

SUPPLEMENTARY MATERIAL

Dissecting the journey to breast cancer diagnosis in sub-Saharan Africa: Findings from the multi-country ABC-DO cohort study

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[The reference nos. correspond to those in the reference list of the paper]

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Supplementary Materials & Methods

To compare the findings from the ABC-DO study with those from previously published studies from Sub-Saharan Africa (SSA) we updated the findings from a recently published systematic review by Espina et al. (5) to the end of 2018 using a similar methodology. Briefly, the electronic databases MEDLINE, Embase and Global Health were searched using relevant terms and subject headings (e.g. “breast cancer”, “delay*”, “late”, “poor”, “diagnosis”, “presentation”) and the Boolean operators “AND” and “OR”. No language restrictions were imposed. Articles were eligible for inclusion if they reported findings from primary research studies conducted in sub-Saharan Africa; reported on delays in presentation, diagnosis of female breast cancer patients; and were published between 1 January 2000 and 31 December 2018. Potentially relevant articles were searched in the electronic databases MEDLINE, Embase, and Global Health. All titles and abstracts were screened to identify potentially eligible articles and the full-text for these retrieved and reviewed to assess their eligibility and, if eligible, to extract relevant data. Because the no. of eligible studies was small, studies that reported on delays to treatment initiation rather than on delays to diagnosis were also included.

To provide a high-income perspective we also searched Medline to identify relevant studies conducted in North America, the only high-income region with a sizeable Black population. A search methodology similar to that described above was used, with no time or language restrictions imposed. Articles were eligible for inclusion if they reported findings from primary research studies conducted in the USA or Canada; reported on delays in presentation, final diagnosis and/or treatment initiation of female breast cancer patients, and were published before 1 January 2018. Articles were excluded if their study population comprised predominantly screen-detected breast cancer patients as their findings would not have been comparable to those from SSA settings where screening is rarely available (see Results section).

The main characteristics of the eligible studies are given in Supplementary Table 1. Study specific lengths of the pre-diagnostic journey, and of the pre- and post-contact intervals, are displayed in Figure 5 and Supplementary Figures 1 and 2, respectively.

Supplementary Table. Main characteristics of studies that reported on the length of the pre-diagnostic journey, or on its pre- and post-contact components, in North America and in sub-Saharan Africa

Author, yr. of publication (ref. no.) ^a	Country/region	Setting	Year of study	Eligibility criteria	Sample size
NORTH AMERICA					
Potts, 1928 (11)	USA, Chicago	Presbyterian Hospital of Chicago	1917-20	NK	100
			1924-27	NK	100
Higginson 1962 (12)	USA, Kansas City	Tumour Registry, Kansas Medical Center	1947-59	BC patients (also other cancers)	644
Dennis et al., 1975 (15)	USA, New York	State University Hospital-Kings County Hospital Center	1965-70	BC patients who underwent a radical mastectomy	237
Wilkinson et al., 1979 (13)	USA, Western New York state & Northwest Pennsylvania	Network of hospital-based tumour registry	1969-1979	Women with a newly-diagnosed and histologically confirmed BC	1784
Elwood & Moorehead, 1980 (14)	Canada, British Columbia	Cancer referral centre	1945 & 1950 (combined due to small nos.)	Histologically confirmed BC	109
			1955		134
			1960		231
			1965		265
			1970		347
			1975		459
			All		1545
Butlar & Templeton, 1983 (16)	USA, Massachusetts	Hospital	1967-78	BC patients with known tumour size	569
Feldman et al., 1983 (17)	USA, N York	Series 1: Brooklyn Breast Cancer Demonstration Network	Series 1: 1975-79	Series 1: BC patients with a self-detected mass who were diagnosed or initially treated in the 15 hospitals	Series 1: 664
		Series 2: Downstate Medical Center & Kings County Hospital Center	Series 2: 1967-77		Series 2: Newly diagnosed BC patients (regardless of whether they presented with a breast mass)
Gregorio et al., 1983 (27)	USA, New York	Roswell Park Memorial Institute	1957-65	Women admitted with BC	Whites: 156; Blacks: 55

