2017 Baby weaning

IL, RSU, SU

Contents

Data analysis

Data extracted was tabulated in a google sheet. Then exported as csv file and imported in R (R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.)

The package meta was used for the meta-analysis. The heterogenicity between studies was checked with Tau2. A funnel plot was used to detect publication bias. We grouped the comparison and outcomes to compare studies. A random effect meta-analysis using odds-ratio as outcome was performed with a DerSimonian and Lard method (add reference DerSimonian 1986) . A forest plot was used to visualize the association between the exposure to specific risk factors and the outcome.

Risk factors were grouped in reports focused to drink, food or breastfeeding and outcomes were severe early-childhood caries (s-ECC), white spot lesions (WSL) or caries measured in ICDAS>0.

Paquetes

Dataset

```
# df <- read_csv("https://docs.google.com/spreadsheets/d/e/2PACX-1vR2cxtO3yvM7-qsEibr9s5dsWh-JCsItfOVi1

df <- read_csv("2017-weaning.csv")
```

```
## Parsed with column specification:
## cols(
##   id = col_character(),
##   `Risk factor` = col_character(),
##   Comparison = col_character(),
##   Outcome = col_character(),
##   `Group A - Protector` = col_character(),
```

```
##   `Group B - Risk factor` = col_character(),
##   `Events in A` = col_integer(),
##   `Total in A` = col_integer(),
##   `Events in B` = col_integer(),
##   `Total in B` = col_integer()
## )
```

```
df <- mutate(df, Groups = paste(Comparison, Outcome))
df <- df %>%
  filter(!str_detect(id, "Un Lam et al")) #avoid Un Lam papers
```

Data cleaning

ANALYSIS

Breastfeeding and s-ECC

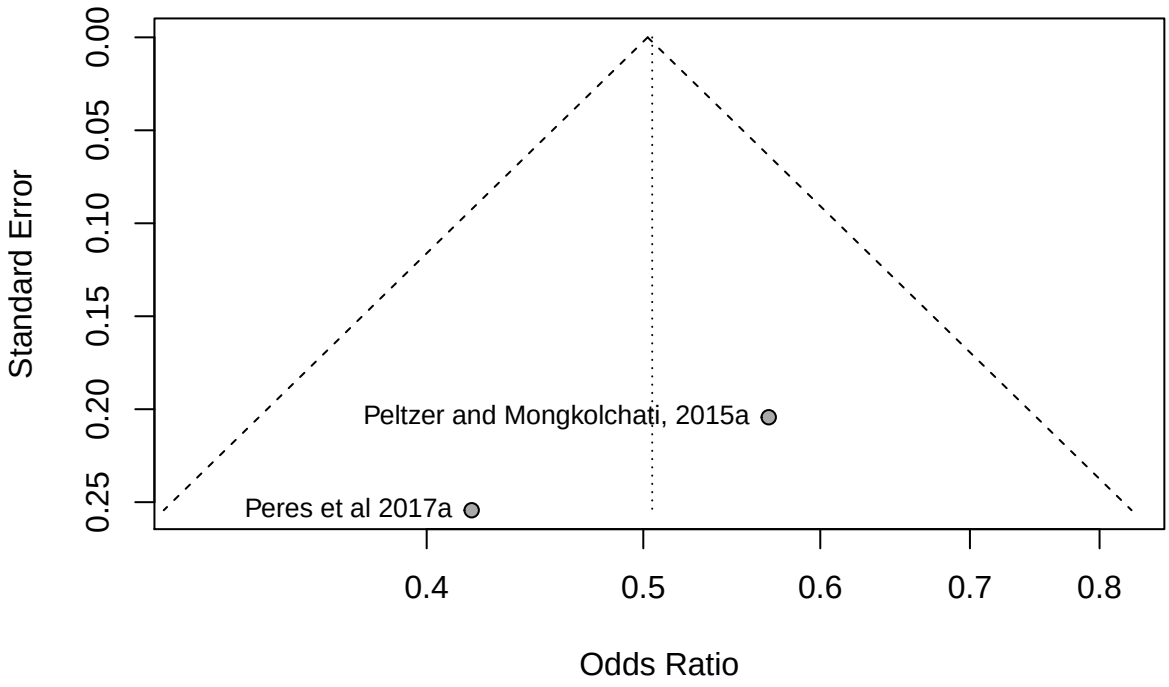
Selection of papers

```
df_b_ecc <- df %>%
  filter(Groups == "Breastfeed S-ECC")
```

```
meta1 <- metabin(`Events in A`, `Total in A`,
                 `Events in B`, `Total in B`,
                 data = df_b_ecc, #change this line
                 sm="OR",  method.tau = "DL",
                 comb.fixed = FALSE,
                 studlab = id)
```

