Letter to the Editor

Mammography Screening and Breast Cancer Mortality—Response

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We thank Drs. Autier and Boniol for their comment raised on the outcome of our case–control study on the impact of mammography screening on the risk of death from breast cancer, but we feel that the methodologic limitations inherent to the case–control design are small.

Aarts and colleagues (1) indeed showed that the participation rate among women of high socioeconomic status (SES) is somewhat higher than those of low SES (87% vs. 79%), in the Netherlands mostly coinciding with women of non-Western ethnic descent. The attendance rate is lower in this group of women (2), in which breast cancer incidence is also considerably lower (3) as well as the risk of death from breast cancer than in the native Dutch population (4).

Aarts and colleagues further report that low SES women are diagnosed with prognostically less favorable breast cancers. However, these differences in tumor stage and overall survival were observed among nonparticipants as well as participants, either screen-detected or symptomatically diagnosed interval breast cancer (1). Therefore, it is incorrect to deduce that participants and nonparticipants present with genuine differences in risk factors associated with dying from breast cancer or from other causes. Risk differences associated with SES groups would reflect only very partially in risk differences between participants and nonparticipants. Case–control studies that could adjust for SES showed no effect of this correction on the estimated ORs (5).

Autier and Boniol question the validity of the factor used for correction of self-selection bias, which is calculated as the relative risk (RR) of death from breast cancer among nonparticipants compared with uninvited women. We used individual data on breast cancer mortality in nonparticipants from the study period 1990 to 2003 and, due to privacy regulations, aggregated data on uninvited women from the prescreening period (1986–1989). Our RR of 1.11 was remarkably similar to the RR of 1.08 from another Dutch study (6) that used data on contemporaneous groups of nonparticipants and uninvited women in the implementation period for screening (1990–1995) from the same region. If breast cancer mortality after 1990 has been decreasing among nonparticipants (numerator of the RR) due to better treatment, then this would also apply for not invited women (denominator of the RR). The RR would then approach unity and results in a higher effect of screening on the risk of breast cancer mortality, adjusted for self-selection. There is no evidence of differential treatment. As screening is fully implemented in the Netherlands, estimation of a correction factor for more recent years is hampered, but given the stable attendance rate in the Netherlands, there is little reason to believe that this will change considerably. Thus, in organized breast cancer screening programs, self-selection appears to be relatively minor.

In our case–control study, we minimized the biases inherent to an observational study design (e.g., identification and selection of cases and controls, equal access to screening during the exposure period, definition of exposure, source population). We showed that breast cancer screening resulted in a 49% reduced risk of dying of breast cancer for women invited and attended mammography screening. Observational study designs are crucial for the evaluation of the effect of mammography screening in the actual female population.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interests were disclosed.

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References

