

Utilisation of smoking cessation pharmacotherapies during pregnancy: a multi-national population-based study

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The Difference is Research

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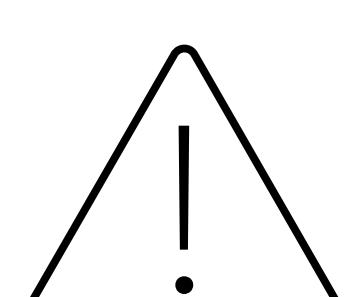
Background



Maternal smoking is a leading, yet modifiable, cause of adverse pregnancy outcomes. [1,2]



Smoking cessation pharmacotherapies are the most effective strategy in general population, with emerging evidence of their efficacy in pregnancy. [3,4]



Significant gaps regarding safety and effectiveness in pregnancy affects guideline recommendations, with varenicline and bupropion currently not recommended during pregnancy and caution regarding the use of NRT.



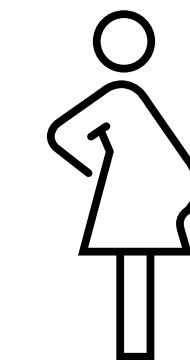
Unknown how many pregnant women use these medicines despite potential risks.

Aim

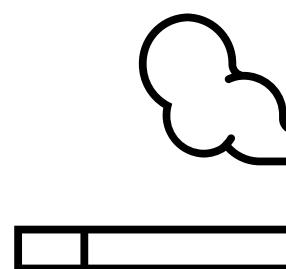
Across four countries quantify the:

- 1) Proportion of pregnant women using smoking cessation pharmacotherapies, and
- 2) Extent of use during the first trimester specifically, due to the risk of congenital malformations.

Results



1.7 million pregnancies were included across the four countries.



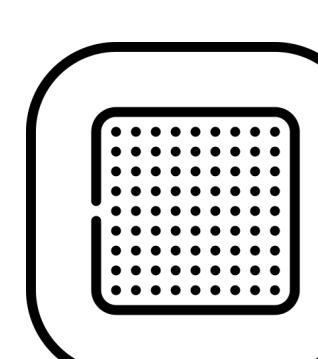
3.4% of births in Norway, 4.3% in Sweden, 9.2% in NSW and 16.0% in New Zealand had maternal smoking recorded.

Proportion of pregnancies exposed to smoking cessation pharmacotherapies

	Pregnancies	NRT *	Varenicline	Bupropion
NSW, Australia	468,341	0.23 %	0.14 %	0.01 %
New Zealand	352,412	1.86 %	0.11 %	0.07 %
Norway	324,926	<0.01 %	0.02 %	<0.01 %
Sweden	554,959	0.01 %	0.03 %	<0.01 %

* Prescription NRT only, no over-the-counter use measured.

→ 5-10x higher among women with a record of maternal smoking.

