Factors affecting delay in the presentation of breast cancer symptoms among women in Gaza, occupied Palestinian territory: a cross-sectional survey

Samira S Abo Al-Shiekh, Yasser S Alajerami, Khaled M Abushab, Ahmed A Najim, Shaymaa AlWaheidi, Elizabeth A Davies

ABSTRACT

Objective To identify factors related to women’s delay in presenting with breast cancer symptoms to improve diagnosis in the occupied Palestinian territory (oPt).

Design Cross-sectional.

Setting Two government cancer hospitals.

Participants A consecutive sample of 130 Palestinian women living in Gaza with newly diagnosed breast cancer were approached in the waiting rooms of cancer hospitals in Gaza between 1 January 2017 and 31 December 2017. 120 women took part and returned the completed questionnaire.

Primary and secondary outcome measures Clinical information about breast cancer was collected from hospital cancer records. An interval of 3 months or more between women’s self-discovery of symptoms and their first presentation to a medical provider was considered as a delay.

Results 94% (122/130) of women attending cancer hospitals in Gaza agreed to take part in the study. Their mean age was 51 years (range: 23–72), 33.6% (31/122) had a family history of breast cancer and 74.5% (41/55) of those whose cancer stage was known had been diagnosed at stage III or IV. Around one-half (62/122) said they had not recognised the seriousness of their breast changes but only 20% (24/122) of women delayed seeking healthcare by 3 months and more. The two only factors associated to late presentation were that the woman considered their symptoms not serious (p<0.001) and lack of pain (p=0.012). Lower socioeconomic status, older age, lower education and negative family history of breast cancer were not statistically associated with women’s delay.

Conclusions Women’s awareness about the seriousness of breast changes and the critical importance of seeking prompt diagnosis needs to be improved using context-relevant and evidence-based awareness campaigns. This should be accompanied with training of female nurses on promoting early detection and improvement in diagnostic facilities to ensure timely diagnosis of cancer in the oPt.

BACKGROUND

Earlier diagnosis of breast cancer is associated with better experiences of care, lower treatment morbidity and better survival than for late-stage disease. A pattern of late stage disease at diagnosis is more common in low-income and middle-income countries (LMICs). However, earlier diagnosis of breast cancer cannot be achieved until women become aware of the importance of early diagnosis and are able to identify breast symptoms and so seek help and receive treatment promptly. The fact that in LMICs most breast cancers are detected at a late stage highlights the importance of understanding barriers to diagnosis and encouraging women with breast cancer symptoms to present early and shorten delays in diagnosis.

As is the case in many other LMICS, the incidence of breast cancer in the occupied Palestinian territory (oPt) is low, and is estimated to be 33 per 100 000 in 2018. Breast cancer was the third largest cause of cancer mortality in 2018 at 12%, after lung cancer...
and colon cancer (20% and 13%, respectively). The only published study on survival from breast cancer in the oPt reported a 5-year crude survival rate of 65% for 1360 women diagnosed between 2005 and 2014 in Gaza.6 Published evidence on grade, and stage of breast cancer is not available for the oPt. Nevertheless, there is consensus that women in Gaza are diagnosed with late stage disease.5

Delays in cancer diagnosis and navigation can occur at any point, from abnormal mammogram finding or from the first observation of symptoms to the start of treatment and are typically classified into: patient, primary care and secondary care intervals.7 Patient delay is defined as a delay in seeking medical assistance following breast cancer symptoms, while system delay refers to a delay in the healthcare system in getting diagnostic tests, receiving a definitive diagnosis and starting treatment.8

Patient delay has been associated with larger tumour size, more advanced stage at presentation and poorer survival outcomes,9 and is a significant concern in LMICs. Sociodemographic factors, cancer knowledge, family history, social support and other factors have been advocated as factors influencing the stage at which women seek medical advice after they discover breast symptoms.10 11 Several studies have also described how the patient’s concealment of symptoms and the stigma that is associated with having the disease may influence, delay of medical help-seeking.3 10 12

While some of these late diagnoses in the oPt are health-system related,13 there is some evidence that women with symptoms present late, and that this may be related to many fears associated with the disease and its treatment.1

No published study, however, has examined how these factors may operate among Palestinian women with breast cancer. It is important to understand what influences the stage at which women with breast changes or symptoms seek medical advice in order to design evidence-based awareness campaigns and breast cancer detection interventions for other women.

This study focused on the patient’s interval delay rather than on the system’s interval delay. It aimed to examine women’s interpretations of potential symptoms of breast cancer, and whether they delayed their presentation to healthcare services after discovering them. It also aimed to identify demographic factors related to women’s delay in order to improve breast cancer education related to breast cancer symptoms in the oPt.

