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Change in prevalence rates of women's physical and sexual intimate partner violence victimization: Data from two cross-sectional studies in New Zealand, 2003-2019

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Abstract

Objectives: To explore changes in reported prevalence of physical and sexual intimate partner violence (IPV) between 2003 and 2019. Changes in attitudes supportive of violence and in help seeking behaviour following disclosure were also explored.

Design: Two cross-sectional studies

Setting and participants: National, cross-sectional studies on family violence conducted in New Zealand in 2003 and 2019. Female respondents aged 18-64 years old were included (2003 n=2,674, 2019 n=944).

Main outcome measures: Prevalence rates of lifetime and past 12-month physical and sexual IPV, attitudes towards gender roles and acceptability of a man hitting his wife, help sought, and received following disclosure were compared between the study years.

Results: Lifetime prevalence of physical IPV was unchanged between 2003 and 2019 (AOR=0.99; 95% CI=0.82-1.17). There was a significant decrease in the proportion of women who reported experiencing 12-month physical IPV (AOR=0.53; 95%CI=0.32, 0.89). Small reductions in rates for lifetime sexual IPV were also observed (AOR=0.78; 95%CI=0.62-0.98). In 2019, fewer women agreed with one or more statements supportive of traditional gender roles (46.9%; 95%CI= 45-48.7) in 2003; 35.3% (95%CI=32.4-38.3 in 2019). There was a significant reduction in women endorsing one or more justifications for a man to hit his wife from 3.7% (95%CI= 3.1-4.5) in 2003 to 2.1% (95%CI= 1.3-3.2) in 2019. A significant increase was noted in the proportion of women who sought help from community organizations (from 4.6% [95%CI= 3.4-6.1] in 2003 to 7.5% [95%CI= 4.8-10.9] in 2019).

Conclusion: While reductions in 12-month physical IPV are positive, prevention efforts need to be maintained and strengthened to address the substantial problem of IPV, as lifetime prevalence remained stable over the 15-year time interval.

Strengths and limitations of this study

- The current investigation used large, representative samples of women in two population-based surveys in 2003 and 2019.
- Repeated surveys of violence exposure, agreement to attitudes supportive of violence and help-seeking behaviours provide an understanding of the effectiveness of population-based policies and programmes.
- True prevalence estimates may be higher as it is expected that women in severely abusive relationships would be unable or unwilling to participate in such a survey.
- Repeated surveys are required to determine if the observed changes are sustained and present a trend.

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Competing interest:

The authors declare that no competing interests exist. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Introduction

Intimate Partner Violence (IPV) has been reported by the UN Secretary-General (2006) as "the most common form of violence experienced by women globally"[1]. IPV includes physical and sexual violence, as well as psychological abuse, controlling behaviour and economic abuse. Efforts to respond to IPV in high income countries include the introduction of legislation or national action plans, and strengthening the non-for-profit sector to respond to the violence experienced [2]. However, the effectiveness of these strategies is not clear, as there is a lack of consistent and reliable data available to monitor changes in the prevalence of IPV over time. The limited research available tends to rely on analysis of IPV homicide data, or other forms of administrative data from agencies such as health providers, police or courts[2]. While providing useful insights, these data do not reflect the magnitude of the problem at the population level, as many who experience IPV frequently do not present to services, or the underlying cause of their presentation may not be identified or recorded [2, 3].

Other attempts to measure changes in IPV occurrence over time have relied on data from general crime victimisation surveys [4], but the overall framing of the questionnaire (i.e., a survey about 'crime') tends to lower the reporting of the violent behaviours within intimate relationships[2, 3]. Surveys conducted for other purposes (e.g., health surveys) which include a dedicated module on family violence provide some information, but can also be problematic, as space limitations for specific modules means that they might not be able to include questions that canvas the full range of violent experiences[5].

The emerging consensus is that 'population-based stand-alone surveys are the instruments of choice' for collecting statistics on violence against women[6]. To date, specific violence against women surveys have been carried out in several high-income countries (for examples U.S.A.[7], Canada[8], Australia[9], European Union[10], Finland[11, 12], New Zealand[13]). However, with an exception of Australia and Finland, the surveys have generally been one-off efforts and thus do not allow for time-related comparisons. Without repeated, comparable surveys, it is not possible to determine if there are overall changes in the occurrence of IPV, or if there are differential patterns of change for specific sub-groups within the population.

According to the World Health Organization, violence results from the complex interplay between individual, relationship, social, cultural and environmental factors[14]. The ecological model has been important in helping determine risk and protective factors associated with violence occurrence, but also holds promise for prevention, as it carries the assumption that changes in contributing factors can potentially lead to changes in prevalence[15]. To date, the limited research that has explored differences in the prevalence of IPV over time has suggested that population-level changes in demographic factors, such as shifts in age, education, relationship status, and socio-economic factors may contribute to the observed prevalence changes[4, 6, 16, 17]. However, changes in environmental and social norms that may condone or help perpetuate violence, and associated effects on violence occurrence have received scant attention in the research.

Community-level norms, such as acceptance of 'traditional" gender roles and beliefs in the justification of 'circumstances in which it is acceptable for a man to hit his wife ' are associated with perpetration of IPV[18]. In some countries, women's acceptance of these attitudes has been found to be associated with their victimisation[19]. For these reasons, attitudes have been a key target of community education campaigns aimed at preventing violence against women[20]. However, to date, there has been little examination of the effectiveness of these initiatives at changing attitudes, or on any associated changes in violence rates[20-22].

New Zealand is one of few high-income countries where more than one comprehensive population-based survey of violence against women has been conducted, the first survey was conducted in 2003, and the second survey in 2019. Between the two surveys, a series of actions were taken to address family violence including; legislation (e.g. amendments to family violence law and protection for victims act), and prevention campaigns (e.g. the Family Violence: It's not ok national campaign, and ACC-funded mates and dates high schools programme on healthy relationships). Many of these initiatives have focussed on addressing physical and sexual violence and have included strong messaging about the importance of help-seeking by those experiencing violence. Repeat surveys on attitudes supporting violence may provide evidence concerning the impact of such campaigns at the population level.

In the current study, using data from two New Zealand cross-sectional population-based surveys we aimed to: (a) describe changes in the reported prevalence rates of physical and sexual IPV between 2003 and 2019, (b) examine whether changes in women's sociodemographic characteristics are associated with changes in IPV prevalence rates, and (c) determine whether changes in the reported prevalence rates are consistent across population subgroups. We also sought to determine if there were (d) changes in attitudes supportive of violence and (e) changes in help-seeking for those who reported experiencing IPV.

Method

Procedure and participants

Data was drawn from two national cross-sectional studies on family violence conducted in New Zealand in 2003 and 2019. A comprehensive description of the methods used in the 2003 and 2019 surveys have been previously presented.[13] A brief description of two surveys is presented here.

The 2003 study was conducted in Auckland and Waikato regions. For the 2019 study, Northland was also included in the sampling. Together the Auckland, Northland, and Waikato

regions account for approximately 40% of the New Zealand population and include a diverse population of Māori (Indigenous people of New Zealand), Pasifika, Asian and European New Zealanders.

Sampling strategies were similar in both surveys. A population-based cluster sampling scheme with a fixed number of dwellings per cluster was used. Primary sampling units (PSUs) were based on meshblock boundaries which contain between 50 and 100 dwellings. The starting point consisted of a randomly selected street and street number within each PSU. Interviewers made up to seven visits to each selected household to identify and recruit study participants. Non-residential, aged-care and short-term residential properties were excluded.

Eligibility: To be eligible to participate in the survey, household members needed to be able to speak conversational English, have lived in the household for at least one month and slept in the house for four or more nights a week.

Of the households invited, 88% in 2003 and 78% in 2019 agreed to participate. Of the eligible women, 76% in 2003 and 63% in 2019 participated, yielding an overall response rate of 67% in 2003 and 63.7% in 2019.

Participants of the 2003 study were 2855 women aged 18-64 years. In 2019, the eligible population was expanded to include women and men aged 16 years and older resulting in 2,888 completed interviews (n=1464 women, n=1423 men, n=1 other). For the purpose of this paper, only ever-partnered women aged 18-64 years from each sample were included, equivalent to almost 94% of all women surveyed in both waves (2003, n= 2674; 2019, n=944). Demographic characteristics of ever-partnered women aged 18-64 years in 2003 and 2019 surveys are presented in Table 1.

Representativeness: In both surveys, the ethnicity, marital status, and deprivation level distribution of the sample were closely comparable to the general population, however both samples were under-represented for younger women (ages 20-29 in 2003, 16-29 in 2019).

Safety and ethics considerations

Ethics and safety recommendations for research on violence against women were followed throughout the research[23]. One individual was randomly selected from each household for the interview. In households with more than one eligible resident, the participant was randomly selected. Interviews were conducted in privacy with no one over the age of two years present. At the completion of the interview, interviewers provided all respondents with a list of approved support agencies regardless of disclosure status. Written informed consent was obtained from all participants.

Ethics approval was granted through the University of Auckland human participants' ethics committee (reference number 2002/199 for the 2003 study, and 2015/ 018244 for the 2019 study).

Patients and Public involvement

Patients or the public were not involved in the design, conduct or reporting or dissemination plans of our research.

Study instrument and measures

To collect data, the WHO Multi-Country Study on Women's Health and Domestic Violence Against Women (WHO MCS) [24] was used in both surveys.

'Intimate partners' included male current or ex-partners that the women were married to or had lived with, or current regular male sexual partners. Definitions are presented in Table 2 for: the physical and sexual IPV; socio-demographic characteristics; attitudes towards gender roles, and acceptance of attitudes justifying a man hitting his wife. Sources of help sought (who told about violence) and help received (sources who provided help) are also described (**Supplementary Table 1**).

Analytic procedure

To explore whether there were any underlying differences in demographic characteristics of the respondents at the two time periods, the 2003 and 2019 samples were compared in terms of age, relationship status, education attainment, access to an independent source of income, and area deprivation level using chi square tests.

Then, the prevalence rates of physical and sexual IPV were compared between two samples with results presented as percentages with 95% confidence intervals. As the results for "moderate" and "severe" and" physical IPV showed similar patterns to any physical IPV, in the following analyses, only the results for *any* physical IPV are presented. To identify evidence of differences in the estimated prevalence over time, odds ratio (OR) and 95% CIs for reported experience of physical and sexual IPV were calculated using univariate logistic regression models, with the study year as the predictor. The same procedure was followed for assessing differences in the attitudes towards gender roles, attitudes towards acceptability of a man hitting his wife, help sought, and help received between the study years. For help-seeking variables, the analyses were restricted to women who reported lifetime experience of physical or sexual IPV only.

Then, to determine if the noted differences in the prevalence rates of IPV between the two study years found in the univariate analyses remained significant after controlling for sociodemographic characteristics, the following steps were taken:

- First, the association between each socio-demographic characteristic and each type of IPV (lifetime or 12-month physical and sexual IPV) was explored using univariate logistic regression models with results presented as unadjusted odds ratios (OR) with 95%CIs.
- Second, multivariate analyses were conducted, with the study year and sociodemographic characteristics included, and results were presented as adjusted odds ratios (AOR) with 95% CIs.

Finally, to determine whether the noted changes in the reported prevalence rates were consistent across population subgroups, multivariate logistic regression models with interaction terms (between each sociodemographic characteristic and the study year) were tested. Potential confounders (e.g. age, education, relationship status, independent income, and area deprivation level) and the study year were included in these analyses.

All analyses were performed on a pooled dataset of the two samples. Missing data including: do not know, do not remember, and no responses were excluded from all analyses. All analyses were conducted using Stata/SE 15.1[25].

Results

Demographic Characteristics of the 2003 and 2019 Survey Respondents

Differences between two study samples in terms of sociodemographic characteristics are presented in **Table 1**. In general, there were more women over 45 years in 2019 (25.8%) compared with 2003 (15.5%). Additionally, a higher proportion of the sample had attained tertiary education in 2019 (66·5%) compared with 44.4% in 2003. A smaller proportion of women in 2019 reporting having an independent source of income (73.7%) compared to 79.4% in 2003. Finally, a smaller proportion of participants lived in the least deprived areas in 2019 (28.6%) compared with 2003 (34.3%).

Table 1. Demographic characteristics of ever-partnered women aged 18-64 years in 2003 and 2019 surveys

	2003	**2019**	**p value**
Age categories			0.001
18-24	182 (6.81)	45 (4.77)	
25-34	581(21.75)	169 (17.90)	

35-44	857(32.09)	218 (23.09)	
45-54	637(23.85)	268 (28.39)	
55-64	414(15.50)	244 (25.85)	
Current relationship status			0.8
Married	1685 (63.06)	601 (63.67)	
Cohabiting	574 (21.48)	201 (21.29)	
Divorced/separated/ broken up	353 (13.21)	117 (12.39)	
Widowed	60 (2.25)	25 (2.65)	
Education attainment			0.001
Primary /Secondary	1478 (56.5)	315 (33.5)	
Higher	1187 (44.4)	625 (66.5)	
Independent income			0.001
Yes	2122/2673 79.4	696/944 73.7	
No	551/2673 (20.6)	248/944 (26.3)	
Deprivation level			0.001
Least deprived	914 (34.3)	270 (28.6)	
Moderately deprived	1045 (39.2)	393 (41.6)	
Most deprived	708 (26.5)	281 (29.8)	

Data are n (Col%)

Characteristics of women reporting lifetime and past-12 months physical or sexual IPV

Lifetime physical IPV:

All sociodemographic factors were significantly associated with reporting lifetime physical IPV in the multivariate model, with the exception of "access to independent income". Women aged 25 years and above were more likely to report having experienced at least one act of lifetime physical IPV. Compared with married women, a higher proportion of women who were cohabiting, divorced, or widowed reported experiencing lifetime physical IPV. Similarly, those who were living in the moderately or most deprived areas were more likely to report the experience of a lifetime physical IPV compared with those living in the least deprived areas. A lower proportion of women with tertiary education reported having experienced lifetime physical IPV (Table 2).

Table 2. Characteristics of women reporting a lifetime and past-12 months **Physical IPV** in pooled database from two cross-sectional studies in New Zealand

	Lifetime		**Univariate Model Odds Ratio (95%CI)**	***Multivariate Model AOR (95%CI)**	**Past 12-month**		**Univariate Model Odds Ratio (95%CI)**	***Multivariate Model AOR (95%CI)**
	2003 n % (95%CI)	2019 n % (95%CI)			2003 n% (95%CI)	2019 n% (95%CI)		
Year (ref=2003)	856 32·0 (30.3-33.8)	291 30·9 (27.9-33.9)	0.95 (0.81-1.11)	0.99 (0.82-1.17)	118 4.4 (3.7-5.3)	19 2.0 (1.2-3.1)	0.44 (0.27-0.73)	0.53 (0.32-0.89)
Age categories								
18-24	53 29.1(22.6-36.3)	14 31.1(18.2-46.6)	1.00	1.00	18 9.9 (6.0-15.2)	4 8.9 (2.5-21.2)	1.00	1.00
25-34	210 36.1(32.2-40.2)	36 21.3(15.4-28.2)	1.17 (0.84-1.61)	1.77 (1.26-2.50)	49 8.4 (6.3-11.0)	4 2.4 (0.6-5.9)	0.71 (0.42-1.19)	0.91 (0.52-1.56)
35-44	278 32.5 (29.3-35.7)	71 32.6 (26.4-39.2)	1.15 (0.84-1.57)	2.14 (1.53-3.01)	35 4.1 (2.9-5.6)	2 0.92(1.1-3.3)	0.33 (0.19-0.57)	0.49 (0.27-0.87)
45-54	201 31.6 (28.0-35.3)	83 31.0 (25.5-36.9)	1.10 (0.80-1.51)	2.11 (1.49-2.98)	10 1.6 (0.8-2.9)	3 1.12 (0.2-3.2)	0.13 (0.06-0.27)	0.21 (0.10-0.45)
55-64	113 27.3 (23.0-31.9)	87 36.0 (29.9-42.3)	1.05 (0.75-1.46)	1.97 (1.37-2.84)	6 1.5 (0.5-3.1)	6 2.5 (0.9-5.3)	0.17 (0.08-0.36)	0.28 (0.13-0.60)
Relationship status								
Married	358 41.8 (38.5-45.1)	125 43.0 (37.4-48.7)	1.00	1.00	39 33.0 (25.1-42.1)	6 31.6 (14.5-55.7)	1.00	1.00
Cohabiting	272 31.8 (28.7-35.0)	85 29.2 (24.2-34.7)	3.19 (2.68-3.80)	3.53 (2.92-4.26)	46 39.0 (30.5-48.1)	5 26.3 (11.0-50.7)	3.5 (2.33-5.28)	2.35 (1.51-3.66)
Divorced/separated/ broken up	207 24.2 (21.4-27.2)	69 23.7 (19.2-28.9)	5.30 (4.30-6.53)	5.00 (4.04-6.20)	33 28.0 (20.5-36.8)	7 36.9 (18.2-60.5)	4.63 (2.0-7.17)	3.92 (2.47-6.23)
Widowed	19 2.2 (1.4-3.4)	12 4.1 (2.3-7.1)	2.14 (1.36-3.36)	1.87 (1.16-3.00)	0	1 5.3 (0.7-30.9)	0.60 (0.08-4.4)	0.75 (0.10-5.65)
Education Attainment								
Primary and secondary	519 35.1 (32.3-37.6)	108 34.5(29.2)	1.00	1.00	77 5.2 (4.1-6.5)	7 2.2 (0.9-4.5)	1.00	1.00
Tertiary level	332 28 (25.4-30.6)	182 29.1(25.6-32.8)	0.73 (0.64-0.84)	0.81 (0.69-0.95)	40 3.4 (2.4-4.6)	12 1.9 (1.0-3.3)	0.60 (0.42-0.85)	0.73 (0.50-1.06)
Independent income								
No	135 24.5 (21.0-28.4)	75 30.4 (24.7-36.5)	1.00	1.00	26 4.7 (3.1-6.8)	5 2.0 (0.7-4.7)	1.00	1.00
Yes	720 33.9 (31.9-36.0)	216 31.1 (27.6-34.7)	1.39 (1.16-1.66)	1.17 (0.97-1.41)	92 4.3 (3.5-5.3)	14 2.0 (2.1-3.3)	0.97 (0.64-1.45)	0.86 (0.55-1.32)
Deprivation level								
Least deprived	224 24.5 (21.7-27.4)	68 25.3 (20.2-30.9)	1.00	1.00	26 2.8 (1.9-4.1)	4 1.5 (0.4-3.8)	1.00	1.00
Moderately deprived	344	113	1.42 (1.20-1.69)	1.28 (1.07-1.53)	44	8	1.44 (0.91-2.27)	1.24 (0.77-1.97)

