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Trends in epidemiology and management of breast cancer in developing Arab countries: A literature and registry analysis[☆]

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Abstract *Background:* Registries and research on breast cancer in Arabic and developing countries are limited.

Methods: We searched PubMed, Medline, WHO and IAEA publications, national, regional, hospital tumor registries and abstracts. We reviewed and analyzed available data on epidemiological trends and management of breast cancer in Arab countries, and compared it to current international standards of early detection, surgery and radiation therapy.

Results: Breast cancer constitutes 13–35% of all female cancers. Almost half of patients are below 50 and median age is 49–52 years as compared to 63 in industrialized nations. A recent rise of Age-Standardized Incidence Rates (ASR) is noted. Advanced disease remains very common in Egypt, Tunisia, Saudi Arabia, Syria, Palestinians and others. Mastectomy is still performed in more than 80% of women with breast cancer. There are only 84 radiation therapy centers, 256 radiation oncologists and 473 radiation technologists in all Arab countries, as compared with 1875, 3068 and 5155, respectively, in the USA, which has an equivalent population of about 300 million. Population-based screening is rarely practiced. Results from recent campaigns and studies show a positive impact of clinical breast examination leading to more early diagnosis and breast-conserving surgery.

Conclusions: Breast cancer is the most common cancer among women in Arab countries with a young age of around 50 years at presentation. Locally advanced disease is very

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common and total mastectomy is the most commonly performed surgery. Awareness campaigns and value of clinical breast examination were validated in the Cairo Breast Cancer Screening Trial. More radiation centers and early detection would optimize care and reduce the currently high rate of total mastectomies. Population-based screening in those countries with affluent resources and accessible care should be implemented.

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Introduction

Breast cancer is the most common cancer seen in women, constituting 22% of all cases worldwide. In 2000, the estimated number of new cases of breast cancer was 579,000 in developed countries and 471,000 in less developed countries.¹ Many differences with respect to age, stages at presentation, and biological characteristics exist between various countries. In the United States, approximately 50% of all women with newly diagnosed breast cancer are older than 63 years while in many so-called developing countries almost half of women with newly diagnosed breast cancer are younger than 50 years of age.² In-situ disease has become more common in the developed world³ yet locally advanced and metastatic diseases at presentation remain very common in the developing countries.⁴

The Arab world has a total population of approximately 301,227,000 in the year 2004, living in 22 countries spread across Northern Africa and Western Asia, including the Middle East.⁵ Data from Arab countries on breast cancer vary according to region and country. Many Arab countries have witnessed great urban development and scattered industrialization. Political instability, military conflicts, and poor planning have kept the majority of the Arab peoples away from enjoying the medical advances of the second half of the twentieth century. Investment in research has lagged behind and remained a matter of individual and institutional motivation. Arab countries spend 0.15% of their gross domestic product on research and development as compared to the world average of 1.4%.⁶ Some countries have allocated large amounts of money for medicine and research.⁷ Like many developing countries, they have had other health priorities such as control of infectious diseases and childhood illnesses. However, the World Health Organization (WHO) has recently acknowledged that non-communicable diseases have become a priority for health care in many developing countries.^{8,9} Cancer remains a taboo in most Arab countries. The recent explosion of knowledge and information through the media and internet have helped change some attitudes, but most people still refer to it as "that other disease" and remain afraid of mentioning it by name.

We undertook this study to determine the particular aspects and status of research on breast cancer in Arab countries. We aimed at outlining proficiencies and deficiencies in order to help improve breast cancer care in Arab developing countries where almost 150 million women live.

Methods

We searched PubMed, Medline and reviewed published literature, International Agency for Research on Cancer

(IARC) publications, data from national and regional cancer registries where available, international and regional cancer meetings, institutional websites, and International Atomic Energy Agency records for radiation therapy. We looked at percentages of breast cancer cases, incidence rates, age-standardized incidence rates (ASR), stages at presentation, and methods of diagnosis, availability of fine-needle aspiration (FNA) and core biopsy, frozen section, breast conservation versus mastectomy, multimodality management, availability of screening, mammography, technical and professional expertise, availability of chemotherapy, radiotherapy, hormonal therapy, participation in international trials, performance of own trials, infrastructure for supportive care for breast cancer patients and patient support groups.