**MATERIALS AND METHODS**

**Study design and participants**

A cross-sectional survey study was designed to be conducted from 1 January 2017 to 31 December 2017. Based on the available literature,12 14-17 the first author developed a closed-question questionnaire in Arabic. Eleven professionals including specialists in public health and clinicians working in governmental hospitals in Gaza reviewed the questionnaire to ensure its clarity and appropriateness. Minor changes were made where necessary.

A pilot study was conducted with 12 women to test the questionnaire and its ease of completion. Information about stage at diagnosis was collected for the study population from hospital cancer records. Information about the nature of the presentation (screening or symptomatic) and family history of breast cancer was collected from patients because they were not included in most hospital cancer records. A validation process using an identification number was used to prevent duplicate entries. This helped increase the validity of the questionnaire data. Re-entry of 5% of the data was carried out to minimise data entry errors. Cronbach’s alpha was used to assess the reliability and internal consistency of the questionnaire.

The final questionnaire (online supplemental file A) consisted of three sections: the first covered sociodemographic characteristics, route of presentation (screening or symptomatic), family history of breast cancer and previous breast examinations performed. Data gathered on sociodemographic characteristics included age at diagnosis, place of residence, marital status, education, occupation, estimated monthly income and governmental health insurance.

The second section asked about the symptoms which women noted before their referral and diagnosis. We considered eight common presenting symptoms of breast problems: breast lump, retracted nipple, change in breast size or shape, nipple discharge, mass under axilla, tingling, redness and tenderness. All other symptoms mentioned by respondents were put in an ‘any other symptom’ category.

The third section of the questionnaire asked about the time women had waited between discovering a breast problem or symptom and presenting to a healthcare professional, and the cause(s) of any delay before this. To minimise potential recall bias, women were asked to remember the onset of symptoms and the first visit to a healthcare professional with the help of a calendar rather than by simply estimating the time lag. Also, information was also cross-checked from hospital cancer records to reduce the risk of recall bias. For the purposes of this study, women’s delay is defined as the reported time elapsing between self-discovery of symptoms and the first presentation to a medical provider to seek evaluation. Women’s delay was then categorised into: (1) up to 3 months or (2) 3 months or more. We used a delay of ≥3 months to define patient delay based on substantial evidence that such delays are associated with lower survival.9 18

The study population was women living in Gaza, who had been diagnosed clinically with primary breast cancer during 2017. We excluded women who had breast cancer diagnosed as a secondary tumour, those diagnosed with recurrent breast cancer, and those with cognitive problems affecting their memory or communication skills to the extent that they could not give consent to the study.

**Sampling methods**

At the time of our study, there were no official statistics showing the new incident cases of breast cancer in Gaza.
for the year 2017. As is the case for many cancer registries, the Gaza Cancer Registry starts collecting data well after the diagnostic year has ended. The information needed about all cases of breast cancer diagnosed in 2017 was, therefore, not available at the time of the study. In addition, governmental hospitals, which provide cancer care in Gaza, do not have hospital-based electronic cancer registries, but maintain all cancer records in paper or in scanned-paper format. However, we were aware that most women diagnosed with breast cancer in Gaza will eventually register at two government cancer hospitals (Al-Rantisi Hospital and European Gaza Hospital) for treatment and follow-up. Therefore, the only feasible sampling method was to approach and recruit women with breast cancer in the waiting room when they attended one of these hospitals for registration, consultation, treatment or follow-up. Two data collectors were trained to approach and recruit women, distribute questionnaires and to help participants (both literate and illiterate) with their completion in the clinic.

An explanation of the study and its objectives was first given to potential participants, and informed consent obtained from them.

Data analysis
Continuous variables were compared using mean±SD, while categorical variables were presented as frequencies and percentages. Data were checked for outliers and errors and continuous variables presented in form of mean±SD, while categorical variables were presented as frequencies and percentages. Prolonged patient delay was defined as an interval of 3 months or more between symptom self-discovery and first presentation to a medical provider to seek assessment. This cut-off point was selected based on published literature showing that women experiencing a delay of 3 months or more had significantly lower survival.9 Two-tailed χ² test was used to evaluate the statistical differences between the different factors investigated as associated the likelihood of patient delay. The Fisher’s exact test was used when one or more of the cell counts in the results table is less than five. A p value was statistically significant at 0.05 level. Data were analysed using the Statistical Package for the Social Sciences V.23 (IBM).