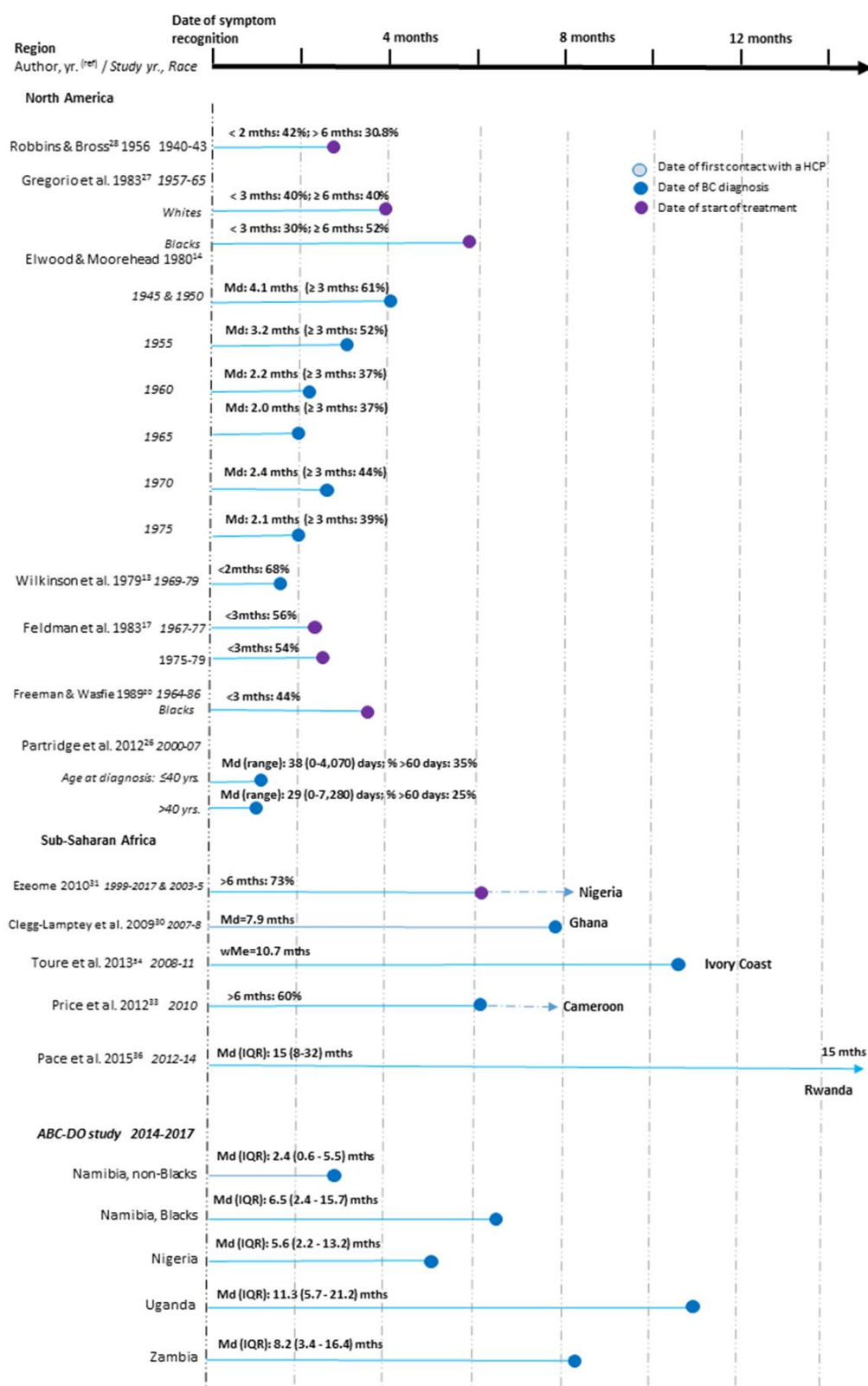
Author, yr. of publication (ref. no.) ^a	Country/region	Setting	Year of study	Eligibility criteria	Sample size
Vernon et al., 1985 (19)	USA, Texas	University of Texas System Cancer Center, MD Anderson Hospital and Cancer Institute	1949-68	All female patients with a histologically confirmed BC	Whites: 1433; Blacks: 445
Huguley et al., 1988 (18)	USA, Georgia	Network of 14 hospitals in Georgia	1975-79	Newly diagnosed BC patients	2083
Freeman & Wasfie, 1989 (20)	USA, Harlem, NY	Harlem Hospital Center	1964-1986	Consecutive Black women with BC who were diagnosed, treated or followed in the study hospital	193
Coates et al., 1992 (21); Hunter al., 1993 (22)	USA, metropolitan areas of Atlanta, New Orleans, San Francisco, Oakland	Hospital pathology records	1985-86	Black and White women aged 20-79 years resident in the study areas with a newly-diagnosed invasive BC and with no previous history of cancer except non-melanoma skin cancer	Black: 410; White: 325
Caplan et al., 1995 (23)	USA, metropolitan areas of Atlanta, New Orleans, San Francisco, Oakland	Hospital pathology reports	1985-86	Newly diagnosed invasive BC patients	Black: 519; White: 477
Rayson et al., 2004 (24)	Canada, Nova Scotia	Nova Scotia Cancer registry (population-based)	1999-2000	Newly-diagnosed invasive BC patients	245
Gorin et al., 2006 (25)	USA, 11 SEER catchment populations	Population-based cancer registry	1992-1999	Newly-diagnosed and histologically-confirmed BC patients	Whites: 43,627; B: 2,982
Partridge et al., 2012 (26)	USA	8 National Comprehensive Cancer Network centres	2000-2007	Newly-diagnosed BC patients	21,818
SUB-SAHARAN AFRICA					
Ly et al., 2002 (29)	Mali, Bamako	Hôpital du Point-G	1998-2000	Newly diagnosed and histologically-confirmed BC patients seen at the haematology/oncology service	44 (43 females)
Clegg-Lampsey et al, 2009 (30)	Ghana, Accra	Korle Bu Teaching Hospital	2007 -2008	Newly diagnosed BC patients	66
Ezeome, 2010 (31)	Nigeria, Enugu	University of Nigeria Teaching Hospital	1999-2001; 2003-2005	BC patients managed at the Surgical Oncology Unit in the hospital	162

