Supplemental 2 JAGS CODE

Fixed effect JAGS models

Fixed effect JAGS models with priors set on a risk of the control group (pcj) with j=1, 2, …, n

1. pcj ~ Beta (0.5, 0.5)
2. pcj ~ Beta (1, 1)

model {

for (j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# log(OR)

theta[j] <- mu

## a.

# 1. prior for risk of the control group using Beta (0.5,0.5)

pc[j] ~ dbeta(0.5,0.5)

or

# 2. prior for risk of the control group using Beta(1,1)

pc[j] ~ dbeta(1,1)

}

# prior for mu

mu ~ dnorm(0, 0.01)

}

1. logit(pcj) ~ unif (-10, 10)
2. logit(pcj) ~ normal (0, 10)
3. logit(pcj) ~ normal (0, 100)

model{

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# log(OR)

theta[j] <- mu

## b.

# 1. prior for control events using uniform distribution

logit(pc[j]) <- phi[j]

phi[j] ~ dunif(-10,10)

Or

# 2. prior for control events using normal distribution

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(0, 0.01)

Or

# 3. prior for control events using normal distribution

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(0, 0.0001)

}

# prior for mu

mu ~ dnorm(0, 0.01)

}

1. hierarchical structure for logit(pcj)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# log(OR)

theta[j] <- mu

## c. prior for control events with heirrarchical setting on logit(pcj)

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(baselogit, precbaselogit)

}

# prior for baselogit : bounded away from zero

## Lowerbound=exp(-6)/(exp(-6)+1)=0.0025

## Upperbound=exp(-3)/1+exp(-3)=0.048

baselogit ~ dunif(-6,-3)

# Prior for the variance

sdbaselogit ~ dunif(0,1)

precbaselogit <- 1/(sdbaselogit \* sdbaselogit)

# prior for mu

mu ~ dnorm(0, 0.01)

}

Random effects JAGS models

Random effects JAGS models with priors set on heterogeneity () and baseline risk (pcj) where j=1, 2, …, n

1. For heterogeneity: ~ halfnorm(0.5)
2. logit(pcj) ~ normal (0, 10)
3. logit(pcj) ~ normal (0, 100)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

}

for(k in 1:nstudies) {

# 1. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.01)

# 2. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.0001)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# a. Prior for heterogeneity

tau ~ dnorm(0,2.55)T(0,)

inv.tausq <- 1/(tau \* tau)

}

1. hierarchical structure for logit(pcj)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

# prior for control events using a random effect on logit pc

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(baselogit,precbaselogit)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# prior for baselogit : bounded away from zero

## Lowerbound=exp(-6)/(exp(-6)+1)=0.0025

## Upperbound=exp(-3)/1+exp(-3)=0.048

baselogit ~ dunif(-6,-3)

# Prior for random effect variance

sdbaselogit ~ dunif(0,1)

precbaselogit <- 1/(sdbaselogit \* sdbaselogit)

# a. Prior for heterogeneity

tau ~ dnorm(0,2.55)T(0,)

inv.tausq <- 1/(tau \* tau)

}

1. For heterogeneity ~ exp(2)
2. logit(pcj) ~ normal (0, 10)
3. logit(pcj) ~ normal (0, 100)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

}

for(k in 1:nstudies) {

# 1. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.01)

# 2. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.0001)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# b. Prior for heterogeneity

tau ~ dexp(2)

inv.tausq <- 1/(tau \* tau)

}

1. hierarchical structure for logit(pcj)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

# prior for control events using a random effect on logit pc

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(baselogit,precbaselogit)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# prior for baselogit : bounded away from zero

## Lowerbound=exp(-6)/(exp(-6)+1)=0.0025

## Upperbound=exp(-3)/1+exp(-3)=0.048

baselogit ~ dunif(-6,-3)

# Prior for random effect variance

sdbaselogit ~ dunif(0,1)

precbaselogit <- 1/(sdbaselogit \* sdbaselogit)

# b. Prior for heterogeneity

tau ~ dexp(2)

inv.tausq <- 1/(tau \* tau)

}

1. For heterogeneity: ~ unif(0, 2)
2. logit(pcj) ~ normal (0, 10)
3. logit(pcj) ~ normal (0, 100)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

}

for(k in 1:nstudies) {

# 1. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.01)

# 2. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.0001)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# c. Prior for heterogeneity

tau ~ dunif(0,2)

inv.tausq <- 1/(tau \* tau)

}

1. hierarchical structure for logit(pcj)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

# prior for control events using a random effect on logit pc

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(baselogit,precbaselogit)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# prior for baselogit : bounded away from zero

## Lowerbound=exp(-6)/(exp(-6)+1)=0.0025

## Upperbound=exp(-3)/1+exp(-3)=0.048

baselogit ~ dunif(-6,-3)

# Prior for random effect variance

sdbaselogit ~ dunif(0,1)

precbaselogit <- 1/(sdbaselogit \* sdbaselogit)

# c. Prior for heterogeneity

tau ~ dunif(0,2)

inv.tausq <- 1/(tau \* tau)

}

1. For heterogeneity: ~ lognormal(-4.06, )
2. logit(pcj) ~ normal (0, 10)
3. logit(pcj) ~ normal (0, 100)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

}

for(k in 1:nstudies) {

# 1. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.01)

# 2. normal(0,10) prior for pc in logit scale

logit(pc[k]) <- phi[k]

phi[k] ~ dnorm(0, 0.0001)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# c. Prior for heterogeneity

tausq ~ dlnorm(-4.06, 0,476)

inv.tausq <- 1/ tausq

}

1. hierarchical structure for logit(pcj)

model {

for(j in 1:nstudies) {

# binomial dist. for events in treatment group

ev\_exp[j] ~ dbin(pt[j],n\_exp[j])

# binomial dist. for events in control group

ev\_con[j] ~ dbin(pc[j],n\_con[j])

logit(pt[j]) <- theta[j] + logit(pc[j])

# Random effect on log(OR)

theta[j] ~ dnorm(mu,inv.tausq)

# prior for control events using a random effect on logit pc

logit(pc[j]) <- phi[j]

phi[j] ~ dnorm(baselogit,precbaselogit)

}

# prior for mu

mu ~ dnorm(0, 0.01)

# prior for baselogit : bounded away from zero

## Lowerbound=exp(-6)/(exp(-6)+1)=0.0025

## Upperbound=exp(-3)/1+exp(-3)=0.048

baselogit ~ dunif(-6,-3)

# Prior for random effect variance

sdbaselogit ~ dunif(0,1)

precbaselogit <- 1/(sdbaselogit \* sdbaselogit)

# c. Prior for heterogeneity

tausq ~ dlnorm(-4.06, 0,476)

inv.tausq <- 1/ tausq

}