Breast cancer is the most common cancer in women worldwide. Even though the incidence of breast cancer in developing countries is lower compared to their Western counterparts, it is on a rapid rise. According to GLOBOCAN estimates, more than half (52.9%) of 1.67 million new breast cancer caseswas diagnosed in developing countries in 2012[1], while it was only 35% in 1980[2]. Although breast cancer is mainly a disease of postmenopausal women (≥ 50 years) in developed countries, almost half of all breast cancer cases (45%) in developing countries were diagnosed in women of reproductive age (15-49 years) in 2010[2].. The mortality of breast cancer is significantly higher in developing countries than in high-income countries. Nearly 62% of breast cancer associated deaths occurred in developing countries in 2012[1].

In Bangladesh, approximately 45 million women are at reproductive age, while 13.5 million women are ≥ 50 years old[4]. Due to nonexistence of population-based cancer registry, the overall epidemiology of breast cancer is mostly unknown. However, according to GLOBOCAN estimates based on the extrapolation of Indian data, 14,836 new breast cancer cases were diagnosed in 2012, with an age-standardized incidence rate (ASR) of 21.4 per 100,000[1].This figure is likely to be underestimated since many cases are missing due to lack of awareness, low level of education, misconceptions, poor socioeconomic status, insufficient access to health care as well as poor governance. Since there is no national cause of death registry in Bangladesh and patient’s follow-up system in hospitals, it is not possible to know about the mortality and survivorship of breast cancer respectively. However, a maternal health survey estimated that cancer was responsible for 21% of all women’s deaths at reproductive age range [23]. Another verbal autopsy study showed that 62% of all breast cancer associated deaths were in women under 50 years old [24].

Women are the key driver of Bangladesh economy and its social transformation through their enormous contribution in clothing industries[10], microcredit and microfinance-based development programs[11]. Healthy women are vital for healthy families and communities. However, women’s problems generally get less priority in the society. None of the breast cancer cases is detected by organized screening in Bangladesh. Almost all breast cancer cases are detected clinically. Most of the patients (around 90%) seek medical attention at the advanced stages i.e. stage III and stage IV (Hossain eta l ). Delays in diagnosis and treatment of breast cancer may seriously impact survival.4,5 Treatment of BCs diagnosed at a later stage is also associated with higher morbidity, due to more aggressive and disfiguring approaches, and is more expensive. Thus, reducing these delays is believed to be of high importance.

Longer waiting times prior to diagnosis and the initiation of therapy are likely to result in advanced disease and low survival [[3](https://bmccancer.biomedcentral.com/articles/10.1186/s12885-016-2394-y#CR3), [4](https://bmccancer.biomedcentral.com/articles/10.1186/s12885-016-2394-y#CR4), [5](https://bmccancer.biomedcentral.com/articles/10.1186/s12885-016-2394-y#CR5)]. The delayed diagnosis is more responsible rather than the disease itself in causing mortality of the patient, as early diagnosis and treatment is associated with better prognosis when compared to worse outcomes related to significantly delayed diagnosis.

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**Participating centres:**

We will conduct our study in National Institute of Cancer Research & Hospital (NICRH) and United Hospital Ltd. NICRH is the only specialized public hospital dedicated for cancer treatment in Bangladesh, while United Hospital is one of few well-equipped private hospitals that serve cancer patients. However, due to high treatment cost, private hospitals are financially out of reach for most Bangladeshis. A significant number of patients are referred to NICRH and United Hospital after a cancer is diagnosis at another facility. None of the breast cancer cases is detected by organized screening in Bangladesh. Almost all breast cancer cases are detected clinically.

### Patients

In this study, we will survey women aged ≥18 years with suspected breast cancer and patients diagnosed with breast cancer are being referred to our participating centres. Most of the patients are referred to NICHR and United Hospital after a cancer diagnosis at another facility. These patients will only be included in the study if their initial stage are documented in the medical records or if their initial stage are unavailable but the initial diagnosis is made no more than 6 months prior to staging at our facilities. The questionnaire will be designed for application through face-to-face interviews due to the difficulties associated with self-administered research instruments due low level of education among general people.

Structured face-to-face questionnaire (Additional file [1](https://bmccancer.biomedcentral.com/articles/10.1186/s12885-016-2394-y#MOESM1)) were conducted by previously trained resident interviewers who were not involved in the clinical management of the patients.

### Key Variables

The conceptual and operational definitions of the time intervals agree with the majority of studies of breast cancer delay [[38](https://bmccancer.biomedcentral.com/articles/10.1186/1471-2407-12-626#CR38)].

Total delay is defined as the time from identification of the problem (either through symptoms or screening) to the beginning of cancer treatment;

patient delay is defined as the time from identification of the problem to the first medical consultation; and

provider delay is defined as the time from the first presentation (first medical consultation) to the beginning of cancer treatment.

Date of symptom discovery and date of presentation will be obtained from the patients through the questionnaire, whereas the dates of beginning of treatment will be obtained from the hospital charts.

When patients will be unable to provide a date for when their symptoms began or the first provider visit, they will be asked to provide a month or month range and year. If they provide a month, the date will be estimated as the 15th of that month; if they provide a month range, the estimated date will be the midpoint between the 15th of those months. If patients are only able to provide a year, the estimated date will be coded as June 30th of that year.

The questionnaire gathered demographic and clinical information and information regarding women’s experiences with their breast problem, including the dates of the initial symptoms and first healthcare facility presentation. We also asked patients which factors, from two lists, were the reasons for the delay.

The key independent variables included demographic information and features of the patients’ experiences with a breast problem, such as their knowledge about breast cancer, type of healthcare provider seen first, and number of healthcare facility visits before the diagnosis.

**Ethical Issues**

The interviewer identified herself and asked the patient for verbal consent to ask her three questions (the exclusion criteria). If the patient was eligible for the study, she was then invited into a private room with the person who accompanied her to the hospital.No monetary incentives were given. The patient was given a written description of the study. After informed consent was obtained, the patient’s relative was asked to wait for the patient outside so that the interview could be done in private.

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