

Association between Contact Precautions and Adverse Events Including Depression, Anxiety, and Decreased Patient Satisfaction: A Meta-Analysis

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Conflicts of Interest

- Previous travel funded by B. Braun
- Study funded by U. S. Centers for Disease Control and Prevention Epicenters

Background

- Contact precautions are typically used to prevent transmission of multidrug-resistant organisms from infected/colonized patients to other hospitalized patients
 - Used for: methicillin-resistant *Staphylococcus aureus*
 - vancomycin-resistant *enterococci*
 - resistant gram-negative organisms
 - *Clostridium difficile*



- Droplet



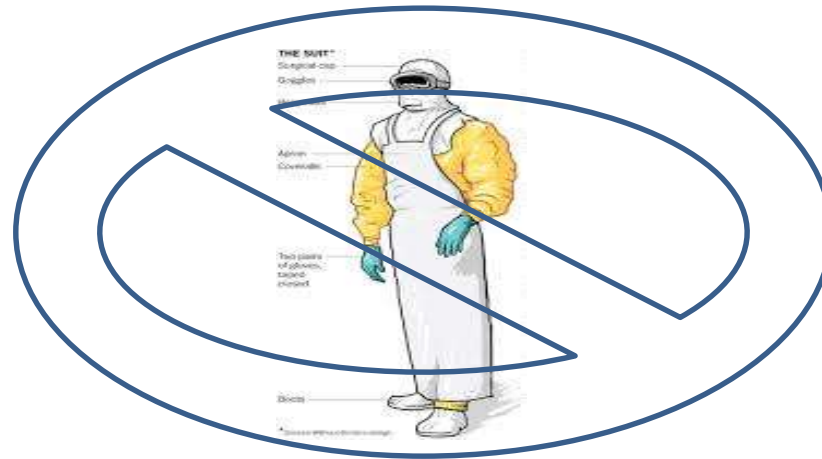
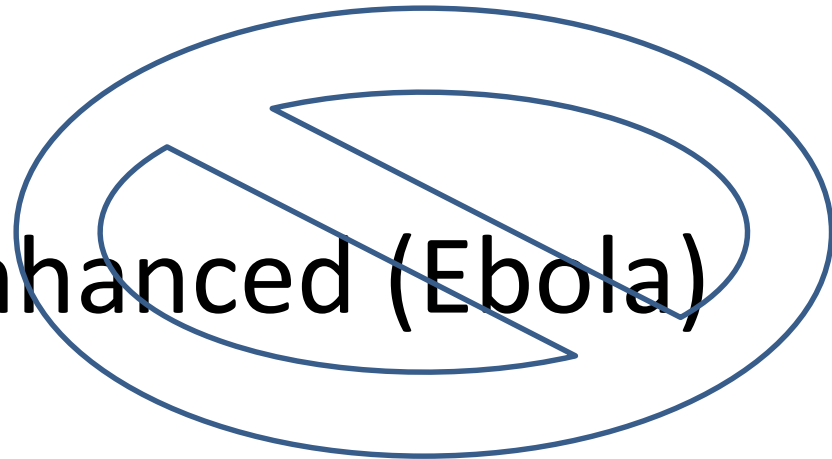
- Airborne



- Enteric



- Enhanced (Ebola)



Controversy: Are Contact Precautions Associated with Anxiety and Depression?

- In some studies, contact precautions have been associated with depression and anxiety
- It is possible that patients experience symptoms of depression and anxiety from their underlying illness rather than from contact precautions.
 - Contact precautions patients may be more severely ill



Methods: Systematic Literature Review

- Searched PubMed, PsychInfo, EMBASE and CINAHL
- Included:
 - Studies published from 2008-2016
 - Studies found in published systematic literature reviews that evaluated the literature between 1970-2008
 - Only studies with control groups not on contact precautions

Methods: Meta-Analysis

- Pooled mean differences and pooled odds ratios were calculated using random effects models with inverse variance weighting
- Heterogeneity was assessed using the Q-statistic and the I^2 statistic