	32.9 (30.1-35.9)	28.7 (24.3-33.5)			4.2 (3.1-5.6)	2.0 (0.9-4.0)		
Mostly deprived	285 40.2 (36.6-44.0)	110 39.3 (33.5-45.3)	2.03 (1.69-2.44)	1.60 (1.31-1.96)	48 6.8 (5.0-8.9)	7 2.5 (1.0-5.1)	2.27 (1.44-3.57)	1.52 (0.94-2.46)

*AORs (Adjusted Odds ratios) are adjusted for age, education, relationship status, deprivation level, independent income, and the year of the study

Changes in physical IPV prevalence rates

Lifetime prevalence. The lifetime prevalence of physical IPV remained relatively unchanged between 2003 and 2019, with almost 30% of ever-partnered women aged 18-64 reporting having experienced at least one episode of physical violence (Table 3). After controlling for sociodemographic factors, adjusted odds ratios showed no significant difference in the reported prevalence rates of lifetime physical IPV between the two study years (AOR=0.99; 95%CI=0.82-1.17).

12-month prevalence. The 12—month prevalence rate of physical IPV decreased from 4·4 % in 2003 to 2·0% in 2019 (OR=0.44; 95%CI=0.27-0.73). The adjusted odds ratio showed that, after controlling for sociodemographic factors, the decrease in 12-month physical IPV was attenuated but still remained significant (AOR=0.53; 95%CI=0.32, 0.89).

Table 3. Characteristics of women with a lifetime and past-12 months **Sexual IPV** in pooled database from two cross-sectional studies in New Zealand

	Lifetime		Univariate Model Odds Ratio (95%CI)	*Multivariate Model AOR (95%CI)	Past 12-month		Univariate Model Odds Ratio (95%CI)	*Multivariate Model AOR (95%CI)
	2003 n % (95%CI)	2019 n % (95%CI)			2003 n % (95%CI)	2019 n % (95%CI)		
Year (ref=2003)	464 17.4 (15.9-18.8)	133 14.1 (11.9-16.5)	0.78 (0.63-0.96)	0.78 (0.62-0.98)	38 1.4 (1.00-1.9)	10 1.06 (0.5-1.9)	0.74 (0.37-1.50)	0.79 (0.37-1.71)
Age categories								
18-24	25 13.7 (9.0-19.6)	5 11.1(3.7-24.0)	1.00	1.00	8 4.4 (1.9-8.5)	0 0 (0-7.9)	1.00	1.00
25-34	105 18.1 (15.0-21.4)	18 10.7 (6.4-16.3)	1.29 (0.84-1.98)	1.87 (1.20-2.91)	13 2.2 (1.2-3.8)	2 1.2 (0.1-4.2)	0.55 (0.23-1.33)	0.64 (0.26-1.58)
35-44	154 18.0 (15.5-20.7)	31 14.2 (9.9-19.6)	1.37 (0.90-2.07)	2.42 (1.56-3.74)	10 1.2 (0.5-2.1)	4 1.8 (0.5-4.6)	0.36 (0.15-0.87)	0.50 (0.20-1.27)
45-54	106 16.6 (13.8-19.8)	39 14.6 (10.6-19.4)	1.25 (0.82-1.91)	2.37 (1.52-3.71)	5 0.8 (0.2-1.8)	2 0.8 (0.1-2.7)	0.21 (0.07-0.59)	0.31 (0.10-0.92)
55-64	73 17.6 (14.1-21.6)	40 16.4(12.0-21.6)	1.37 (0.88-2.11)	2.59 (1.62-4.12)	2 0.5 (.05-1.7)	2 0.8 (0.1-2.9)	0.17 (0.05-0.56)	0.21 (0.06-0.78)
Relationship status								
Married	165 35.6 (31.3-40)	58 43.6 (35.4-52.2)	1.00	1.00	13 34.2 (20.6-51.1)	5 50 (20.7-79.3)	1.00	1.00
Cohabiting	155 33.4 (29.2-37.8)	38 28.6 (21.5-36.9)	3.06 (2.47-3.80)	3.46 (2.75-4.36)	15 39.5 (24.9-56.2)	1 10 (1.2-50.9)	2.66 (1.34-5.23)	1.59 (0.75-3.36)
Divorced/separated/ broken up	131 28.2 (24.3-32.5)	34 25.5 (18.8-33.7)	5.00 (3.95-6.32)	4.80 (3.77-6.11)	10 26.3 (14.4-43.1)	3 30 (9-64.9)	3.58 (1.74-7.36)	2.78 (1.31-5.88)
Widowed	13 2.2 (1.6-4.8)	3 2.3 (0.7-6.8)	2.14 (1.22-3.75)	1.82 (1.02-3.25)	-	1 10 (1.2-50.9)	1.52 (0.20-11.50)	1.71 (0.21-13.72)
Education attainment								
Primary and secondary	291 19.7 (17.7-21.8)	54 17.1(13.1-21.8)	1.00	1.00	25 1.7 (1.1-2.5)	6 1.9 (0.7-4.1)	1.00	1.00

Tertiary level	172 14.5 (12.5-16.6)	78 12.5(10.0-15.3)	0.67 (0.56-0.80)	0.77 (0.64-0.94)	13 1.1 (0.5-1.9)	3 0.5 (0.1-1.4)	0.50 (0.27-0.93)	0.63 (0.33-1.19)
Independent income								
Yes	388 18.3 (16.7-20.0)	98 14.1 (11.6-16.9)	1.29 (1.03-1.61)	1.07 (0.84-1.35)	28 1.3 (0.9-1.9)	7 1.0 (0.4-2.1)	0.76 (0.40-1.44)	0.83 (0.41-1.65)
No	76 13.8 (11.0-17.0)	35 14.2 (10.1-19.1)	1.00	1.00	10 1.8 (0.9-3.3)	3 1.2 (0.2-3.5)	1.00	1.00
Deprivation level								
Least deprived	123 13.4 (11.3-15.8)	32 11.9 (8.3-16.4)	1.00	1.00	4 0.4 (0.1-1.1)	2 0.7 (0.09-2.6)	1.00	1.00
Moderately deprived	181 17.3 (15.1-19.8)	48 12.2 (9.2-15.9)	1.25 (1.01-1.56)	1.12 (0.89-1.41)	16 1.5 (0.9-2.5)	2 0.5 (0.06-1.8)	2.48 (0.98-6.28)	2.18 (0.86-5.54)
Mostly deprived	160 22.6 (19.5-25.9)	53 18.9 (14.5-24.0)	1.82 (1.45-2.28)	1.41 (1.10-1.80)	18 2.5 (1.5-4.0)	6 2.1 (0.8-4.6)	4.88 (1.99-12.00)	3.33 (1.31-8.43)

* AORs (Adjusted Odds ratios) are adjusted for age, education, relationship status, deprivation level, independent income, and the year of the stud

Changes in sexual IPV prevalence rates

Lifetime prevalence. A significant decrease in the reported lifetime prevalence of sexual violence was found in univariate analysis, from 17.4% in 2003 to 14.1% in 2019 (OR= 0.78; 95%CI=0.63-0.96). After controlling for sociodemographic variables, the noted significant decrease in the reported experience of lifetime sexual IPV remained unchanged (AOR=0.78; 95%CI=0.62-0.98).

12-month prevalence: No significant differences in the 12-month prevalence rates of sexual IPV between two study years was found in univariate analysis (approximately 1% in both study years) (OR=0.74, 95%CI=0.37-1.50). After controlling for sociodemographic factors, the nonsignificant difference in 12-month sexual IPV between two study years remained unchanged (AOR=0.79; 95%CI=0.37-1.71).

Past 12-month physical IPV. At the multivariate level, age and relationship status were significantly associated with reports of experiencing past 12-month physical IPV. A lower proportion of women aged 35 years and older reported experiencing past 12-month physical IPV compared with those younger than 35 years. A higher proportion of those who were cohabiting or divorced compared with those who were married reported this experience (Table 2).

Lifetime sexual IPV. At the multivariate level, age, relationship status, education attainment, and area deprivation level were significantly associated with lifetime sexual IPV. Women were more likely to report having experienced lifetime sexual IPV if they were: aged 25 and over; cohabiting, divorced or separated, or widowed; or living in the most deprived areas. Those who had some tertiary education were less likely to report lifetime experience of sexual IPV compared with those with primary or secondary education (Table 3).

Past 12-month sexual IPV

Those who were cohabiting or divorced/separated were more likely to report having experienced 12-month sexual IPV compared to married women. Those living in the most deprived areas were also more likely to report 12-month sexual IPV. Women aged 45 years and above were less likely to report having experienced sexual IPV in the past 12 months compared with younger women (Table 3).

There was a significant interaction between relationship status and the study year for reported lifetime sexual IPV. Fewer women who were not married but were cohabitating reported experience of lifetime sexual IPV in 2019 (28.6%) compared with 2003 (33.4%) (AOR=0.60, 95%CI= 0.40-0.90) (data not shown). No other interactions were significant for reported 12-month sexual IPV, or lifetime and 12-month physical IPV.

Changes in women's attitudes

In 2003, 47% agreed with at least one of the statements indicating agreement with traditional gender roles, compared with 35.3% in 2019. While not common in 2003 (3.7%), it was even less common in 2019 (2.1%) for women to agree with one or more justifications for a man to hit his wife. This decrease appears to be driven by fewer women agreeing with the statement that it is acceptable for a man to hit his wife if he finds out she has been unfaithful (3.2% agreement in 2003, 1.6% agreement in 2019) (Table 4).

Table 4. Prevalence rates and changes in women's attitudes toward traditional gender roles in relationship and attitudes toward acceptability of a man hitting his wife.

Attitude item	Freq % (95%CI)		Odds ratio (95%CI)	P value
	2003 (n=2850)	2019 (n=1039)		
Roles of women and men in relationships				
A good wife obeys her husband even if she disagrees	371 13.2 (11.9-14.5)	108 10.8 (8.9-12.8)	0.79 (0.63-0.99)	0.049
Family problems should only be discussed with people in the family	1076 38.2 (36.3-40.0)	274 27.1 (24.4-30.0)	0.60 (0.51-0.70)	0.001
It is important for a man to show his partner who is boss	201 7.1 (6.2-8.1)	32 3.1 (2.1-4.4)	0.42 (0.29-0.62)	0.001
A woman should be able to choose her own friends even if her husband disapproves (disagree)	169 6.0 (5.1-6.9)	66 6.5 (5.1-8.2)	1.09 (0.81-1.46)	0.549
It's a wife obligation to have sex with her husband even if she doesn't feel like	216 7.6 (6.7-8.7)	56 5.5 (4.2-7.1)	0.71 (0.52-0.96)	0.027
At least agreed with one statement	1337 46.9 (45.0-48.7)	365 35.3 (32.4-38.3)	0.62 (0.53-0.71)	0.001
Acceptability of a man hitting his wife				
She doesn't complete her household work to his satisfaction	9 0.3 (0.1-0.5)	5 0.5 (0.1-1.1)	1.53 (0.51-4.58)	0.4
She disobeys him	18 0.6 (0.3-1.0)	8 0.8 (0.3-1.5)	1.22 (0.53-2.83)	0.6
She refuses to have sex with him	9 0.3 (0.1-0.6)	5 0.5 (0.1-1.1)	1.53 (0.51-4.60)	0.4
She asks him whether he has other girlfriends	18 0.6 (0.4-1.0)	3 0.3 (0.05-0.8)	0.46 (0.13-1.56)	0.2
He suspects that she is unfaithful	36 1.3 (0.9-1.7)	8 0.8 (0.3-1.5)	0.61 (0.28-1.31)	0.2
He finds out she has been unfaithful	107 3.7 (3.1-4.5)	17 1.6 (0.9-2.6)	0.42 (0.25-0.72)	0.001
At least one	107/2748 3.7 (3.1-4.5)	22 2.1 (1.3-3.2)	0.55 (0.35-0.88)	0.014

Changes in help seeking behaviors

Overall, there was no difference in the proportion of women who had sought help from formal or informal sources, with three-quarters (75%) of women who had experienced IPV reporting that they had told someone about the violence in both survey years. With one exception, there was no change in usage of 'formal' responders (police, lawyer, court, health and mental health professionals) between the two study years. The exception was the increase in the proportion of women who sought help from community organizations such as women's refuge /NGOs/ women organisations/ or Marae (from 4.6% in 2003 to 7.5% in 2019). However, no significant increase in the reported proportion of women who indicated that they received help from these service providers was found (2003, 4.5%, 2019, 5.7%) (Table 5).

Table 5. Prevalence rates and changes in help sought and received help between 2003 and 2019 (for those who reported at least one type of sexual or physical IPV)

Source of help		*Help sought (Who you told about IPV)*				*Who helped you with IPV*			
		2003 (n=957)	2019 (n=322)	Odds ratio	P value	2003 (n=957)	2019 (n=322)	Odds ratio	P value
No one		223 23.3(20.6- 26.1)	89 27.6(22.8-32.9)	1.19 (0.89—1.58)	0.2	397 41.5 (38.3-44.7)	125 38.8 (33.5-44.4)	0.88 (0.68-1.13)	0.3
Informal sources		679 70.9 (67.9-73.7)	216 67.1 (61.6-72.2)	0.86 (0.65-1.12)	0.2	489 51.1 (47.9-54.3)	171 53.1 (47.5-58.7)	1.11 (0.86-1.43)	0.4
Formal sources	police/lawyer/court	132 13.8 (11.7-16.1)	49 15.2 (11.5-19.6)	1.08 (0..76-1.55)	0.6	89 9.3 (7.5-11.3)	31 9.6 (6.6-13.4)	1.00 (0.65-1.54)	0.9
	Women's refugee/NGO/women organization/Marae	44 4.6 (3.4 -6.1)	24 7.45 (4.8-10.9)*	1.70 (1.02-2.81)	0.04	43 4.5 (3.3-6.0)	19 5.7 (3.6-9.1)	1.29 (0.74-2.25)	0.3
	Health workers	125 13.1 (11-15.4)	40 12.4 (9.0-16.5)	0.91 (0.63-1.34)	0.6	71 7.4 (5.8-9.3)	26 8.07 (5.3-11.6)	1.06 (0.67-1.70)	0.8
	Counsellor	168 17.5 (15.2-20.1)	45 14 (10.4-18.2)	0.74 (0.52-1.05)	0.09	103 10.8 (8.9-12.9)	37 11.5 (8.2-15.5)	1.04 (0.70-1.55)	0.8
	At least one	294 30.7 (27.8-33.7)	93 28.9 (24.0-34.2)	0.89 (0.68-1.17)	0.4	203 21.2 (18.7-23.9)	67 20.8 (16.5-25.6)	0.94 (0.70-1.28)	0.7
Religious leader (priest in 2003)/church member		31 3.24(2.2-4.5)	4 1.2(0.3-3.1)	0.36 (0.12-1.04)	0.4	16 1.7 (0.9-2.7)	5 1.5 (0.3-3.1)	0.90 (0.32-2.48)	0.8

Discussion

Using population-based cross-sectional studies conducted in 2003 and 2019, we explored if there were changes in the lifetime and past 12-month prevalence rates of physical and sexual IPV reported by women. We also explored if there were changes in women's agreement with attitudes supportive of traditional gender roles, and attitudes that justified a man hitting his wife. Additionally, changes in help sought and help received by women exposed to IPV were investigated.

