

Ethnic Variations in Chest Pain and Angina: Scottish Ethnicity and Health Linkage Study

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Chest pain and angina are important early signs of cardiovascular disease. However, neither the incidence of hospitalization for chest pain, nor the incidence of hospitalization for angina, has been described by ethnic group in a European country. Furthermore research on ethnic variations in cardiovascular disease has so far mostly examined mortality endpoints using country of birth. Scotland's major ethnic majority groups, are from England and Wales, Ireland, Pakistan, India, and China. Mostly, these are long-established populations, though more recently established populations include those from Eastern Europe, Africa, and the Caribbean.

This paper compares rates of chest pain and angina by self-reported ethnic group using a retrospective cohort linking the Census 2001 for Scotland (providing 14 ethnic group categories) and hospital inpatient and mortality data. Data for the study were created by linking data from the Census 2001 for Scotland (providing self-reported ethnic group for each individual, and other demographic and social variables) to the Scottish Community Health Index (identifier for patients registered with the NHS in Scotland) using names, addresses, and dates of birth. The Community Health Index was then linked to hospital and death records to create a database containing ethnicity and other Census information along with information on hospital admissions and deaths relating to cardiovascular disease.

Age standardised rate ratios were calculated for each ethnic group, compared to the white-Scottish population. Additionally these were calculated adjusted for age and highest educational qualification using Poisson regression.

Rates of chest pain were found to be significantly higher for: the Indian, Pakistani, other South Asian (excluding Indian and Parkistani) populations; and significantly lower for other White British and Chinese (see Table 1). Differences were less marked for angina where rates were significantly higher for the Pakistani population, and significantly lower for other White British, other Whites, and Chinese. Adjustment for education did not greatly alter these patterns.

Table 1. Rate ratios (x100) for chest pain by ethnic group (significant differences from White Scottish in bold)

| | Rate ratio – age standardised (95% CI) | Rate ratio - age and education adjusted (95% CI) |
|---------------------|--|--|
| Men | | |
| White Scottish | 100.0 | 100.0 |
| Other White British | 76.1 (73.5–78.6) | 83.5 (77.4–90.2) |
| White Irish | 101.0 (93.4–108.6) | 102.0 (94.5–110.2) |
| Other White | 88.8 (81.5–96.1) | 88.6 (76.6–102.5) |
| Mixed background | 78.5 (53.8–103.1) | 84.8 (63.6–113.1) |
| Indian | 141.2 (117.1–165.4) | 136.7 (114.3–163.6) |
| Pakistani | 216.2 (192.5–240.0) | 198.2 (174.5–225.2) |
| Other South Asian | 125.8 (94.4–157.2) | 140.1 (108.4–181.1) |
| African | 110.5 (79.9–141.2) | 119.6 (87.0–164.3) |
| Chinese | 67.6 (50.5–84.7) | 56.1 (43.6–72.1) |
| Other ethnic group | 75.9 (41.8–110.0) | 86.5 (50.8–147.1) |
| Women | | |
| White Scottish | 100.0 | 100.0 |
| Other White British | 73.7 (71.2–76.2) | 77.7 (71.3–84.8) |
| White Irish | 99.5 (92.3–106.8) | 101.5 (90.4–113.9) |
| Other White | 84.2 (77.4–91.0) | 85.5 (70.1–104.2) |
| Mixed background | 99.5 (73.2–125.7) | 97.2 (74.4–127.1) |
| Indian | 148.6 (119.2–178.1) | 136.5 (103.1–180.8) |
| Pakistani | 243.0 (208.7–277.4) | 215.8 (193.0–241.4) |
| Other South Asian | 140.9 (101.4–180.4) | 135.1 (101.4–180.0) |
| African | 132.3 (93.0–171.5) | 124.7 (88.0–176.8) |
| Chinese | 76.7 (55.3–98.1) | 60.5 (45.4–80.5) |
| Other ethnic group | 95.4 (58.9–131.8) | 71.0 (51.5–97.9) |

The paper contributes to the European effort to tackle cardiovascular disease and ethnic inequalities therein, in three ways. First, it shows a method to study the phenomenon more widely in Europe through linkage of data, given the paucity of primary longitudinal research data. Second, it calls for practical clinical and public health actions to focus prevention and disease programmes and research on the populations at greatest need (in Scotland the Pakistani populations). Third, it calls for studies to examine why some populations (e.g. Chinese in much of Europe) fare comparatively well so lessons can be learned.

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