5,335 titles of studies that evaluated contact precautions and adverse events published after 2008 screened for inclusion

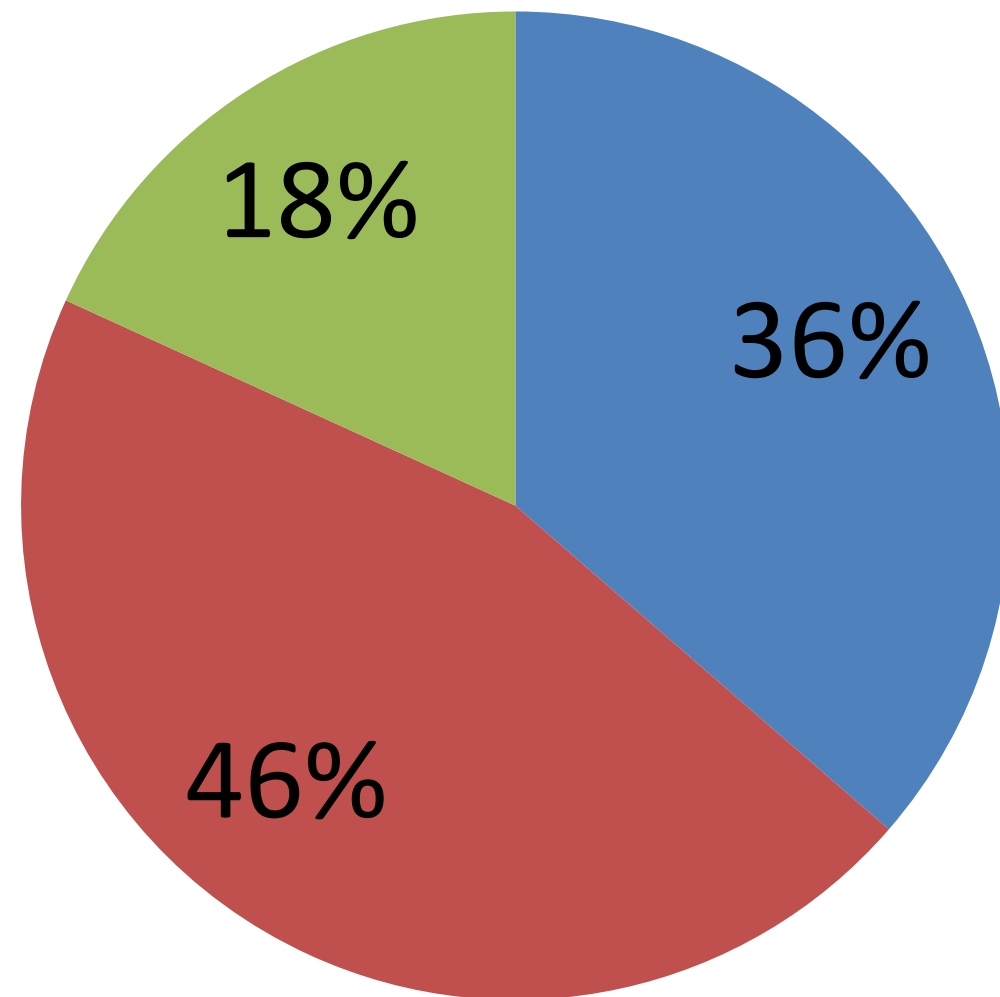
17 Articles from prior systematic literature reviews added, 5 articles from references

- Excluded: 5,258 due to:
- animal studies
 - case reports/case series
 - commentaries/editorials/reviews
 - duplicates
 - laboratory studies
 - Location outside of healthcare system
 - mathematical models
 - no control group
 - no exposure of interest
 - no outcome of interest
 - not patient population of interest

99 Reviewed full text

11 Articles on Contact Precautions and Anxiety or Depression
5 Articles on Patient Satisfaction

Results of the 11 Included Studies on Contact Precautions (CP) and Anxiety or Depression



