

Increased risk of acute appendicitis linked to biological sex, ethnic background, obesity, and smoking status

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Acute appendicitis (AA) is the inflammation of the vermiform appendix in the distal human gut. Dietary behaviour has been suggested as a risk factor for AA associated with Western Dietary Patterns (WDP). However, the role of socio-cultural factors such as obesity, ethnicity, gender, smoking status and their association with AA in post-industrial populations has not been systematically examined and remains speculative.⁽¹⁾ Hence, the aim of this investigation was to assess the clinical effect of biological sex, birth country, ethnic background, obesity, and smoking status on AA outcomes using the UK Biobank database. We hypothesized that AA outcomes were positively associated with country of birth and ethnic groups belonging to post-industrial societies, male sex, and tobacco smoking. An assessment of socio-cultural parameters relative to AA was conducted on a prospective cohort UK Biobank study population of 500,000 men and women. The International Classification of Diseases-10 (ICD-10) codes created the population subset with past AA. The analysed socio-cultural factors included sex, waist circumference, hip circumference, body mass index (BMI), current or past tobacco smoking, maternal smoking around birth, breastfed as a baby, country of birth, and ethnic background. R studio software executed a binomial regression analysis to determine AA association with the relevant socio-cultural parameters. The *p*-value measured statistical significance of the association, whilst odds ratio (OR) quantified the change in likelihood of AA outcomes. Of the statistically significant socio-cultural factors (*p* < 0.05), obese BMI categories ≥ 30–40 kg/m² and BMI ≥ 60–70 kg/m² demonstrated a respective increased AA risk of 12% and 287%. This showed that obesity is positively associated with AA outcomes. Country of birth and ethnic groups from post-industrial environments were associated with higher AA odds such as being born in England and being ethnically British that raised the AA risk by 12% and 24%, respectively. This was comparable to ethnicities from pre-industrialised societies such as Black Caribbean, Indian and Pakistani that have an accordingly lower chance of AA by 36%, 44% and 52%, respectively. Additionally, being male increased the odds of AA by 10%, which highlighted the differential role of sex on AA outcomes. There were a 25% increased odds of AA history in UK Biobank participants that were currently smoking tobacco. In summary, the UK Biobank AA population demonstrated that belonging to at least one of the following categories: currently smoking tobacco, England born, British ethnicity, male, and having an obese BMI increased the likelihood of AA. Thus, to address AA incidence, public health policies must be targeted towards improving dietary patterns away from WDP and further decreasing tobacco smokers and obesity demographics.

Reference

1. Bhangu A, Soreide K, Di Saverio S, *et al.* (2015) *Lancet* **386**, 1278–1287.