

# A Review and Meta-analysis of the Association between Dairy Intake and Breast Cancer Risk in Prospective Cohort Studies

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## Background

- Breast cancer is the most common cancer among women
- Over 220,000 women were diagnosed with breast cancer in 2012
- It has been hypothesized that dairy may play a role in breast cancer; however, research has been inconsistent
- Proposed mechanisms linking dairy and breast cancer risk include: insulin-like growth factor-1 concentrations; phytanic acid through alpha-methylacyl-CoA racemase expression; and conjugated linoleic acid through cell signaling pathways and DNA synthesis

## Objective

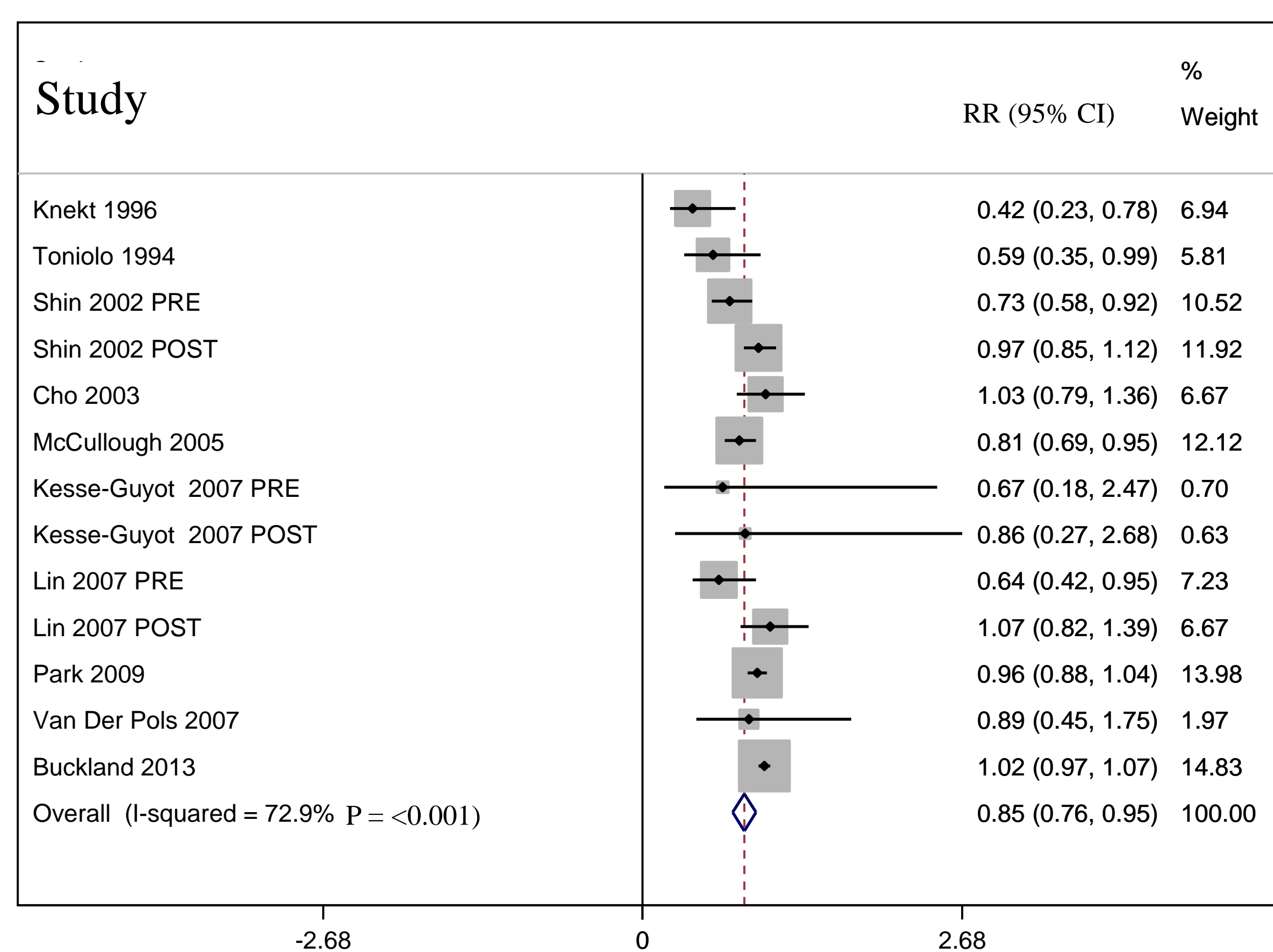
- Our objective is to review literature and conduct a meta-analysis on the association between dairy intake and breast cancer risk in prospective cohort studies