Patient and public involvement
Patients, carers or members of the public were not involved in the study described, but we will seek their help in disseminating and advocating the study findings among cancer support groups and cancer hospitals in Gaza.

RESULTS
Sample characteristics
The initial sample included all Palestinian women (N=130) who were diagnosed with breast cancer in 2017. Of these, 122 agreed to take part and completed the study questionnaire (response rate, 93.8%). Reasons for non-participation were not given by women who did not participate in the study. The characteristics of the sample are shown in table 1.

The mean age of women at diagnosis was 51 years±11.9 years. Sixteen per cent (16/122) were aged less than 40 years, 30% (36/122) 40–49 years, 27% (33/122) 50–59 years, 18% (22/122) 60–69 years and 10% (12/122) 70

| Characteristic                        | N   | %   |
|---------------------------------------|-----|-----|
| Age group (years)                     |     |     |
| <40                                   | 19  | 15.6|
| 40–49                                 | 36  | 29.5|
| 50–59                                 | 33  | 27  |
| 60–69                                 | 22  | 18  |
| 70 or older                           | 12  | 9.8 |
| Marital status                        |     |     |
| Single                                | 12  | 9.8 |
| Married                               | 84  | 68.9|
| Divorced                              | 3   | 2.5 |
| Widow                                 | 23  | 18.9|
| Monthly income                        |     |     |
| <NIS1000*                             | 59  | 48.4|
| NIS1000–NIS2290                       | 32  | 26.2|
| ≥NIS2290                              | 24  | 19.7|
| NA                                    | 7   | 5.7 |
| Education level                       |     |     |
| <Secondary school                     | 44  | 36.1|
| ≥Secondary school                     | 78  | 63.9|
| Family history of breast cancer       |     |     |
| No                                    | 81  | 66.4|
| Yes                                   | 41  | 33.6|
| Examinations done                     |     |     |
| Diagnostic mammography before         | 92  | 75.4|
| confirmation of the disease           |     |     |
| Ultrasound                            | 110 | 90.2|
| Biopsy                                | 122 | 100 |
| Side of tumour                        |     |     |
| Right                                 | 53  | 43.4|
| Left                                  | 67  | 54.9|
| Both                                  | 2   | 1.6 |
| Stage of disease                      |     |     |
| I                                     | 1   | 0.8 |
| II                                    | 13  | 10.7|
| III                                   | 28  | 23  |
| IV                                    | 13  | 10.7|
| NA                                    | 67  | 54.9|

*NIS1=US$0.29. NA, not available; NIS, New Israeli Shekel.
or older. Sixty-seven per cent were married (84/122) and 52% had five or more children (63/122). Seventy-five per cent (91/122) were living below the poverty line (less than US$600 monthly) but nearly all (97%, 118/122) had national health insurance. About two-thirds of women (64%, 78/122) had secondary education or higher, and most were unemployed (80%, 98/122) (table 1).

Around one-third of women (34%, 41/122) reported a family history of breast cancer. Most said that they had undergone diagnostic mammography (75%, 92/122) and breast ultrasound (90%, 110/122) as part of their diagnostic investigation. All women also underwent breast biopsy to confirm the diagnosis. Breast cancer was more frequent in the left breast (55%, 67/122) than in the right (44%, 53/122), and only two women had bilateral breast cancer. However, just over one half of the women (53%, 67/122) did not have a cancer stage reported in their hospital cancer records during the study period. Seventy-five per cent (41/55) of those with this information recorded had stage 3 or 4 disease, while only 25% (14/55) had stage 1 or 2 disease (table 1).

**Presenting symptoms and women’s delay**

All women presented with self-discovered symptoms of breast cancer, and only 8% (10/122) mentioned that they had mammographic screening in the past.

The most frequent initial symptom was a lump in the breast (81%, 99/122), while a few had other symptoms such as pain and retracted nipple. The median waiting time before seeking medical help was 14 days (0–912) days and the average waiting time between self-discovery of symptoms and first medical consultation was 74.6±148.5 (0–912) days. One-fifth (21%, 26/122) of women did not give any reason for delaying seeking medical help and presented as soon as possible. Thirty per cent of women (37/122) gave one reason to justify the time they waited or delayed, and most women (79%, 96/122) gave two or more reasons to justify delaying. The most commonly reported barriers to seeking medical help were considering the symptom was not serious (49%, 60/122), fear of diagnosis with the disease (34%, 41/122) and lack of pain (29%, 35/122) (table 2). Among the 122 respondents, 4 women delayed seeking medical help because they felt embarrassed of being examined, 5 women feared a cancer diagnosis and another 2 were worried that their husbands would reject them. Six women reported financial barriers related to paying for the diagnosis or transportation to the doctor.