Bias

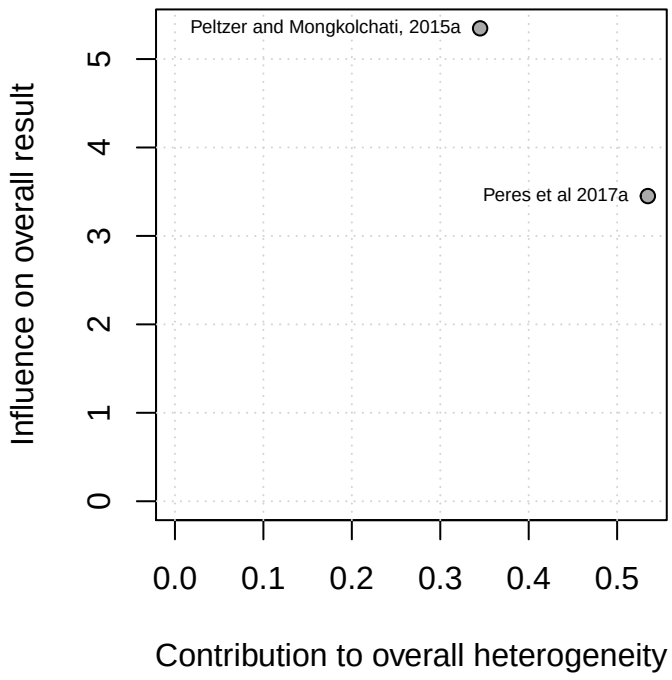
```
funnel.meta(meta1,
            studlab = TRUE)
```



Heterogeneity

Baujat B, Mahé C, Pignon JP, Hill C (2002), A graphical method for exploring heterogeneity in meta-analyses: Application to a meta-analysis of 65 trials. Statistics in Medicine, 30, 2641–2652.

```
baujat.meta(meta1,
            yscale = 10, xmin = 2, ymin = 2,
            cex.studlab = .55)
```



Meta-analysis

```
meta1 <- metabin(`Events in A`, `Total in A`,
                 `Events in B`, `Total in B`,
                 data = df_b_ecc,
                 sm="OR",  method.tau = "DL",
                 comb.fixed = FALSE,
                 studlab = id)
```

```
summary(meta1)
```

```
## Number of studies combined: k = 2
##
##                          OR           95%-CI     z  p-value
## Random effects model 0.5046 [0.3693; 0.6895] -4.29 < 0.0001
##
## Quantifying heterogeneity:
##  tau^2 = 0; H = 1.00; I^2 = 0.0%
##
## Test of heterogeneity:
##     Q d.f.  p-value
##  0.88    1   0.3480
##
## Details on meta-analytical method:
## - Mantel-Haenszel method
```