Author, yr. of publication (ref. no.) ^a	Country/region	Setting	Year of study	Eligibility criteria	Sample size
Ibrahim & Oludara, 2012 (32)	Nigeria, Lagos	Lagos State University Teaching Hospital	2009-2010	BC patients referred to one of the general surgery outpatient clinics in the hospital	201
Price et al., 2012 (33)	Cameroon, Yaoundé	Yaoundé General Hospital	2010	Patients aged ≥18 yrs. with primary invasive BC and who received chemotherapy	50
Toure et al., 2013 (34)	Côte d'Ivoire, Abidjan	University Hospital of Treichville	2008-2011	Patients with a histologically confirmed adenocarcinoma of the breast	350
Marcus et al., 2013 (35)	South Africa, south Gauteng	Sebokeng Hospital	2007-2010	Patients presenting at the breast clinic with advanced BC (IIB or higher)	103
Pace et al., 2015 (36)	Rwanda, Northern & Eastern provinces	Butaro and Rwinkwavu rural hospitals	2012-2014	Women aged ≥21 yrs. with pathologically confirmed BC (excluded women diagnosed elsewhere >6 months previously without initial staging)	144
Brinton et al. 2017 (37)	Ghana, Accra & Kumasi	Korle Bu Teaching Hospital (Accra), Komfo Anoyke Teaching Hospital (Kumasi) and Peace and Love Hospital (Kumasi)	~2014	Women aged 18-74 years resident in the hospital catchment areas diagnosed with a pathologically-confirmed BC	1184
Joffe et al., 2018 (38)	South Africa, Soweto	Chris Hani Baragwanath Academic Hospital	2015-2016	Patients aged 18+ yrs. newly-diagnosed with BC (stages 0-IV)	499

