



Original article

Fertility concerns among breast cancer patients in Mexico



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ABSTRACT

Objective: Young women represent a high proportion of the total number of breast cancer (BC) patients in Mexico; however, no previous studies addressing their attitudes regarding the risk of chemotherapy-induced infertility and its contributing factors are available. The aim of this study was to evaluate the concerns of young women with BC towards the risk of infertility in two referral centers in Mexico with access to public health services.

Methods: A cross-sectional study including women with newly or previously detected BC aged 40 years or younger at diagnosis was conducted. Variables regarding concerns about fertility were collected from an adapted version of the Fertility Issues Survey.

Results: 134 consecutive eligible women responded to the in-person paper survey. 55% were partnered, 35.1% had no children, and 48% reported willingness to have children prior to BC diagnosis. Only 3% of patients considered to be able to afford extra expenses. At diagnosis, 44% of women expressed some level of concern about infertility risk. The only factor significantly associated with fertility concern was the desire of having children prior to diagnosis (OR 11.83, $p = 0.006$). Only 30.6% patients recalled having received information regarding infertility risk from their physicians.

Conclusion: A minority of young women with breast cancer in Mexico is informed about the risk of BC treatment-induced infertility, despite substantial interest. Informing all patients about infertility risk and available options for fertility preservation should be an essential aspect of the supportive care of young women with BC, even in low-middle income countries such as Mexico.

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1. Background

Young age, defined as ≤ 40 years at the time of diagnosis [1], has been recognized as a predictor of aggressive disease and poor outcomes in patients with breast cancer (BC) [2]. International guidelines recommend the use of systemic treatment in premenopausal women with chemotherapy and/or hormonal therapy

(depending on stage at diagnosis and the expression of hormone receptors and HER2 status), as these therapeutic options improve survival [1,3]. However, they also pose potential risks to premature menopause and infertility, an issue of great importance for young women who have not completed childbearing [4].

In the United States (US), England and other developed countries, the number of live births for women in their 30s and 40s has risen in the past years [5,6]. A similar distribution has been reported in less developed countries such as Mexico, where 25.5% of child births occur in women 30 years or older, according to data from the National Institute of Statistics and Geography (INEGI) [7].

In Mexico, BC among young women represents a significant

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burden, due to the fact that a very high proportion of the total number of BC patients are diagnosed in their early years, with figures reaching 11%–15% [8,9]. For these young patients, fertility impairment may be a very relevant issue [10], as evidence suggests that young patients with BC experience greater psychological distress and anxiety due to concern for possible future loss of fertility following anticancer treatments [11,12].

In Latin America, no previous studies have addressed the attitudes of young women with BC regarding infertility risk and its contributing factors, or whether these patients are informed at diagnosis about the possible infertility risk and if timely referrals to a fertility specialist occur. The aim of this study was to evaluate the attitudes of young women with BC towards the risk of infertility due to systemic treatment in two referral centers in Mexico.

2. Methods

A cross-sectional study was conducted at the Instituto Nacional de Cancerología (INCan) in Mexico City and the Breast Cancer Center at Hospital San Jose (HSJ) Tec de Monterrey in Monterrey City, where patients have access to public health services. All women aged 40 years or younger at diagnosis, with newly or previously diagnosed BC that attended clinic from May 2015 to August 2016, were invited to participate.

The survey was administered in-person on paper before or after the clinic visit. The survey included 25 items, adapted from the Fertility Issues Survey of the “Helping Ourselves, Helping Others: the Young Women’s Breast Cancer Study” from the Dana-Farber Cancer Institute in Boston, Massachusetts [13]. Additional characteristics, including clinical and pathological variables, were obtained from medical record review. The survey questions were originally translated and back-translated to apply the assessment to Spanish speaking residents in the US. For our current research, we modified the Spanish version minimally for better adaptation to the Mexican population. BC specialists born and raised in Mexico, who speak and write both English and Spanish, reviewed the survey for content comprehension.