- Significant Association between CP and Increased Depression and Anxiety (4/11)
- No Statistically Significant Associations (5/11)
- Significant Increase in Depression but Not Anxiety Among CP Patients (2/11)

Only 6 Studies Adjusted for Baseline Measures or Other Confounders

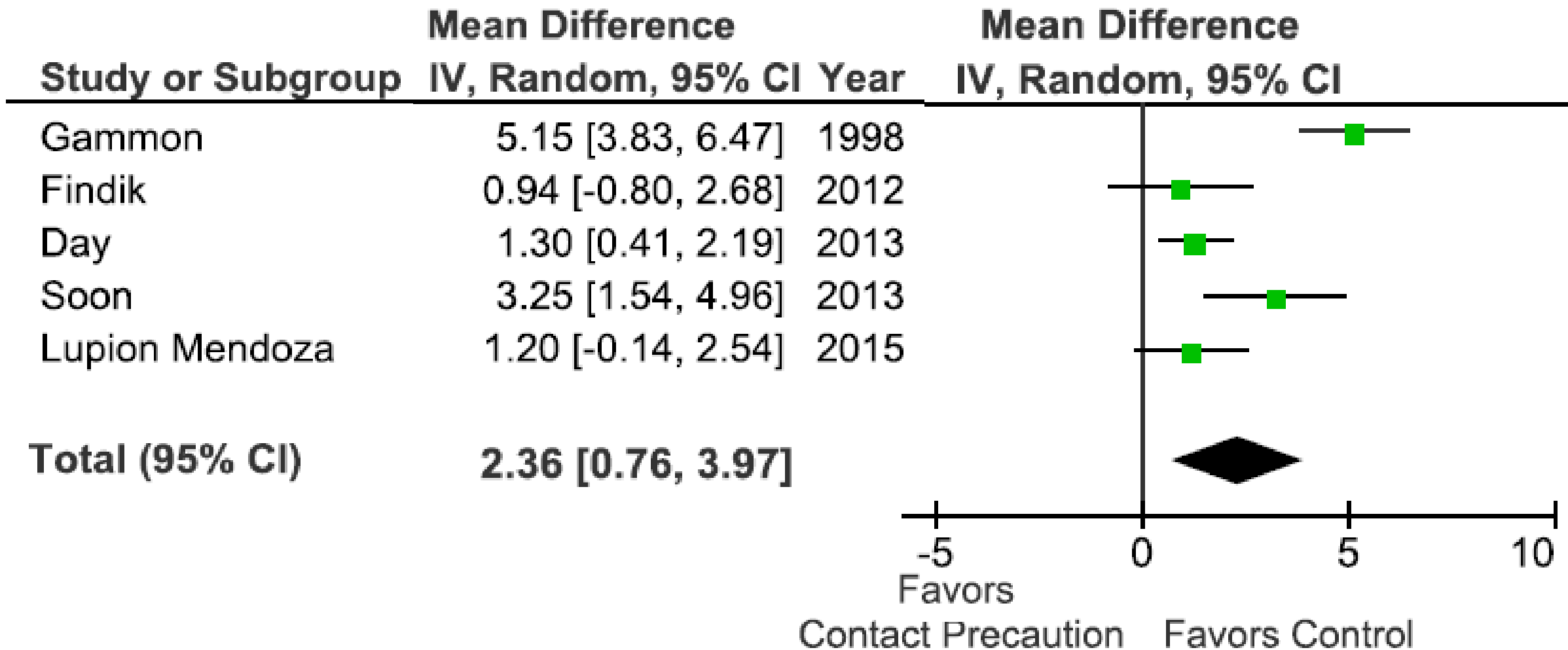
- 3 found significant associations between CP and depression but only 1 of those also found significant associations between CP and anxiety
- Other 3 found no significant association between CP and anxiety or depression

Multiple Tools Used to Evaluate Depression and Anxiety

- Hospital Anxiety and Depression Scale (HADS) (n=7)
- Hamilton Anxiety and Depression Rating Scale (n=1)
- Beck Depression Inventory (n=1)
- State Anxiety Inventory (n=1)
- Profile of Mood States (n=2)
- Geriatric Depression Scale (n=1)