Results

Scarcity of data was remarkable. Only three Arab countries were listed in IARC Cancer in five continents,¹⁰ namely Algeria, Kuwait and Oman. Most countries either have a national registry or regional registry. Some countries have no data; Most data are published in peer-reviewed journals or in local journals, meeting abstracts, or posted on websites. We summarize all the available information on breast cancer in Arab countries in Tables 1 and 2.

Breast data from selected countries

Egypt

National Cancer Institute in Cairo registry reported breast cancer to represent 35.1% of female cancers. An ASR of 49.6 in the region of Gharbiah, Egypt in 2002 was reported. Extensive disease at presentation was reported.^{11–15} A recent article about breast cancer in Cairo indicates a higher than expected detection rate of 8 per 1000 breast cancer cases upon first screening of a target group of 4116 invited women aged 35–64 living in a geographically defined area in Cairo, which suggests that many women in the community with early but palpable breast cancer fail to seek medical attention until their cancer is advanced.¹⁶ National Cancer Institute of Cairo data showed breast cancer stages III and IV to be around 80–90% while it became 60% during this study. This study showed benefit from clinical breast examination (CBE) and reduction of the incidence of locally advanced disease, and improvement of breast-conserving surgery rates.¹⁴

Jordan

In 1997, breast cancer constituted 14.2% of all cancer cases in women. Crude ASR was calculated at 21.3/100,000 in 1997.^{17,18}

Table 1 Clinical data for breast cancer in Arab countries

Country	Frequency data	Year(s)	No. of patients (pts) and type of registry	ASR (per 100,000)	Age at presentation	Ref.
Algeria	*	1990–1993	*	9.5	*	10
Bahrain	*	1982–1994	117 pts	*	*	48
Egypt	37.50%	2002–2003	Hospital-based	*	Median age: 49	12
	*	2003–2004	Hospital-based	*	*	12
	*	*	Regional (Alexandria)	*	*	13
	37.6%	1999	Regional (Gharbiah)	15	Median age: 48.7	11
Jordan	14.20%	1997	National	21.3	*	18
Kuwait	34.40%	*	258 pts (National)	32.8	78% < 50	20
Saudi Arabia	19.10%	1994–1996	1430 pts (national)	11.2	48.3	34
	*	1985–1995	292 pts		Median age = 42	36
Lebanon	23–35%	1964	Hospital-based	20	*	25
	27%	1984	1094 pts (National)	*	*	26
	35%	1982–2000	2673 pts (hospital-based)	30.6	Median age: 49; 49% < 50	21
	33%	1998 National	2092 pts (National)	46.7	Median age: 52; 50% < 50	22
Morocco	22.30%	1986–1987	5148 pts (hospital-based)	*	*	29
Oman	13.70%	1993–1997	1809 pts	13	*	8
	*	1993	152 pts	15.6	Mean: 48.5; 48% premenopausal	30
Palestinians	30%	1995	*	13.6 in Arab women vs. 102.2 in Jews	*	31
	*	1994–1999	65 pts		51.5	32
Syria	30%	1998–1999 (1 year)	230 pts	30.4	*	38
	*	*	*	*	*	39
Tunisia	*	1994	689 pts	16.7	Average age: 50	40
Yemen	*	1989–1996	225 pts	*	69% below 50	41

*Information not available.

Kuwait

Information from the Kuwait Cancer Registry 1998 shows a total number of cases 454 of whom 258 were women. Eighty-nine cases were breast cancer (34.4% of female cases).¹⁹ ASR was 32.8/100,000 (increase from 7.6/100,000 women in 1982) and 78% of cases were below the age of 50.²⁰

Lebanon

Publications from 1962 until 2004^{21–27} show breast cancer to range from 23% to 35% of cancer in women. Breast cancer was the most common cancer in women (33% of cases).^{21,22,28} Absolute Standardized Incidence Rate (ASR) was 20/100,000 women per year in 1966,²³ 30/100,000 women/year for years 1983–2000,²¹ and 46.7/100,000 women per

