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Female preventive practices: Breast and smear tests

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ABSTRACT

Breast cancer and cervical cancer are the most common female cancers in Spain and in many developed countries. The main goal of this paper is to identify the determinants of individual decisions on breast screening and smear testing, that is to say, the decision to take a test for the first time and the decision to test with suitable regularity.

To that end, we have combined analyses of micro and macro data (the Spanish National Health Survey and Spanish Regional Social Indicators) and employed multilevel estimation models.

Among the main results, we highlight the fact that regional public screening programmes improve individual decisions on screening (more women testing for the first time and more women testing regularly) and, furthermore, they generate positive synergies; for example, regional public programmes for smear testing improve individual decisions on both cervical and breast cancer screening. In addition, we conclude that it is not only important to know if the numbers of women undergoing breast screening and smear testing are increasing, it is also important to know if they are testing regularly.

1. Introduction

Breast cancer and cervical cancer are the most common types of female cancer in Europe and North America [1,2]. In Spain, as in most developed countries, the annual incidence of breast cancer is 51 new cases per 100,000, whilst for cervical cancer the figure is 8 new cases per 100,000. Breast cancer most frequently occurs in women between the ages of 35 and 80 but the peak onset period is between 45 and 65 [3]. The average age of cervical cancer diagnosis is 48 years old although approximately 47% of women with invasive cervical carcinoma are diagnosed before the age of 35 [4].

Since the introduction of smear tests, deaths caused by carcinoma of the cervix have fallen by up to 99% in populations in which women are regularly screened. A routine smear testing programme with appropriate follow-up can reduce the incidence of cervical cancer by up to 80% [5]. The mortality rate for breast cancer has fallen by almost 30% and two-thirds of the decrease has been attributed to screening [6,7]. Regular screening from the age of 50 is not only cost-effective [8], but it saves about 2 lives over 15 years for every 1000 women screened [7].

Screening can lead to longer survival rates but it can also result in over-diagnosis, or have no effect at all. In fact, the use of mammography as a screening tool for the detection of early breast cancer in healthy women without symptoms continues to be debated. The figures have to be seen in the light of errors in diagnosis, overtreatment, and radiation exposure. 1 woman in 2000 will have her life prolonged by 10 years through screening but 10 healthy

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women will undergo unnecessary breast cancer treatment and 200 women will suffer from significant psychological stress due to erroneous diagnosis [9].

Despite these negative aspects, health organisations continue to recommend regular breast screening – every 2 years for women between the ages of 50 and 74 [10] or every 2–3 years between 50 and 69 [11].

In Spain, cancer screening is in accordance with national and international recommendations. Despite the fact that screening is free, or the charge is symbolic, there are important socio-economic inequalities in the take-up of breast screening. There are a number of possible explanations for this: (i) the poor and less educated might feel less confident and be less inclined to request specialist consultation (instead of, for example, asking the family doctor); (ii) they are also more likely to suffer from fear and anxiety which are negatively correlated with screening; and (iii) the poor and less educated are more likely to turn to preventive care later than the economically advantaged, for example, they wait until after the appearance of health problems [12].

Health expenditure and finance has become a key issue in these times of economic crisis. Demographic and socio-economic changes are affecting the financial sustainability of the welfare state and an economic perspective on health issues is essential. Mammographic screening programmes for women aged 50–70 have been shown to be effective in reducing mortality rates at reasonable cost [13] but they are not necessarily cost-effective in every situation and the inclusion of other age groups is far from accepted, particularly in terms of cost and the impact on quality of life. Economic evaluations of interventions for malignant neoplasms are not common despite their gradual increase in recent years in Spain [14]. In the case of cervical cancer, the Spanish government recommends human papilloma virus vaccination for teenage girls, despite its high cost and persistent doubts about its effectiveness and the need to continue regular cytology screening [13].

The aim of this paper is to study the determinants of breast and cervical cancer screening among Spanish women. The Spanish National Health Survey (2006/07 and 2011/12) [15] has been used to provide information on sociodemographic characteristics, risk behaviours, access to health services and the state of health of Spanish women. Special attention is paid to questions related to preventive practices such as screening controls and frequency.

The research should make empirical evidence on vulnerable population groups and the efficiency of public health policies available to policy makers. The main research contribution of this paper is the use of both micro data and regional health public policies in the analyses. We have examined data at different aggregation levels (individuals and regions – the Spanish Autonomous Communities) in order to determine if geographical differences are consequences of population characteristics (e.g. gender, age or working status), contextual data (e.g. regional public health policies) or simply unobserved contextual data. We have also repeated estimations by age cohorts in order to understand if different population groups require specific policies. Not all population groups are targeted by public screening programmes, so we are able to check if women of different ages are particularly sensitive to specific factors.

2. Review of the published literature

Breast and cervical cancer incidence rates in Spain are slowly increasing; this is probably due to the country's ageing population and more frequent early diagnosis [4]. An ageing population is not unique to Spain, it affects most developed countries. The positive relationship between age and screening participation with breast and cervical cancer rates has been known for decades [16].

Screening is a key tool to prevent cancer deaths. For example, screening attendance of 70% might reduce breast cancer mortality by about 25% among women aged 50–69 [11]. In Europe, the availability of screening programmes explains about 40% of cross-country differences in screening rates and factors like age, education, health status, etc. are associated with screening uptake within countries [2].

Screening is not the only preventive action that can be taken; healthy habits also play an important role. Smoking is a leading factor in cervical cancer [16] and a high-fat diet [17] and excessive alcohol intake [18] are risk factors for breast cancer. Smoking is a negative health behaviour that serves as a proxy for poor health habits such as lack of exercise, bad diet and alcohol abuse [19].

Age, smoking and health care access are inversely related to screening, whilst education, income, insurance and perceived risk of cancer are directly related [19–21]. Women who are strongly influenced by the advice of their General Practitioners tend to take regular tests, women who do not receive this advice screen less frequently, or not at all [21].

In the USA, health insurance reduces the cost of point-of-service care and has a positive effect on the demand for screening [19]. In the UK, there is empirical evidence that income does not influence uptake as screening is free of charge [22].

The literature on Spain concludes that invitation to screening, visits to the gynaecologist and women's attitudes are the main reasons for testing [23]. More effort is required for women over 65 with regards to breast cancer testing and women over 55 for cytology. Special attention needs to be paid to women in lower socioeconomic level groups [23–26]. Additional medical insurance coverage increases the probability of regular screening and this is especially true for mammography [24]. Unhealthy lifestyles have been associated with non-adherence [25].

The implications of lifestyles on health are also validated by international comparisons. The incidence of both types of cancer has increased in Spain in recent decades but they are still lower than rates in North America. Cervical and breast cancer are related to lifestyles as well as cultural and environmental factors [27]. Individual and contextual covariates (such as the number of health care centres or population characteristics) are associated with the uptake of breast and cervical cancer screening [28].

3. The data: public health policies, individual observations and regional indicators

The Spanish Constitution of 1978 gave its Autonomous Communities (also known as regions) the legal authority