Significant differences were determined by Fisher’s exact test and Pearson’s chi-squared test for categorical variables, and Kruskal-Wallis test for continuous non-parametric variables. A p value of <0.05 was considered statistically significant. Univariate analysis assessed the association between fertility concern (dichotomized as very, somewhat or a little concerned versus not at all concerned) and sociodemographic factors, stage at diagnosis and treatments, and prior fertility-related issues. Variables associated with univariable p value < 0.05 were evaluated in a multivariable logistic regression model using stepwise selection, and variables achieving significance at $p < 0.05$ were included in the final model. Statistical analyses were performed using SPSS v20.0 (IBM Corporation, 2012).

Study procedures were reviewed and approved by the Institutional Review Boards at INCan and HSJ, and written consent was obtained from all participants before study participation.

3. Results

A total of 134 consecutive eligible patients were included in the present study. Mean age at diagnosis was 34.6 years (range 19–40 y) and 50.8% were 35 years or younger at the time of diagnosis. Only 3% of patients considered to be able to afford extra expenses.

At diagnosis, 45.5% were either single, widowed or divorced and 35.1% had no children. Almost half of the patients (47.8%) reported willingness to have children prior to BC diagnosis, while 29.1% desired to have children at the time of the survey. Two patients

(1.5%) were pregnant at time of diagnosis. Table 1 lists the remaining patient and disease characteristics.

Forty-four percent of the patients expressed some level of fertility concern (very, somewhat or a little concerned). Table 2 summarizes the degree of fertility concerns. Fifteen (11.2%) patients reported having difficulties achieving pregnancy prior to cancer diagnosis, and four of them had undergone assisted reproductive techniques.

In a comparative analysis between having or not having children prior to BC diagnosis and level of fertility concerns, 68.1% of women who had no children expressed some level of concern about infertility risk, compared to a smaller proportion of women who already had children (31%) ($p < 0.001$). Similarly, 81% of the patients who were interested in having future pregnancies prior to BC diagnosis showed some level of concern about infertility risk after systemic treatment in comparison with 6.7% of those who were not interested in future pregnancies ($p < 0.001$).

The association between socio-demographic/clinical variables and the level of fertility concern is also shown in Table 1. In unadjusted analysis, younger age, not having children prior to diagnosis, desire of having children preceding diagnosis, single status and previous difficulties on achieving pregnancy resulted as significant predictors of fertility concern. After multivariable analysis, the only factor that remained statistically significant was the desire of having children prior to diagnosis (OR 11.83, 95%CI 2.06–67.93, $p = 0.006$).

Thirty (22.4%) patients mentioned that their treatment decision regarding chemotherapy and endocrine therapy was changed due to fertility concerns (Table 3). Of the patients that desired future pregnancies at time of diagnosis, 17.2% were worried about not being able to care for their children in case of cancer recurrence. Of the patients that did not desire future pregnancies, the main reason (20.1%) was that they had completed their family plan prior to cancer diagnosis (Table 4).

Table 5 summarizes our study findings and compares them to data reported in the *Helping Ourselves, Helping Others: The Young Women’s Breast Cancer Study* [14] and a web-based survey of fertility issues in young women with BC [11], the largest two studies addressing fertility concerns from the Dana Farber Cancer Institute group.

When questioning about the information received by cancer specialists regarding possible fertility impairment secondary to systemic treatment, 41 (30.6%) patients recalled having received information from their physicians. Only one patient underwent fertility preservation treatment through embryo cryopreservation prior to receiving systemic treatment and after being informed of infertility risk by her physician.

4. Discussion

This is the first study describing fertility concerns and receipt of information regarding risk of infertility among young women with BC in Mexico. Findings confirm and expand upon prior work in other populations of young BC survivors regarding concern about the possible loss of fertility [12,15]. Although important factors such as young age, being single, not having children and previous difficulty achieving pregnancies should be asked and considered for referral for fertility preservation strategies, the most important and strongly associated predictor of fertility concern was the desire to have children. This should be highlighted as physicians must inform all young patients about infertility risk and offer preservation options, regardless of marital status and having previous children, emphasizing that this consideration should rely solely on the patients’ preferences and not on providers’ opinions associated with potential biases.

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