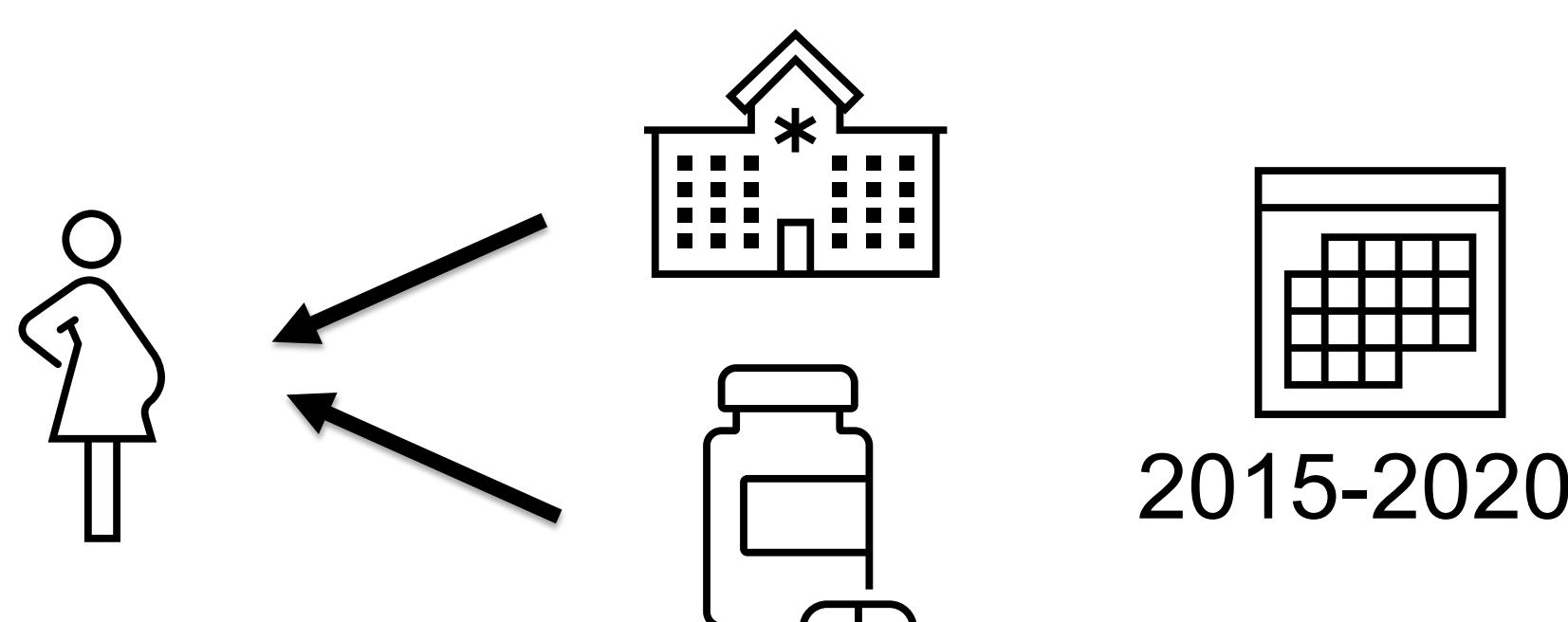


In New Zealand, of all pregnancies exposed to NRT during gestation, 74% used patches, 32% lozenges and 40% gums, with 41% of births used more than one form of NRT.

Methods



Hospital admission records and medication dispensing records were linked to birth registers.



We calculated utilisation among all pregnancies and among those with a record or indication of maternal smoking.

