

ESTIMATION OF THE EFFECT OF PROSTATE-SPECIFIC ANTIGEN (PSA) SCREENING ON PROSTATE CANCER INCIDENCE IN SPAIN

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BACKGROUND AND OBJECTIVES

Prostate cancer incidence has increased dramatically in developed countries, principally because of the widespread use of prostate-specific antigen (PSA) from the early 90s producing a substantial overdiagnosis. The main objective of this study is to estimate the additional number of men who were diagnosed with prostate cancer during the period 2003-2006 in Spain due to the use of the PSA test and to estimate the overall percentage of increase of patients diagnosed in different age-groups and periods.

RESULTS

During the period 2003-2006, 40,010 additional prostate cancers were diagnosed in Spain which represents a 40.1% of 99,874 prostate cancers diagnosed in this period.

By age, the proportion of additional cases was: <60y: 77%; 60-69y: 60%; 70-79y: 29%; 80+y: 11%. By period, these proportions were: 20% in 1993-1997; 34% in 1998-2002 and 40% in 2003-2006 (Figures 1, 2 and 3).

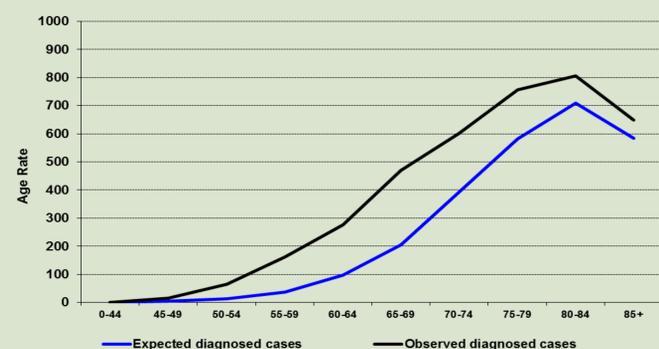


Figure 1: Observed and expected prostate cases diagnosed by age group. Spain 2003-2006

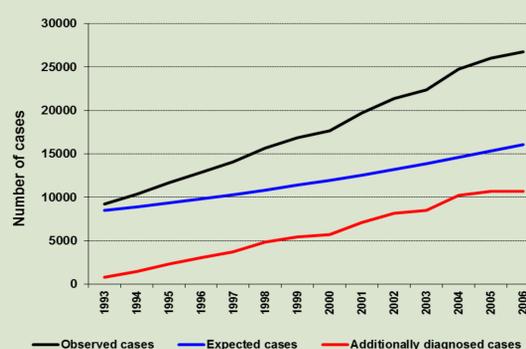


Figure 2: Observed, expected and additionally diagnosed prostate cases diagnosed by year. Spain 1993-2006

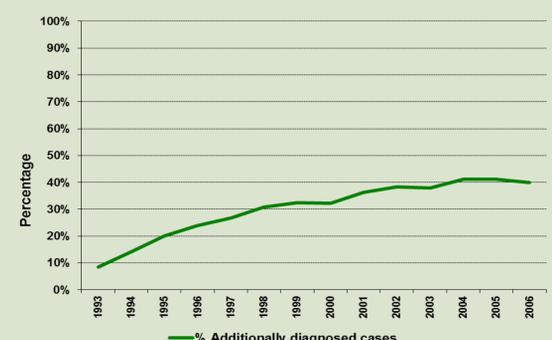


Figure 3: Proportion of additionally diagnosed prostate cases by year. Spain 1993-2006

By age and period, the proportion of additionally diagnosed cases increased constantly from 1993-1997 to 2003-2006 in all age groups except in the 80+ years age group (Figure 4 and Tables 1 and 2).

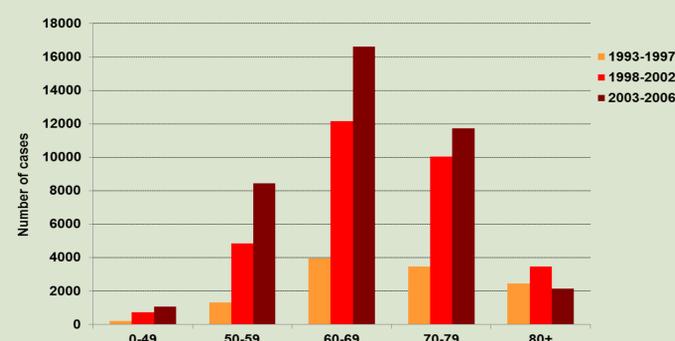


Figure 4: Additionally diagnosed prostate cases by age group and period. Spain 1993-2006

Age Group	1993-1997	1998-2002	2003-2006
0-49	214	740	1,073
50-59	1,325	4,861	8,436
60-69	3,960	12,175	16,603
70-79	3,473	10,039	11,742
80+	2,452	3,453	2,156
GLOBAL	11,424	31,268	40,010

Table 1: Additionally diagnosed prostate cases by age group and period. Spain 1993-2006

Age Group	1993-1997	1998-2002	2003-2006
0-49	39.2 %	65.5 %	73.3 %
50-59	39.9 %	66.5 %	77.5 %
60-69	25.9 %	48.7 %	59.8 %
70-79	14.0 %	25.8 %	29.0 %
80+	17.1 %	18.4 %	11.2 %
GLOBAL	19.6 %	34.3 %	40.1 %

Table 2: Proportion of additionally diagnosed prostate cases by age group and period. Spain 1993-1996

DISCUSSION / CONCLUSION

In Spain, during the period 2003-2006, 40% of diagnosed cases of prostate cancer were additionally diagnosed in relation to the expected incidence. Because of the expected cases were estimated taking into account the APC of the previous years and it probably includes the effect of risk factors as diet and obesity, it is very probable that all or the majority of additionally diagnosed cases were attributable to the use of the PSA test. As expected, the number of additionally diagnosed cases increased throughout the studied periods and was higher in the youngest age-groups. These additionally diagnosed cases represent a very important public health concern.

It is highly probable that the major part of the observed increase in prostate cancer incidence was due to the combined effect of overdiagnosis and lead time bias produced by the use of PSA test.