Our findings indicated that the lifetime prevalence of physical IPV remained relatively unchanged between 2003 and 2019, with almost one third (30%) of women in both surveys reporting having experienced at least one act of physical IPV in their lifetime. This rate is similar to reported prevalence rates from the EU 28-countries study (33%)[26], and the USA (30.6%)[27], and is comparable to the global average[28]. While lifetime prevalence of physical IPV was unchanged, there was a significant decrease in the proportion of women who reported experiencing 12-month physical IPV. Small reductions in rates for lifetime sexual IPV were also observed. Population changes in sociodemographic characteristics did not explain the decreases in IPV prevalence over time.

In 2003, 47% of women agreed one or more of the statements supportive of traditional gender roles, compared with 35.3% in 2019. These were low percentages of agreement compared with women in low- and middle- income countries[29-31]. Agreement with attitudes supportive of justifications for a man hitting his wife was low in both the 2003 (0.3%-3.7%) and 2019 surveys (0.3%-1.6%), and extremely low compared with results reported from low-and middle-income countries[32, 33], but comparable with high income countries[34]. Even with this low rate of agreement, change was still observed, with a significant reduction in agreement with the statement that it was "acceptable for a man to hit his wife if he found out she was unfaithful", from 3.7% in 2003 to 1.6% in 2019.

Overall, among women who experienced IPV, the rates of disclosure (telling someone about the violence) were high (77% in 2003, 73% in 2019), compared with findings from low- and middle income countries,[35, 36] and comparable with high income countries[37]. It should be noted, however, that most disclosures were made to informal sources, such as family or friends. There was a significant increase in seeking help from community organizations such as Women's

Refuges and other NGOs (4.6% in 2003, to 7.5% in 2019), but this is still only a minority of those who have experienced IPV. There was no change in "help received" from formal sources (21% in 2003, 21% in 2019). This warrants further attention, to determine if this is due to limited service capacity, or limits in the quality of help currently available.

Between 2003 and 2019, a number of actions were undertaken to address family violence. These included: changes in legislation (e.g. amendments to family violence law), and the introduction of prevention campaigns and programmes (e.g. the Family Violence: It's not ok national campaign[38], and Accident Compensation Corporation-funded Mates and Dates high schools programmes on healthy relationships[39]. These actions may have contributed to changes in societal awareness and understandings of attitudes supportive of violence against women, an interpretation supported by our findings on the changes in agreement with attitudes toward traditional gender roles and the non-acceptability of a man hitting his wife under difference circumstances. An additional feature of these actions was the call for those experiencing violence to reach out for help.[38] Our findings suggest that more women agreed that family problems could be discussed with outside help, and that more women who experienced IPV did contact refuges and other community organisations. However, this was still a very small minority (7.5%) of those who experienced IPV, which indicates that the majority of women are still not accessing specialised help for these experiences.

The observed reduction in 12-month prevalence of physical IPV is positive, and parallels overall reductions in crime rates reported by crime and victimisation surveys[40], and is similar to reductions in prevalence of IPV documented in Australia between 1996 and 2005[41]. It may be the result of more women recognising abusive behaviour and taking their own actions to leave abusive relationships. However, further efforts and investment are needed to ensure that those who ask for help actually receive help. There is a currently a gap between those who ask and those who indicate that helpful responses were forthcoming. However, the stability of the lifetime prevalence of physical IPV reinforces the need for comprehensive and sustained prevention work with those who use violence in relationships.

Strengths

Strengths include: the representativeness of the samples obtained, and the use of comparable methods and comparable questions across the two survey waves. Additionally, the 15 year time gap between the two survey waves is sufficient to determine if real change occurred[12].

Limitations

Changes between two time points are not sufficient to determine if the change represents a trend, so caution is needed when interpreting the changes observed. Overall, the prevalence estimate obtained may be under-reports of what is happening in the population as a whole, either because of stigma [42], or because of the overall response rate for the study. While we successfully surveyed over 60% of eligible women, those with greater levels of exposure to violence may be less likely to have participated.

Conclusion

The observed reduction in 12-month physical and lifetime sexual IPV prevalence rates, changes in attitudes about the acceptability of violence, and the increases in help seeking are positive. However, work is still needed to address the substantial problem of IPV, as the lifetime prevalence rate of 1 in 3 women experiencing IPV remained stable over the 15-year time interval. This means that prevention efforts must be increased and sustained, and that adequate structures and resources must be available to respond to those seeking help.

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Contributors: Janet Fanslow (JF), Pauline Gulliver (PG), contributed to the conception and design of the study. Tracey McIntosh (TM) contributed to the application for funding of 2019 study. Ladan Hashemi (LH) managed the data cleaning, and conducted the analyses, with contributions from Zarintaj Malihi (ZM). LH, JF and PG interpreted the data, drafted the article and revised it. All authors contributed to the manuscript and approved the final version.

Ethics approval was granted by the University of Auckland Human Participants Ethics Committee in 2003 (Ref number: 2002/199) and 2019 (Reference number 2015/ 018244).

Data availability statement Data are unavailable due to the confidentiality and sensitivity of the data and Māori data sovereignty.

Competing interests hereby we confirm that all authors read and understood BMJ policy on declaration of interests and have completed the ICMJE uniform disclosure form at http://www.icmje.org/coi_disclosure.pdf and declare that we received: no support from any organisation for the submitted work (or describe if any); no financial relationships with any organisations that might have an interest in the submitted work in the previous three years.

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Supplementary Table 1. Definition of lifetime and past 12-month physical and sexual IPV, sociodemographic factors, attitude toward violence against women and gender roles, and help seeking behaviours in 2003 and 2019 surveys

Variable	Definition
Ever-partnered	If they had ever been married, ever lived with, or were currently with a regular sexual partner.
Lifetime Physical IPV	Participants were categorised as experiencing lifetime physical IPV if they reported having experienced one or more of the following moderate or severe acts of physical violence. **Moderate**: Have been slapped or had something thrown at or have been pushed, shoved, or had their hair pulled **Severe**: Have been kicked, dragged, beaten up, hit with fist or something else, chocked or burnt
12-Month Physical IPV	Participants were categorised as experiencing 12-month physical IPV if they reported having experienced one or more acts of the physical IPV in the last 12 months prior to the data collection
Sexual IPV	Participants were categorised as experiencing lifetime sexual IPV if they reported having experienced one or more of the following acts: being physically forced to have sexual intercourse when the woman did not want to; having sexual intercourse because she was afraid of what her partner might do or being forced to do something sexual that she found degrading or humiliating.
12-Month Sexual IPV	Participants were categorised as experiencing 12-month sexual IPV if they reported having experienced one or more acts of the sexual IPV in the last 12 months prior to the data collection
Independent source of income	Have access to income from wages or investments, retirement income (yes or no).
Deprivation level	Taken from NZ index of multiple deprivation (IMD) [44] which used a combination of routinely collected data from government departments and census data in seven domains (i.e. employment, income, crime, housing, health, education, and access to services) to develop a measure of deprivation at the neighborhood level. Participants were classified in three groups: living in least, moderately and most deprived area.
Attitudes toward a man hitting his wife	Participant opinion on six conditions under which hitting or beating one's wife was considered justified : she doesn't complete her household work to his satisfaction; she disobeys him; she refuses to have sex with him; she ask him whether he has other girlfriends; he suspects that she is unfaithful; he finds out that she has been unfaithful. Response options were yes and no.
Attitudes toward gender roles	Participant's attitude about acceptable behaviour for men and women in relationships, and views on family issues being made public: A good wife obeys her husband even if she disagrees; family problems should only be discussed with people in the family; it is important for a man to show his partner who is boss; a woman should be able to choose her own friends even

	if her husband disapproves; it is a wife's obligation to have sex with her husband even if she doesn't feel like it
Formal help-seeking	Contact with service agencies including: police, lawyers, courts, health professionals and mental health workers, or NGOs and community based service providers, including Women's Refuges, and Marae.
Informal help seeking	Support from family, friends, neighbours, or workmates.

STROBE 2007 (v4) checklist of items to be included in reports of observational studies in epidemiology*

Checklist for cohort, case-control, and cross-sectional studies (combined)

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2-4
Objectives	3	State specific objectives, including any pre-specified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4-5
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	4-5
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	NA
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6, Supplementary table
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6, Supplementary table
Bias	9	Describe any efforts to address potential sources of bias	7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-7
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6-7
		(*b*) Describe any methods used to examine subgroups and interactions	6-7
		(*c*) Explain how missing data were addressed	7
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed	NA

		Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy	
		(*e*) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	4-5
		(b) Give reasons for non-participation at each stage	4-5
		(c) Consider use of a flow diagram	
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 5, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	NA
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	NA
		Cross-sectional study—Report numbers of outcome events or summary measures	Table 2 & Table 3
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 2 and Table 3
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	19
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	21
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	20
Generalisability	21	Discuss the generalisability (external validity) of the study results	19
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	2

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.
Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Change in prevalence rates of physical and sexual intimate partner violence against women: Data from two cross-sectional studies in New Zealand, 2003 and 2019

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Change in prevalence rates of physical and sexual intimate partner violence against women: Data from two cross-sectional studies in New Zealand, 2003 and 2019

Abstract

Objectives: To explore changes in reported prevalence of physical and sexual intimate partner violence (IPV) between 2003 and 2019. The impact of socio-demographic differences between the two samples and between group differences were also examined. Changes in attitudes supportive of violence and in help-seeking behaviour following disclosure were also explored.

Design: Two cross-sectional studies

Setting and participants: Cross-sectional studies on family violence conducted in New Zealand in 2003 and 2019. Ever-partnered female respondents aged 18-64 years old were included (2003 n=2,674, 2019 n=944).

Main outcome measures: Prevalence rates of lifetime and past 12-month physical and sexual IPV, attitudes towards gender roles and acceptability of a man hitting his wife, help sought, and received following disclosure were compared between the study years.

Results: Lifetime prevalence of physical IPV was unchanged between 2003 and 2019 (AOR=0.89; 95% CI=0.73-1.08). There was a significant decrease in the proportion of women who reported experiencing 12-month physical IPV (AOR=0.53; 95% CI=0.29-0.97). Small reductions in rates for lifetime sexual IPV were also observed (AOR=0.74; 95%CI=0.59-0.95). In 2019, fewer women agreed with one or more statements supportive of traditional gender roles (48.1%; 95% CI= 45.7-50.5 in 2003; 38.4.3% (95% CI=33.8-43.2 in 2019). A significant decrease was noted in the proportion of women who sought help from informal sources (from 71.3% [95% CI= 68.1-74.2] in 2003 to 64.6% [95% CI= 58.7-70.1] in 2019). No significant changes in seeking help from formal sources, or perceived helpfulness from any source were noted.

Conclusion: While the reduction in 12-month physical and lifetime sexual IPV are positive, prevention efforts need to be established, maintained and strengthened to address the substantial lifetime prevalence of IPV. Efforts to strengthen responses from formal and informal sources continue to be needed.

Strengths and limitations of this study

- The current investigation used large, representative samples of women from population-based surveys in 2003 and 2019.
- Regular and comparable surveys of violence exposure, agreement to attitudes supportive of violence and help-seeking behaviours provide an understanding of the effectiveness of population-based policies and programmes.
- True prevalence estimates may be higher in both surveys as it is expected that women in severely abusive relationships would be unable or unwilling to participate.
- Observed changes may reflect societal changes or environmental factors not considered in this investigation.
- Regular and comparable surveys of violence exposure are required to determine if the observed changes are sustained and represent a trend.

Introduction

Intimate Partner Violence (IPV) has been reported by the UN Secretary-General (2006) as "the most common form of violence experienced by women globally."[1] IPV includes physical and sexual violence, as well as psychological abuse, controlling behaviour and economic abuse.

Efforts to respond to IPV in high income countries include the introduction of legislation or national action plans, and strengthening the non-for-profit sector to respond to the violence experienced.[2] However, the effectiveness of these strategies is not clear, as there is a lack of consistent and reliable data available to monitor changes in the prevalence of IPV over time.

The limited research available tends to rely on analysis of IPV homicide data, or other forms of administrative data from agencies such as health providers, police or courts.[2] While providing useful insights, these data do not reflect the magnitude of the problem at the population level, as many who experience IPV frequently do not present to services, or the underlying cause of their presentation may not be identified or recorded.[2, 3]

Other attempts to measure changes in IPV occurrence over time have relied on data from general crime victimisation surveys,[4] but the overall framing of these questionnaires (i.e., surveys about 'crime') tends to lower the reporting of the violent behaviours within intimate relationships.[2, 3] Surveys conducted for other purposes (e.g., health surveys) which include a dedicated module on family violence provide some information, but can also be problematic,

as space limitations for specific modules means that they might not be able to include questions that canvas the full range of violent experiences.[5]

The emerging consensus is that 'population-based stand-alone surveys are the instruments of choice' for collecting statistics on violence against women.[6] To date, specific violence against women surveys have been carried out in several high-income countries (for examples U.S.A.,[7] Canada,[8] Australia,[9] European Union,[10] Finland,[11, 12] Spain,[13] New Zealand[14]). However, with an exception of Australia and Finland, the surveys have generally been one-off efforts and thus do not allow for time-related comparisons. Without regular, comparable surveys, it is not possible to determine if there are overall changes in the occurrence of IPV, or if there are differential patterns of change for specific sub-groups within the population.

According to the World Health Organization, violence results from the complex interplay between individual, relationship, social, cultural and environmental factors.[15] The ecological model has been important in helping determine risk and protective factors associated with violence occurrence, but also holds promise for prevention, as it carries the assumption that changes in contributing factors can potentially lead to changes in prevalence.[16] To date, the limited research that has explored differences in the prevalence of IPV over time has suggested that population-level changes in demographic factors, such as shifts in age, education, relationship status, and socio-economic factors may contribute to the observed prevalence changes.[4, 6, 17, 18] However, changes in environmental and social norms that may condone or help perpetuate violence, and associated effects on violence occurrence have received scant attention in the research.

Community-level norms, such as acceptance of 'traditional" gender roles and beliefs in the justification of 'circumstances in which it is acceptable for a man to hit his wife ' are associated with perpetration of IPV.[19] In some countries, women's acceptance of these attitudes has been found to be associated with increased risk of IPV victimisation.[20] For these reasons, attitudes have been a key target of community education campaigns aimed at preventing violence against women.[21] However, to date, there has been little examination of the effectiveness of these initiatives at changing attitudes, or on any associated changes in violence rates.[21-23]

New Zealand is one of few high-income countries where more than one comprehensive population-based survey of violence against women has been conducted: the first survey was conducted in 2003, and the second survey in 2019. Between the two surveys, a series of actions were taken to address family violence including; legislation (e.g. amendments to family violence law and protection for victims act), and prevention campaigns (e.g. the Family Violence: It's not ok national campaign, and the ACC-funded mates and dates high schools programme on healthy relationships). Many of these initiatives have focussed on addressing physical and sexual violence and have included strong messaging about the importance of help-seeking by those experiencing violence. Comparable surveys on attitudes supporting violence over time may provide evidence about the impact of such campaigns at the population level.

In the current study, using data from two New Zealand cross-sectional population-based surveys we aimed to: (a) describe changes in the reported prevalence rates of physical and sexual IPV between 2003 and 2019, (b) examine whether changes in women's sociodemographic characteristics were associated with changes in IPV prevalence rates, and (c) determine whether changes in the reported prevalence rates were consistent across population subgroups. We also sought to determine if there were (d) changes in attitudes supportive of violence and (e) changes in help-seeking for those who reported experiencing IPV.

Method

Procedure and participants

Data was drawn from two cross-sectional studies on family violence conducted in New Zealand in 2003 and 2019. A comprehensive description of the methods used in the 2003 and 2019 surveys have been previously presented.[14, 24] A brief description of the two surveys is presented here.

The 2003 study was conducted in Auckland and Waikato regions. For the 2019 study, Northland was also included in the sampling.

Sampling strategies were similar in both surveys. A population-based cluster sampling scheme with a fixed number of dwellings per cluster was used for both studies. Primary sampling units (PSUs) were based on meshblock boundaries which contain between 50 and 100 dwellings. The starting point consisted of a randomly selected street and street number within each PSU. Interviewers made up to seven visits to each selected household to identify and recruit study participants. Non-residential, aged-care and short-term residential properties were excluded from both surveys. Interviewer training and support procedures were comparable across survey waves.

Eligibility: To be eligible to participate in the survey, household members needed to be able to speak conversational English, have lived in the household for at least one month and slept in the house for four or more nights a week.

Of the households invited, 88.3% in 2003 and 78% in 2019 agreed to participate. Of the eligible women, 75.8% in 2003 and 63.7% in 2019 participated, yielding an overall response rate of 66.9% in 2003 and 63.7% in 2019. Figure 1 demonstrates the number of people invited and those who were interviewed and included in the analyses for each survey year.

