

two year screening interval. The proportion of true interval cancers occurring in the first two years after screening in our series was 60%, similar to that reported in the Nijmegen programme (58%) and Stockholm trial (64%) in women aged 50-64.^{4,5} Recent changes designed to improve the sensitivity of the screening test are welcome, but we believe that shortening the screening interval is the only way to reduce the number of true interval cancers which will otherwise continue to present in the third year after screening.

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Increased incidence of primary total hip replacement in rural communities

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Previous studies of the incidence of total hip replacement operations have been based on large heterogeneous populations.¹ From crude data based on large geographic areas, an increased incidence has been suggested in rural populations of Scotland. However, the population distribution within these areas might alter the significance of these results.² We used the smallest geographical areas for which reliable population data were available to determine the incidence of total hip replacement in urban and rural populations.

Subjects, methods, and results

Using data from operating theatre registers and the Scottish Morbidity Record, we identified 2053 patients who had undergone a primary total hip arthroplasty between 1 September 1991 and 28 February 1993 in the 16 hospitals in the west of Scotland that performed such surgery. Reasons for surgery included all diagnoses except fractured neck of femur. We reviewed 2035 (98%) case notes, verified the type of operation, and identified the patient's postcode of residence. We determined whether each postcode sector was urban or rural according to census data from the registrar general, using the definition that an urban postcode contains at least five people per hectare while a rural postcode contains four or fewer.³

We calculated the incidence of primary total hip replacement, standardised for age and sex to the Scottish population, in the urban and rural populations. The incidence of surgery for the urban and rural groups was 66.9 and 85.6 per 100 000 population respectively ($\chi^2 = 40.42$, $df = 1$, $P < 0.001$). The Spearman correlation between the population density of the 26 political districts of the west of Scotland and the incidence of total hip replacement in these areas confirmed an inverse relation ($R = -0.721$, $P < 0.001$) (fig 1).

We analysed the demographic characteristics of the patients. Mean age at operation was 67 (SD 11) years in both the rural and urban groups. The male to female ratio was 1:2 for the urban population and the group as a whole. The rural population had a higher proportion of male patients (ratio 1:1.4), and almost twice the number of rural patients were employed at the time of the operation. The distribution of diagnoses was not significantly different between the rural patients (osteoarthritis 89.2%, rheumatoid arthritis 5.1%, congenital hip dysplasia 0.4%, other

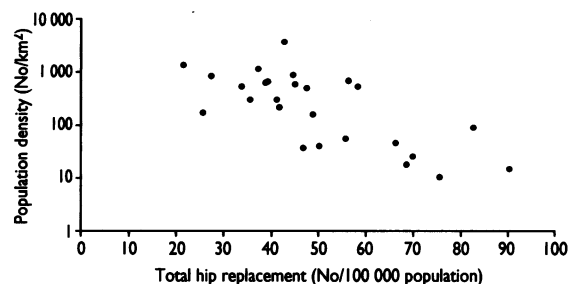


Fig 1—Population density of political districts in west of Scotland (log scale) by incidence of total hip replacement

diagnoses 5.3%) and urban patients (osteoarthritis 85.9%, rheumatoid arthritis 7.9%, congenital hip dysplasia 1.1%, other diagnoses 5.1%).

Comment

Using the smallest geographical area available (post-code sector), we confirmed the previously reported increased incidence of total hip replacement in the rural population of the west of Scotland. It is not known if this is due to an increased incidence of conditions meriting total hip replacement, historically lower operation rates, or increased demand due to higher functional requirements and greater perceived disability. These findings may have important resource implications. If the rural incidence of surgery was applied to the urban population then an extra 350 operations would be required in the area studied.

In the absence of dedicated population based studies for the need for total hip replacement, our retrospective analysis of the incidence of operations has provided information for resource allocation and contract purchasing. The variation in incidence between urban and rural populations indicates that care must be taken in using global operation rates at a local level. Regional studies are required to identify local need and other factors affecting the true need for hip replacement surgery in order to correctly plan resource allocation.

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