PHW250B Journal Club Assignment 5
Effect modification, matching, and screening

Problem 1. Below is an excerpt from Table 6. Calculate the observed and expected stunting <u>prevalence ratios</u> for the water, sanitation, and handwashing arm and the nutrition arm. What do you conclude about interaction, and on which scale? (1-2 sentences)

	n/N (%)	Difference vs control (95% CI)	Difference vs washing, sanitation, and handwashing (95% CI)	Difference vs nutrition (95% CI)
Stunting*				
Control	451/1103 (41%)	..	..	..
Water	255/595 (43%)	2·4 (–2·6 to 7·3)	..	..
Sanitation	232/579 (40%)	–0·4 (–5·3 to 4·6)	..	..
Handwashing	263/570 (46%)	5·3 (0·2 to 10·3)	..	..
Water, sanitation, and handwashing	232/579 (40%)	–0·5 (–5·5 to 4·4)	..	..
Nutrition	186/567 (33%)	–7·7 (–12·4 to –2·9)	..	..
Water, sanitation, handwashing, and nutrition	221/591 (37%)	–3·8 (–8·6 to 1·1)	–2·8 (–8·4 to 2·8)	4·0 (–1·6 to 9·6)

Problem 2. Below is an excerpt from Table 6. Calculate the observed and expected stunting <u>prevalence differences</u> for the water, sanitation, and handwashing arm and the nutrition arm. What do you conclude about interaction, and on which scale? (1-2 sentences)

	n/N (%)	Difference vs control (95% CI)	Difference vs washing, sanitation, and handwashing (95% CI)	Difference vs nutrition (95% CI)
Stunting*				
Control	451/1103 (41%)	..	..	..
Water	255/595 (43%)	2·4 (–2·6 to 7·3)	..	..
Sanitation	232/579 (40%)	–0·4 (–5·3 to 4·6)	..	..
Handwashing	263/570 (46%)	5·3 (0·2 to 10·3)	..	..
Water, sanitation, and handwashing	232/579 (40%)	–0·5 (–5·5 to 4·4)	..	..
Nutrition	186/567 (33%)	–7·7 (–12·4 to –2·9)	..	..
Water, sanitation, handwashing, and nutrition	221/591 (37%)	–3·8 (–8·6 to 1·1)	–2·8 (–8·4 to 2·8)	4·0 (–1·6 to 9·6)

Problem 3. In this study, what step would we need to take <u>before</u> calculating the relative excess risk due to interaction? (1-2 sentences)

Problem 4. Under the potential outcomes / counterfactual model, what do the results of problems 1-2 indicate about the presence of <u>causal interaction</u> between these interventions? (1-2 sentences)
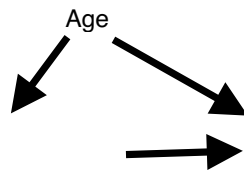
Problem 5. Was any matching used in the WASH Benefits Bangladesh study design? Describe the nature of the matching. (2-3 sentences)

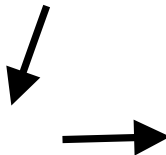<u>Questions about Reingold et al., 1989</u>

Problem 6. Describe the matching used in this study. (1-2 sentences)

Problem 7. In case-control studies, what is typically the primary reason to match cases to controls? (1-2 sentences)

Problem 8. Draw a DAG including nodes for the exposure and outcome in this study as well as age. Assume that age affects both toxic shock syndrome and tampon use. What do you conclude about the risk of overmatching on the variable age in this study? If overmatching is a concern, what would the result of overmatching be in this study? (2-3 sentences)

Age

Problem 9. Now draw a DAG for a hypothetical study of tampon use and toxic shock in which investigators matched on hormonal contraception use. Assume that hormonal contraception use affects tampon use but not toxic shock syndrome. What do you conclude about the risk of overmatching on hormonal contraception use in this study? If overmatching is a concern, what would the result of overmatching be in this study? (2-3 sentences)

Problem 10. What formula for the odds ratio would be used in the study by Reingold et al. in a bivariate analysis of tampon use and toxic shock syndrome?