Participants of the 2003 study were 2855 women aged 18-64 years. In 2019, the eligible population was expanded to include women and men aged 16 years and older resulting in 2,888 completed interviews (n=1464 women, n=1423 men, n=1 other). For the purpose of this paper, only ever-partnered women aged 18-64 years from each sample were included, equivalent to almost 94% of all women aged 18-64 years surveyed in both waves (2003, n= 2674; 2019, n=944).

Representativeness: In both surveys, the ethnicity, marital status, and area-level deprivation distribution of the samples were closely comparable to the general population, however both samples were under-represented for younger women (ages 20-29 in 2003, 16-29 in 2019).[14, 24] Demographic characteristics of ever-partnered women aged 18-64 years in the 2003 and 2019 surveys are presented in Table 1.

Safety and ethics considerations

Ethics and safety recommendations for research on violence against women were followed throughout the research.[25] One individual was randomly selected from each household for the interview. In households with more than one eligible resident, the participant was randomly

selected. Interviews were conducted in privacy with no one over the age of two years present. At the completion of the interview, interviewers provided all respondents with a list of approved support agencies regardless of disclosure status. Written informed consent was obtained from all participants.

Ethics approval was granted through the University of Auckland human participants' ethics committee (reference number 2002/199 for the 2003 study, and 2015/018244 for the 2019 study).

Patient and Public involvement

No patients or members of the public were involved in the design, conduct or reporting or dissemination plans of our research.

Study instrument and measures

To collect data, the WHO Multi-Country Study on Women's Health and Domestic Violence Against Women (WHO MCS) [26] was used in both surveys.

'Intimate partners' included male current or ex-partners that the women were married to or had lived with, or current regular male sexual partners. Definitions are presented in Supplementary Table 1 for: physical and sexual IPV; socio-demographic characteristics; attitudes towards gender roles, acceptance of attitudes justifying a man hitting his wife, and sources of help sought (who was told about the IPV) and help received (sources who provided help. All questions used for analyses were identical in the two surveys.

Analytic procedure

To explore whether there were any underlying differences in demographic characteristics of the respondents at the two time periods, the 2003 and 2019 samples were compared in terms of age, relationship status, education attainment, access to an independent source of income, and area-level deprivation using chi square tests.

Then, the prevalence rates of physical and sexual IPV were compared between two samples with results presented as percentages with 95% confidence intervals (CIs). As the results for "moderate" and "severe" physical IPV showed similar patterns to any physical IPV, in the following analyses, only the results for *any* physical IPV are presented. Any act of sexual IPV was considered as severe. To identify evidence of differences in the estimated prevalence over time, odds ratio (OR) and 95% CIs for reported experience of physical and sexual IPV were calculated using univariate logistic regression models, with the study year as the predictor. The

same procedure was followed for assessing differences in women's attitudes towards gender roles, attitudes towards acceptability of a man hitting his wife, help sought, and help received between the study years. For help-seeking variables, the analyses were restricted to women who reported lifetime experience of physical or sexual IPV only.

Then, to determine if the noted differences in the prevalence rates of IPV between the two study years found in the univariate analyses remained significant after controlling for sociodemographic characteristics, the following steps were taken:

- First, the association between each socio-demographic characteristic and each type of IPV (lifetime or 12-month physical and sexual IPV) was explored using univariate logistic regression models with results presented as unadjusted odds ratios (OR) with 95%CIs.
- Second, multivariate analyses were conducted, with the study year and sociodemographic characteristics included, and results were presented as adjusted odds ratios (AOR) with 95% CIs.

Finally, to determine whether the noted changes in the reported prevalence rates were consistent across population subgroups, multivariate logistic regression models with interaction terms (between each sociodemographic characteristic and the study year) were tested. Potential confounders (e.g. age, education, relationship status, independent income, and area-level deprivation) and the study year were included in these analyses.

All analyses were performed on a pooled dataset of the two samples. Missing data including: do not know, do not remember, and no responses were excluded from all analyses. Less than 4% of any variable had missing data in both surveys. All analyses were conducted using Stata/SE 15.1[27] survey commands to allow for stratification by sample location (region), clustering by primary sampling units (PSU), and weighting of data to account for the number of eligible participants in each household.

Results

Differences between two study samples in terms of sociodemographic characteristics are presented in Table 1. In general, there were more women over 45 years in 2019 (51.4%) compared with 2003 (39.3%). Additionally, a higher proportion of the sample had attained

tertiary education in 2019 (65.1%) compared with 44.8% in 2003. A smaller proportion of women in 2019 reporting having an independent source of income (72.5%) compared to 79.5% in 2003.

Table 1. Demographic characteristics of ever-partnered women aged 18-64 years in 2003 and 2019 surveys

	2003	**2019**	**p value**
Total sample	**n=2674**	**n=944**	
Age categories	n (%)*	n (%)*	0.001
18-24	182 (8.6)	45 (6.7)	
25-34	581(21.9)	169 (17.4)	
35-44	857(30.2)	218 (21.5)	
45-54	637(24.6)	268 (30.8)	
55-64	414(14.7)	244 (23.3)	
Relationship status			0.4
Married	1685 (61.4)	601 (63.3)	
Cohabiting	574 (22.1)	201 (21.2)	
Divorced/separated/ broken up	353 (14.3)	117 (12.6)	
Widowed	60 (2.1)	25 (2.9)	
Education attainment			0.001
Primary /Secondary	1478 (55.2)	315 (34.8)	
Higher	1187 (44.8)	625 (65.1)	
Independent income			0.0007
Yes	2122 (79.5)	696 (72.5)	
No	551 (20.4)	248 (27.0)	
Area—level deprivation			0.1
Least deprived	914 (33.6)	270 (26.8)	
Moderately deprived	1045 (38.8)	393 (39.8)	
Most deprived	708 (27.5)	281 (33.4)	

Data are n (Col%)

*Weighted % are presented

Table 2. Characteristics of women reporting lifetime and past-12 month **Physical IPV** in the pooled database from two cross-sectional studies in New Zealand

	Lifetime		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)	Past 12-month		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)
	2003 n % (95%CI)*	2019 n % (95%CI)*			2003 n % (95%CI)*	2019 n % (95%CI)*		
Year (ref=2003)	856 32.2 (30.2-34.2)	291 29.1 (25.8-32.7)	0.86 (0.71-1.04)	0.89 (0.73-1.08)	118 5.0 (4.1-6.1)	19 2.4 (1.5-3.8)	0.46 (0.27-0.79)	0.53 (0.29-0.97)
Age categories								
18-24	53 28.1 (21.6-35.7)	14 24.4 (13.3-40.3)	1.00	1.00	18 9.4 (5.7-14.9)	4 9.7 (3.4-24.6)	1.00	1.00
25-34	210 37.7 (33.6-42.0)	36 20.6 (15.0-27.6)	1.36 (0.95-1.95)	2.11 (1.43-3.13)	49 10.0 (7.5-13.3)	4 2.4 (0.8-6.7)	0.87 (0.48-1.55)	1.09 (0.59-2.02)
35-44	278 32.9 (29.4-36.5)	71 32.9 (25.9-40.8)	1.31 (0.92-1.85)	2.58 (1.75-3.82)	35 4.7 (3.2-6.9)	2 0.7 (0.2-3.1)	0.39 (0.21-0.73)	0.60 (0.29-1.21)
45-54	201 30.9 (27.2-34.9)	83 28.0 (22.2-34.6)	1.14 (0.80-1.63)	2.38 (1.60-3.54)	10 1.7 (0.9-3.2)	3 1.7 (0.5-5.3)	0.16 (0.08-0.35)	0.28 (0.12-0.64)
55-64	113 27.3 (23.0-32.0)	87 34.9 (29.0-41.4)	1.15 (0.81-1.65)	2.37 (1.58-3.56)	6 1.3 (0.6-2.9)	6 2.6 (1.1-5.8)	0.17 (0.08-0.37)	0.30 (0.13-0.68)
Relationship status								
Married	358 21.2 (19.1-23.4)	125 19.8 (16.5-23.7)	1.00	1.00	39 2.5 (1.8-3.4)	6 1.1 (0.4-2.6)	1.00	1.00
Cohabiting	272 46.7 (42.3-51.2)	85 40.3(33.0-48.0)	3.11 (2.58-3.76)	3.75 (3.04-4.64)	46 9.1 (6.6-12.3)	5 3.6 (1.4-8.9)	3.88 (2.48-6.06)	2.68 (1.58-4.54)
Divorced/separated/ broken up	207 57.8 (52.4-63.0)	69 53.4 (43.2-63.2)	4.98 (3.98-6.22)	4.84 (3.84-6.08)	33 10.6 (7.4-15.0)	7 6.7 (3.1-14.0)	5.01 (3.10-8.12)	4.27 (2.63-6.94)
Widowed	19 28.8 (18.9-41.2)	12 44.1 (25.6-64.4)	1.96 (1.22-3.14)	1.71 (1.05-2.78)	0	1 2.9 (0.4-18.4)	0.48 (0.06-3.57)	0.65 (0.08-5.00)
Education Attainment								
Primary and secondary	519 34.6 (32.0-37.4)	108 31.1 (24.9-38.1)	1.00	1.00	77 5.5 (4.3-6.8)	7 3.2 (1.4-7.1)	1.00	1.00
Tertiary level	332 28.9 (26.2-31.8)	182 28.1 (24.2-32.3)	0.78 (0.66-0.91)	0.87 (0.73-1.03)	40 4.3 (3.1-6.0)	12 2.0 (1.1-3.5)	0.68 (0.47-1.00)	0.82 (0.54-1.25)
Independent income								
No	135 26.0 (21.8-30.7)	75 28.2 (22.4-34.7)	1.00	1.00	26 6.3 (4.0-9.9)	5 1.9 (0.7-4.7)	1.00	1.00
Yes	720 33.8 (31.5-36.1)	216 29.5 (25.6-33.6)	1.33 (1.08-1.63)	1.10 (0.90-1.36)	92 4.7 (3.8-5.8)	14 2.6 (1.5-4.5)	0.85 (0.52-1.38)	0.71 (0.39-1.27)
Area-level deprivation								
Least deprived	224 25.9 (22.8-29.3)	68 22.7 (18.2-27.9)	1.00	1.00	26 3.3 (2.0-5.3)	4 1.3 (0.5-3.3)	1.00	1.00
Moderately deprived	344	113	1.34 (1.11-1.63)	1.21 (1.00-1.48)	44	8	1.54 (0.89-2.65)	1.34 (0.78-2.28)

	32.1 (29.0-35.2)	28.5 (23.5-34.1)			4.7 (3.5-6.2)	3.2 (1.5-6.6)		
Mostly deprived	285 40.1 (36.1-44.2)	110 34.9 (27.9-42.7)	1.86 (1.50-2.30)	1.54 (1.24-1.91)	48 7.8 (5.8-10.3)	7 2.3 (1.1-4.8)	2.23 (1.29-3.82)	1.50 (0.89-2.54)

* Weighted % and 95%CIs are presented.

**AORs (Weighted Adjusted Odds Ratios) are adjusted for age, education, relationship status, area-deprivation level, independent income, and the year of the study

Physical IPV

Changes in physical IPV prevalence rates

Lifetime physical IPV prevalence. The lifetime prevalence of physical IPV remained relatively unchanged between 2003 and 2019, with almost 30% of ever-partnered women aged 18-64 reporting having experienced at least one episode of physical violence (Table 2). After controlling for sociodemographic factors, adjusted odds ratios showed no significant difference in the reported prevalence rates of lifetime physical IPV between the two study years (AOR=0.89; 95%CI=0.73-1.08).

12-month physical IPV prevalence. The 12-month prevalence of physical IPV decreased from 5 % in 2003 to 2·4% in 2019 (OR=0.46; 95%CI=0.27-0.79). The adjusted odds ratio showed that, after controlling for sociodemographic factors, the decrease in 12-month physical IPV was attenuated but still remained significant (AOR=0.53; 95%CI=0.29-0.97).

Characteristics of women reporting lifetime and past-12 months physical IPV

Lifetime physical IPV:

All sociodemographic factors were significantly associated with reporting lifetime physical IPV in the multivariate model, with the exception of "access to independent income" and "educational attainment". Women aged 25 years and above were more likely to report having experienced at least one act of lifetime physical IPV. Compared with married women, a higher proportion of women who were cohabiting, divorced, or widowed reported experiencing lifetime physical IPV. Similarly, those who were living in the moderately or most deprived areas were more likely to report the experience of lifetime physical IPV compared with those living in the least deprived areas (Table 2).

Past 12-month physical IPV. At the multivariate level, age and relationship status were significantly associated with reports of experiencing past 12-month physical IPV. A lower proportion of women aged 45 years and older reported experiencing past 12-month physical IPV compared with those younger than 45 years. A higher proportion of those who were cohabiting or divorced compared with those who were married reported this experience (Table 2).

Table 3. Characteristics of women with lifetime and past-12 month **Sexual IPV** in the pooled database from two cross-sectional studies in New Zealand

	Lifetime		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)	Past 12-month		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)
	2003 n % (95%CI)*	2019 n % (95%CI)*			2003 n % (95%CI)*	2019 n % (95%CI)*		
Year (ref=2003)	464 16.9 (15.4-18.6)	133 13.1 (11.0-15.4)	0.74 (0.59-0.92)	0.74 (0.59-0.95)	38 1.8 (1.3-2.6)	10 0.9 (0.5-1.9)	0.50 (0.23-1.10)	0.50 (0.19-1.35)
Age categories								
18-24	25 14.2 (9.6-20.5)	5 7.3 (2.3-20.6)	1.00	1.00	8 5.6 (2.7-11.1)	0	1.00	1.00
25-34	105 17.7 (14.7-21.2)	18 10.3 (6.5-15.8)	1.32 (0.83-2.10)	1.92 (1.18-3.14)	13 2.8 (1.5-5.2)	2 1.0 (0.2-3.8)	0.54 (0.21-1.41)	0.62 (0.23-1.70)
35-44	154 17.6 (15.0-20.5)	31 13.9 (9.6-19.8)	1.40 (0.89-2.20)	2.54 (1.56-4.12)	10 1.2 (0.4-3.0)	4 0.5 (0.1-2.2)	0.32 (0.12-0.85)	0.46 (0.17-1.24)
45-54	106 15.9 (13.0-19.3)	39 13.6 (9.9-18.3)	1.24 (0.78-1.97)	2.43 (1.46-4.03)	5 0.4 (0.1-1.7)	2 0.7 (0.2-2.9)	0.22 (0.07-0.66)	0.34 (0.11-1.09)
55-64	73 17.6 (14.0-21.9)	40 15.4 (11.3-20.7)	1.40 (0.89-2.21)	2.78 (1.67-4.62)	2 0.8 (0.4-1.6)	2 0.7 (0.2-1.9)	0.12 (0.04-0.42)	0.18 (0.05-0.63)
Relationship status								
Married	165 9.7 (8.3-11.3)	58 9.0 (6.9-11.7)	1.00	1.00	13 3.4 (2.0-5.7)	5 0.4 (0.05-2.8)	1.00	1.00
Cohabiting	155 25.6 (22.1-29.5)	38 18.1 (12.8-25.0)	2.94 (2.33-3.71)	3.52 (2.72-4.58)	15 4.1 (2.0-7.9)	1 2.7 (0.8-8.6)	3.30 (1.55-7.02)	2.01 (0.85-4.73)
Divorced/separated/ broken up	131 34.3 (28.9-40.1)	34 25.7 (18.7-34.2)	4.50 (3.48-5.82)	4.42 (3.39-5.76)	10 4.1 (2.0-7.9)	3 2.7 (0.8-8.6)	4.82 (2.11-11.0)	3.89 (1.71-8.85)
Widowed	13 19.7 (11.7-31.2)	3 8.8 (2.8-24.8)	1.81 (1.02-3.20)	1.58 (0.88-2.82)	0	1 2.9 (0.4-18.5)	1.27 (0.16-9.90)	1.55 (0.20-12.19)
Education attainment								
Primary and secondary	291 19.2 (17.2-21.5)	54 14.8 (11.0-19.6)	1.00	1.00	25 2.0 (1.3-3.2)	6 1.7 (0.7-4.0)	1.00	1.00
Tertiary level	172 14.1 (12.2-16.3)	78 12.1 (9.7-15.1)	0.69 (0.57-0.83)	0.77 (0.64-0.94)	13 1.6 (0.9-2.8)	3 0.4 (0.1-1.2)	0.58 (0.300-1.12)	0.77 (0.36-1.62)
Independent income								
Yes	388 17.7 (16.0-19.5)	98 13.2 (10.9-16.0)	1.25 (0.98-1.60)	1.05 (0.81-1.35)	28 1.7 (1.1-2.5)	7 0.9 (0.4-2.2)	0.79 (0.39-1.59)	0.76 (0.34-1.69)

No	76 14.1 (11.2-17.7)	35 12.6 (9.0-17.6)	1.00	1.00	10 2.4 (1.2-4.5)	3 0.9 (0.3-2.9)	1.00	1.00
Area-deprivation level								
Least deprived	123 13.2 (11.0-15.7)	32 11.8 (8.2-16.7)	1.00	1.00	4 0.6 (0.2-1.6)	2 0.9 (0.2-4.0)	1.00	1.00
Moderately deprived	181 16.9 (14.6-19.4)	48 12.0 (9.1-15.7)	1.24 (0.98-1.57)	1.12 (0.88-1.44)	16 2.1 (1.2-3.5)	2 0.4 (0.06-3.0)	2.46 (0.92-6.59)	2.16 (0.79-5.94)
Mostly deprived	160 21.8 (18.5-25.5)	53 15.3 (11.6-19.9)	1.66 (1.29-2.15)	1.36 (1.03-1.78)	18 3.1 (1.8-5.1)	6 1.5 (0.7-3.4)	3.95 (1.52-10.25)	2.78 (1.04-7.40)

* Weighted % and 95%CIs are presented.