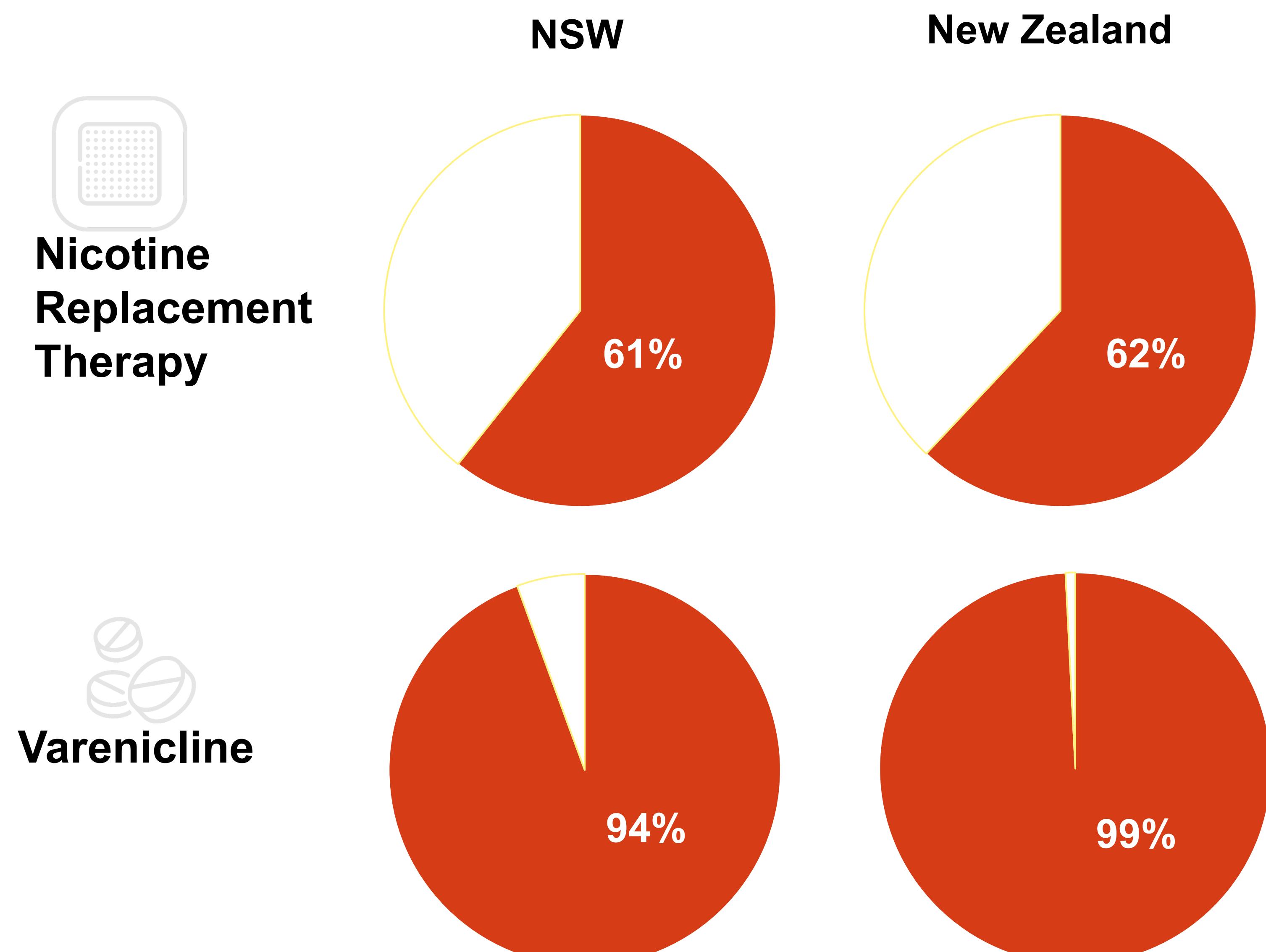
Use during pregnancy defined as ≥1 dispensing with day's supply overlapping the period from date of conception to childbirth.

First trimester use was defined as use in the 11 weeks following date of conception.

References

1. Jaakkola JJK, Gissler M. Maternal Smoking in Pregnancy, Fetal Development, and Childhood Asthma. *Am J Public Health* [Internet]. 2004 Jan;94(1):136–40.
2. Hammoud AO, et al. Smoking in pregnancy revisited: Findings from a large population-based study. *American Journal of Obstetrics and Gynecology*. Mosby Inc.; 2005. p. 1856–62.
3. Lindson N, et al. Pharmacological and electronic cigarette interventions for smoking cessation in adults: component network meta-analyses. *Cochrane Database of Systematic Reviews* [Internet]. 2023 Sep 12;2023(9).
4. Vila-Farinás A, et al. Effectiveness of smoking cessation interventions among pregnant women: An updated systematic review and meta-analysis. *Addictive Behaviors* [Internet]. 2024 Jan;148:107854.

First Trimester Exposure among Exposed Pregnancies



Proportion of exposed pregnancies with exposure in the first trimester

Implications

Although a large proportion of use occurred in the period of concern for congenital malformations (first trimester), it is reassuring that few women use smoking cessation pharmacotherapies during pregnancy.

Our findings indicate that pregnancy risk minimisation strategies are not currently required for these medicines.