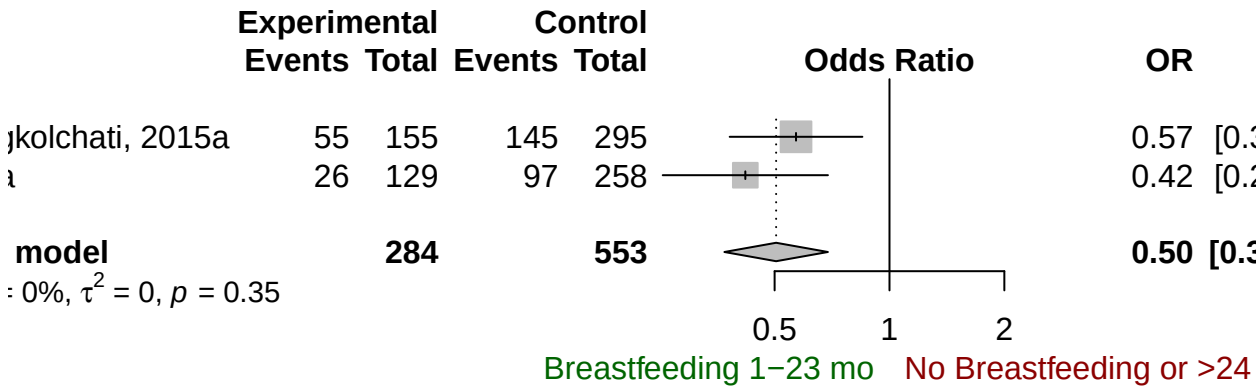
```
## - DerSimonian-Laird estimator for tau^2
```

```
meta1
```

```
##                                     OR           95%-CI %W(random)
## Peltzer and Mongkolchati, 2015a 0.5690 [0.3812; 0.8492]       60.8
## Peres et al 2017a               0.4190 [0.2545; 0.6897]       39.2
##
## Number of studies combined: k = 2
##
##                           OR           95%-CI     z  p-value
## Random effects model 0.5046 [0.3693; 0.6895] -4.29 < 0.0001
##
## Quantifying heterogeneity:
##  tau^2 = 0; H = 1.00; I^2 = 0.0%
##
## Test of heterogeneity:
##     Q d.f.  p-value
##  0.88    1   0.3480
##
## Details on meta-analytical method:
## - Mantel-Haenszel method
## - DerSimonian-Laird estimator for tau^2
```

Forest plot

```
forest.meta(meta1, # layout = "JAMA", # JAMA layout is more simple
       comb.fixed = FALSE,
       # LEFT
       label.left         = "Breastfeeding 1-23 mo",
       col.label.left     = "darkgreen",
       # RIGHT
       label.right        = "No Breastfeeding or >24 mo BF",
       col.label.right    = "darkred")
```