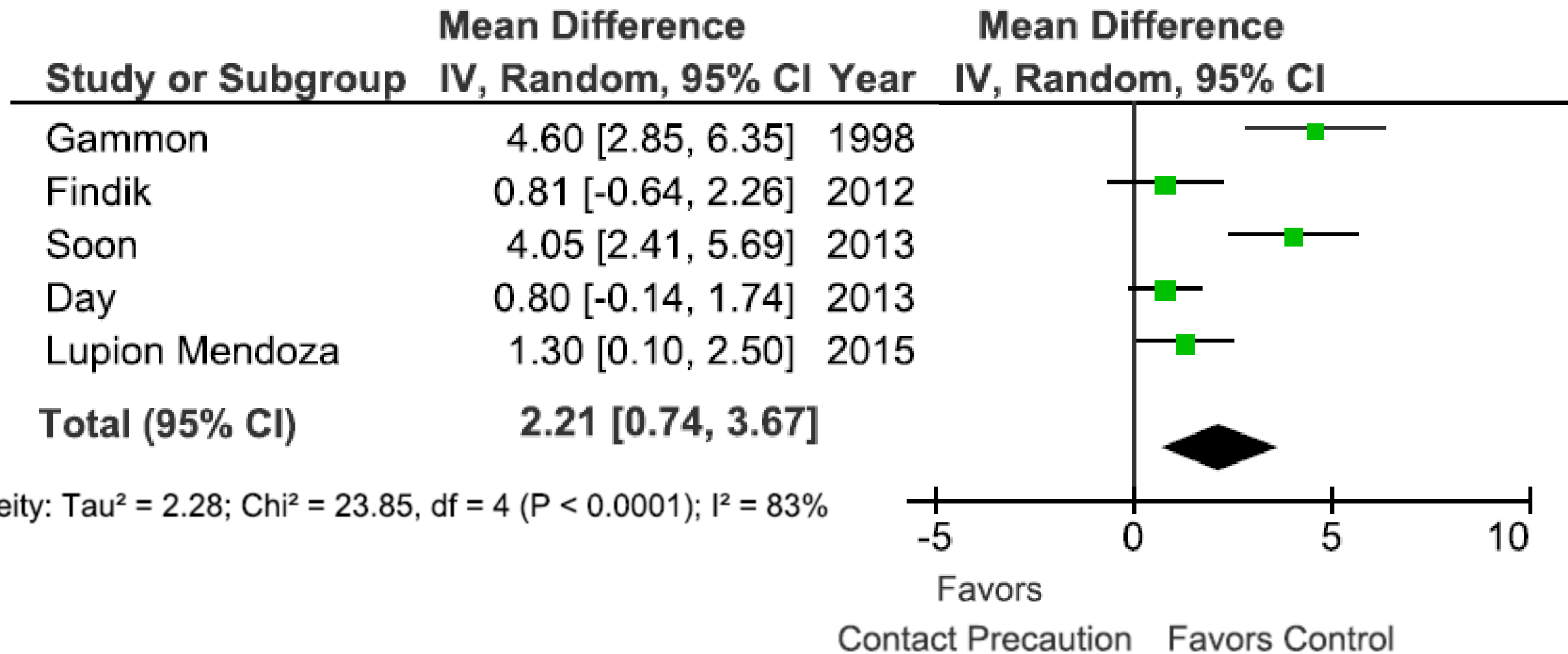
Thus only pooled studies using same scale

5 Studies Evaluated Depression using HADS



Heterogeneity: $\tau^2 = 2.84$; $\chi^2 = 28.67$, $df = 4$ ($P < 0.00001$); $I^2 = 86\%$

5 Studies Evaluated Anxiety Using HADS



Bonus Data: Contact Precautions and Patient Satisfaction

- 5 studies included in meta-analysis for patient satisfaction
- Consumer Assessment of Healthcare Providers and Systems (CAHPS) was used for 4 studies, similar questions for 1 study