Table 2 Stage at presentation and mastectomy rate

Country	Mastectomy rate	Average tumor size (cm)	Stage at presentation	Ref.
Bahrain	*	70% >2	I: 6.8%; II: 51.3%; III: 21.4%; IV: 11.1%	48
Egypt	79.9–82%	*	III and IV: 68%	12,13
Saudi Arabia	*	*	I: 9%; II: 44%; III: 30%; IV: 16%	36
Oman	65%	4.6	III: 34.9%; IV: 15.8%	30
Palestinians	70%	3.9	I: 23%; II: 43%; III: 33%; IV: 2% (+ve LNs 53%)	31
Syria	88%	*	*	39
Tunisia	82.40%	4.95	T1: 7.2%; T2: 48.9%; T3: 18.5%; T4: 23.4%; CIS: 3.3%; M1: 22.1%	40

*Information not available.

year in 1998.²² There is an increase of young age at presentation with 49% of cases being below 50 and a median age of 49.8 years. This is in contrast to the USA and Europe where the median age is around 63 with only 25–30% of patients under 50 years, and 50% of patients are over 63 years of age.² In 2004, the Lebanese Cancer Epidemiology Group showed a total number of cancers of 4388 of which 2092 cases were in women. Breast cancer was 33.4%, median age was 52 years and 50% were below age 50.²²

Morocco

In a review of 5148 cancer patient files, the authors noted that cervix uteri cancer was prevalent in 35% of cases and breast cancer was the second most common, in 22.3% of cases.²⁹

Oman

Oman had a cancer registry for the period 1993–1997. There were 4091 cases of cancer (2282 in men, 1809 in women). Breast cancer was 13.7% of all female cases, with an ASR of 13/100,000.⁸ In another study,³⁰ breast cancer constituted 13.7% of all female cases. ASR was reported at 15.6/100,000. The number of cases was 152 and the mean age was 48.5. Patients tended to present with large tumors.

Palestinians

Studies from the Israel Cancer Registry and Jerusalem area were reviewed.^{31,32} Breast cancer accounts for 30% of all new cases of cancer, and 23% of all cancer death in Israel. The crude incidence for breast cancer in Israel in 1995 was 13.6/100,000 in Arab women as compared to 102.2/100,000 among Jewish women. Incidence of breast cancer has increased by 93.7% from 1970 up to 1995 in Arab women, while in the Jewish population the increase was only 31.7%. The authors reported that 11% of the Palestinian group were younger than 35 years as compared to only 5% of the two Jewish study groups. Screening mammography diagnosed breast cancer in 26% of the Ashkenazi group, 13% in the Sephardic group, and only 9% in the Palestinian group. The mean age of Palestinian women with breast cancer was 51.5 years, while for Sephardic Jews (of Asian origin) it was 53.4 ± 1.5 and for Ashkenazi Jews (of European origin), 55.9 years. Palestinians tended to present with larger tumors. Age and ethnicity were not found to be independent predictors of survival. The authors noted that tumors in Palestinian women were generally detected by physical examination and not by the widely available screening mammography, and late diagnosis was the major factor related to the higher mortality in the Palestinian group.³¹

Saudi Arabia

A National Registry was published 1999 and reported 1430 cases of breast cancer (19.1% of all cases). Mean age at diagnosis: 48.3 years. No case of only ductal carcinoma in situ (DCIS) was noted.³³ Regional variations in Saudi Arabia were noted by al Hag et al.³⁴ Primary stages I and II constituted 53% of cases, stage III 30%, and stage IV 16%.³⁵ Locally advanced breast cancer was also significant according to data from KFSHRC (King Faysal Specialist Hospital and Research Center) in Riyadh³⁶ and constituted 40% of all non-metastatic breast cancer. Bin Yousef et al.³⁷ reported

an interesting observation on Outreach efforts of KFSHRC with peripheral hospitals, and noted an increased rate of use of mammography and increased utilization of FNA/core biopsies for preoperative diagnosis.

Syria

There are no national statistics available. The rate of breast-conserving surgery was reported to be 18%, while 88% of patients still undergo mastectomy. Syrian surgeons relate this to the fact that radiation therapy machines are located only in the capital, and to the presence of larger tumors at presentation.³⁸ An ASR of 30.4 was reported from a regional study from Aleppo, Syria³⁹ and is included in Table 1.