## Methods

- We identified previous studies on dairy intake and breast cancer risk that were included in at least one of the three review/meta-analysis articles (Dong et al. 2011, Moorman et al. 2004 and Zang et al. 2015)
- Prospective cohort studies reporting associations between self-reported dairy intake during adulthood and risk of breast cancer were gathered from these articles
- Relative risk (RR) and 95% confidence intervals (CI) for comparing the highest and the lowest dairy intake categories were extracted
- We conducted a meta-analysis from 18 studies, after excluding one that did not report 95% CI, using Stata 14.1

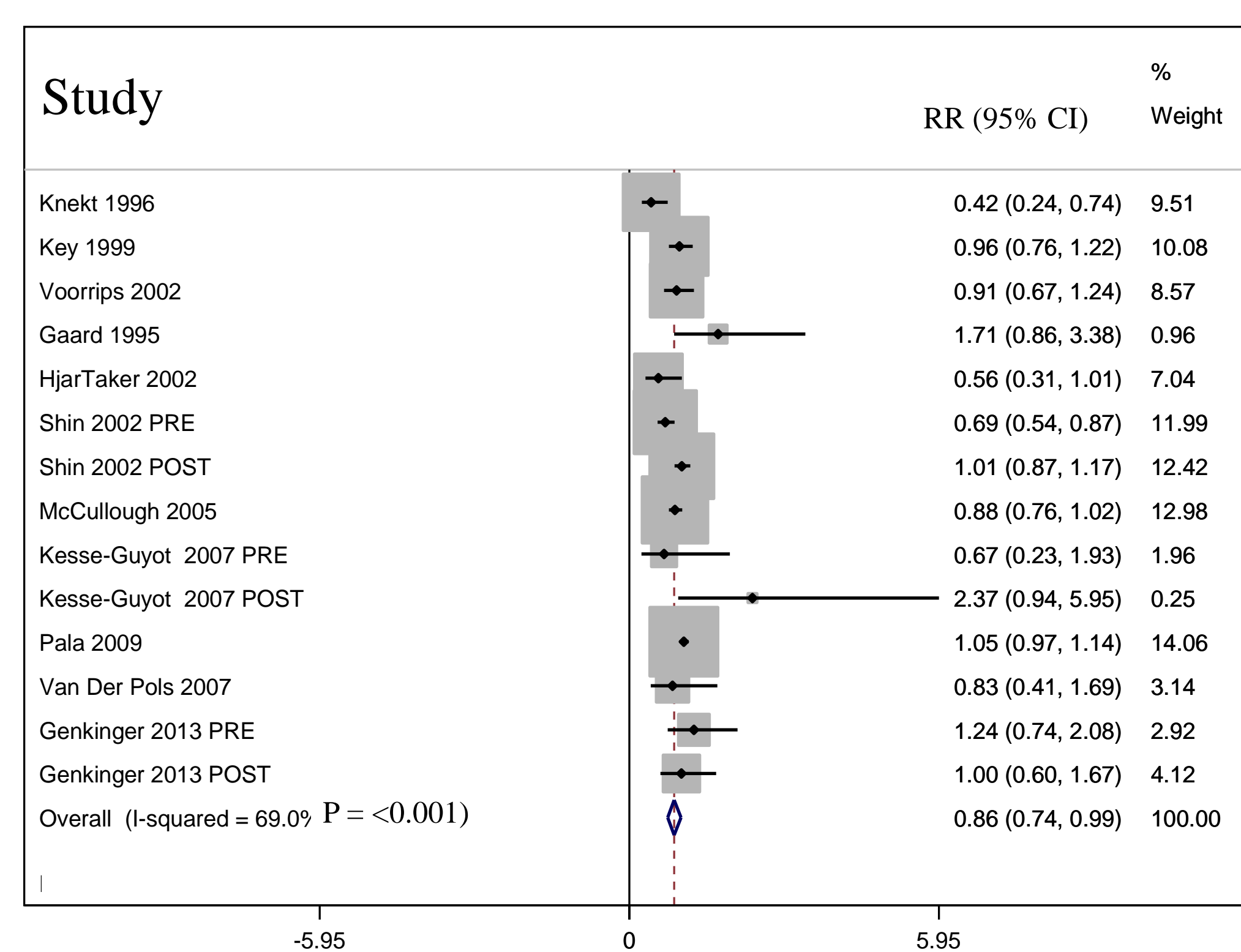
## Results

Table 1: Association of total dairy and breast cancer risk



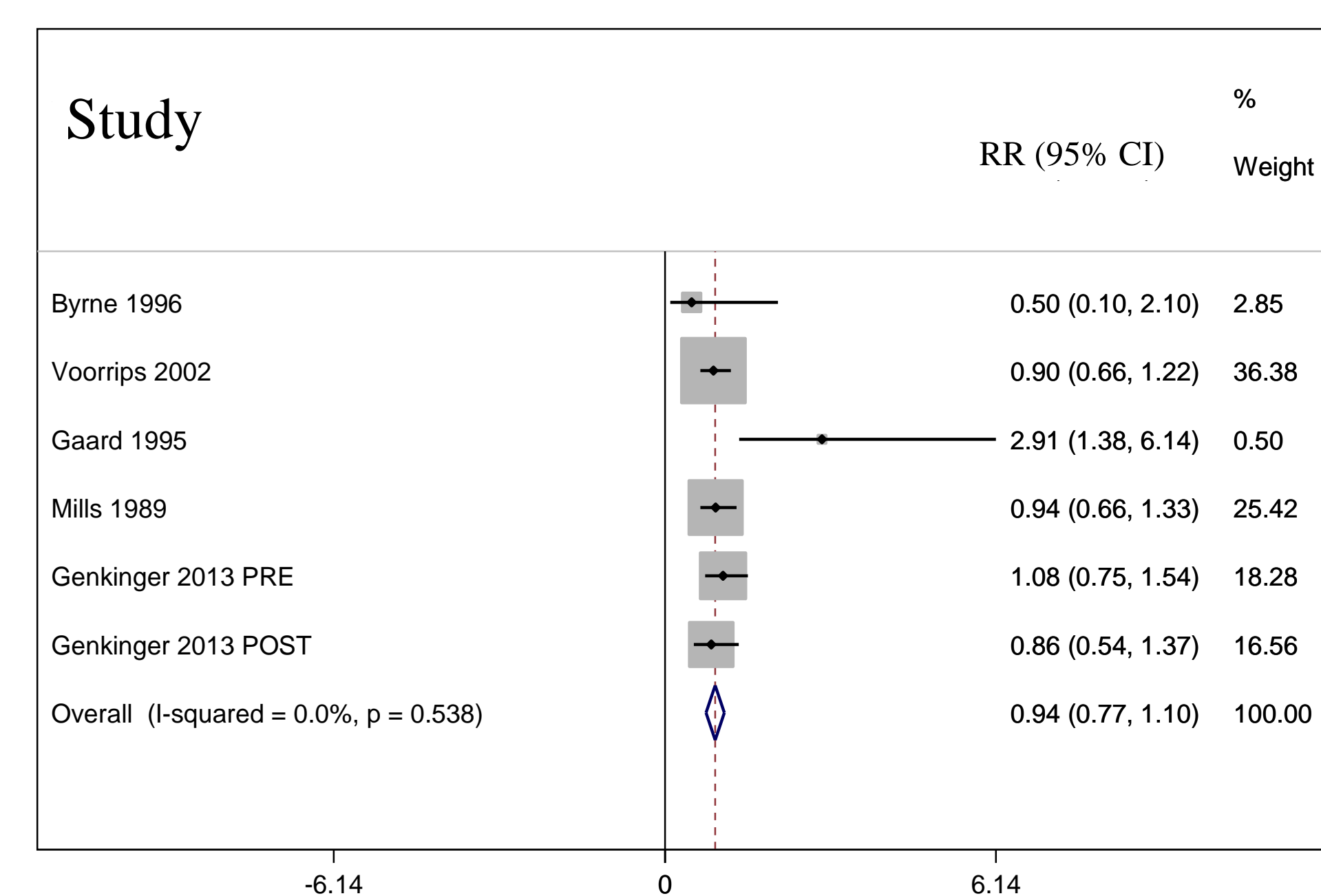
For total dairy intake, 10 studies were included and showed a statistically significant inverse association with breast cancer risk [RR (95% CI) = 0.85 (0.76-0.95)]

