

OCCUPATIONAL RISK FACTORS FOR BREAST CANCER: FINDINGS FROM THE NEW ZEALAND BREAST CANCER STUDY

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BACKGROUND

In 2007, IARC classified night shift work involving circadian disruption as a probable carcinogen to humans; however the link between night shift work and breast cancer remains controversial. The epidemiological evidence for occupational risk factors for breast cancer is also inconsistent.

AIM OF THE STUDY

To investigate the association between occupational risk factors and breast cancer risk in Māori and non-Māori women in New Zealand (NZ).

METHODS

A population-based case-control study was conducted to examine risk factors for breast cancer among three different ethnic groups in NZ: Māori, Pacific, and non-Māori/non-Pacific (NM/NP).

All women registered on the NZ Cancer Registry with primary invasive breast cancer between 2005-2007 were eligible for inclusion. Controls were identified from the NZ Electoral Roll and matched on ethnicity and frequency matched on 5-year age bands.

All participants completed comprehensive questionnaires on health and lifestyle behaviours including socio-demographics, lifestyle, and work and reproductive histories. Participants were asked to list all of the jobs that they ever held including whether they worked night shift. All jobs were assigned a New Zealand Standard Classification of Occupations (NZSCO) 5-digit code.

Unconditional logistic regression models were used to estimate odds ratios (OR) and 95% confidence intervals (CI) adjusted for established breast cancer risk factors and socioeconomic status (NZDep).

RESULTS

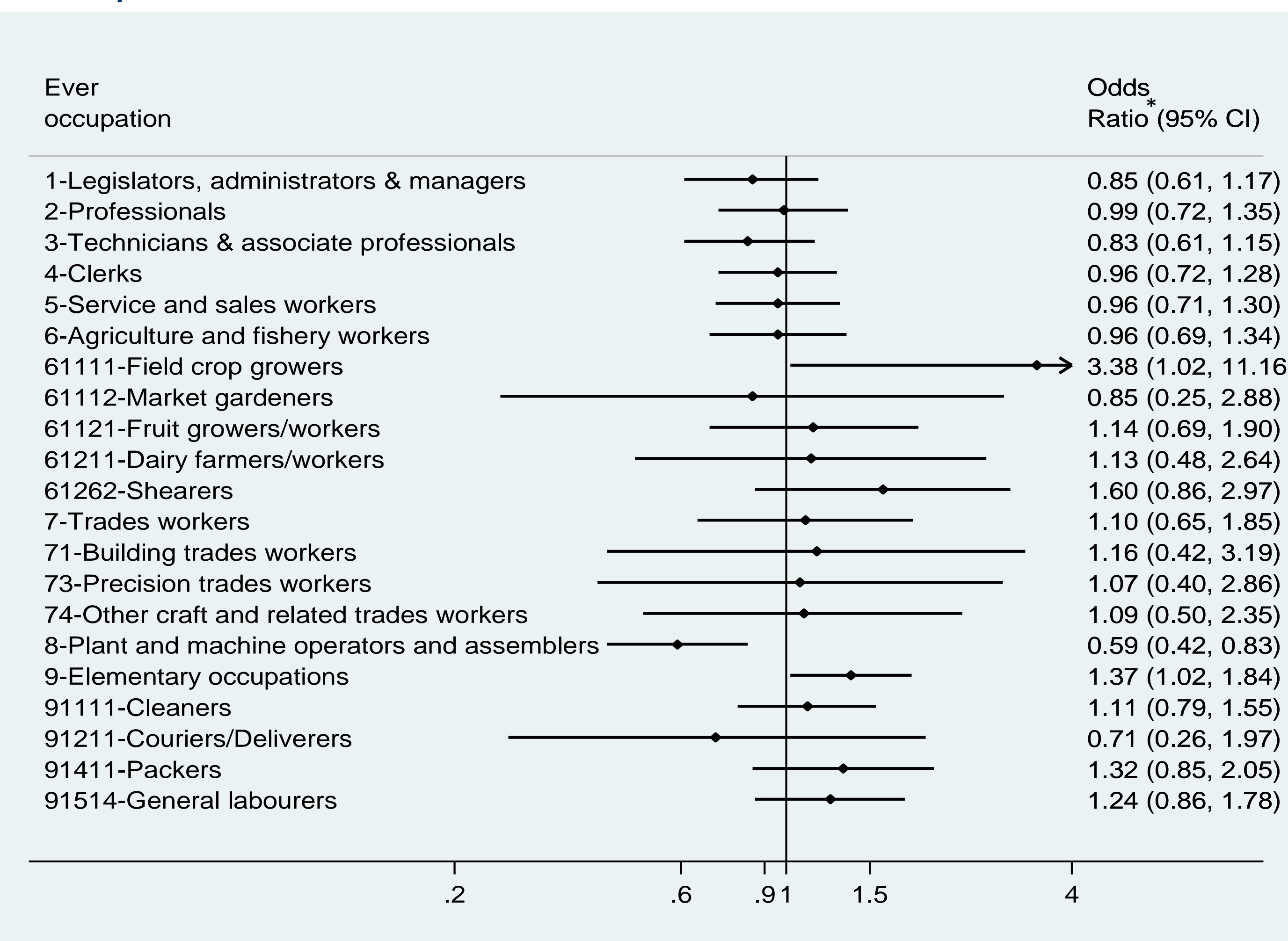
The analysis focused on Māori and NM/NP women due to the small number of Pacific women in the study and included 1,637 cases (1,343 NM/NP and 294 Māori) and 2,214 controls (1,406 NM/NP and 808 Māori).

