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Effect of a breast navigation programme in a teaching hospital in Africa

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Background: Breast cancer screening programmes have been developed in few developing countries to aid curb the increasing burden. However, breast cancer is still being detected in late stage, attributed to barriers in health care. Patient navigation programmes have been implemented in developed countries to help patients overcome these barriers, and they have been associated with early detection and timely diagnosis. Despite the consistent positive effects of breast navigation programmes, there are no studies conducted to show its effect in Africa where the needs are enormous.

Aim: To evaluate the effect of patient navigation programme on patient return after an abnormal clinical breast cancer screening examination finding at Aga Khan University Hospital, Nairobi(AKUH-N).

Setting: Women presenting for breast screening.

Methods: This was a before-and-after study conducted on 76 patients before and after the implementation of the navigation programme. They were followed up for 30 days. Measures included proportion of patient return and time to return.

Results: The proportion of return of patients in the navigated and non-navigated group was 57.9% and 23.7%, respectively (odds ratio [OR]: 4.43 [95% confidence interval, CI: 1.54– 12.78]; $p = 0.0026$).The proportion of timely return in the navigated group was 90.1% and 77.8% for the non-navigated group (OR: 2.85 [95% CI: 0.34–24.30], $p = 0.34$). The mean time to return in the non-navigated and navigated group was 7.33 days and 8.33 days, respectively ($p = 0.67$).

Conclusion: There was an increase in the proportion of patients who returned for follow-up following abnormal clinical breast examination finding after implementation of the breast navigation programme at AKUH-N.

Introduction

A patient navigation programme is defined as 'a process by which an individual guides a patient through a suspicious finding through and around barriers in complex cancer care systems to help ensure timely diagnosis'.[1] It is aimed at helping patients overcome barriers to cancer care. Dr Harold Freeman initiated breast navigation in 1990 in Harlem Hospital in New York, which led to absolute reduction in patients presenting in late stage breast cancer from 50% to close to 21%.[2] Following the success of the breast navigation programme, it was adopted in the developed countries and showed positive impact on screening, diagnosis and treatment through timeliness in diagnosis and improvement in patient adherence to follow-up through diagnostic resolution.[3,4]

Patient navigation programmes have also been tested in medically underserved populations such as American Indian, African-American, Latinos and poor white women with improved rescreening rate for women in this population.[5] Despite the consistent positive effects of breast navigation programmes, there are no studies conducted to show its effect in Africa where the needs are enormous. In Kenya as a case in point, breast cancer has a considerable burden being the commonest cancer in women with an incidence of 34 per 100 000.[6] In addition, there are informal breast cancer screening programmes that are neither coordinated nor fully funded with utility of clinical breast examinations being the main stay of these programmes. Patients with abnormal clinical examinations are advised to seek further tests such as diagnostic mammogram or ultrasound based on their age. The utility of screening mammogram is low and inconsistent, seen to be popular in October, the 'breast cancer month'. Patients are known to seek different services in different health institutions due to lack of comprehensive personnel and equipment. The few institutions that offer these services are not accessible to most patients or are overwhelmed by

high volumes. These challenges lead to haphazard diagnosis of the disease and worse still poor follow-up of patients with a suspicious breast lesion.[7]

Aga Khan University Hospital is a private teaching hospital in Nairobi that runs free monthly clinical breast screening clinics. An audit conducted in 2013 revealed only 23% of women with an abnormal clinical breast examination finding returned for follow-up by the breast surgeon. Reasons cited for failure of follow-up included fear of diagnosis, unfamiliarity with the hospital system and painless condition and thus no urgency to seek medical care.[8] There was an enormous need to increase this proportion. We conducted a study to evaluate the effect of patient navigation programme on patient return after an abnormal clinical breast cancer screening examination finding at Aga Khan University Hospital, Nairobi (AKUH-N).

Research methods and design

Study design

Before and after study designs were used to compare two groups of patients with an abnormal clinical breast examination finding after breast cancer screening. The 'before' group (control) was studied before introduction of the navigation programme and the 'after' group (intervention) was studied after the introduction of the navigation programme.