Table 2: Association of total milk and breast cancer risk



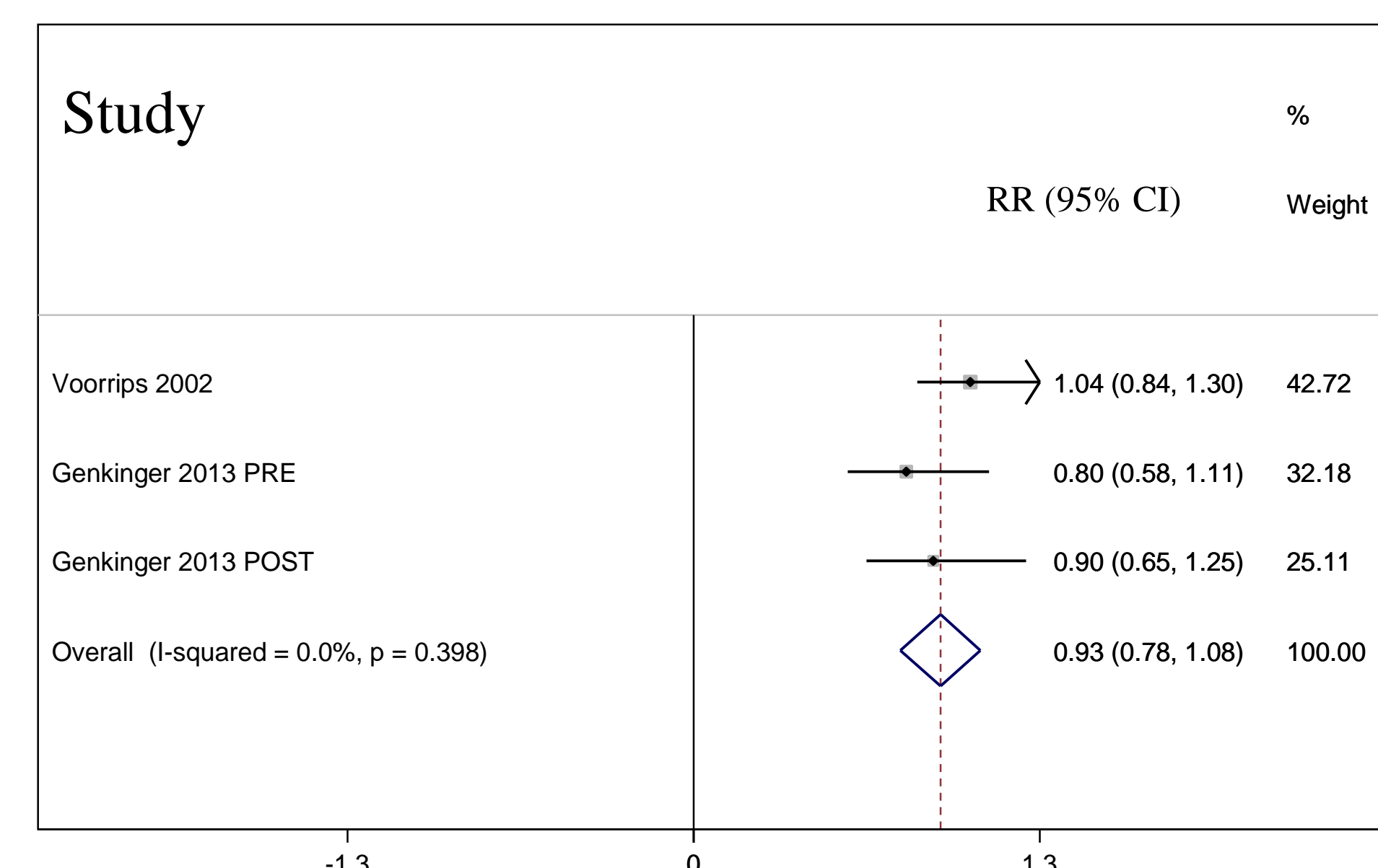
A total of 11 studies were included for total milk intake and showed a statistically significant inverse association with breast cancer risk [RR (95% CI) = 0.86 (0.74-0.99)]

Table 3: Association of whole milk and breast cancer risk



There were 5 studies included for whole milk intake and it was not associated with breast cancer risk [RR (95% CI) = 0.94 (0.77-1.10)]

Table 4: Association of low-fat milk and breast cancer risk



A total of 2 studies were included for low-fat milk intake and showed no association with breast cancer risk [RR (95% CI) = 0.93 (0.78-1.08)]

- The total number of participants from 18 studies is 1,418,051 women
- The total number of breast cancer cases from 18 studies is 35,196 women
- The studies were conducted in several countries: nine studies from Europe, eight from the U.S., and one from Japan

## Strengths & Limitations

- We were able to include studies conducted between 1948 and 2005
- We were able to include studies from various countries
- Although major confounders were adjusted for in most of the studies that were included, the possibility of residual confounding variables cannot be fully ruled out

## Conclusion

- Total dairy and total milk intakes were inversely associated with breast cancer risk
- Whole milk and low-fat milk intakes were not associated with breast cancer risk

## Future Directions

- Additional literature review will be conducted to search for prospective cohort studies of dairy intake and breast cancer risk that were not included in the three meta-analysis/review articles.
- Potential sources of heterogeneity for associations of total dairy or total milk intake with breast cancer risk will be explored
- More literature review will be conducted for potential mechanisms underlying dairy and breast cancer association

## References

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