Night shift

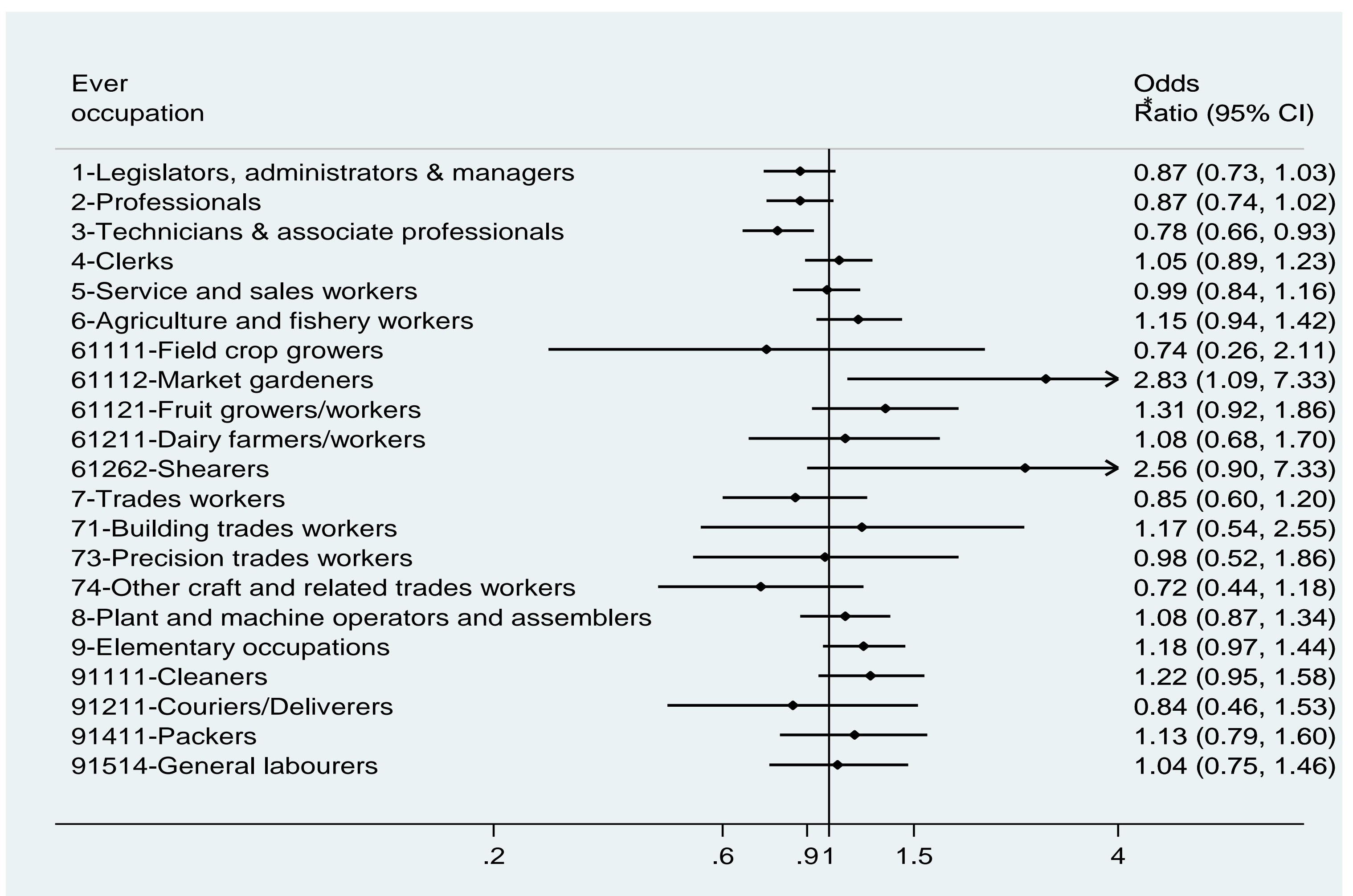
		Māori				Non-Māori			
		% Cases	% Controls	OR*	95% CI	% Cases	% Controls	OR*	95% CI
Ever worked night shift		55.8	58.2	0.86	0.64-1.15	36.4	37.0	0.96	0.82-1.13
Years worked night shift	<1	56.1	51.5	1.00	Ref	67.3	66.9	1.00	Ref
	1-5	15.7	18.1	0.86	0.58-1.28	13.3	13.2	1.02	0.81-1.28
	6-15	15.7	17.7	0.77	0.51-1.14	9.9	10.5	0.92	0.71-1.19
	≥15	12.5	12.7	0.77	0.50-1.20	9.5	9.4	0.97	0.74-1.27

