Phenotypes of Inflammatory Bowel Disease in the Māori Population of New Zealand
INTRODUCTION

IBD most prevalent in Caucasian population, highest rate in North America and Europe

New Zealand one of highest incidence rates of IBD in the world
• 39.5/100,000 in Canterbury 2014

Increasing incidence in developing countries and immigrants

Low incidence in Indigenous population
• Australia - Aboriginal and/or Torres Strait Islander 1.58% IBD patients (Busingye et al, 2021)

• Saskatchewan, Canada - First Nation prevalence 3 per 100,000 (Pena-Sanchez et al, 2022)
TIMELINE

1969 - 1978
Auckland
0.4% UC, 0% CD Māori
patients with colitis

2004
Canterbury
Incidence
25.2 per 100,000, 1% Māori

2013
Otago
Incidence
29.8 per 100,000, 1.8% Māori

2019
Waikato
Incidence 17.5 per 100,000, 3.7% Māori

2021
Lakes
Incidence 12.5 per 100,000, 7.6% Māori
AIM

Improve understanding of IBD in Māori population

Phenotype using Montreal Classification
METHODS

Four DHBs - Northland, Bay of Plenty, Lakes, Waikato

Population 1,046,300, Māori 292,600

32.8% Māori population in NZ

IBD diagnosis from 1983 to 2022

Total patients = 165
PHENOTYPES - CROHNS

- A1 <16yo: 14.5%
- A2 17-40yo: 59.4%
- A3 >40yo: 26.1%
DISCUSSION

Increase in incidence of Māori IBD by 5 folds

Consistent figures across DHBs

Average incidence per five-year period

Seleq et al 2019

Qiu et al 2022
PHENOTYPES

![Graph showing phenotypes](image-url)
DISCUSSION

CARD15 allele mutation in Crohn’s

Autoimmune disease

Immune regulation

Genetic predisposition

Environmental factors

Infection
Microbiome
Dysregulated mucosal response

Hygiene hypothesis
Urbanisation
Smoking
Diet
Table 1  CARD15 allele frequencies among New Zealand ancestral groups

<table>
<thead>
<tr>
<th>CARD15 variant</th>
<th>Caucasian (n = 201)</th>
<th>Admixed Maori (n = 37)</th>
<th>Non-admixed Maori (n = 53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P268S*</td>
<td>23.4</td>
<td>16.2</td>
<td>12.3</td>
</tr>
<tr>
<td>R702W</td>
<td>3.0</td>
<td>1.4</td>
<td>0.9</td>
</tr>
<tr>
<td>G908R</td>
<td>1.2</td>
<td>1.4</td>
<td>0.9</td>
</tr>
<tr>
<td>1007fs</td>
<td>1.0</td>
<td>1.0</td>
<td>0.0</td>
</tr>
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*P268S (background) variant + R702W, G908R, or 1007fs. Test for linear trend (p = 0.016).
Māori Ethnicity = 560,000 (15% population)

Sole Māori group = 280,000

Māori Ancestry = 630,000

4000 did not have Māori ancestry, 6000 unsure about Māori ancestry
2013

38% Māori women 18-24yo daily smokers
Only 1 in 3 never smoked by age 24yo
Risk factors – household smoking, low academic qualification, unemployment
**Daily smoking rates in Aotearoa 2021/22 were:**

<table>
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<tr>
<th>Demographic</th>
<th>Percentage</th>
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<td>Adult smokers (15+)</td>
<td>8%[^27] (down from 9.4% the previous year[^39] and 16.4% in 2011/12[^29])</td>
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<td>- Smoking rates among all adult women were 7.3% and among all adult men were 8.6%[^77]</td>
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<td>Young adults 18–24</td>
<td>8.2%[^77] (down from 25% in 2006/07[^29] and 13.1% in 2019/20[^39])</td>
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<tr>
<td>Māori adults</td>
<td>19.9%[^77] (down from 39% in 2006/07[^29] and 28.6% in 2019/20[^39])</td>
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<tr>
<td>- Smoking rates among Māori women were 18.2% and among Māori men were 21.8%</td>
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<tr>
<td>Pacific peoples</td>
<td>18.2%[^77] (25% in 2006/07[^29] and 20.2% in 2017/18[^39])</td>
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<tr>
<td>- Smoking rates among Pacific women were 19.2% and among Pacific men were 16.9%</td>
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<tr>
<td>European and other</td>
<td>7.2%[^27] (14.7% in 2011/12[^29] and 10.1% in 2019/20[^39])</td>
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<tr>
<td>- Smoking rates among European/Other women were 6.2% and among European/Other men were 8.3%</td>
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</tr>
<tr>
<td>Asian adults</td>
<td>2.6%[^27] (7.9% in 2011/12[^29] and 7.4% in 2019/20[^39])</td>
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<tr>
<td>- Smoking rates among Asian women were 1.5% and among Asian men were 3.7%</td>
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</table>
SUMMARY

Increase incidence of IBD in Māori population across regions

Higher rate of Māori female with Crohn’s Disease

Addressing environmental and socioeconomical factors

Future studies to expand demographic coverage and explore outcomes
Thank you

James Fulforth
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