Women who had not perceived their breast symptoms as serious were ten times more likely than others to have delayed seeking medical help ($\chi^2$ 13.94, p>0.05). Also, women were more likely to tolerate or ignore symptoms if they were painless ($\chi^2$ 6.63, p>0.05) (table 2).

Feeling embarrassed, fear of diagnosis or worry about the relationship with their husband were not statistically associated with women’s delay (table 2). Nor were lower socioeconomic status, older age, lower education levels and negative family history of breast cancer (table 3).

Despite having listed one or more reasons to delay seeking medical help, most women (80%, 98/122) reported presenting within 3 months of discovering their symptoms. Only six women (5%) delayed their presentation for 1 year or more. This might be because more than one half of women also reported (53%, 64/122) receiving encouragement from their families to seek medical help.

**Table 2** Association between women’s demographic characteristics and their time of presentation

| Category                        | Answer | Count | No delay | Delay | Two-tailed $\chi^2$ test | P value |
|---------------------------------|--------|-------|----------|-------|--------------------------|---------|
|                                 |        |       | <3 months| $\geq$3 months |                          |         |
| Age (years)                     | <40    | 19    | 18 (95%) | 1 (5%)  | 4.7                      | 0.46    |
|                                 | 40–49  | 36    | 27 (75%) | 9 (25%) |                         |         |
|                                 | 50–59  | 33    | 27 (82%) | 6 (8%)  |                         |         |
|                                 | 60–69  | 22    | 18 (82%) | 4 (8%)  |                         |         |
|                                 | 70 or older | 12 | 8 (67%) | 4 (33%) |                         |         |
| Monthly income                  | <NIS1000* | 59 | 46 (78%) | 13 (22%) | 0.33                     | 0.85    |
|                                 | NIS1000–NIS2290 | 32 | 25 (78%) | 7 (22%)  |                         |         |
|                                 | $\geq$NIS2290 | 24 | 20 (83%) | 4 (17%)  |                         |         |
|                                 | NA     | 7     | 7 (100%) | 0 (0%)  |                         |         |
| Education level                 | <Secondary school | 44 | 34 (77%) | 10 (23%) | 0.41                     | 0.52    |
|                                 | $\geq$Secondary school | 78 | 64 (82%) | 14 (18%) |                         |         |
| Family history of breast cancer | No     | 81    | 66 (82%) | 15 (18%) | 0.2                      | 0.65    |
|                                 | Yes    | 41    | 32 (78%) | 9 (22%)  |                         |         |

*NIS1=US$0.29.
NIS, New Israeli Israeli Shekel.
However, only 14% (12/84) of women received encouragement from their husbands, while 31% (38/122) received no encouragement from anyone and decided themselves to seek medical help. Overall, 20% (24/122) delayed their presentation for 3 months or more.

**Discussion**

**Summary of main findings**

This study surveyed a consecutive sample of 122 women with newly diagnosed breast cancer attending the two governmental cancer hospitals in Gaza about the way they had presented with their breast cancer symptoms. The average waiting time between self-discovery of symptoms and first medical consultation was 74.6±148.5 (0–912) days. Most women reported one or more barriers to presenting as soon as possible. The most significant barrier was considering the symptom as not being serious. Delay for longer than 3 months was found in one-fifth of the women. Social and demographic factors were not statistically associated with patient delay and family support to seek evaluation was reported by about one half of the women. Most women (67/122) did not have their cancer stage reported in their hospital records at the time of the study, nor had they been given this information. The considerable absence of information about cancer stage could be because these women were newly diagnosed. It was also not possible to retrieve this information at a later stage because the ethical approval for the study had expired. Associations between cancer stage, presenting symptoms and patient delay could therefore not be explored.

**Comparison to findings from previous research**

A delay by women of 3 months or more seen in 20% of our study population is consistent with the findings of many studies in Arab and Muslim countries as well as studies from Europe.19 20 This figure is much lower than the 50% to 89% delay reported in other developing countries.12 21 22 It is possible that the social interactions of life in extended families common in Gaza, may play a role in explaining this difference. The fact that people can talk more with one another in person and share information on personal experiences could encourage them not to delay seeking medical help despite facing some barriers. Many women in our study received encouragement from their husbands or families to present to healthcare facilities after symptom discovery.