Tunisia

All breast cancers in Tunisia seen in 1994 constituted 689 new cases. The ASR was calculated at 16.7/100,000. Average age was 50 years. Average tumor size was noted at 49.5 mm. Only 3.3% of cases were in situ cancers. Breast-conserving surgery was done only in 17.6%. Twenty-two percent were metastatic at presentation.⁴⁰

Yemen

There was only a retrospective study from the University Hospital in Yemen.⁴¹ Two hundred and twenty-seven patients were seen between 1989 and 1998 of whom 225 were women. Sixty-nine percent were below the age of 50. Positive lymph nodes were present in 90% of cases.⁴¹

Breast cancer screening

Screening in Lebanon, for example, reflects the situation in most Arab countries. There are no national programs for screening. Women who undergo screening mammography are usually self-motivated or referred by a motivated physician. Governmental and private insurers do not usually cover the expenses of screening mammography. Most governments do not monitor mammography centers either for safety or for results. This remains a matter of institutional internal policies. There have been several awareness campaigns at the occasion of October Breast Cancer Month. These awareness campaigns involve media interventions and interviews by physicians, media advertisements, street posters and public lectures. In 2003 and 2004, campaigns involved soliciting and offering screening mammography in scattered centers at a reduced price.

Rates of partial vs. total mastectomies

Modified radical mastectomy (MRM) remains the most commonly performed operation for Arab women with breast cancer (see Table 2). Awareness campaigns in Lebanon have reduced the rates of locally advanced disease and a recent study from AUBMC on 1328 patients showed that the rate of mastectomy was 90% in 1990 and became 45% in 2001 (El Saghir, et al. unpublished data). The Cairo Breast Cancer Screening Trial resulted in more early detection and an improved rate of breast-conserving surgery.^{14,16} In Syria, MRM was 88% and a major reason for this practice is the presence of one radiation therapy center in Damascus for

the whole country.³⁸ In a study from Tunisia, breast-conserving surgery was done only in 17.6%.⁴⁰

Clinical trials

Other than phase II trials, several physicians and centers (Egypt, Kuwait, Lebanon, Saudi Arabia and others) participate in international phase III trials such as with EORTC and Breast cancer research groups.

Radiation therapy

Radiation therapy is an essential modality for the treatment of breast cancer. Availability of modern radiation oncology units in various parts of each country allows for the practice of breast-conservation surgery where surgical expertise exists. Based on our field knowledge, and data from the International Atomic Energy Agency (IAEA), we were able to obtain information on several Arabic countries and compare them with neighboring countries, Europe and the United States.⁴² Table 3 shows that the availability of radiotherapy services in the Arab world is far below international standards and varies significantly among different countries. In addition, there is a large gap between many Arab countries and the industrialized nations. For instance, in the Arab world there is an average of one linear accelerator (Linac) per 4.3 million persons compared to one Linac per 0.149 million in industrialized countries like the United States, France and Australia. The gap also exists, but to a lesser degree, with neighboring non-Arab countries like Israel, Cyprus and Turkey (1 Linac per 1.495 million persons). The shortage also extends to health care providers and support personnel like medical physicists and radiation therapy technologists (Table 3). In a comparison between Arab countries and the USA, which have equivalent population numbers around 300 million, Arab countries combined have only 84 radiation therapy centers while the USA has 1875, Arab countries have 256 radiation oncologists while the USA has 3068, and Arab countries have 473 radiation technologists while the USA has 5155 (Table 4).

Discussion

Breast cancer incidence rates

ASR for Arab countries vary between those from industrialized nations and less developed countries. Median age at presentation is around 50 years and there are increased percentages of younger-aged groups at presentation. Age-adjusted incidence rates for breast cancer in many Arab countries such as Lebanon (from 20 in 1996 to 46.7 in 1998), Jordan (ASR increase from 7.6/100,000 women in 1982 to 32.8/100,000 in 1997), Palestinians (up 93%), and Egypt up to an ASR of 49.6.¹¹ Although the rates are still below those in industrialized nations, they are rising and may be expected to reach the same levels. Changes may be due to westernized lifestyle changes including dietary habits, lack of exercise and urbanization, and delay of ages of marriage and first pregnancy from the late

teens and early twenties to the late twenties in many Arab countries. Increase in breast cancer incidence is noted worldwide.⁴³ However, many Arab countries still need National and Regional Cancer Registries that issue regular updates. Adequate Mortality records and disease-specific mortality rates are still missing in almost all Arab countries. Research into etiological factors remains minimal. Very few reports exist on BRCA1 and BRCA2^{44–47} from Tunisia and Jordan, and no conclusions could be made on the prevalence or frequency of mutations among Arab women.