Sugary drinks and s-ECC

Selection of papers

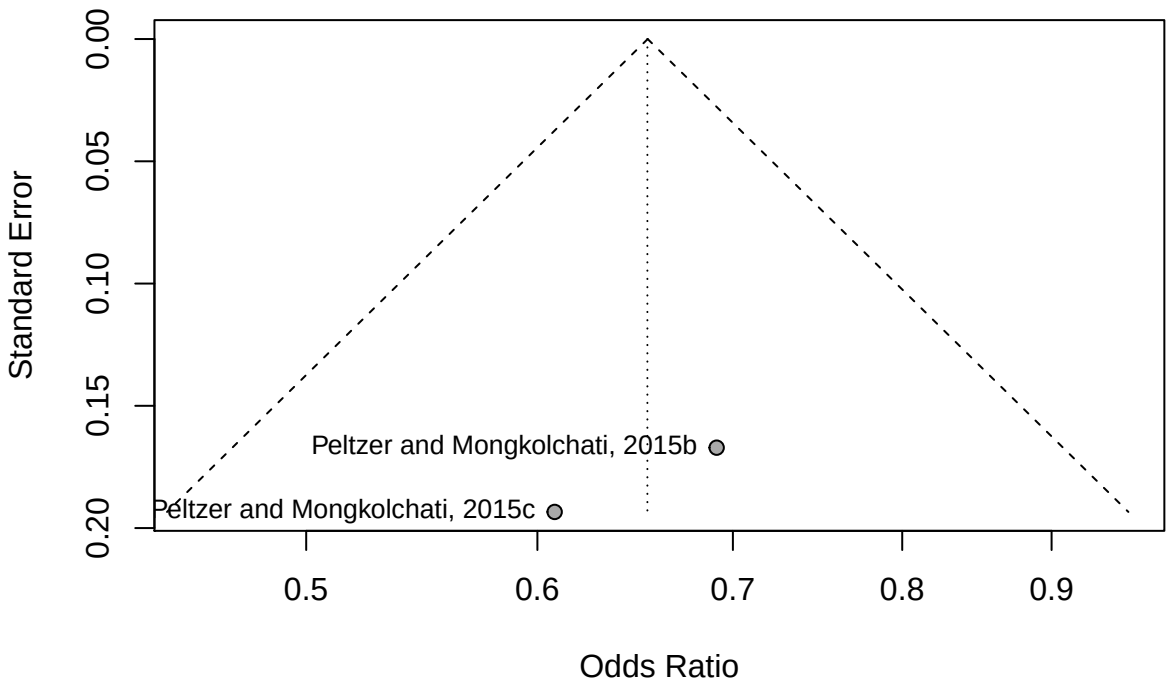
```
df_b_ecc <- df %>%
  filter(Groups == "Drink S-ECC")
df_b_ecc
```

```
## # A tibble: 2 × 11
##                                id                    `Risk factor`
##                             <chr>                            <chr>
## 1 Peltzer and Mongkolchati, 2015b     Introduction to soft drinks
## 2 Peltzer and Mongkolchati, 2015c Sleeps with bottle at 30 months
## # ... with 9 more variables: Comparison <chr>, Outcome <chr>, `Group A -
## #   Protector` <chr>, `Group B - Risk factor` <chr>, `Events in A` <int>,
## #   `Total in A` <int>, `Events in B` <int>, `Total in B` <int>,
## #   Groups <chr>
```

```
meta1 <- metabin(`Events in A`, `Total in A`,
                 `Events in B`, `Total in B`,
                 data = df_b_ecc, #change this line
                 sm="OR",  method.tau = "DL",
                 comb.fixed = FALSE,
                 studlab = id)
```

Bias

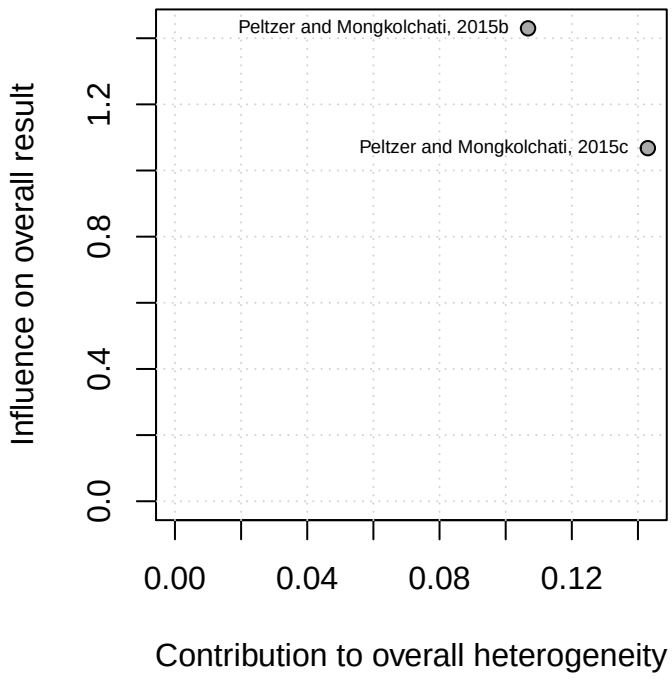
```
funnel.meta(meta1,
            studlab = TRUE)
```



