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# Effects of Smoking vs. Nicotine Replacement Therapy During Pregnancy on Childhood Health Outcomes: An Integrative Literature Review

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# Effects of Smoking vs. NRT During Pregnancy

Andrew J. McBride, Kristen P. Sabo & Emily D. Williams  
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## PATIENT CARE ISSUE

- Cost for neonatal complications estimated >\$350 million annually (NC DHHS, 2013).
- Approximately 10.6% of women smoke while they are pregnant (NC DHHS, 2013).
- Smoking during pregnancy can lead to premature, low birth-weight infants, or stillbirth.
- Carbon monoxide and nicotine cross the placenta and interfere with fetal oxygen supply (NIH National Institute on Drug Abuse, 2014).
- Complications due to maternal smoking include Sudden Infant Death Syndrome, growth retardation, poor lung development, obesity, and respiratory infections (CDC, 2011).

## EVIDENCE-BASED PRACTICE QUESTION

**Question:** In pregnant women, does the use of Nicotine Replacement Therapy compared to smoking during pregnancy reduce the risk of future childhood health concerns?

**P-** Pregnant women

**I-** Nicotine Replacement Therapy (NRT)

**C-** Smoking

**O-** Reduce the risk of future childhood health concerns (respiratory complications, obesity)

## REGISTERED NURSE INTERVIEW

### Labor and Delivery CRN

- NRT is often used improperly by pregnant mothers.
- Fetal heart rate increases after maternal nicotine use.

### NICU CRN

- Nicotine addiction in pregnant mothers can lead to nicotine addiction in neonates.
- Mothers using nicotine often give birth to neonates who are small for gestational age, low in birth weight, and have prolonged, increased heart rate.

## METHODS

**Key Words:** pregnancy, maternal smoking, nicotine replacement therapy, nicotine, childhood health concerns, childhood obesity

**Databases:** Alt HealthWatch, AMED, CINAHL, Medline

**Inclusion Criteria:** Articles published between 2008 and 2014, articles that focused on the fetal and future childhood concerns of NRT use and smoking use during pregnancy