Study setting and time

The study was conducted at breast screening clinics at AKUH-N, a private teaching hospital, and satellite sites within the city of Nairobi (Kayole and South C) which were off the hospital grounds. The study was conducted over a period of 6 months. The month of October was excluded from the study period as this is the breast cancer awareness month and this would have introduced bias because of increased information in the media urging women to seek breast care.

Study population

The criteria for inclusion into the study included individuals of 18 years and above and patients with an abnormal clinical breast examination finding defined as a breast mass, discoloration, pain, itchiness or nipple discharge. The following were excluded from the study: patients unable to be followed up by phone, prior diagnosis of breast cancer and pregnancy.

Usual care

The control group received standard care, which involved instructing them to return to the clinic any day between Monday and Thursday. They were not issued a specific appointment date or time.

Recruitment and training

Once the study proposal got approval from the institutional review board, all patients who met the inclusion criteria were consecutively recruited into the control group. They received usual care as described above. Once all 38 participants in the control group were recruited, the nurses underwent an online course on patient navigation in preparation for the post-intervention phase. The module is available online by the university of Colorado, Denver on www.patientnavigatortraining.org/course1.[9] There was reinforcement of the training of the nurses by the primary investigator to enhance understanding of the concept.

After the training, the rest of the patients who met the inclusion criteria were consecutively recruited into the intervention group.

Intervention

The navigator assisted the patients in the intervention phase from the screening date to the clinic attendance date. The services rendered included counselling women, ensuring their understanding of the symptom or sign and need for further timely evaluation by a surgeon, scheduled appointment to see the surgeon within 2 weeks of the screening date in line with the convenience and availability of the patient, phone call and text message appointment reminders, tour of the clinic, diagnostic and treatment facilities in the hospital, assisting in document filling, financial counselling and exploration of financial options. The women were all called a day before and on the day of the scheduled clinic visit.

In both groups, women who had not returned after a 30-day period had a telephone call by the primary investigator. They were then advised to return for follow-up.

Primary and secondary outcomes

The main outcome was proportion of patients returning for follow-up at the breast clinic within 30 days. Time to return between the navigated and non-navigated group was defined as follows: timely return was considered as return within 14 days of screening. This was informed by the UK guidelines, which recommended that patients with signs and symptoms referred to the breast clinic should get an appointment within 2 weeks of referral.[10] Delayed return was defined as return between 15 and 30 days. Defaulters to follow-up were defined as failure to return within 30 days. This was informed by an observation from an earlier audit at AKUH-N that patients with an abnormal breast examination were unlikely to return for follow-up after 30 days.[8]

Other demographic data that had influence on the main outcome were recorded, including marital status, level of education, occupation, medical insurance and reason for screening. Medical insurance was distinguished between private insurance and National Health Insurance Fund (NHIF) that is provided by the government at a subsidised monthly rate ranging from $1.50 to $16.50. Information on potential barriers to breast care classified into financial, physical access, communication, sociocultural and system barriers was

obtained from all patients. Further information on whether they have someone to remind them of clinic appointments was sought. This information was to guide with system modification during the intervention (navigation) phase.

Sample size

The sample size was calculated for an expected 30% improvement in the follow-up rate, which was considered clinically and administratively significant. A previous study had showed a 30%-point increase in the diagnostic follow-up rate.[11] The study was powered at 80% with a sample size of 76 with 38 women in each group.

Data analysis

Data were recorded on a questionnaire and entered weekly onto a database using Microsoft Excel 2010. Analysis was performed through STATA software. The comparison of proportion was tested by chi-square and Fisher's exact tests and $p \leq 0.05$ was considered statistically significant.

Ethical consideration

The study protocol was reviewed and approved by the ethics and research committee at the Aga Khan University Hospital (2014/REC-09(v2)). Written consent was obtained for those eligible before being enrolled into the study.