		Māori		Non-Māori	
		Case %	Control %	Case %	Control %
Age (years)	20-	3.4	5.7	1.3	1.0
	35-	28.9	38.4	23.5	19.3
	50-	46.6	43.9	41.9	48.9
	65-	21.1	12.0	33.3	30.9
Body Mass Index	<25	26.5	35.9	44.4	48.9
	25-29	31.0	31.7	37.5	34.4
	30-40	34.0	25.9	16.7	15.3
	40+	8.5	6.6	1.5	1.4
NZ Deprivation Index	1-4	16.3	29.6	38.6	51.9
	5-7	26.5	29.3	33.7	30.7
	8-10	57.1	41.1	27.8	17.5
Parous	Yes	91.8	91.7	89.1	92.0
Ever used HRT	Yes	15.0	13.7	24.8	25.5
Ever OC use	Yes	69.1	80.5	74.8	80.7
Age at menarche	<12	23.5	21.2	16.5	16.6
	12	24.2	27.9	24.4	22.3
	13	28.6	24.6	31.5	31.7
Post-menopausal	Yes	73.1	55.5	76.4	76.9
	No	26.9	44.5	23.6	23.1
Smoking	Never	20.4	30.6	53.6	55.3
	Ex	47.3	43.2	37.8	34.0
	Current	32.3	26.2	8.6	10.7
	Unknown	1.0	0.0	0.0	0.0

Occupations - Māori



Non-Māori



*adjusted for age, BMI, NZDep, menopausal status, HRT, OC use, parity, age at menarche, and smoking (never/ex/current)

Adjustment for duration of years smoking and frequency of alcohol consumption in the past year did not substantially affect the results. ORs are presented for all 1-digit NZSCO groups and, for groups 6,7 and 9, specific 2-digit or 5-digit occupations with >5 women in each cell for both ethnic groups

CONCLUSION

The prevalence of having ever worked night shifts was high in this population and there was no clear evidence of an increased breast cancer risk for either ethnic group. For both Māori and non-Māori women, the highest risk of breast cancer was for having ever worked in the lowest skill-based occupational category (the 'Elementary' occupations). Māori women who ever worked in this group were almost 40% more likely to have breast cancer compared to Māori women who never worked in this group. In particular, packers and general labourers showed modestly elevated risks. For non-Māori women, the occupational group with the second highest risk was Agriculture and for both ethnic groups, elevated risks were observed for shearers and for certain pesticide-related occupations.