**Exclusion Criteria:** Non-human test population, year of publication prior to 2008, small sample size

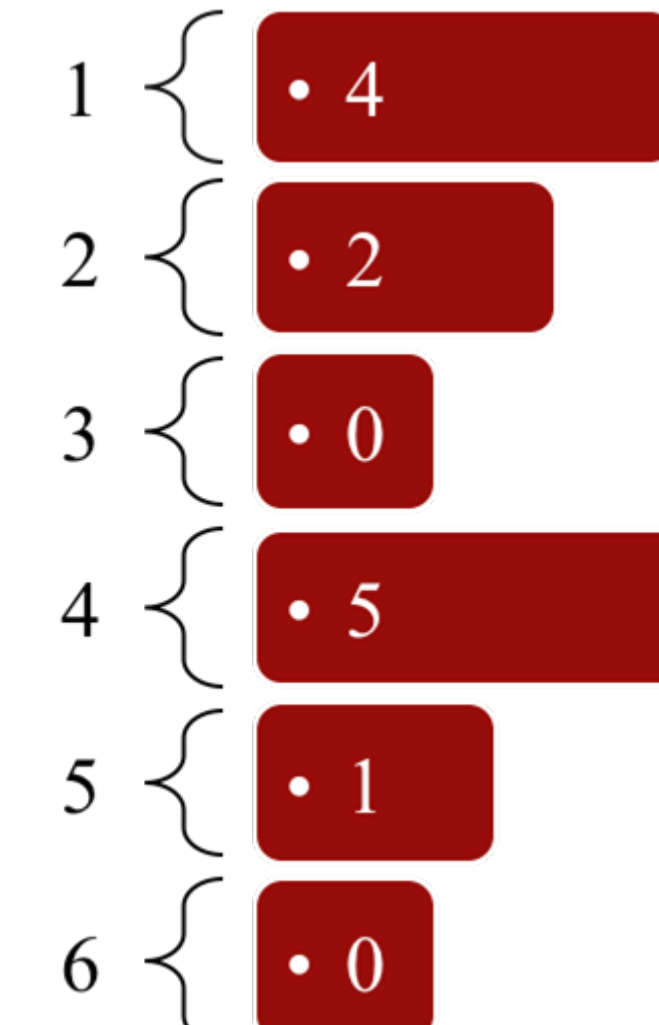
## SYNTHESIS OF EVIDENCE

- Smoking leads to increased chance of preterm birth & low birth weight (LBW) (CDC, 2011).
- Childhood obesity is linked to smoking during pregnancy (Behl, 2013; Bekkers, 2011; Ino, 2010, Weng, 2012).
- NRT delivers nicotine without carcinogens (Oncken, 2008; Brose, 2013).
- NRT showed positive safety outcomes but low adherence (Coleman, 2010).
- Infants born to NRT using mothers had 2x the risk of having LBW (Gaither, 2008)
- Infants born to smokers had 1.31x the risk of LBW (Gaither, 2008).
- Combination NRT increases cessation but exposes fetus to higher nicotine levels (Brose, 2013).
- Smoking cessation should be targeted at one year prior to pregnancy (Wang, 2012).

## RESULTS

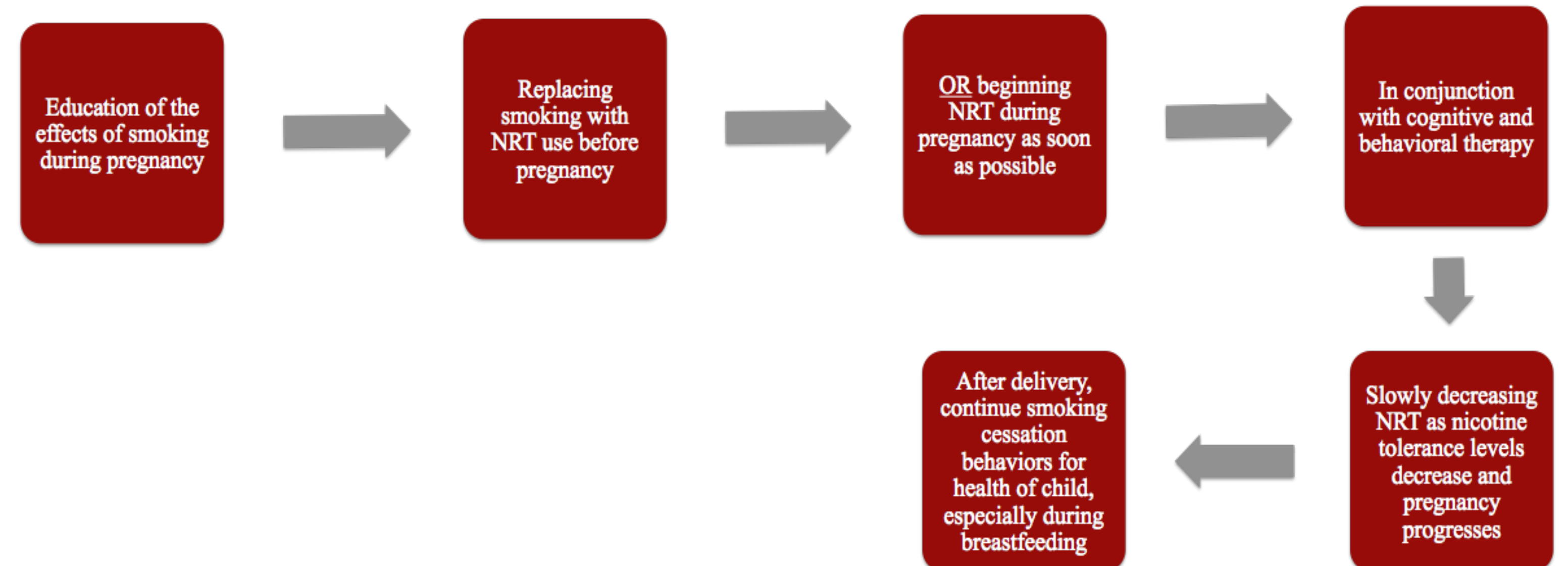
Database	Results
Alt HealthWatch	1
AMED	2
CINAHL	855
Medline	82

Level Of Evidence



Number of Articles Included

## EVIDENCE-BASED PRACTICE RECOMMENDATIONS



## LIMITATIONS

- Limited studies of primary evidence within the past 5 years
- Limited studies analyzing direct effects of NRT on the fetus.
- Few studies examining longevity effects of NRT on the offspring.

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