[*] AORs (Weighted Adjusted Odds Ratios) are adjusted for age, education, relationship status, area-deprivation level, independent income, and the year of the study.

Sexual IPV

Changes in sexual IPV prevalence rates

Lifetime prevalence. A significant decrease in the reported lifetime prevalence of sexual IPV was found in univariate analysis, from 16.9% in 2003 to 13.1% in 2019 (OR= 0.74; 95%CI=0.59-0.92). After controlling for sociodemographic variables, the significant decrease in the reported experience of lifetime sexual IPV remained unchanged (AOR=0.74; 95%CI=0.59-0.95).

12-month prevalence. No significant differences in the 12-month prevalence rates of sexual IPV between two study years was found in univariate analysis (approximately 1% in both study years) (OR=0.50, 95%CI=0.23-1.10). After controlling for sociodemographic factors, the nonsignificant difference in 12-month sexual IPV between two study years remained unchanged (AOR=0.50; 95%CI=0.19-1.35).

Characteristics of women reporting lifetime and past-12 months sexual IPV

Lifetime sexual IPV. At the multivariate level, age, relationship status, education attainment, and area-deprivation level were significantly associated with lifetime sexual IPV. Women were more likely to report having experienced lifetime sexual IPV if they were: aged 25 and over; cohabiting, divorced or separated, or widowed; or living in the most deprived areas. Those who had some tertiary education were less likely to report lifetime experience of sexual IPV compared with those with primary or secondary education (Table 3).

Past 12-month sexual IPV. Those who were divorced/separated were more likely to report having experienced 12-month sexual IPV compared to married women. Those living in the most deprived areas were also more likely to report 12-month sexual IPV. Women aged 55 years and above were less likely to report having experienced sexual IPV in the past 12 months compared with younger women (Table 3).

No significant interaction was found between study year and socio-demographic factors (data not shown).

Changes in women's attitudes

In 2003, 48.1% agreed with at least one of the statements indicating agreement with traditional gender roles, compared with 38.4% in 2019. While not common in 2003, it was even less

common in 2019 for women to agree with the justifications for a man to hit his wife if he finds out she has been unfaithful (3.8% agreement in 2003, 1.8% agreement in 2019) (Table 4).

Table 4. Prevalence rates and changes in women's attitudes toward traditional gender roles in relationships and attitudes towards acceptability of a man hitting his wife.

Attitude item	Freq % (95% CI)*		Odds ratio (95%CI)*	P value
	2003 (n=2674)	2019 (n=944)		
Roles of women and men in relationships				
A good wife obeys her husband even if she disagrees	371 13.6 (12.0-15.4)	108 14.7 (10.8-19.8)	1.10 (0.75-1.61)	0.6
Family problems should only be discussed with people in the family	1076 39.5 (37.2-41.9)	274 27.6 (24.0-31.4)	0.58 (0.47-0.72)	0.001
It is important for a man to show his partner who is boss	201 7.4 (6.2-8.7)	32 3.1 (2.1-4.7)	0.40 (0.25-0.64)	0.001
A woman should be able to choose her own friends even if her husband disapproves (disagree)	169 6.0 (5.1-7.2)	66 7.3 (5.5-9.6)	1.23 (0.87-1.74)	0.2
It's a wife obligation to have sex with her husband even if she doesn't feel like	216 8.1 (6.9-9.4)	56 5.8 (4.1-8.0)	0.70 (0.47-1.03)	0.07
At least agreed with one statement	1337 48.1 (45.7-50.5)	365 38.4 (33.8-43.2)	0.67 (0.54-0.83)	0.001
Acceptability of a man hitting his wife				
She doesn't complete her household work to his satisfaction	9 0.3 (0.1-0.6)	5 0.4 (0.1-1.2)	1.47 (0.40-5.36)	0.5
She disobeys him	18 0.5 (0.3-0.9)	8 0.7 (0.3-1.5)	1.32 (0.52-3.34)	0.5
She refuses to have sex with him	9 0.2 (0.1-0.5)	5 0.5 (0.2-1.3)	1.99 (0.60-6.62)	0.2
She asks him whether he has other girlfriends	18 0.5 (0.3-1.0)	3 0.2 (0.04-0.7)	0.31 (0.07-1.39)	0.1
He suspects that she is unfaithful	36 1.3 (0.9-1.9)	8 0.7 (0.3-1.5)	0.52 (0.22-1.25)	0.1
He finds out she has been unfaithful	107 3.8 (3.0-4.8)	17 1.8 (1.0-3.3)	0.46 (0.24-0.90)	0.02
At least one	107/2748 3.5 (2.8-4.5)	22 2.3 (1.4-3.8)	0.64 (0.35-0.1.14)	0.1

*Weighted % and odds ratios with 95% CIs are presented

Changes in help seeking behaviors

There was an overall reduction in the proportion of women who had sought help from formal or informal sources, with three-quarters (77%) of women who had experienced IPV reporting that they had told someone about the violence in 2003 compared with 70% in 2019. This reduction appears to be driven by the significant reduction in the proportion of women who sought help from informal sources (from 71.3% in 2003 to 64.6% in 2019). There was no change in the proportion of women who sought help from 'formal' sources between the two study years. Similarly, there was no significant change in the proportion of women who reported that they received help from formal sources (Table 5).

Table 5. Prevalence rates and changes in help sought and received help between 2003 and 2019 by those who reported at least one type of sexual or physical IPV.

Source of help		*Help sought (Who you told about IPV)*				*Who helped you with IPV*			
		2003 (n=957)	2019 (n=322)	Odds ratio	P value	2003 (n=957)	2019 (n=322)	Odds ratio	P value
No one		223 23.3(20.6- 26.3)	89 30.0 (24.8-35.9)	1.41 (1.04-1.92)	0.027	397 40.6 (37.5-43.9)	125 39.9 (34.5-45.6)	0.97 (0.74-1.27)	0.8
Informal sources		679 71.3 (68.1-74.2)	216 64.6 (58.7-70.1)	0.74 (0.55-0.98)	0.037	489 52.0 (48.8-55.3)	171 52.1 (46.4-57.7)	1.00 (0.77-1.30)	0.9
Formal sources	police/lawyer/court	132 13.6 (11.4-16.2)	49 13.8 (10.4-18.2)	1.02 (0.69-1.49)	0.9	89 9.1 (7.4-11.2)	31 8.8 (6.1-12.5)	0.96 (0.61-1.50)	0.8
	Women's refugee/NGO/women organization/Marae	44 4.5 (3.2-6.3)	24 6.9 (4.3-11.0)	1.57 (0.84-2.91)	0.15	43 4.3 (3.1-5.9)	19 5.3 (3.1-8.9)	1.24 (0.64-2.37)	0.5
	Health workers	125 12.9 (10.8-15.4)	40 11.2 (8.2-15.1)	0.85 (0.57-1.26)	0.4	71 7.7 (5.9-9.9)	26 8.0 (5.4-11.6)	1.04 (0.63-1.71)	0.8
	Counsellor	168 16.7 (14.4-19.2)	45 12.2 (8.9-16.6)	0.69 (0.47-1.03)	0.07	103 10.4 (7.4-14.3)	37 10.4 (7.4-14.3)	0.98 (0.64-1.49)	0.9
	At least one	294 30.3 (27.3-33.4)	93 25.8 (21.1-31.1)	0.80 (0.59-1.08)	0.1	203 21.1 (18.5-24.0)	67 19.4 (15.2-24.4)	0.90 (0.64-1.25)	0.5
Religious leader (priest in 2003)/church member		31 3.2 (2.2-4.8)	4 1.1 (0.4-2.8)	0.32 (0.11-0.93)	0.037	16 1.8 (1.0-3.1)	5 1.3 (0.5-3.2)	0.73 (0.26-2.08)	0.5

Discussion

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Changes in prevalence of physical and sexual IPV between 2003 and 2019 were explored using two population-based surveys. Our findings indicated that the lifetime prevalence of physical IPV remained relatively unchanged between 2003 and 2019, with almost one third (30%) of women in both surveys reporting having experienced at least one act of physical IPV in their lifetime. This is similar to reported prevalence rates from the EU 28-countries study (33%),[28] and the USA (30.6%),[29] and is comparable to the global average.[30] While lifetime prevalence of physical IPV was unchanged, there was a significant decrease in the proportion of women who reported experiencing 12-month physical IPV. Small reductions in rates for lifetime sexual IPV were also observed. Population changes in sociodemographic characteristics did not fully explain the decreases in IPV prevalence over time, and the noted changes were consistent across sub-groups of the population.

In 2003, 48.1% of women agreed one or more of the statements supportive of traditional gender roles, compared with 38.4% in 2019. These were low percentages of agreement compared with women in low- and middle- income countries.[31-33] Agreement with attitudes supportive of justifications for a man hitting his wife was low in both the 2003 (0.2%-3.8%) and 2019 surveys (0.2%-2.3%), and extremely low compared with results reported from low-and middle-income countries.[34, 35] but comparable with high income countries.[36] Even with this low rate of agreement, change was still observed, with a significant reduction in agreement with the statement that "it is acceptable for a man to hit his wife if he found out she was unfaithful", from 3.8% in 2003 to 1.8% in 2019.

Overall, among women who experienced IPV, the rates of disclosure (telling someone about the violence) were high (77% in 2003, 70% in 2019), compared with findings from low- and middle income countries,[37, 38] and comparable with high income countries.[39] It should be noted, however, that most disclosures were made to informal sources, such as family or friends. There was no change in "help received" from formal sources (21.1% in 2003, 19.4% in 2019). This warrants further attention, to determine if this is due to limited service capacity, or limits in the quality of help currently available.

Possible explanations for the study findings include: actual changes in perpetrator behavior over time; or changes due to differences in methods, measurement or samples.

There is some evidence that changes in perpetrator behavior may have occurred, as the reduction in the 12-month prevalence of physical and lifetime sexual IPV between 2003 and 2019 is consistent with a reduction in 12-month prevalence of psychological IPV noted in the same sample (Fanslow et al, BMJ Open, under revision).[40] Changes in perpetrator behaviour are possible, as there have been a series of strategies and campaigns implemented between the two study years. These included: changes in legislation (e.g. amendments to family violence law), and the introduction of prevention campaigns and programmes (e.g. the Family Violence: It's not ok national campaign,[41] and Accident Compensation Corporation-funded Mates and Dates high schools programmes on healthy relationships[42]). These actions may have contributed to changes in societal awareness and understandings of attitudes supportive of violence against women as there is some evidence that these initiatives had wide population reach.[40] This interpretation is supported by our findings on the reduction in women's agreement with attitudes toward traditional gender roles and reduction in women's agreement with the acceptability of a man hitting his wife if she was unfaithful.

An additional feature of these societal actions was the call for those experiencing violence to reach out for help.[41] Our findings suggest that there has been no change in women contacting formal source of help, and a small but significant reduction in talking with informal sources. This finding raises concerns that activities designed to encourage community engagement in violence prevention may need additional resourcing to ensure a sustained response. Further research with larger sample sizes will be important to verify this finding.

The alternate explanation of the observed changes being due to differences in study methods or sample difference seem less likely. Specifically, the comparability of methods across the two surveys, including use of identical questions in the two survey waves, lends strength to the interpretation that the prevalence changes noted are real. Additionally, while there were some differences in the characteristics of the two samples, the adjusted odds ratio showed that after controlling for all socio-demographic factors, the observed differences in prevalence still remained significant.

The observed reduction in 12-month prevalence of physical IPV is positive, and parallels overall reductions in crime rates reported by crime and victimisation surveys,[43], and is similar to reductions in prevalence of IPV documented in Australia between 1996 and 2005.[44] It may be the result of more women recognising abusive behaviour and taking their own actions to

leave abusive relationships. However, further efforts and investment are needed to ensure that those who ask for help actually receive help. Importantly, the stability of the lifetime prevalence of physical IPV should heighten efforts to develop and implement comprehensive and sustained prevention work with those who use violence in relationships.

Strengths

Strengths include: the representativeness of the samples obtained, and the use of comparable methods and comparable questions across the two survey waves. Additionally, the 15 year time gap between the two survey waves is sufficient to determine if real change occurred.[12]

Limitations and recommendations for future studies

Changes between two time points are not sufficient to determine if the change represents a trend, so caution is needed when interpreting the changes observed. Overall, the prevalence estimate obtained may under-report what is happening in the population as a whole, either because of stigma,[45] or because of the overall response rate for the study. While we successfully surveyed over 63% of eligible women, those with greater levels of exposure to violence may be less likely to have participated. Future studies would benefit from larger sample sizes, which would improve the chance of detecting real changes in low base rate phenomena, such as 12-month prevalence of sexual IPV.

Conclusion

The observed reduction in 12-month physical and lifetime sexual IPV prevalence rates, changes in attitudes about the acceptability of violence, and the increases in help seeking are positive. However, work is still needed to address the substantial problem of IPV, as the lifetime prevalence rate of 1 in 3 women experiencing IPV remained stable over the 15-year time interval. This means that prevention efforts must be increased and sustained, and that adequate structures and resources must be available to respond to those seeking help.

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Contributors: Janet Fanslow (JF), Pauline Gulliver (PG), contributed to the conception and design of the study. Tracey McIntosh (TM) contributed to the application for funding of 2019 study. Ladan Hashemi (LH) managed the data cleaning, and conducted the analyses, with contributions from Zarintaj Malihi (ZM). LH, JF and PG interpreted the data, drafted the article and revised it. All authors contributed to the manuscript and approved the final version.

Competing interests hereby we confirm that all authors read and understood BMJ policy on declaration of interests and have completed the ICMJE uniform disclosure form at http://www.icmje.org/coi_disclosure.pdf and declare that we have no financial relationships with any organisations that might have an interest in the submitted work in the previous three years.

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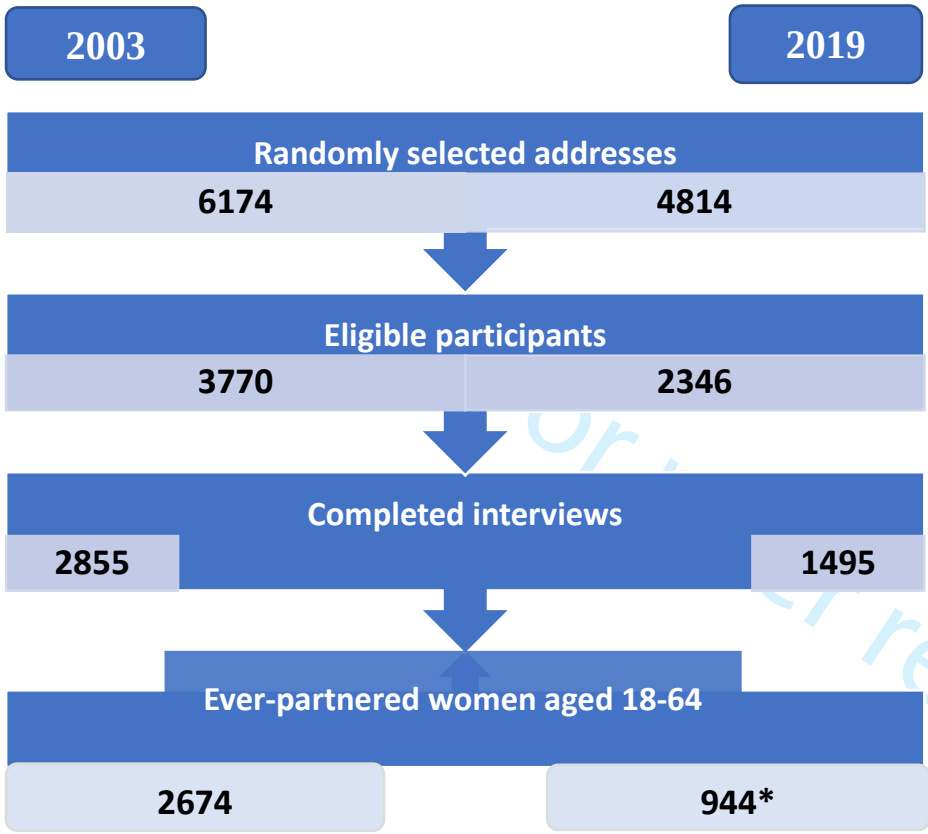
Figure legend:
Figure 1 Flow diagram of female participants in the 2003 and 2019 population-based studies on family violence in New Zealand



2,404 in 2003 and 2,468 in 2019 Dwelling inaccessible/vacant/not home/ language barrier/ participants were not eligible/ incapacitated/unavailable

915 participants in 2003 and 851 in 2019 refused to participate or did not complete interviews

181 in 2003 and 95 in 2019 (out of 1039 heterosexual women aged 18-64 years) were never partnered so were excluded from current analysis.

