Letters

The effect of school screening on surgery for adolescent idiopathic scoliosis: a comment

Sir,

Wiegersma et al.[1] have recently published a registry-based study on the effect of school screening on surgery for adolescent idiopathic scoliosis. We like to comment on methodological issues which could have influenced the outcome of this study. The authors discussed several possibilities for misclassification. In our opinion two possibilities of misclassification were not discussed. One refers to the allocation of Youth Health Care (YHC) departments to the categories 'screening' and 'non-screening'. The category 'screening' included all YHC departments with a screening in either the last grade of primary school (group 8) or grade 1 of secondary school. So the category 'non-screening' included YHC departments without any screening for trunk abnormalities at all and those which had a screening programme either in a different age group or as part of the regular health assessment in grade 7 of primary school and/or grade 2 of secondary school. This classification is correct if it is assumed that screening in these age groups is not effective at all. Our YHC department (Rotterdam) was assigned with many others to the 'non-screening' category. However during the reported period of Wiegersma et al., we conducted a prospective study on trunk abnormalities (including scoliosis) in a cohort of 4,915 eleven-year-old children.[2–4] We are not convinced that the category 'non-screening' is homogeneous to the exposure of 'not being screened'.

The second source of misclassification is linked with the relation between postal code of residence and location of school, and residence and YHC code. Most secondary schools are in the larger towns and cities. So in reality screened children might be classified as belonging to a non-screening YHC region and the other way around. The allocation of cases was based on the postal code of residence at time of discharge after surgery. In fact this was 2–6 years after screening. So migration as a source of misclassification cannot be excluded.

With these comments in mind we think that the authors are quite ambitious in their conclusions. To our opinion further studies are needed to support the findings and conclusions of this study, which at present hampers of the problem which is often referred to as ecological fallacy.

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References

1 1 Wiegersma PA, Hofman A, Zielhuis GA. The effect of school screening on surgery for adolescent idiopathic scoliosis. Eur J Public Health 1998;8:237-40

2 Hazebroek-Kampschreur AAJM. Trunk abnormalities in adolescence [dissertation]. Erasmus Universiteit Rotterdam, 1993.

3 Hazebroek-Kampschreur AAJM, Hofman A, Van Dijk APh, Van Linge B. Prevalence of trunk abnormalities in eleven year old schoolchildren in Rotterdam, The Netherlands. J Ped Orthop 1992;12:480-4

4 Hazebroek-Kampschreur AAJM, Hofman A, Van Dijk APh, Van Linge B. Two-year cumulative incidence of trunk abnormalities in a schoolpopulation in Rotterdam, The Netherlands. Eur J Public Health 1995;5 220-2.

The effect of school screening on surgery for adolescent idiopathic scoliosis: response to readers' comments

Sir,

It is our pleasure to clarify, in response to the letter, some obviously less clear passages in our article.

We agree that misclassification can be a major threat to this so-called ecologic case-referent design. In this regard we would like refer to the discussion paragraph, in which several possibilities were explicitly discussed, among others the two (actually three) mentioned in the letter.[1]

We are uncertain on what grounds the writers conclude that Rotterdam was allocated to the 'non-screening' category. On the contrary, based on the information obtained from their youth health care department, they were allocated to the 'screening' category, which seems to substantiate our accuracy in allocating YHC departments. This, furthermore, is of course unrelated to the study cited in the letter, as that was not conducted in the same period at all, but between 1984 and 1987.[2] Our study period *started* in 1987.

Apart from that – anticipating the argument regarding effectiveness of screening in grade 2 of secondary schools – we calculated an Odds Ratio for surgery *including* children screened in second grade. The resulting OR (0.98) was virtually the same as the OR without inclusion of 14 year olds (see Discussion).[1]

We also addressed the problem of misclassification due to migration and differences between place of residence and location of the secondary school, by which the YHC region was determined. Elsewhere we point out that internal migration mainly occurs among the older persons in the designated age group, and that those with severe scoliosis are unlikely to move to another part of the country prior to surgery. Our article further states, that to mask an otherwise significant difference, of the 22 surgery cases screened in secondary school, more than half would have to be wrongly classified. These arguments, coupled with the fact that the work area of Regional Health Authorities often encompasses both 'central city' as well as the surrounding area from which the children come for secondary education, strengthens us in our belief that in our study misclassification is less important.

Regarding 'ecological fallacy', we would like to stress, that discussed here are possible sources of non-differential misclassification. This is something altogether different from non-random allocation of a study population to determinant categories, or unequal distribution of confounding variables between populations or regions, necessary to induce ecological bias.[3,4]

These considerations strengthen us in our belief that our original conclusions remain valid, that is that: 'to continue screening would represent an unreasonable and disproportionate burden to the already limited resources of preventive health care. Moreover, it can result in mislabelling and, consequently, the inconvenience, financial and emotional cost and potential radiation exposure of needless follow-up evaluations'.[1]

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