Heterogeneity

Baujat B, Mahé C, Pignon JP, Hill C (2002), A graphical method for exploring heterogeneity in meta-analyses: Application to a meta-analysis of 65 trials. Statistics in Medicine, 30, 2641–2652.

```
baujat.meta(meta1,
            yscale = 10, xmin = 1, ymin = 1,
            studlab = TRUE ,
            cex.studlab = .55)
```



Meta-analysis

```
meta1 <- metabin(`Events in A`, `Total in A`,
                 `Events in B`, `Total in B`,
                 data = df_b_ecc,
                 sm="OR",  method.tau = "DL",
                 comb.fixed = FALSE,
                 studlab = id)
```

```
summary(meta1)
```

```
## Number of studies combined: k = 2
##
##                          OR           95%-CI     z  p-value
## Random effects model 0.6544 [0.5107; 0.8384] -3.35   0.0008
##
## Quantifying heterogeneity:
##  tau^2 = 0; H = 1.00; I^2 = 0.0%
##
## Test of heterogeneity:
##     Q d.f.  p-value
##  0.25    1   0.6172
##
## Details on meta-analytical method:
## - Mantel-Haenszel method
```

```
## - DerSimonian-Laird estimator for tau^2
```

```
meta1
```

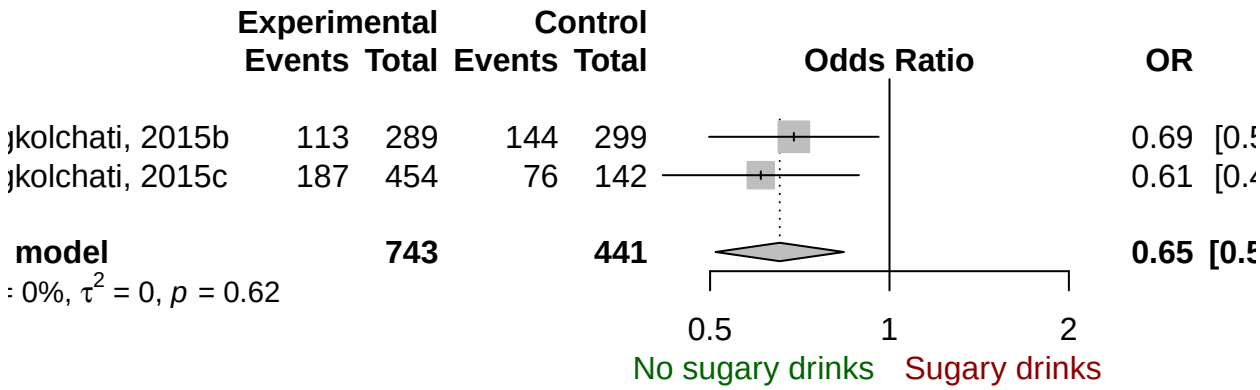
```
##                                     OR           95%-CI %W(random)
## Peltzer and Mongkolchati, 2015b 0.6911 [0.4981; 0.9589]       57.3
## Peltzer and Mongkolchati, 2015c 0.6082 [0.4163; 0.8885]       42.7
##
## Number of studies combined: k = 2
##
##                          OR           95%-CI     z  p-value
## Random effects model 0.6544 [0.5107; 0.8384] -3.35   0.0008
##
## Quantifying heterogeneity:
##  tau^2 = 0; H = 1.00; I^2 = 0.0%
##
## Test of heterogeneity:
##     Q d.f.  p-value
##  0.25    1   0.6172
##
## Details on meta-analytical method:
## - Mantel-Haenszel method
## - DerSimonian-Laird estimator for tau^2
```