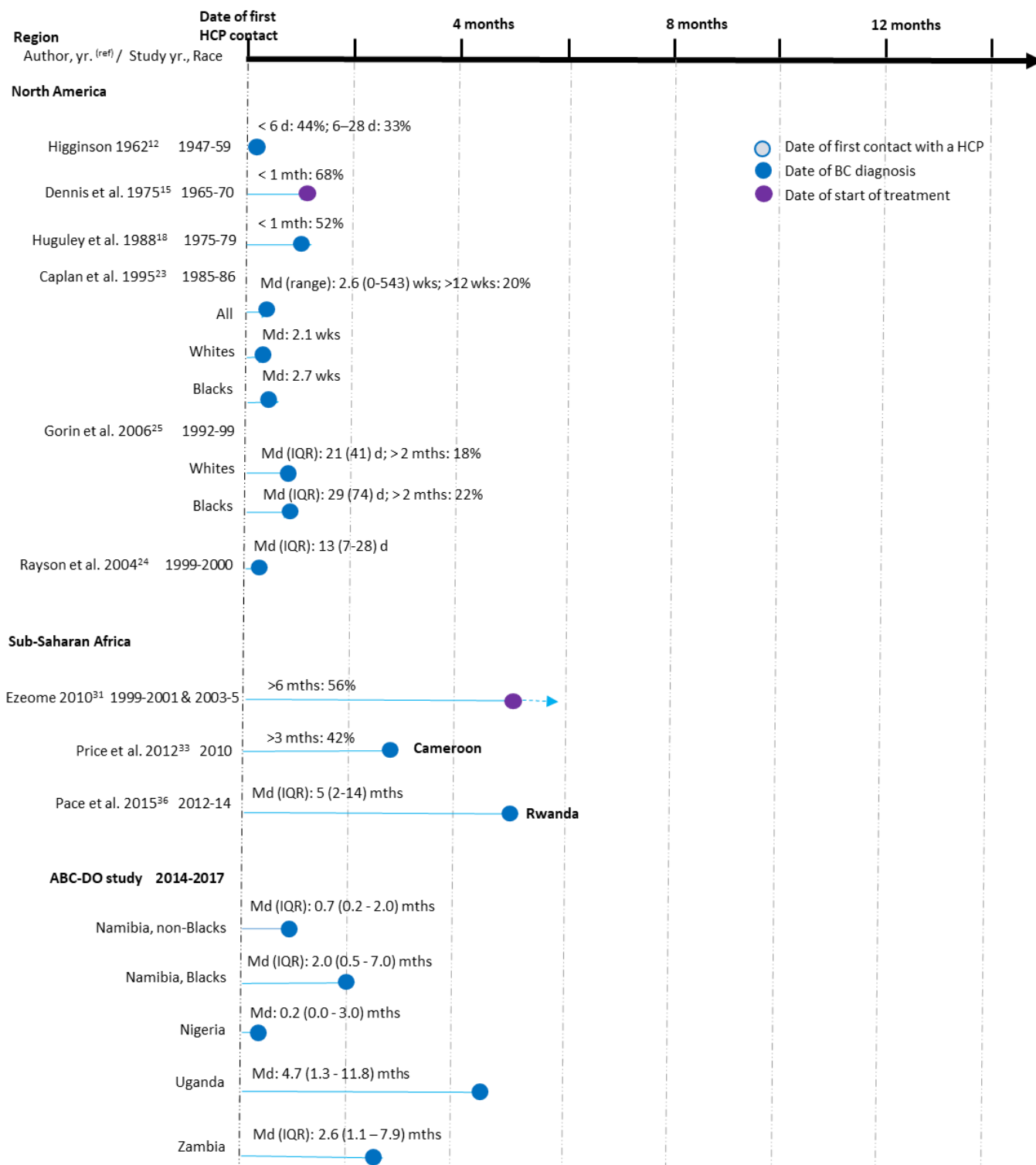
BC: breast cancer

^a Ref. numbers as in the reference list provided in the paper

Supplementary Figure 1. Comparison of the lengths of the diagnostic journey for ABC-DO women with published estimates from North America, a high-income region with a sizeable Black population, and sub-Saharan Africa. Notes: Av: average; d: days; IQR: inter-quartile range; Md: median; mths: months; wMe: weighted mean. A dashed line indicates that the estimate shown in the figure is an underestimation of the median value (the latter could not be calculated from data provided in the original article).



Supplementary Figure 2. Comparison of the lengths of the pre-contact interval in the ABC-DO study populations with published estimates from North America, a high-income region with a sizeable Black population, and from sub-Saharan Africa. Notes: Av: average; d: days; IQR: inter-quartile range; Md: median; mths: months; wMe: weighted mean. Reference numbers as in the reference list of the paper.



Supplementary Figure 3. Comparison of the lengths of the post-contact interval in the ABC-DO study populations with published estimates from North America, a high-income region with a sizeable Black population, and from sub-Saharan Africa. Notes: Av: average; d: days; IQR: inter-quartile range; Md: median; mths: months; wks: weeks. Reference numbers as in the reference list of the paper. A dashed line indicates that the estimate shown in the figure is an underestimation of the median value (the latter could not be calculated from data provided in the original article).