***For the purpose of this paper, we only included women aged 18-64 years from the 2019 survey.**

Supplementary Table 1. Definition of lifetime and past 12-month physical and sexual IPV, sociodemographic factors, attitude toward violence against women and gender roles, and help seeking behaviours in the 2003 and 2019 surveys

Variable	Definition
Ever-partnered	If they had ever been married, ever lived with, or were currently with a regular sexual partner.
Lifetime Physical IPV	Participants were categorised as experiencing lifetime physical IPV if they reported having experienced one or more of the following moderate or severe acts of physical violence. **Moderate**: Have been slapped or had something thrown at or have been pushed, shoved, or had their hair pulled **Severe**: Have been kicked, dragged, beaten up, hit with fist or something else, chocked or burnt
12-Month Physical IPV	Participants were categorised as experiencing 12-month physical IPV if they reported having experienced one or more acts of the physical IPV in the last 12 months prior to the data collection
Sexual IPV	Participants were categorised as experiencing lifetime sexual IPV if they reported having experienced one or more of the following acts: being physically forced to have sexual intercourse when the woman did not want to; having sexual intercourse because she was afraid of what her partner might do or being forced to do something sexual that she found degrading or humiliating.
12-Month Sexual IPV	Participants were categorised as experiencing 12-month sexual IPV if they reported having experienced one or more acts of the sexual IPV in the last 12 months prior to the data collection
Independent source of income	Have access to income from wages or investments, retirement income (yes or no).
Deprivation level	Taken from NZ index of multiple deprivation (IMD) [44] which used a combination of routinely collected data from government departments and census data in seven domains (i.e. employment, income, crime, housing, health, education, and access to services) to develop a measure of deprivation at the neighborhood level. Participants were classified in three groups: living in least, moderately and most deprived area.
Attitudes toward a man hitting his wife	Participant opinion on six conditions under which hitting or beating one's wife was considered justified : she doesn't complete her household work to his satisfaction; she disobeys him; she refuses to have sex with him; she ask him whether he has other girlfriends; he suspects that she is unfaithful; he finds out that she has been unfaithful. Response options were yes and no.
Attitudes toward gender roles	Participant's attitude about acceptable behaviour for men and women in relationships, and views on family issues being made public: A good wife obeys her husband even if she disagrees; family problems should only be discussed with people in the family; it is important for a man to show his partner who is boss; a woman should be able to choose her own friends even

Variable	Definition
	if her husband disapproves; it is a wife's obligation to have sex with her husband even if she doesn't feel like it
Formal help-seeking	Contact with service agencies including: police, lawyers, courts, health professionals and mental health workers, or NGOs and community based service providers, including Women's Refuges, and Marae.
Informal help seeking	Support from family, friends, neighbours, or workmates.

STROBE 2007 (v4) checklist of items to be included in reports of observational studies in epidemiology*

Checklist for cohort, case-control, and cross-sectional studies (combined)

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2-4
Objectives	3	State specific objectives, including any pre-specified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4-5
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	4-5
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	NA
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6, Supplementary table
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6, Supplementary table
Bias	9	Describe any efforts to address potential sources of bias	7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-7
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6-7
		(*b*) Describe any methods used to examine subgroups and interactions	6-7
		(*c*) Explain how missing data were addressed	7
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed	NA

		Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy	
		(*e*) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	4-5
		(b) Give reasons for non-participation at each stage	4-5
		(c) Consider use of a flow diagram	
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 5, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	NA
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	NA
		Cross-sectional study—Report numbers of outcome events or summary measures	Table 2 & Table 3
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 2 and Table 3
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	19
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	21
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	20
Generalisability	21	Discuss the generalisability (external validity) of the study results	19
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	2

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.
Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Change in prevalence rates of physical and sexual intimate partner violence against women: Data from two cross-sectional studies in New Zealand, 2003 and 2019

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Change in prevalence rates of physical and sexual intimate partner violence against women: Data from two cross-sectional studies in New Zealand, 2003 and 2019

Abstract

Objectives: To explore changes in reported prevalence of physical and sexual intimate partner violence (IPV) between 2003 and 2019. The impact of socio-demographic differences between the two samples and between group differences were also examined. Changes in attitudes supportive of violence and in help-seeking behaviour following disclosure were also explored.

Design: Two cross-sectional studies

Setting and participants: Cross-sectional studies on family violence conducted in New Zealand in 2003 and 2019. Ever-partnered female respondents aged 18-64 years old were included (2003 n=2,674, 2019 n=944).

Main outcome measures: Prevalence rates of lifetime and past 12-month physical and sexual IPV, attitudes towards gender roles and acceptability of a man hitting his wife, help sought, and received following disclosure were compared between the study years.

Results: Lifetime prevalence of physical IPV was unchanged between 2003 and 2019 (AOR=0.89; 95% CI=0.73-1.08). There was a significant decrease in the proportion of women who reported experiencing 12-month physical IPV (AOR=0.53; 95% CI=0.29-0.97). Small reductions in rates for lifetime sexual IPV were also observed (AOR=0.74; 95%CI=0.59-0.95). In 2019, fewer women agreed with one or more statements supportive of traditional gender roles (48.1%; 95% CI= 45.7-50.5 in 2003; 38.4.3% (95% CI=33.8-43.2 in 2019). A significant decrease was noted in the proportion of women who sought help from informal sources (from 71.3% [95% CI= 68.1-74.2] in 2003 to 64.6% [95% CI= 58.7-70.1] in 2019). No significant changes in seeking help from formal sources, or perceived helpfulness from any source were noted.

Conclusion: While the reduction in 12-month physical and lifetime sexual IPV are positive, prevention efforts need to be established, maintained and strengthened to address the substantial lifetime prevalence of IPV. Efforts to strengthen responses from formal and informal sources continue to be needed.

Strengths and limitations of this study

- The current investigation used large, representative samples of women from population-based surveys in 2003 and 2019.
- Regular and comparable surveys of violence exposure, agreement to attitudes supportive of violence and help-seeking behaviours provide an understanding of the effectiveness of population-based policies and programmes.
- True prevalence estimates may be higher in both surveys as it is expected that women in severely abusive relationships would be unable or unwilling to participate.
- Observed changes may reflect societal changes or environmental factors not considered in this investigation.
- Regular and comparable surveys of violence exposure are required to determine if the observed changes are sustained and represent a trend.

Introduction

Intimate Partner Violence (IPV) has been reported by the UN Secretary-General (2006) as "the most common form of violence experienced by women globally."[1] IPV includes physical and sexual violence, as well as psychological abuse, controlling behaviour and economic abuse.

Efforts to respond to IPV in high income countries include the introduction of legislation or national action plans, and strengthening the non-for-profit sector to respond to the violence experienced.[2] However, the effectiveness of these strategies is not clear, as there is a lack of consistent and reliable data available to monitor changes in the prevalence of IPV over time.

The limited research available tends to rely on analysis of IPV homicide data, or other forms of administrative data from agencies such as health providers, police or courts.[2] While providing useful insights, these data do not reflect the magnitude of the problem at the population level, as many who experience IPV frequently do not present to services, or the underlying cause of their presentation may not be identified or recorded.[2, 3]

Other attempts to measure changes in IPV occurrence over time have relied on data from general crime victimisation surveys,[4] but the overall framing of these questionnaires (i.e., surveys about 'crime') tends to lower the reporting of the violent behaviours within intimate relationships.[2, 3] Surveys conducted for other purposes (e.g., health surveys) which include a dedicated module on family violence provide some information, but can also be problematic,

as space limitations for specific modules means that they might not be able to include questions that canvas the full range of violent experiences.[5]

The emerging consensus is that 'population-based stand-alone surveys are the instruments of choice' for collecting statistics on violence against women.[6] To date, specific violence against women surveys have been carried out in several high-income countries (for examples U.S.A.,[7] Canada,[8] Australia,[9] European Union,[10] Finland,[11, 12] Spain,[13] New Zealand[14]). However, with an exception of Australia and Finland, the surveys have generally been one-off efforts and thus do not allow for time-related comparisons. Without regular, comparable surveys, it is not possible to determine if there are overall changes in the occurrence of IPV, or if there are differential patterns of change for specific sub-groups within the population.

According to the World Health Organization, violence results from the complex interplay between individual, relationship, social, cultural and environmental factors.[15] The ecological model has been important in helping determine risk and protective factors associated with violence occurrence, but also holds promise for prevention, as it carries the assumption that changes in contributing factors can potentially lead to changes in prevalence.[16] To date, the limited research that has explored differences in the prevalence of IPV over time has suggested that population-level changes in demographic factors, such as shifts in age, education, relationship status, and socio-economic factors may contribute to the observed prevalence changes.[4, 6, 17, 18] However, changes in environmental and social norms that may condone or help perpetuate violence, and associated effects on violence occurrence have received scant attention in the research.

Community-level norms, such as acceptance of 'traditional" gender roles and beliefs in the justification of 'circumstances in which it is acceptable for a man to hit his wife ' are associated with perpetration of IPV.[19] In some countries, women's acceptance of these attitudes has been found to be associated with increased risk of IPV victimisation.[20] For these reasons, attitudes have been a key target of community education campaigns aimed at preventing violence against women.[21] However, to date, there has been little examination of the effectiveness of these initiatives at changing attitudes, or on any associated changes in violence rates.[21-23]

New Zealand is one of few high-income countries where more than one comprehensive population-based survey of violence against women has been conducted: the first survey was conducted in 2003, and the second survey in 2019. Between the two surveys, a series of actions were taken to address family violence including; legislation (e.g. amendments to family violence law and protection for victims act), and prevention campaigns (e.g. the Family Violence: It's not ok national campaign, and the ACC-funded mates and dates high schools programme on healthy relationships). Many of these initiatives have focussed on addressing physical and sexual violence and have included strong messaging about the importance of help-seeking by those experiencing violence. Comparable surveys on attitudes supporting violence over time may provide evidence about the impact of such campaigns at the population level.

In the current study, using data from two New Zealand cross-sectional population-based surveys we aimed to: (a) describe changes in the reported prevalence rates of physical and sexual IPV between 2003 and 2019, (b) examine whether changes in women's sociodemographic characteristics were associated with changes in IPV prevalence rates, and (c) determine whether changes in the reported prevalence rates were consistent across population subgroups. We also sought to determine if there were (d) changes in attitudes supportive of violence and (e) changes in help-seeking for those who reported experiencing IPV.

Method

Procedure and participants

Data was drawn from two cross-sectional studies on family violence conducted in New Zealand in 2003 and 2019. A comprehensive description of the methods used in the 2003 and 2019 surveys have been previously presented.[14, 24] A brief description of the two surveys is presented here.

The 2003 study was conducted in Auckland and Waikato regions. For the 2019 study, Northland was also included in the sampling.

Sampling strategies were similar in both surveys. A population-based cluster sampling scheme with a fixed number of dwellings per cluster was used for both studies. Primary sampling units (PSUs) were based on meshblock boundaries which contain between 50 and 100 dwellings. The starting point consisted of a randomly selected street and street number within each PSU. Interviewers made up to seven visits to each selected household to identify and recruit study participants. Non-residential, aged-care and short-term residential properties were excluded from both surveys. Interviewer training and support procedures were comparable across survey waves.

Eligibility: To be eligible to participate in the survey, household members needed to be able to speak conversational English, have lived in the household for at least one month and slept in the house for four or more nights a week.

Of the households invited, 88.3% in 2003 and 78% in 2019 agreed to participate. Of the eligible women, 75.8% in 2003 and 63.7% in 2019 participated, yielding an overall response rate of 66.9% in 2003 and 63.7% in 2019. Figure 1 demonstrates the number of people invited and those who were interviewed and included in the analyses for each survey year.

Participants of the 2003 study were 2855 women aged 18-64 years. In 2019, the eligible population was expanded to include women and men aged 16 years and older resulting in 2,888 completed interviews (n=1464 women, n=1423 men, n=1 other). For the purpose of this paper, only ever-partnered women aged 18-64 years from each sample were included, equivalent to almost 94% of all women aged 18-64 years surveyed in both waves (2003, n= 2674; 2019, n=944).

Representativeness: In both surveys, the ethnicity, marital status, and area-level deprivation distribution of the samples were closely comparable to the general population, however both samples were under-represented for younger women (ages 20-29 in 2003, 16-29 in 2019).[14, 24] Demographic characteristics of ever-partnered women aged 18-64 years in the 2003 and 2019 surveys are presented in Table 1.

Safety and ethics considerations

Ethics and safety recommendations for research on violence against women were followed throughout the research.[25] One individual was randomly selected from each household for the interview. In households with more than one eligible resident, the participant was randomly

selected. Interviews were conducted in privacy with no one over the age of two years present. At the completion of the interview, interviewers provided all respondents with a list of approved support agencies regardless of disclosure status. Written informed consent was obtained from all participants.

Ethics approval was granted through the University of Auckland human participants' ethics committee (reference number 2002/199 for the 2003 study, and 2015/018244 for the 2019 study).

Patient and Public involvement

No patients or members of the public were involved in the design, conduct or reporting or dissemination plans of our research.

Study instrument and measures

To collect data, the WHO Multi-Country Study on Women's Health and Domestic Violence Against Women (WHO MCS) [26] was used in both surveys.

'Intimate partners' included male current or ex-partners that the women were married to or had lived with, or current regular male sexual partners. Definitions are presented in Supplementary Table 1 for: physical and sexual IPV; socio-demographic characteristics; attitudes towards gender roles, acceptance of attitudes justifying a man hitting his wife, and sources of help sought (who was told about the IPV) and help received (sources who provided help. All questions used for analyses were identical in the two surveys.

Analytic procedure

To explore whether there were any underlying differences in demographic characteristics of the respondents at the two time periods, the 2003 and 2019 samples were compared in terms of age, relationship status, education attainment, access to an independent source of income, and area-level deprivation using chi square tests.

Then, the prevalence rates of physical and sexual IPV were compared between two samples with results presented as percentages with 95% confidence intervals (CIs). As the results for "moderate" and "severe" physical IPV showed similar patterns to any physical IPV, in the following analyses, only the results for *any* physical IPV are presented. Any act of sexual IPV was considered as severe. To identify evidence of differences in the estimated prevalence over time, odds ratio (OR) and 95% CIs for reported experience of physical and sexual IPV were calculated using univariate logistic regression models, with the study year as the predictor. The

same procedure was followed for assessing differences in women's attitudes towards gender roles, attitudes towards acceptability of a man hitting his wife, help sought, and help received between the study years. For help-seeking variables, the analyses were restricted to women who reported lifetime experience of physical or sexual IPV only.

Then, to determine if the noted differences in the prevalence rates of IPV between the two study years found in the univariate analyses remained significant after controlling for sociodemographic characteristics, the following steps were taken:

- First, the association between each socio-demographic characteristic and each type of IPV (lifetime or 12-month physical and sexual IPV) was explored using univariate logistic regression models with results presented as unadjusted odds ratios (OR) with 95%CIs.
- Second, multivariate analyses were conducted, with the study year and sociodemographic characteristics included, and results were presented as adjusted odds ratios (AOR) with 95% CIs.

Finally, to determine whether the noted changes in the reported prevalence rates were consistent across population subgroups, multivariate logistic regression models with interaction terms (between each sociodemographic characteristic and the study year) were tested. Potential confounders (e.g. age, education, relationship status, independent income, and area-level deprivation) and the study year were included in these analyses.

All analyses were performed on a pooled dataset of the two samples. Missing data including: do not know, do not remember, and no responses were excluded from all analyses. Less than 4% of any variable had missing data in both surveys. All analyses were conducted using Stata/SE 15.1[27] survey commands to allow for stratification by sample location (region), clustering by primary sampling units (PSU), and weighting of data to account for the number of eligible participants in each household.

Results

Differences between two study samples in terms of sociodemographic characteristics are presented in Table 1. In general, there were more women over 45 years in 2019 (51.4%) compared with 2003 (39.3%). Additionally, a higher proportion of the sample had attained

tertiary education in 2019 (65.1%) compared with 44.8% in 2003. A smaller proportion of women in 2019 reporting having an independent source of income (72.5%) compared to 79.5% in 2003.