Results

A total of 584 women were screened, and 76 women were recruited into the study over a 6-month period. There were 38 women in each group with the control group being studied between September and December 2014 excluding the month of October 2014 and the intervention phase was between January and March 2015.

The baseline characteristics between the two study phases were analysed. The groups were similar except for the screening site (Table 1).

The distribution of symptoms among the women with abnormal clinical breast examination finding had breast lump and breast pain as the commonest (Table 2).

The proportion of return of patients in the navigated and non-navigated group was 57.9% and 23.7%, respectively (odds ratio [OR]: 4.43 [95% confidence interval, CI: 1.54–12.78]; $p = 0.0026$). There was a higher proportion in return in the navigated group (Table 3). The proportion of timely return in the navigated group was 90.1% and 77.8% for the non-navigated group (OR: 2.85 [95% CI: 0.34–24.30]; $p = 0.34$).

The range of number of days taken until return was 1–25 days in the navigated group and 1–20 days in the non-navigated groups. There was no significant difference in the meantime to return between the navigated group (8.4 days [SD 6.21, 95% CI: 5.66–11.16]; $p = 0.67$) and the non-navigated group (7.33 days [SD 6.6, 95% CI: 2.26–12.40]).

TABLE 1: Baseline characteristics of patients with positive breast examination finding in the non-navigated and navigated group.

Characteristic	Non-navigated *N* (%)	Navigated *N* (%)	*p**
Age			0.826
< 35 years	16 (42)	20 (53)	
35 years and above	16 (42)	18 (47)	
Missing	6 (16)	0 (0)	
Screening site			0.012
AKUH-N	24 (63)	13 (34)	
Offsite (Kayole/South C)	14 (37)	25 (66)	
Prior AKUH-N Visit			0.236
Yes	4 (11)	10 (26)	
No	25 (66)	27 (71)	
Missing	9 (23)	1 (3)	
Marital status			0.143
Single	19 (50)	14 (37)	
Married	18 (47)	21 (55)	
Divorced	1 (3)	0 (0)	
Widowed	0 (0)	3 (8)	
Education			0.719
Primary	8 (21)	7 (18)	
Secondary	18 (47)	13 (34)	
Diploma	4 (11)	5 (13)	
1st Degree	6 (16)	10 (26)	
Master	2 (5)	3 (8)	
Employment			0.815
Yes	25 (66)	27 (71)	
No	13 (34)	11 (29)	
Insurance			1.000
None	25 (66)	25 (66)	
National (NHIF)	8 (21)	7 (18)	
Private	5 (13)	6 (16)	
Symptomatic patients			0.791
No	10 (53)	9 (47)	
Yes	28 (49)	29 (51)	

Source: Authors' own work

AKUH-N, Aga Khan University Hospital, Nairobi.

N, number; *, $p \leq 0.05$.

TABLE 2: Reason for attending breast cancer screening clinics.

Reason for screening	Frequency (*n* = 76)	Percentage
Breast lump	29	38.5
Breast pain	22	29.0
Routine screening/ asymptomatic	16	21.1
Nipple discharge	4	5.3
Breast itchiness	2	2.6
Seeking second opinion	1	1.3
Breast discoloration	1	1.3
Family history of breast cancer	1	1.3

Source: Authors' own work

n, number.

TABLE 3: Proportion of return in navigated and non-navigated patients.

Group	Proportion of return %	
	Return	Defaulter
Non-navigated (*n* = 38)	23.7 (9)	76.3 (29)
Navigation (*n* = 38)	57.9 (22)	42.1 (16)

Source: Authors' own work

n, number.

The pattern of return within the navigated and non-navigated patients revealed that the patients in the non-navigated group returned for follow-up earlier than those in the navigated group. The patients in the navigated group took somewhat longer but the overall proportion of those who returned at the end of the study period was higher.

Forty-nine (64.5%) individuals had someone to remind them of appointments.