Breast cancer early detection and screening

Breast cancer awareness campaigns increase women's individual motivation and private physician's initiative for higher indices of suspicion and early diagnosis. Although in some specialized centers there are an increasing number of women presenting with early breast cancer and even DCIS, large numbers of women still present with locally advanced and metastatic breast cancer in most Arab countries. Reasons for this include fear of cancer, shyness, poor health education and difficult access to health care facilities. Therefore, most Arab countries should aim at decreasing the incidence of large tumors and advanced disease at presentation. The application of international guidelines has to be adapted to local circumstances, and breast cancer programs should have a goal of diagnosis at early stages.⁴⁹

Screening mammography recommendations

While the majority of countries with limited resources should aim at discovering cancer at early stages, those Arab countries with adequate or abundant resources could adopt population-based screening mammography programs. Screening mammography is recommended for women over the age of 50 years; however, many authorities also recommend that screening mammography be started at age 40.⁵⁰ In view of younger ages at presentation in Arab Countries, it is reasonable to adopt recommendations to start at the age of 40 in those countries with adequate resources and where setups for benefit from early detection are available. Mammography centers should be subjected to inspection for radiation emission, technician skills, film development and reading, and should be required to have certification and licensing renewal every year. Breast cancer-related mortality rates have started to decrease in the United States, Canada, and some European countries because of widespread population screening, better awareness, and advances in therapy. Arab countries should aim at reducing locally advanced and metastatic breast cancer at presentation and discover it early in order to reduce morbidity and mortality from breast cancer.

Role of husbands in early detection and screening

Practicing surgeons and medical oncologists routinely see young women presenting with large breast tumors. Large

Table 3 Availability of radiotherapy in Arab countries

Country	Population ($\times 10^3$)	RT Centers	Linacs	^{60}Co	LA and ^{60}Co	Simul.	Brachytherapy	Radiat. Oncologists	Med. Physicians	Radiat. Technologists
Iraq	28807	2		2	2					
Jordan	5703	4	5	4	9	2	1	10	13	18
Kuwait	2687	2	1	2	3	0		0	0	0
Lebanon	3577	6	9	4	13	4	1	11	5	22
Qatar	813	2				0				
Saudi Arabia	24573	8	16	2	18	2	4	22	10	34
Syria	19043	2	1	4	5	2	1	9	5	24
United Arab Emirates	4496	2	4	2	6	2	2	6	10	20
Yemen	20975	1		1	1	0				
Algeria	32854	7	6	12	18	5		20	9	41
Egypt	74033	27		20	20	12	2	133	71	209
Libyan Arab Jamahiriya	5853	7	21	6	27	3	2	2	5	6
Morocco	31478	6	3	5	8	3	22	25	4	28
Tunisia	10102	6	2	7	9	3	5	10	2	34
Sudan	36233	2	2	3	5	2	1	8	4	37
Total	301227	84	70	74	144	40	41	256	138	473
Average/Country	20081.80	5.60	6.36	5.29	10.29	2.86	4.10	21.33	11.50	39.42
Average/1000		0.28	0.23	0.25	0.48	0.13	0.14	0.85	0.46	1.57
Ratio		3586	4303	4071	2092	7531	7347	1177	2183	637
<i>Neighboring countries</i>										
Israel	6725	16	22	7	29	4	3	17	24	61
Cyprus	835	2	2	2	4	1	1	9	8	18
Turkey	73193	40	30	47	77	31	4	234	95	259
Total	80753	58	54	56	110	36	8	260	127	338
Average/Country	26917.67	19.33	18.00	18.67	36.67	12.00	2.67	86.67	42.33	112.67
Average/1,000,000		0.72	0.67	0.69	1.36	0.45	0.10	3.22	1.57	4.19
Ratio		1392	1495	1442	734	2243	10094	311	636	239
<i>Industrialized nations</i>										
Australia	20155	34	110	1	29	29	24	161	127	731
France	60496	195	291	110	157	157	25	565	287	201
United States of America	298213	1875	2133	166	1058	1058	238	3068	1926	5155
Total	378864	2104	2534	277	1244	1244	287	3794	2340	6087
Average/Country	126288.00	701.33	844.67	92.33	414.67	414.67	95.67	1264.67	780.00	2029.00
Average/1,000,000		5.55	6.69	0.73	3.28	3.28	0.76	10.01	6.18	16.07
Ratio		180	150	1368	305	305	1320	100	162	62

Ratio = number of people covered per unit of equipment (or physician). Sources: International Atomic Energy Agency. Directory of Radiotherapy Centers (DIRAC), September 2004.