Table 1. Demographic characteristics of ever-partnered women aged 18-64 years in 2003 and 2019 surveys

	2003	**2019**	**p value**
Total sample	**n=2674**	**n=944**	
Age categories	n (%)*	n (%)*	0.001
18-24	182 (8.6)	45 (6.7)	
25-34	581(21.9)	169 (17.4)	
35-44	857(30.2)	218 (21.5)	
45-54	637(24.6)	268 (30.8)	
55-64	414(14.7)	244 (23.3)	
Relationship status			0.4
Married	1685 (61.4)	601 (63.3)	
Cohabiting	574 (22.1)	201 (21.2)	
Divorced/separated/ broken up	353 (14.3)	117 (12.6)	
Widowed	60 (2.1)	25 (2.9)	
Education attainment			0.001
Primary /Secondary	1478 (55.2)	315 (34.8)	
Higher	1187 (44.8)	625 (65.1)	
Independent income			0.0007
Yes	2122 (79.5)	696 (72.5)	
No	551 (20.4)	248 (27.0)	
Area—level deprivation			0.1
Least deprived	914 (33.6)	270 (26.8)	
Moderately deprived	1045 (38.8)	393 (39.8)	
Most deprived	708 (27.5)	281 (33.4)	

Data are n (Col%)

*Weighted % are presented

Table 2. Characteristics of women reporting lifetime and past-12 month **Physical IPV** in the pooled database from two cross-sectional studies in New Zealand

	Lifetime		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)	Past 12-month		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)
	2003 n % (95%CI)*	2019 n % (95%CI)*			2003 n % (95%CI)*	2019 n % (95%CI)*		
Year (ref=2003)	856 32.2 (30.2-34.2)	291 29.1 (25.8-32.7)	0.86 (0.71-1.04)	0.89 (0.73-1.08)	118 5.0 (4.1-6.1)	19 2.4 (1.5-3.8)	0.46 (0.27-0.79)	0.53 (0.29-0.97)
Age categories								
18-24	53 28.1 (21.6-35.7)	14 24.4 (13.3-40.3)	1.00	1.00	18 9.4 (5.7-14.9)	4 9.7 (3.4-24.6)	1.00	1.00
25-34	210 37.7 (33.6-42.0)	36 20.6 (15.0-27.6)	1.36 (0.95-1.95)	2.11 (1.43-3.13)	49 10.0 (7.5-13.3)	4 2.4 (0.8-6.7)	0.87 (0.48-1.55)	1.09 (0.59-2.02)
35-44	278 32.9 (29.4-36.5)	71 32.9 (25.9-40.8)	1.31 (0.92-1.85)	2.58 (1.75-3.82)	35 4.7 (3.2-6.9)	2 0.7 (0.2-3.1)	0.39 (0.21-0.73)	0.60 (0.29-1.21)
45-54	201 30.9 (27.2-34.9)	83 28.0 (22.2-34.6)	1.14 (0.80-1.63)	2.38 (1.60-3.54)	10 1.7 (0.9-3.2)	3 1.7 (0.5-5.3)	0.16 (0.08-0.35)	0.28 (0.12-0.64)
55-64	113 27.3 (23.0-32.0)	87 34.9 (29.0-41.4)	1.15 (0.81-1.65)	2.37 (1.58-3.56)	6 1.3 (0.6-2.9)	6 2.6 (1.1-5.8)	0.17 (0.08-0.37)	0.30 (0.13-0.68)
Relationship status								
Married	358 21.2 (19.1-23.4)	125 19.8 (16.5-23.7)	1.00	1.00	39 2.5 (1.8-3.4)	6 1.1 (0.4-2.6)	1.00	1.00
Cohabiting	272 46.7 (42.3-51.2)	85 40.3(33.0-48.0)	3.11 (2.58-3.76)	3.75 (3.04-4.64)	46 9.1 (6.6-12.3)	5 3.6 (1.4-8.9)	3.88 (2.48-6.06)	2.68 (1.58-4.54)
Divorced/separated/ broken up	207 57.8 (52.4-63.0)	69 53.4 (43.2-63.2)	4.98 (3.98-6.22)	4.84 (3.84-6.08)	33 10.6 (7.4-15.0)	7 6.7 (3.1-14.0)	5.01 (3.10-8.12)	4.27 (2.63-6.94)
Widowed	19 28.8 (18.9-41.2)	12 44.1 (25.6-64.4)	1.96 (1.22-3.14)	1.71 (1.05-2.78)	0	1 2.9 (0.4-18.4)	0.48 (0.06-3.57)	0.65 (0.08-5.00)
Education Attainment								
Primary and secondary	519 34.6 (32.0-37.4)	108 31.1 (24.9-38.1)	1.00	1.00	77 5.5 (4.3-6.8)	7 3.2 (1.4-7.1)	1.00	1.00
Tertiary level	332 28.9 (26.2-31.8)	182 28.1 (24.2-32.3)	0.78 (0.66-0.91)	0.87 (0.73-1.03)	40 4.3 (3.1-6.0)	12 2.0 (1.1-3.5)	0.68 (0.47-1.00)	0.82 (0.54-1.25)
Independent income								
No	135 26.0 (21.8-30.7)	75 28.2 (22.4-34.7)	1.00	1.00	26 6.3 (4.0-9.9)	5 1.9 (0.7-4.7)	1.00	1.00
Yes	720 33.8 (31.5-36.1)	216 29.5 (25.6-33.6)	1.33 (1.08-1.63)	1.10 (0.90-1.36)	92 4.7 (3.8-5.8)	14 2.6 (1.5-4.5)	0.85 (0.52-1.38)	0.71 (0.39-1.27)
Area-level deprivation								
Least deprived	224 25.9 (22.8-29.3)	68 22.7 (18.2-27.9)	1.00	1.00	26 3.3 (2.0-5.3)	4 1.3 (0.5-3.3)	1.00	1.00
Moderately deprived	344	113	1.34 (1.11-1.63)	1.21 (1.00-1.48)	44	8	1.54 (0.89-2.65)	1.34 (0.78-2.28)

	32.1 (29.0-35.2)	28.5 (23.5-34.1)			4.7 (3.5-6.2)	3.2 (1.5-6.6)		
Mostly deprived	285 40.1 (36.1-44.2)	110 34.9 (27.9-42.7)	1.86 (1.50-2.30)	1.54 (1.24-1.91)	48 7.8 (5.8-10.3)	7 2.3 (1.1-4.8)	2.23 (1.29-3.82)	1.50 (0.89-2.54)

* Weighted % and 95%CIs are presented.

**AORs (Weighted Adjusted Odds Ratios) are adjusted for age, education, relationship status, area-deprivation level, independent income, and the year of the study

Physical IPV

Changes in physical IPV prevalence rates

Lifetime physical IPV prevalence. The lifetime prevalence of physical IPV remained relatively unchanged between 2003 and 2019, with almost 30% of ever-partnered women aged 18-64 reporting having experienced at least one episode of physical violence (Table 2). After controlling for sociodemographic factors, adjusted odds ratios showed no significant difference in the reported prevalence rates of lifetime physical IPV between the two study years (AOR=0.89; 95%CI=0.73-1.08).

12-month physical IPV prevalence. The 12-month prevalence of physical IPV decreased from 5 % in 2003 to 2·4% in 2019 (OR=0.46; 95%CI=0.27-0.79). The adjusted odds ratio showed that, after controlling for sociodemographic factors, the decrease in 12-month physical IPV was attenuated but still remained significant (AOR=0.53; 95%CI=0.29-0.97).

Characteristics of women reporting lifetime and past-12 months physical IPV

Lifetime physical IPV:

All sociodemographic factors were significantly associated with reporting lifetime physical IPV in the multivariate model, with the exception of "access to independent income" and "educational attainment". Women aged 25 years and above were more likely to report having experienced at least one act of lifetime physical IPV. Compared with married women, a higher proportion of women who were cohabiting, divorced, or widowed reported experiencing lifetime physical IPV. Similarly, those who were living in the moderately or most deprived areas were more likely to report the experience of lifetime physical IPV compared with those living in the least deprived areas (Table 2).

Past 12-month physical IPV. At the multivariate level, age and relationship status were significantly associated with reports of experiencing past 12-month physical IPV. A lower proportion of women aged 45 years and older reported experiencing past 12-month physical IPV compared with those younger than 45 years. A higher proportion of those who were cohabiting or divorced compared with those who were married reported this experience (Table 2).

Table 3. Characteristics of women with lifetime and past-12 month **Sexual IPV** in the pooled database from two cross-sectional studies in New Zealand

	Lifetime		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)	Past 12-month		Univariate Model Odds Ratio (95%CI)	**Multivariate Model AOR (95%CI)
	2003 n % (95%CI)*	2019 n % (95%CI)*			2003 n % (95%CI)*	2019 n % (95%CI)*		
Year (ref=2003)	464 16.9 (15.4-18.6)	133 13.1 (11.0-15.4)	0.74 (0.59-0.92)	0.74 (0.59-0.95)	38 1.8 (1.3-2.6)	10 0.9 (0.5-1.9)	0.50 (0.23-1.10)	0.50 (0.19-1.35)
Age categories								
18-24	25 14.2 (9.6-20.5)	5 7.3 (2.3-20.6)	1.00	1.00	8 5.6 (2.7-11.1)	0	1.00	1.00
25-34	105 17.7 (14.7-21.2)	18 10.3 (6.5-15.8)	1.32 (0.83-2.10)	1.92 (1.18-3.14)	13 2.8 (1.5-5.2)	2 1.0 (0.2-3.8)	0.54 (0.21-1.41)	0.62 (0.23-1.70)
35-44	154 17.6 (15.0-20.5)	31 13.9 (9.6-19.8)	1.40 (0.89-2.20)	2.54 (1.56-4.12)	10 1.2 (0.4-3.0)	4 0.5 (0.1-2.2)	0.32 (0.12-0.85)	0.46 (0.17-1.24)
45-54	106 15.9 (13.0-19.3)	39 13.6 (9.9-18.3)	1.24 (0.78-1.97)	2.43 (1.46-4.03)	5 0.4 (0.1-1.7)	2 0.7 (0.2-2.9)	0.22 (0.07-0.66)	0.34 (0.11-1.09)
55-64	73 17.6 (14.0-21.9)	40 15.4 (11.3-20.7)	1.40 (0.89-2.21)	2.78 (1.67-4.62)	2 0.8 (0.4-1.6)	2 0.7 (0.2-1.9)	0.12 (0.04-0.42)	0.18 (0.05-0.63)
Relationship status								
Married	165 9.7 (8.3-11.3)	58 9.0 (6.9-11.7)	1.00	1.00	13 3.4 (2.0-5.7)	5 0.4 (0.05-2.8)	1.00	1.00
Cohabiting	155 25.6 (22.1-29.5)	38 18.1 (12.8-25.0)	2.94 (2.33-3.71)	3.52 (2.72-4.58)	15 4.1 (2.0-7.9)	1 2.7 (0.8-8.6)	3.30 (1.55-7.02)	2.01 (0.85-4.73)
Divorced/separated/ broken up	131 34.3 (28.9-40.1)	34 25.7 (18.7-34.2)	4.50 (3.48-5.82)	4.42 (3.39-5.76)	10 4.1 (2.0-7.9)	3 2.7 (0.8-8.6)	4.82 (2.11-11.0)	3.89 (1.71-8.85)
Widowed	13 19.7 (11.7-31.2)	3 8.8 (2.8-24.8)	1.81 (1.02-3.20)	1.58 (0.88-2.82)	0	1 2.9 (0.4-18.5)	1.27 (0.16-9.90)	1.55 (0.20-12.19)
Education attainment								
Primary and secondary	291 19.2 (17.2-21.5)	54 14.8 (11.0-19.6)	1.00	1.00	25 2.0 (1.3-3.2)	6 1.7 (0.7-4.0)	1.00	1.00
Tertiary level	172 14.1 (12.2-16.3)	78 12.1 (9.7-15.1)	0.69 (0.57-0.83)	0.77 (0.64-0.94)	13 1.6 (0.9-2.8)	3 0.4 (0.1-1.2)	0.58 (0.300-1.12)	0.77 (0.36-1.62)
Independent income								
Yes	388 17.7 (16.0-19.5)	98 13.2 (10.9-16.0)	1.25 (0.98-1.60)	1.05 (0.81-1.35)	28 1.7 (1.1-2.5)	7 0.9 (0.4-2.2)	0.79 (0.39-1.59)	0.76 (0.34-1.69)

No	76 14.1 (11.2-17.7)	35 12.6 (9.0-17.6)	1.00	1.00	10 2.4 (1.2-4.5)	3 0.9 (0.3-2.9)	1.00	1.00
Area-deprivation level								
Least deprived	123 13.2 (11.0-15.7)	32 11.8 (8.2-16.7)	1.00	1.00	4 0.6 (0.2-1.6)	2 0.9 (0.2-4.0)	1.00	1.00
Moderately deprived	181 16.9 (14.6-19.4)	48 12.0 (9.1-15.7)	1.24 (0.98-1.57)	1.12 (0.88-1.44)	16 2.1 (1.2-3.5)	2 0.4 (0.06-3.0)	2.46 (0.92-6.59)	2.16 (0.79-5.94)
Mostly deprived	160 21.8 (18.5-25.5)	53 15.3 (11.6-19.9)	1.66 (1.29-2.15)	1.36 (1.03-1.78)	18 3.1 (1.8-5.1)	6 1.5 (0.7-3.4)	3.95 (1.52-10.25)	2.78 (1.04-7.40)

* Weighted % and 95%CIs are presented.

[*] AORs (Weighted Adjusted Odds Ratios) are adjusted for age, education, relationship status, area-deprivation level, independent income, and the year of the study.

Sexual IPV

Changes in sexual IPV prevalence rates

Lifetime prevalence. A significant decrease in the reported lifetime prevalence of sexual IPV was found in univariate analysis, from 16.9% in 2003 to 13.1% in 2019 (OR= 0.74; 95%CI=0.59-0.92). After controlling for sociodemographic variables, the significant decrease in the reported experience of lifetime sexual IPV remained unchanged (AOR=0.74; 95%CI=0.59-0.95).

12-month prevalence. No significant differences in the 12-month prevalence rates of sexual IPV between two study years was found in univariate analysis (approximately 1% in both study years) (OR=0.50, 95%CI=0.23-1.10). After controlling for sociodemographic factors, the nonsignificant difference in 12-month sexual IPV between two study years remained unchanged (AOR=0.50; 95%CI=0.19-1.35).

Characteristics of women reporting lifetime and past-12 months sexual IPV

Lifetime sexual IPV. At the multivariate level, age, relationship status, education attainment, and area-deprivation level were significantly associated with lifetime sexual IPV. Women were more likely to report having experienced lifetime sexual IPV if they were: aged 25 and over; cohabiting, divorced or separated, or widowed; or living in the most deprived areas. Those who had some tertiary education were less likely to report lifetime experience of sexual IPV compared with those with primary or secondary education (Table 3).

Past 12-month sexual IPV. Those who were divorced/separated were more likely to report having experienced 12-month sexual IPV compared to married women. Those living in the most deprived areas were also more likely to report 12-month sexual IPV. Women aged 55 years and above were less likely to report having experienced sexual IPV in the past 12 months compared with younger women (Table 3).

No significant interaction was found between study year and socio-demographic factors (data not shown).

Changes in women's attitudes

In 2003, 48.1% agreed with at least one of the statements indicating agreement with traditional gender roles, compared with 38.4% in 2019. While not common in 2003, it was even less

common in 2019 for women to agree with the justifications for a man to hit his wife if he finds out she has been unfaithful (3.8% agreement in 2003, 1.8% agreement in 2019) (Table 4).

Table 4. Prevalence rates and changes in women's attitudes toward traditional gender roles in relationships and attitudes towards acceptability of a man hitting his wife.

Attitude item	Freq % (95% CI)*		Odds ratio (95%CI)*	P value
	2003 (n=2674)	2019 (n=944)		
Roles of women and men in relationships				
A good wife obeys her husband even if she disagrees	371 13.6 (12.0-15.4)	108 14.7 (10.8-19.8)	1.10 (0.75-1.61)	0.6
Family problems should only be discussed with people in the family	1076 39.5 (37.2-41.9)	274 27.6 (24.0-31.4)	0.58 (0.47-0.72)	0.001
It is important for a man to show his partner who is boss	201 7.4 (6.2-8.7)	32 3.1 (2.1-4.7)	0.40 (0.25-0.64)	0.001
A woman should be able to choose her own friends even if her husband disapproves (disagree)	169 6.0 (5.1-7.2)	66 7.3 (5.5-9.6)	1.23 (0.87-1.74)	0.2
It's a wife obligation to have sex with her husband even if she doesn't feel like	216 8.1 (6.9-9.4)	56 5.8 (4.1-8.0)	0.70 (0.47-1.03)	0.07
At least agreed with one statement	1337 48.1 (45.7-50.5)	365 38.4 (33.8-43.2)	0.67 (0.54-0.83)	0.001
Acceptability of a man hitting his wife				
She doesn't complete her household work to his satisfaction	9 0.3 (0.1-0.6)	5 0.4 (0.1-1.2)	1.47 (0.40-5.36)	0.5
She disobeys him	18 0.5 (0.3-0.9)	8 0.7 (0.3-1.5)	1.32 (0.52-3.34)	0.5
She refuses to have sex with him	9 0.2 (0.1-0.5)	5 0.5 (0.2-1.3)	1.99 (0.60-6.62)	0.2
She asks him whether he has other girlfriends	18 0.5 (0.3-1.0)	3 0.2 (0.04-0.7)	0.31 (0.07-1.39)	0.1
He suspects that she is unfaithful	36 1.3 (0.9-1.9)	8 0.7 (0.3-1.5)	0.52 (0.22-1.25)	0.1
He finds out she has been unfaithful	107 3.8 (3.0-4.8)	17 1.8 (1.0-3.3)	0.46 (0.24-0.90)	0.02
At least one	107/2748 3.5 (2.8-4.5)	22 2.3 (1.4-3.8)	0.64 (0.35-0.1.14)	0.1

*Weighted % and odds ratios with 95% CIs are presented

Changes in help seeking behaviors

There was an overall reduction in the proportion of women who had sought help from formal or informal sources, with three-quarters (77%) of women who had experienced IPV reporting that they had told someone about the violence in 2003 compared with 70% in 2019. This reduction appears to be driven by the significant reduction in the proportion of women who sought help from informal sources (from 71.3% in 2003 to 64.6% in 2019). There was no change in the proportion of women who sought help from 'formal' sources between the two study years. Similarly, there was no significant change in the proportion of women who reported that they received help from formal sources (Table 5).