Overall, factors that were associated with return for follow-up included navigation ($p = 0.003$), marital status ($p = 0.02$) and education status above secondary school ($p = 0.007$). The rest of the factors were not significant (Table 4).

There appeared to be a better response to navigation in patients with higher education, breast symptoms, history of prior visit to AKUH and initial screening site at AKUH (Table 5).

Majority of patients (50 [65.8%]) had no health insurance while 15 (19.7%) had NHIF and 11(14.7%) had private insurance. At the time of the study, NHIF did not provide insurance coverage for outpatient services, which translates to only 14.7% of clients having outpatient insurance services available to them.

TABLE 4: Factors associated with return in patients with abnormal clinical breast examination finding.

Variable	OR (95%–CI)	p*
Navigation (38)	(1.53–12.78)	0.003
Age < 35 years (36) 35 years and above (34)	1.4 (0.53–3.68)	0.50
Prior AKUH-N visit (14)	1.77 (0.52–5.8)	0.38
Initial screening site AKUH (37) Offsite – Kayole and South C (39)	0.63 (0.25–1.61)	0.33
Employment (52)	0.82 (0.29–2.36)	0.72
Insurance None/NHIF (65) Private (11)	1.25 (0.34–4.52)	0.73
Symptomatic (60)	0.52 (0.17–1.58)	0.24
Education Basic (46) Higher (30)	3.81 (1.44–10.07)	0.007
Marital status Not married (37) Married (39)	3.15 (1.21–8.23)	0.02

Source: Authors' own work

AKUH-N, Aga Khan University Hospital, Nairobi; CI, confidence interval; NHIF, National Health Insurance Fund; OR, odds ratio.

*, $p \leq 0.05$.

TABLE 5: Effect of different variables on navigation.

Variable (*n*)	Proportion of return %		p*
	Non-navigated	Navigated	
Age			0.083
< 35 years (36)	18.5	50.0	
35 years and above (35)	18.5	66.7	
Missing (2)	50.0	50.0	
Screening site			0.014
AKUH (37)	20.8	61.5	
Offsite (Kayole and South C) (39)	28.9	56.0	
Prior visit to AKUH-N			0.020
Yes (14)	0.0	70.0	
No (52)	20.0	51.8	
Missing (10)	44.0	100.0	
Marital status			0.090
Married (39)	38.9	66.7	
Not married (37)	10.0	47.1	
Education			0.017
Basic (46)	19.2	40.0	
Higher (30)	33.3	77.9	
Symptomatic			0.040
Yes (57)	25.0	77.8	
No (19)	20.0	51.7	
Insurance			0.750
Private (11)	40.0	50.0	
NHIF or none (65)	21.2	59.4	
Reminder			0.110
Yes (49)	22.6	44.4	
No(27)	28.6	70.1	

Source: Authors' own work

AKUH-N, Aga Khan University Hospital, Nairobi; NHIF, National Health Insurance Fund; *n*, number.

*, $p \leq 0.05$.

Financial barrier was cited in 39 (51.3%) patients with 84.6% having difficulty paying bills and lack of insurance coverage and 15.4% having inadequate insurance coverage. No patients had physical access barrier to health care. Eight (10.5%) had communication barrier, which included speaking a primary language other than English or Kiswahili (the national language in Kenya) and inability to read and write. Sociocultural barriers were seen in 24 (31.6%), which included cultural beliefs, fear of the unknown, belittling the problem and stigmatisation. The cultural beliefs cited included breast cancer being associated with immoral women and a curse that only affects old women. Nine patients expressed having other pressing health problems, busy schedule and other health priorities other than breast care. Twenty-seven patients cited absence of someone to remind them of clinic appointments.

System barriers were expressed in 32 (42.1%) women. These included false reassurance from clinicians in 5 women, unfriendly clinicians reported in 8 women and long processes such as queues reported in 12 women. Nine women cited unfamiliar facilities, being unaware of where and how to reach the different clinical facilities such as laboratories, radiology department and breast clinic. Five women reported lack of comprehensive facilities hence leading to referral to other institutions. Four women reported having to see many clinicians before getting to the specialist. Two women reported too much paper work in hospital.

