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The association between treatment adherence to nicotine patches and smoking cessation in pregnancy

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INTRODUCTION

- In non-pregnant “quitters,” adherence to nicotine replacement therapy (NRT) increases smoking cessation.
- Only 7-30% of pregnant women who received NRT reported finishing a complete course
- A potential reason for the apparently lower efficacy of NRT in pregnancy may be poor adherence to treatment.
- We used data from a placebo randomised trial of 1050 pregnant women to nicotine replacement therapy (NRT) or placebo to investigate relationships between adherence to placebo or NRT patches and cessation in pregnancy

OBJECTIVES

In this study, we investigated:

1. Which participant characteristics are associated with adherence to trial treatments
2. The relationship between trial participants' adherence to treatment patches and the odds of smoking cessation
3. Whether reverse causation explains any apparent adherence-cessation association
4. Whether there is evidence of an interaction between adherence, type of patch used (i.e. placebo or nicotine) and the odds of cessation

METHODS

The methods for the objectives stated above are as follows:

1. Multivariable linear regression was used to determine which patient characteristics were associated with the number of patches used, using a stepwise backwards model building strategy.
2. Multivariable logistic regression was used to investigate the relationship between adherence and smoking cessation. Treatment adherence and heaviness of smoking were considered a-priori confounders.
3. Logistic regression between adherence and cessation at delivery was conducted in a group restricted to those assigned NRT patches and who achieved abstinence at one month post-quit date.
4. Logistic regression for cessation at delivery with an interaction between NRT assignment and adherence (high vs. low based) was carried out to investigate whether higher use of NRT patches are associated with increased cessation.

RESULTS

OBJECTIVE 1. – Factors associated with adherence (n=957)

Adherence reported at 1m (0-4WKS)		Adherence reported at delivery (0-8WKS)	
Characteristic	Adjusted β , (95%CI)	Characteristic	Adjusted β , (95%CI)
Baseline cotinine	-0.08 (-0.18,-0.01)	HSI	-0.27 (-0.50, -0.05)
Allocation to NRT	2.59 (1.50, 3.68)	Allocation to NRT	0.51 (0.29, 3.68)

OBJECTIVE 2. – The association between adherence and cessation (n=957)

- For each extra day trial patches were used, up to 1 month, the odds of cessation at 1 month increased by **11%** (adjusted OR 1.11, 95%CI 1.08 to 1.13, p<0.001).
- For each extra day trial patches were used, up to eight weeks, the odds of cessation at delivery increased by **6%** (adjusted OR 1.06, 95%CI 1.03 to 1.09, p<0.001).

OBJECTIVE 3. – Investigation of whether failure to quit results in reduced adherence (n=167)

- No association between adherence and cessation was observed when the group of participants was restricted to a subgroup where reverse causation was not possible (OR: 0.63, 95%CI: 0.31-1.27, p=0.196).

OBJECTIVE 4. – Investigating the interaction between assignment to NRT and adherence (n=957)

- There was no difference in cessation between high and low adherence to placebo patches amongst users (OR 0.94, 95%CI 0.47 to 1.88, p=0.858).
- BUT...**
- In NRT users, highly adherent women were more likely to achieve cessation than less adherent women (OR 2.47, 95%CI 1.32 to 4.63, p=0.004).



CONCLUSIONS

- Greater adherence was seen with NRT patches, and greater adherence with NRT patches increased the odds of smoking cessation.
- If used sufficiently, NRT patches may be effective for at least some pregnant women who try to stop smoking. Trials testing interventions which encourage women's adherence to higher dose NRT are indicated.

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