Forest plot

```
df_b_ecc
```

```
## # A tibble: 2 × 11
##                                id                    `Risk factor`
##                             <chr>                            <chr>
## 1 Peltzer and Mongkolchati, 2015b     Introduction to soft drinks
## 2 Peltzer and Mongkolchati, 2015c Sleeps with bottle at 30 months
## # ... with 9 more variables: Comparison <chr>, Outcome <chr>, `Group A -
## #   Protector` <chr>, `Group B - Risk factor` <chr>, `Events in A` <int>,
## #   `Total in A` <int>, `Events in B` <int>, `Total in B` <int>,
## #   Groups <chr>
```

```
forest.meta(meta1, # layout = "JAMA", # JAMA layout is more simple
       comb.fixed = FALSE,
       # LEFT
       label.left         = "No sugary drinks",
       col.label.left     = "darkgreen",
       # RIGHT
       label.right        = "Sugary drinks",
       col.label.right    = "darkred")
```



Food White and spot lesions

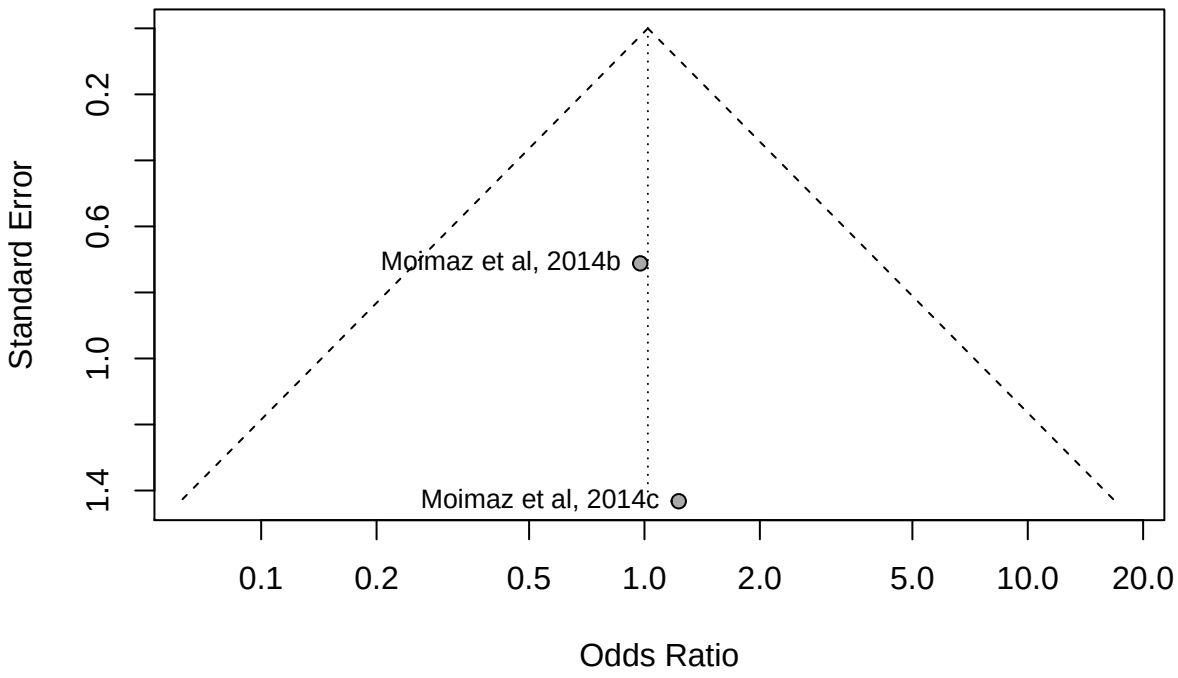
Selection of papers

```
df_b_ecc <- df %>%
  filter(Groups == "Food White spot lesions")
```

```
meta1 <- metabin(`Events in A`, `Total in A`,
                 `Events in B`, `Total in B`,
                 data = df_b_ecc, #change this line
                 sm="OR",  method.tau = "DL",
                 comb.fixed = FALSE,
                 studlab = id)
```