Discussion

This is the first study conducted locally to assess the effect of a breast navigation programme. The implementation of the breast navigation programme showed a statistically significant increase in the proportion of patients returning after an abnormal clinical breast examination finding at Aga Khan University Hospital. Our study showed that patients who were navigated were four times more likely to return for follow-up compared to the non-navigated patients. A positive effect was similarly seen by Battaglia and Reich.[3,4]

The introduction of the navigation system improved the proportion of women with financial barrier who returned through counselling and exploration of available financial options. Even though the women faced higher costs for services, the patient navigator helped the women in exploring financial resources available to them. This approach has been supported by studies that show charging for health care services will be compensated by the quality of services received.[12] On the other hand, there are breast navigation programmes that have shown high adherence to cancer care through financial support.[13,14]

Telephone reminders and text messages alter the inducement and were associated with follow-up behaviour and may

show effect in patients who have no support system to remind them of appointments and those who are too busy or forgetful.[15] In our study, 35.5% of women had no one to remind them of appointments and they responded better to navigation compared to their counterparts who were not navigated, though this was not statistically significant.

Interventions such as same-day tests and portable facilities have shown an increase in follow-up rate in cancer screening in institutions that lack facilities.[16] In our study, ultrasound, cytology and physician consultation were provided on site for Kayole and South B sites, which explains the follow-up time of 1 day; however, availability of these services did not statistically influence return of patients.

Individuals screened on site and those who had prior visits to the hospital seemed to have a better response to navigation. This may be because of the patients being familiar with the system and thus navigation being an additive effect. The response to navigation appeared to be better among the individuals with a higher education (higher than secondary school), which may be explained by a better understanding of health and higher utilisation of health facilities.[17] Patient navigation should focus on individuals with lower education and those who are unfamiliar with the hospital system; thus, modification in the approach of this particular programme could have yielded better outcomes in those who need it most.

Married individuals were also more likely to return for follow-up irrespective of whether they were navigated or not, possibly because of support from the spouse. Previous studies have demonstrated interdependence in marriage, which has been associated with intense support.[18]

Navigation programme did not significantly reduce the time taken to return; however, it seemed to influence more people to return after the 10th day. This could be because of the fact that the programme allowed them to choose a convenient day to return within 2 weeks and scheduling, phone calls and text reminders enhanced it.

The limitations of this study include the methodology not being able to control for all variables. It was not feasible to do a randomised controlled trial in our hospital setup at the time, as there was only one breast clinic which reviewed regular patients and those being followed up after breast cancer screening. There was a risk of contamination between the two groups. Secondly, because of the consent being obtained at the beginning of the study, this could have influenced their health-seeking behaviour, as they were aware they were being observed. Thirdly, the period of follow-up for the individuals was a limitation too. There is a possibility of better return rates if the follow-up period was longer considering majority of patients who present for screening do not have invasive disease and can thus be followed longer without compromising on patient care. Moreover, the study setting was a private hospital in the capital city of Kenya, with a cosmopolitan population. The barriers to health care are not necessarily replicated in other areas within the region.

Conclusion

There was an increase in the proportion of patients who returned for follow-up following abnormal clinical breast examination finding after implementation of the breast navigation programme at AKUH-N. The patient navigation programme appears to have a significant effect on patient return and can be considered in screening programmes. A more robust study design such as randomised controlled trial can be used to confirm this apparent superiority.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article. They also confirm that this work is original, has not been published elsewhere nor is it currently under consideration for publication elsewhere.

Authors' contributions

B.R., principal author, was responsible for project design, ethics approval application, data processing and writing of the manuscript draft. R.W. was responsible for context, critical revision of the article and final approval of the version submitted for publication. H.S. was responsible for methodology, critique of data and final approval of manuscript submitted for publication. The authors alone are responsible for the content and writing of this article.

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