Results: Non-Significant Differences

Question	*Odds Ratio (95% CI)	I ²
High rating of hospital	0.78 (0.60, 1.02)	0%
Did the doctor treat you with courtesy and respect?	0.67 (0.41, 1.11)	35%
Did the nurse listen carefully to you?	0.81 (0.63, 1.05)	0%
Did the nurse explain things in a way you could understand?	0.64 (0.40, 1.03)	44%
Did the hospital staff explain what the new medicine was for?	0.80 (0.58, 1.10)	0%
Did the hospital staff explain side-effects of the new medicine?	0.93 (0.43, 2.00)	75%
Did you get written information on symptoms/problems to look for after discharge?	0.89 (0.52, 1.52)	17%
How often was the area around your room quiet at night?	1.19 (0.69, 2.06)	66%
Did the hospital staff discuss help at or after discharge?	1.09 (0.72, 1.64)	0%

* *Contact Precautions versus no Contact Precautions*

Results Presented at SHEA 2017 by Nair et al.

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Results: Significant Differences

Question	*Odds Ratio (95% CI)	I ²
Recommend hospital to family and friends?	0.78 (0.51, 0.89)	0%
Did the doctor listen carefully to you?	0.63 (0.49, 0.82)	0%
Did the doctor explain things in a way you could understand?	0.68 (0.53, 0.88)	0%
Did the nurse treat you with courtesy and respect?	0.69 (0.52, 0.91)	0%
Did the hospital staff help with pain control?	0.66 (0.49, 0.88)	0%
How often was your pain well controlled?	0.73 (0.56, 0.95)	0%
Did you receive help after pressing call button?	0.66 (0.52, 0.84)	0%
Did you receive help in bathroom/bedpan use?	0.54 (0.39, 0.73)	0%
How often were your room or bathroom kept clean?	0.75 (0.59, 0.95)	0%

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Modifiable through education and interventions like “talk box”

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Residual confounding due to severity of illness and *C. difficile*?

Modifiable targets

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Conclusions

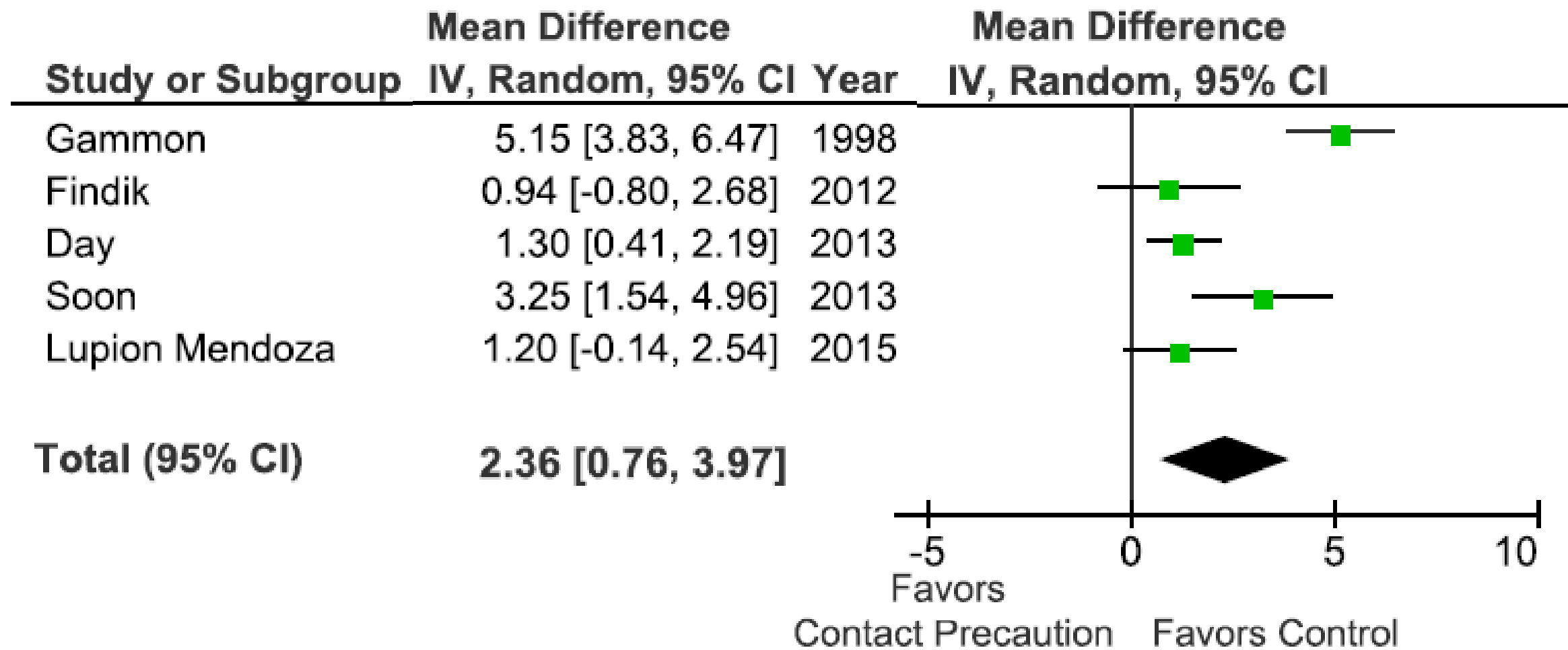
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- Contact precautions also associated with low patient satisfaction.
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- More high-quality studies that correct for baseline anxiety and depression scores and use consistent validated measures need to be performed.