Bias

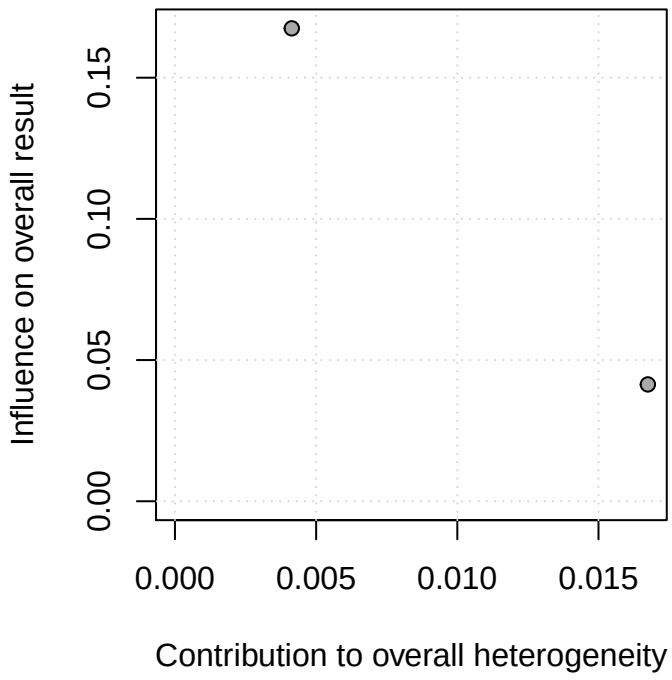
```
funnel.meta(meta1,
            studlab = TRUE)
```



Heterogeneity

Baujat B, Mahé C, Pignon JP, Hill C (2002), A graphical method for exploring heterogeneity in meta-analyses: Application to a meta-analysis of 65 trials. Statistics in Medicine, 30, 2641–2652.

```
baujat.meta(meta1,
            yscale = 10, xmin = 1, ymin = 1,
            studlab = TRUE ,
            cex.studlab = .55)
```



Meta-analysis

```
meta1 <- metabin(`Events in A`, `Total in A`,
                 `Events in B`, `Total in B`,
                 data = df_b_ecc,
                 sm="OR",  method.tau = "DL",
                 comb.fixed = FALSE,
                 studlab = id)
```

```
summary(meta1)
```

```
## Number of studies combined: k = 2
##
##                          OR           95%-CI    z  p-value
## Random effects model 1.0207 [0.2926; 3.5611] 0.03   0.9744
##
## Quantifying heterogeneity:
##  tau^2 = 0; H = 1.00; I^2 = 0.0%
##
## Test of heterogeneity:
##     Q d.f.  p-value
##  0.02    1   0.8851
##
## Details on meta-analytical method:
## - Mantel-Haenszel method
```

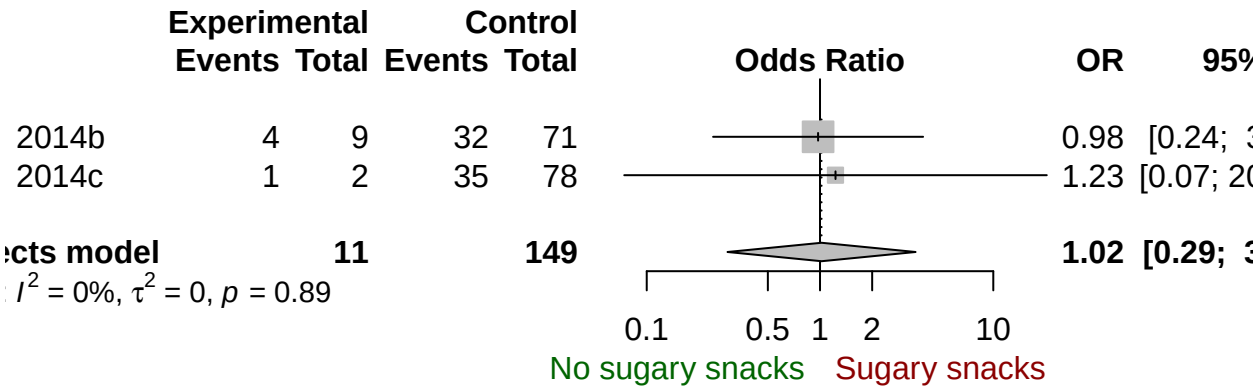
```
## - DerSimonian-Laird estimator for tau^2
```

```
meta1
```

```
##                          OR            95%-CI %W(random)
## Moimaz et al, 2014b 0.9750 [0.2415;  3.9358]       80.2
## Moimaz et al, 2014c 1.2286 [0.0742; 20.3554]       19.8
##
## Number of studies combined: k = 2
##
##                           OR           95%-CI    z  p-value
## Random effects model 1.0207 [0.2926; 3.5611] 0.03   0.9744
##
## Quantifying heterogeneity:
##  tau^2 = 0; H = 1.00; I^2 = 0.0%
##
## Test of heterogeneity:
##     Q d.f.  p-value
##  0.02    1   0.8851
##
## Details on meta-analytical method:
## - Mantel-Haenszel method
## - DerSimonian-Laird estimator for tau^2
```