Consistent with other studies,19 20 the most commonly reported barriers to seeking medical help were women perceiving their breast symptoms as non-serious. In our study, these women were ten times more likely than others to delay seeking medical help. This reflects the lack of awareness about breast cancer symptoms as well as the significance of presentation after symptom discovery for diagnosis. Symptom interpretation is the most important step in seeking medical help and is believed to encourage up to 80% of women in seeking medical help.23 Women cannot, however, be expected to know which symptoms they should act on and present to any healthcare system in the absence of co-ordinated awareness programmes driven by that system. These programmes need to be based on women’s experiences of a breast cancer symptoms and diagnosis and to be developed and evaluated for acceptability in collaboration with women from the relevant communities. This study represents a first step in that process.

Older age did not significantly influence patient delay, in contrast to many other reports.14 22 24 25 This may be due to the younger study population (only 28% were aged 60 or older) compared with other studies. This age profile in turn represents the target population in the oPt where the mean age of diagnosis is about 53.5

Lower family income is another demographic factor that affects patient delay in other studies.26–28 While most
of our study population lived below the poverty line, we found no evidence that lower economic status was associated with delayed presentation. This could be due to nearly all respondents being insured by the Palestinian government. Governmental health insurance is the only type of medical coverage available for cancer diagnosis and treatment in the oPt, and it covers referrals to hospitals in Egypt and Israel.

There is an assumption that Muslim women will be afraid or embarrassed of physical examination when attending a health facility.28–33 In oPt more than 90% of the women are Muslim. Very few women in our study, however, reported feeling embarrassed or worried about the relationship with their husband as barriers to early presentation. One other study reported that these factors were also not significantly associated with patient delay in seeking medical advice among women with no history of breast cancer in the oPt.34 It could be that Palestinian women are aware that female nurses will be present during breast examination, as the government takes these religious aspects into consideration when providing health services. However, stigma and embarrassment issues might appear after the confirmation of diagnosis since almost all oncologists and cancer surgeons in Gaza are male professionals.

Implications for practice, policy and future research
Women’s delay in this study was found to be particularly associated with failing to recognise the seriousness of breast changes and of knowing of the need to seek medical help promptly for them. The factors responsible for this should be investigated in larger studies. Women’s awareness about the critical importance of seeking an immediate medical diagnosis needs to be improved. Culturally accepted and evidence-based awareness campaigns are required to make women ‘breast aware’ both of their healthy breasts and changes in them, and of the potential seriousness of these changes. Given the high percentage of family history found in this study, cancer hospitals in Gaza need to start documenting family history of breast and/or ovarian cancer in order to guide future efforts to raise awareness and to target high-risk groups. Also, it is important that nurses, female health visitors and doctors, and families are included in the development of such campaigns and patient navigation roles. This will support women prompt follow-up and diagnosis of an abnormal finding on cancer screening or prediagnosis tests.35 Strong leadership and clear decision-making coupled with the funds needed to support the communication network and provide training for staff will help promote implementation of effective health information to patients.36 In the oPt, as in any other LMIC, access to breast cancer diagnosis and treatment facilities must be improved as a part of a breast cancer control programme. Delays related to the Palestinian healthcare system were investigated in another study which showed that women wait a long time to undergo biopsies in governmental hospitals.13 This is in addition to the limited number of trained staff and poor availability of diagnostics.37 Awareness campaigns to avoid patient delays will have a limited effect on overall breast cancer care without the timely diagnosis of breast cancer in the oPt.

Contributors SSA-S designed the study and coordinated the data extraction and data analysis. SA and EAD coordinated the interpretation of the results and reviewed the study results. SSA-S, SA and EAD participated in the discussion and writing of the manuscript. All authors oversaw the study implications and contributed to writing subsequent versions of the manuscript. SSA-S, SA, EAD, AAN, KMA and YSA read and approved the final written version of the manuscript. SSA-S, Guarantor.

Funding This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. Funding was available only to support the publication of this study by the Research Group led by EAD on the presentation of women with breast cancer in Gaza.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Ethical approval was obtained from both the Palestinian Health Research Council (PHRC/HC/239/17) and the Palestinian Ministry of Health (158258/29/08/2017). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information. Extra data can be accessed via the Dryad data repository at http://datadryad.org/ with the doi: 10.5061/dryad.8ght76s8.

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ORCID iDs Shaymaa AlWaheidi http://orcid.org/0000-0002-1485-7078
Elizabeth A Davies http://orcid.org/0000-0003-2325-0849

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BMJ Open: first published as 10.1136/bmjopen-2022-061847 on 21 October 2022. Downloaded from http://bmjopen.bmj.com/ on September 13, 2023 by guest. Protected by copyright.
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