Conclusions- Questions?

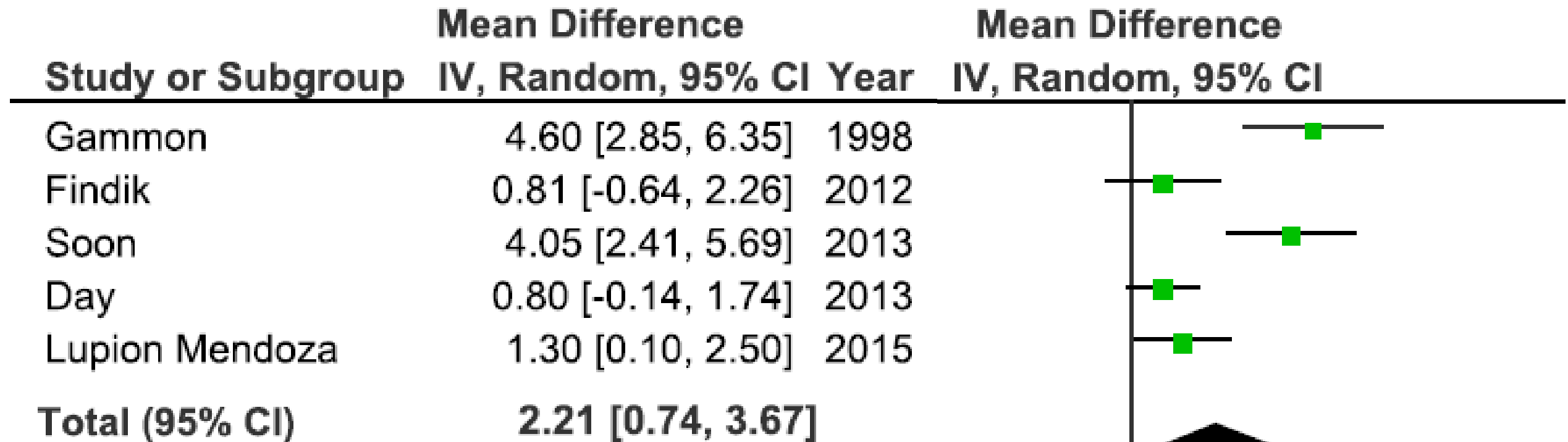
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5 Studies Evaluated Anxiety Using HADS



Heterogeneity: $\tau^2 = 2.28$; $\chi^2 = 23.85$, $df = 4$ ($P < 0.0001$); $I^2 = 83\%$