Table 5. Prevalence rates and changes in help sought and received help between 2003 and 2019 by those who reported at least one type of sexual or physical IPV.

Source of help		*Help sought (Who you told about IPV)*				*Who helped you with IPV*			
		2003 (n=957)	2019 (n=322)	Odds ratio	P value	2003 (n=957)	2019 (n=322)	Odds ratio	P value
No one		223 23.3(20.6- 26.3)	89 30.0 (24.8-35.9)	1.41 (1.04-1.92)	0.027	397 40.6 (37.5-43.9)	125 39.9 (34.5-45.6)	0.97 (0.74-1.27)	0.8
Informal sources		679 71.3 (68.1-74.2)	216 64.6 (58.7-70.1)	0.74 (0.55-0.98)	0.037	489 52.0 (48.8-55.3)	171 52.1 (46.4-57.7)	1.00 (0.77-1.30)	0.9
Formal sources	police/lawyer/court	132 13.6 (11.4-16.2)	49 13.8 (10.4-18.2)	1.02 (0.69-1.49)	0.9	89 9.1 (7.4-11.2)	31 8.8 (6.1-12.5)	0.96 (0.61-1.50)	0.8
	Women's refugee/NGO/women organization/Marae	44 4.5 (3.2-6.3)	24 6.9 (4.3-11.0)	1.57 (0.84-2.91)	0.15	43 4.3 (3.1-5.9)	19 5.3 (3.1-8.9)	1.24 (0.64-2.37)	0.5
	Health workers	125 12.9 (10.8-15.4)	40 11.2 (8.2-15.1)	0.85 (0.57-1.26)	0.4	71 7.7 (5.9-9.9)	26 8.0 (5.4-11.6)	1.04 (0.63-1.71)	0.8
	Counsellor	168 16.7 (14.4-19.2)	45 12.2 (8.9-16.6)	0.69 (0.47-1.03)	0.07	103 10.4 (7.4-14.3)	37 10.4 (7.4-14.3)	0.98 (0.64-1.49)	0.9
	At least one	294 30.3 (27.3-33.4)	93 25.8 (21.1-31.1)	0.80 (0.59-1.08)	0.1	203 21.1 (18.5-24.0)	67 19.4 (15.2-24.4)	0.90 (0.64-1.25)	0.5
Religious leader (priest in 2003)/church member		31 3.2 (2.2-4.8)	4 1.1 (0.4-2.8)	0.32 (0.11-0.93)	0.037	16 1.8 (1.0-3.1)	5 1.3 (0.5-3.2)	0.73 (0.26-2.08)	0.5

Discussion

Changes in prevalence of physical and sexual IPV between 2003 and 2019 were explored using two population-based surveys. Our findings indicated that the lifetime prevalence of physical IPV remained relatively unchanged between 2003 and 2019, with almost one third (30%) of women in both surveys reporting having experienced at least one act of physical IPV in their lifetime. This is similar to reported prevalence rates from the EU 28-countries study (33%),[28] and the USA (30.6%),[29] and is comparable to the global average.[30] While lifetime prevalence of physical IPV was unchanged, there was a significant decrease in the proportion of women who reported experiencing 12-month physical IPV. Small reductions in rates for lifetime sexual IPV were also observed. Population changes in sociodemographic characteristics did not fully explain the decreases in IPV prevalence over time, and the noted changes were consistent across sub-groups of the population.

In 2003, 48.1% of women agreed one or more of the statements supportive of traditional gender roles, compared with 38.4% in 2019. These were low percentages of agreement compared with women in low- and middle- income countries.[31-33] Agreement with attitudes supportive of justifications for a man hitting his wife was low in both the 2003 (0.2%-3.8%) and 2019 surveys (0.2%-2.3%), and extremely low compared with results reported from low-and middle-income countries.[34, 35] but comparable with high income countries.[36] Even with this low rate of agreement, change was still observed, with a significant reduction in agreement with the statement that "it is acceptable for a man to hit his wife if he found out she was unfaithful", from 3.8% in 2003 to 1.8% in 2019.

Overall, among women who experienced IPV, the rates of disclosure (telling someone about the violence) were high (77% in 2003, 70% in 2019), compared with findings from low- and middle income countries,[37, 38] and comparable with high income countries.[39] It should be noted, however, that most disclosures were made to informal sources, such as family or friends. There was no change in "help received" from formal sources (21.1% in 2003, 19.4% in 2019). This warrants further attention, to determine if this is due to limited service capacity, or limits in the quality of help currently available.

Possible explanations for the study findings include: actual changes in perpetrator behavior over time; or changes due to differences in methods, measurement or samples.

There is some evidence that changes in perpetrator behavior may have occurred, as the reduction in the 12-month prevalence of physical and lifetime sexual IPV between 2003 and 2019 is consistent with a reduction in 12-month prevalence of psychological IPV noted in the same sample (Fanslow et al, BMJ Open, under revision).[40] Changes in perpetrator behaviour are possible, as there have been a series of strategies and campaigns implemented between the two study years. These included: changes in legislation (e.g. amendments to family violence law), and the introduction of prevention campaigns and programmes (e.g. the Family Violence: It's not ok national campaign,[41] and Accident Compensation Corporation-funded Mates and Dates high schools programmes on healthy relationships[42]). These actions may have contributed to changes in societal awareness and understandings of attitudes supportive of violence against women as there is some evidence that these initiatives had wide population reach.[40] This interpretation is supported by our findings on the reduction in women's agreement with attitudes toward traditional gender roles and reduction in women's agreement with the acceptability of a man hitting his wife if she was unfaithful. Other studies have also noted the relationship between attitudes to violence and victimization.[43, 44]

An additional feature of these societal actions was the call for those experiencing violence to reach out for help.[41] Our findings suggest that there has been no change in women contacting formal sources of help, and a small but significant reduction in talking with informal sources. As help-seeking can be related to the severity of violence experienced, it is possible that the lack of change in accessing formal help among women is related to the reduction of current physical, and lifetime sexual IPV between the studied years and a possible decrease of high severity cases. However, it is also possible that activities designed to encourage community engagement in violence prevention may need additional resourcing to ensure a sustained response and appropriate access to necessary services. Further research with larger sample sizes will be important to verify this finding.

The alternate explanation of the observed changes being due to differences in study methods or sample difference seem less likely. Specifically, the comparability of methods across the two surveys, including use of identical questions in the two survey waves, lends strength to the interpretation that the prevalence changes noted are real. Additionally, while there were some differences in the characteristics of the two samples, the adjusted odds ratio showed that after controlling for all socio-demographic factors, the observed differences in prevalence still remained significant.

The observed reduction in 12-month prevalence of physical IPV is positive, and parallels overall reductions in crime rates reported by crime and victimisation surveys,[45], and is similar to reductions in prevalence of IPV documented in Australia between 1996 and 2005.[46] It may be the result of more women recognising abusive behaviour and taking their own actions to leave abusive relationships. However, further efforts and investment are needed to ensure that those who ask for help actually receive help. Importantly, the stability of the lifetime prevalence of physical IPV should heighten efforts to develop and implement comprehensive and sustained prevention work with those who use violence in relationships.

Strengths

Strengths include: the representativeness of the samples obtained, and the use of comparable methods and comparable questions across the two survey waves. Additionally, the 15 year time gap between the two survey waves is sufficient to determine if real change occurred.[12]

Limitations and recommendations for future studies

Changes between two time points are not sufficient to determine if the change represents a trend, so caution is needed when interpreting the changes observed. Overall, the prevalence estimate obtained may under-report what is happening in the population as a whole, either because of stigma,[47] or because of the overall response rate for the study. While we successfully surveyed over 63% of eligible women, those with greater levels of exposure to violence may be less likely to have participated. Future studies would benefit from larger sample sizes, which would improve the chance of detecting real changes in low base rate phenomena, such as 12-month prevalence of sexual IPV.

Conclusion

The observed reduction in 12-month physical and lifetime sexual IPV prevalence rates, changes in attitudes about the acceptability of violence, and the increases in help seeking are positive. However, work is still needed to address the substantial problem of IPV, as the lifetime prevalence rate of 1 in 3 women experiencing IPV remained stable over the 15-year time interval. This means that prevention efforts must be increased and sustained, and that adequate structures and resources must be available to respond to those seeking help.

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Contributors: Janet Fanslow (JF), Pauline Gulliver (PG), contributed to the conception and design of the study. Tracey McIntosh (TM) contributed to the application for funding of 2019 study. Ladan Hashemi (LH) managed the data cleaning, and conducted the analyses, with contributions from Zarintaj Malihi (ZM). LH, JF and PG interpreted the data, drafted the article and revised it. All authors contributed to the manuscript and approved the final version.

Competing interests hereby we confirm that all authors read and understood BMJ policy on declaration of interests and have completed the ICMJE uniform disclosure form at http://www.icmje.org/coi_disclosure.pdf and declare that we have no financial relationships with any organisations that might have an interest in the submitted work in the previous three years. The authors declare that no competing interests exist. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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Data availability statement. Data are unavailable due to the confidentiality and sensitivity of the data and Māori data sovereignty.

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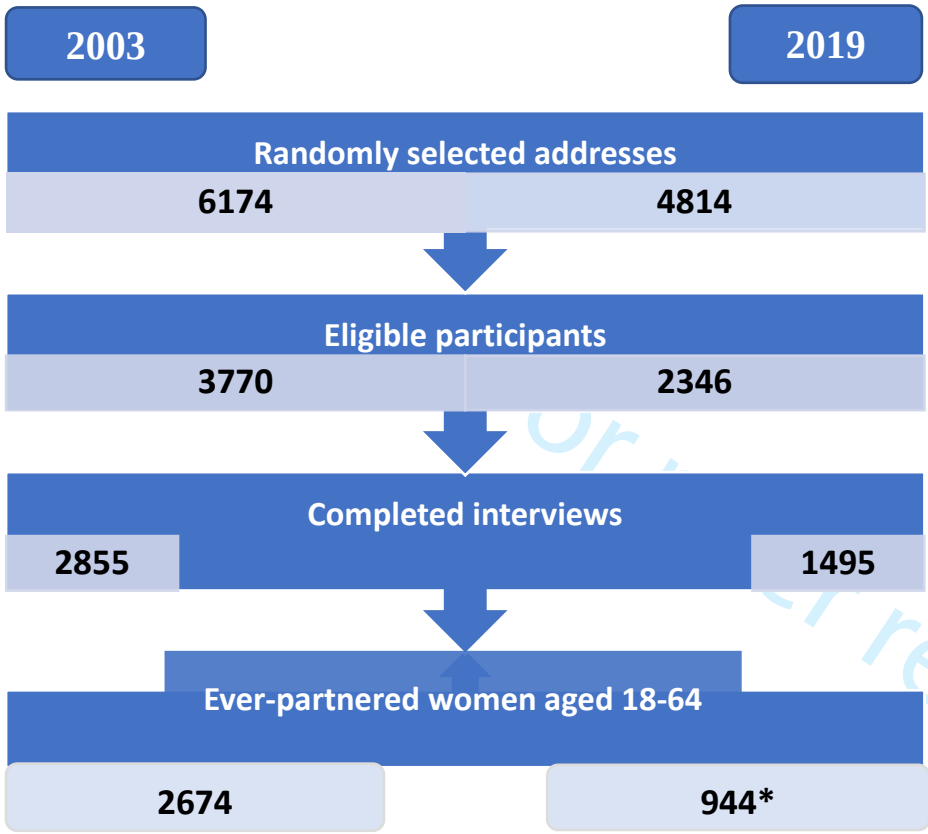
Figure legend:
Figure 1 Flow diagram of female participants in the 2003 and 2019 population-based studies on family violence in New Zealand



2,404 in 2003 and 2,468 in 2019 Dwelling inaccessible/vacant/not home/ language barrier/ participants were not eligible/ incapacitated/unavailable

915 participants in 2003 and 851 in 2019 refused to participate or did not complete interviews

181 in 2003 and 95 in 2019 (out of 1039 heterosexual women aged 18-64 years) were never partnered so were excluded from current analysis.

***For the purpose of this paper, we only included women aged 18-64 years from the 2019 survey.**

Supplementary Table 1. Definition of lifetime and past 12-month physical and sexual IPV, sociodemographic factors, attitude toward violence against women and gender roles, and help seeking behaviours in the 2003 and 2019 surveys

Variable	Definition
Ever-partnered	If they had ever been married, ever lived with, or were currently with a regular sexual partner.
Lifetime Physical IPV	Participants were categorised as experiencing lifetime physical IPV if they reported having experienced one or more of the following moderate or severe acts of physical violence. **Moderate**: Have been slapped or had something thrown at or have been pushed, shoved, or had their hair pulled **Severe**: Have been kicked, dragged, beaten up, hit with fist or something else, chocked or burnt
12-Month Physical IPV	Participants were categorised as experiencing 12-month physical IPV if they reported having experienced one or more acts of the physical IPV in the last 12 months prior to the data collection
Sexual IPV	Participants were categorised as experiencing lifetime sexual IPV if they reported having experienced one or more of the following acts: being physically forced to have sexual intercourse when the woman did not want to; having sexual intercourse because she was afraid of what her partner might do or being forced to do something sexual that she found degrading or humiliating.
12-Month Sexual IPV	Participants were categorised as experiencing 12-month sexual IPV if they reported having experienced one or more acts of the sexual IPV in the last 12 months prior to the data collection
Independent source of income	Have access to income from wages or investments, retirement income (yes or no).
Deprivation level	Taken from NZ index of multiple deprivation (IMD) [44] which used a combination of routinely collected data from government departments and census data in seven domains (i.e. employment, income, crime, housing, health, education, and access to services) to develop a measure of deprivation at the neighborhood level. Participants were classified in three groups: living in least, moderately and most deprived area.
Attitudes toward a man hitting his wife	Participant opinion on six conditions under which hitting or beating one's wife was considered justified : she doesn't complete her household work to his satisfaction; she disobeys him; she refuses to have sex with him; she ask him whether he has other girlfriends; he suspects that she is unfaithful; he finds out that she has been unfaithful. Response options were yes and no.
Attitudes toward gender roles	Participant's attitude about acceptable behaviour for men and women in relationships, and views on family issues being made public: A good wife obeys her husband even if she disagrees; family problems should only be discussed with people in the family; it is important for a man to show his partner who is boss; a woman should be able to choose her own friends even

Variable	Definition
	if her husband disapproves; it is a wife's obligation to have sex with her husband even if she doesn't feel like it
Formal help-seeking	Contact with service agencies including: police, lawyers, courts, health professionals and mental health workers, or NGOs and community based service providers, including Women's Refuges, and Marae.
Informal help seeking	Support from family, friends, neighbours, or workmates.

STROBE 2007 (v4) checklist of items to be included in reports of observational studies in epidemiology*

Checklist for cohort, case-control, and cross-sectional studies (combined)

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2-4
Objectives	3	State specific objectives, including any pre-specified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4-5
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	4-5
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	NA
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6, Supplementary table
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6, Supplementary table
Bias	9	Describe any efforts to address potential sources of bias	7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-7
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6-7
		(*b*) Describe any methods used to examine subgroups and interactions	6-7
		(*c*) Explain how missing data were addressed	7
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed	NA

		Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy	
		(*e*) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	4-5
		(b) Give reasons for non-participation at each stage	4-5
		(c) Consider use of a flow diagram	
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 5, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	NA
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	NA
		Cross-sectional study—Report numbers of outcome events or summary measures	Table 2 & Table 3
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 2 and Table 3
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	19
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	21
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	20
Generalisability	21	Discuss the generalisability (external validity) of the study results	19
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	2

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.
Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.