Forest plot

```
forest.meta(meta1, # layout = "JAMA", # JAMA layout is more simple
       comb.fixed = FALSE,
       # LEFT
       label.left         = "No sugary snacks",
       col.label.left     = "darkgreen",
       # RIGHT
       label.right        = "Sugary snacks",
       col.label.right    = "darkred")
```



References

```
citation()
```

```
##
## To cite R in publications use:
##
##   R Core Team (2017). R: A language and environment for
##   statistical computing. R Foundation for Statistical Computing,
##   Vienna, Austria. URL https://www.R-project.org/.
##
## A BibTeX entry for LaTeX users is
##
##   @Manual{,
##     title = {R: A Language and Environment for Statistical Computing},
##     author = {{R Core Team}},
##     organization = {R Foundation for Statistical Computing},
##     address = {Vienna, Austria},
##     year = {2017},
##     url = {https://www.R-project.org/},
##   }
##
## We have invested a lot of time and effort in creating R, please
## cite it when using it for data analysis. See also
```

```
## 'citation("pkgname")' for citing R packages.
```

```
citation(package = "tidyverse")
```

```
##
## To cite package 'tidyverse' in publications use:
##
##   Hadley Wickham (2017). tidyverse: Easily Install and Load
##   'Tidyverse' Packages. R package version 1.1.1.
##   https://CRAN.R-project.org/package=tidyverse
##
## A BibTeX entry for LaTeX users is
##
##   @Manual{,
##     title = {tidyverse: Easily Install and Load 'Tidyverse' Packages},
##     author = {Hadley Wickham},
##     year = {2017},
##     note = {R package version 1.1.1},
##     url = {https://CRAN.R-project.org/package=tidyverse},
##   }
```

```
citation(package = "stringr")
```

```
##
## To cite package 'stringr' in publications use:
##
##   Hadley Wickham (2017). stringr: Simple, Consistent Wrappers for
##   Common String Operations. R package version 1.2.0.
##   https://CRAN.R-project.org/package=stringr
##
## A BibTeX entry for LaTeX users is
##
##   @Manual{,
##     title = {stringr: Simple, Consistent Wrappers for Common String Operations},
##     author = {Hadley Wickham},
##     year = {2017},
##     note = {R package version 1.2.0},
##     url = {https://CRAN.R-project.org/package=stringr},
##   }
```

```
citation(package = "meta")
```

```
##
## To cite package 'meta' in publications use:
##
##   Guido Schwarzer (2007), meta: An R package for meta-analysis, R
##   News, 7(3), 40-45.
##
## A BibTeX entry for LaTeX users is
##
##   @Article{,
##     title = {meta: {A}n {R} package for meta-analysis},
##     author = {Guido Schwarzer},
##     journal = {R News},
##     year = {2007},
##     volume = {7},
```

```
##     number = {3},
##     pages = {40--45},
##   }
##
## URL https://cran.r-project.org/doc/Rnews/Rnews_2007-3.pdf
```