Table 4 Comparison of radiation therapy facilities and resources between Arab countries and USA

Countries	Population	RT Centers	Radiation oncologists	Radiation technologists
Arab	301,227,000	84	256	473
USA	298,213,000	1875	3068	5155

tumors of more than 5–10 cm are of common occurrence as noted above. These large tumors could be easily felt by the young woman or her husband. However, fear of cancer, shyness, family restrictions and fear of social implications, as well as poor health education and difficulty of access to breast health care, may be reasons for delays in presentation and diagnosis. Advanced breast cancer can be devastating not only to the woman, especially a young woman, but also to all her family and particularly her husband and children. We recommend that awareness campaigns should be also directed toward husbands. Husbands should be asked to encourage their wives to enroll in awareness and screening campaigns.

Radiation therapy in the Arab world

We have shown that modern radiation therapy is available only in select centers, and varies from country to country and from region to region. This shortage negatively affects the feasibility of modern treatment approaches of all cancers, including breast cancer conservation surgery and adjuvant radiation therapy. Our study shows the deficiencies and investment in technical equipment and human resources is needed. Early diagnosis of breast cancer requires the availability of more radiation facilities in order to reduce the unacceptable current rate of mastectomy in Arab countries. The recently reported short-term methods of delivering targeted intraoperative radiation therapy (Targit)⁵¹ from the University College London Hospital, London, UK and Electron Intra-Operative Radiation Therapy (ELIOT)⁵² from the European Institute of Oncology of Milan, Italy in one session, or one intra-operative session followed by 12 external radiation therapy sessions in women below age 48 years,⁵³ may be reasonable options in some large countries where most patients have to travel long distances to receive radiation therapy daily for 5–6 weeks.

Multi-disciplinary management of breast cancer in the Arab world

Of the many things that are taken for granted in Europe, USA, Australia and the rest of the industrialized world is the multidisciplinary approach to cancer management. Currently, very few centers practice it in developing and Arab countries. Access to multi-disciplinary tumor boards and clinics will improve breast cancer care. Development of centralized, specialized cancer centers may be a cost-effective way to deliver breast cancer care to some women when it is not possible to deliver such care to women

nationwide according to the Global Summit Consensus Conference.⁴⁹ A few cancer centers exist in Arab countries and many more are needed.

Conclusions

Breast cancer has become a curable cancer, with reduced toxicity and less breast deformity in larger numbers of women, in industrialized nations but only so in a small number in the Arab world. Breast cancer is the most common cancer in Arabic women and affects younger women than their counterparts in industrialized nations. Collecting data on breast cancer is imperative for deciding how best to apply resources. National and regional cancer registries are still lacking in many countries. Although population screening may be feasible in some countries with abundant-resources, it is not practical in most Arab countries with large populations and truly limited resources. In fact, breast cancer mortality can be reduced if disease is diagnosed at earlier stages. Panelists of the Global Summit Consensus Conference noted that measures to educate the public and health care providers about breast health and breast cancer detection, diagnosis, and treatment are considered more important than screening in countries with limited resources.⁴⁹ Development of centralized, specialized cancer centers may be a cost-effective way to deliver breast cancer care to some women when it is not possible to deliver such care to women nationwide.⁴⁹ Awareness campaigns and screening should be applied according to resources. Awareness campaigns should also be directed at husbands to encourage women to enroll in early detection programs. Radiation therapy facilities and manpower remain very limited and deserve better planning and investment, and to be more widely available and distributed in major cities and distant regions.

Medical development in the Arab world has not followed urban development in the last 50 years. The Arab world cannot be conceived collectively as a number of countries with limited resources. Whereas some of the Arab countries have truly limited resources, others have abundant resources and most of them could benefit from better allocation of these resources. Medical research, including cancer research, deserves to be given priority in the Arab world. Research into etiology, local characteristics and new therapies should be further developed. Women's rights movements in the Arab world ought to put breast cancer, amongst other women's health issues, on their agenda. The medical community in the Arab World is urged to publish its findings in peer-reviewed scientific journals.

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