

Interpersonal trauma as a marker of risk for urinary tract dysfunction in women

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Defining trauma

Individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life threatening and that has lasting effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being.

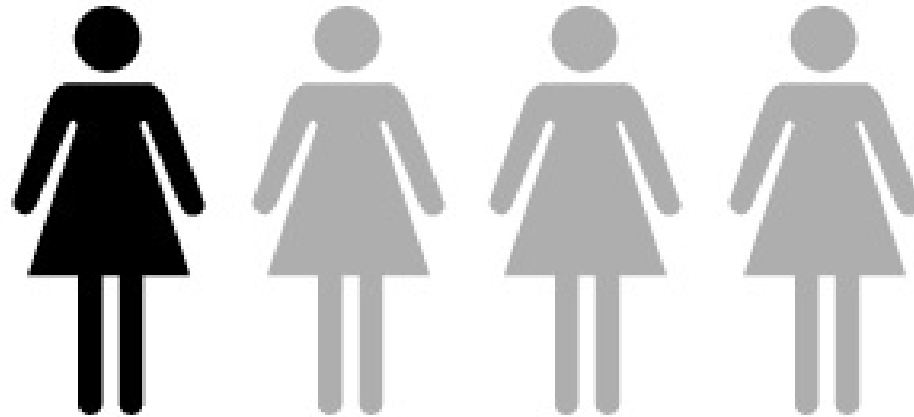
- *Substance Abuse and Mental Health Services Administration (SAMHSA)*

Psychological sequelae of trauma

- Traumatic experiences invoke sympathetic *flight, fight, or freeze* responses
- Responses become counterproductive when activated for too long (constant flood of adrenaline and cortisol)
- Traumatic experiences can cause people to react to normal stimuli with excess fear or anxiety
- Victims of trauma may cope by turning to alcohol, other drugs, or high-risk behaviors
- Extreme manifestation: post-traumatic stress disorder (PTSD)

Source: Centers for Disease Control and Prevention

Interpersonal violence and PTSD are common in women



Breiding, MMWR 2014

Early epidemiologic studies of abuse and genitourinary dysfunction in girls or young women

- Adverse childhood experiences (ACEs) are associated with increased risk of sexually transmitted infections in adulthood
 - VJ Felitti et al, American Journal of Preventive Medicine, 1998
- Childhood and adolescent abuse are associated with increased urinary frequency, urgency, and nocturia in adulthood
 - C. Link et al, European Urology, 2007
- Up to 12 years after sexual abuse, girls have more diagnoses for urinary and genital problems
 - P Vezina-Gagnon et al, Journal of Pediatrics 2018

Reproductive Risks of Incontinence Study at Kaiser (RRISK)

- Observational cohort of ~2,000 women over 40 years of age enrolled in Kaiser Permanente Northern California (KPNC)
- Long-term female enrollees sampled by age and race/ethnicity (~40% non-Latina White, ~20% Latina White, ~20% Black, ~20% Asian)
- Wave 3 involving assessment of exposure to interpersonal violence during home-based study visits from 2008-2012
- Mean age 61 years, 14% born outside the U.S., 19% with no college education, 69% with a spouse or partner, 4% with a history of same sex relationships, 69% multiparous, mean body mass index ~30 kg/m²

Assessment of interpersonal violence exposures in RRISK3

Self-administered questionnaires assessed lifetime exposure to:

- **Physical intimate partner violence (Physical IPV)** (being pushed, shoved, punched, or threatened with a weapon)
- **Emotional/verbal intimate partner violence (Emotional IPV)** (being severely criticized, called worthless, threatened with harm)
- **Sexual assault** (being touched in sexual parts of body without consent, including being fondled, groped, or raped)

Mouton et al., Annals of Family Medicine, 2010

Assessment of common urinary tract symptoms and infections in RRISK3

Structured items focusing on most common symptoms in women:

- **Stress-type UI** –leakage “with an activity like coughing, sneezing, or exercise” in the past month (with further differentiation of frequency)
- **Urgency-type UI** – leakage “with an overwhelming urge to urinate or difficulty holding urine” in the past month (differentiation of frequency)
- **Nocturia** – frequency of needing to urinate “from the time you go to bed at night until the time you get up in the morning”
- **Bladder pain** – “pain or discomfort in your bladder” in the past 3 months rated on a 10-point Likert scale
- **Clinician-diagnosed UTIs** – history of clinician-prescribed antibiotic treatment for UTIs

Lifetime exposure to interpersonal violence in RRISK3, by race/ethnicity

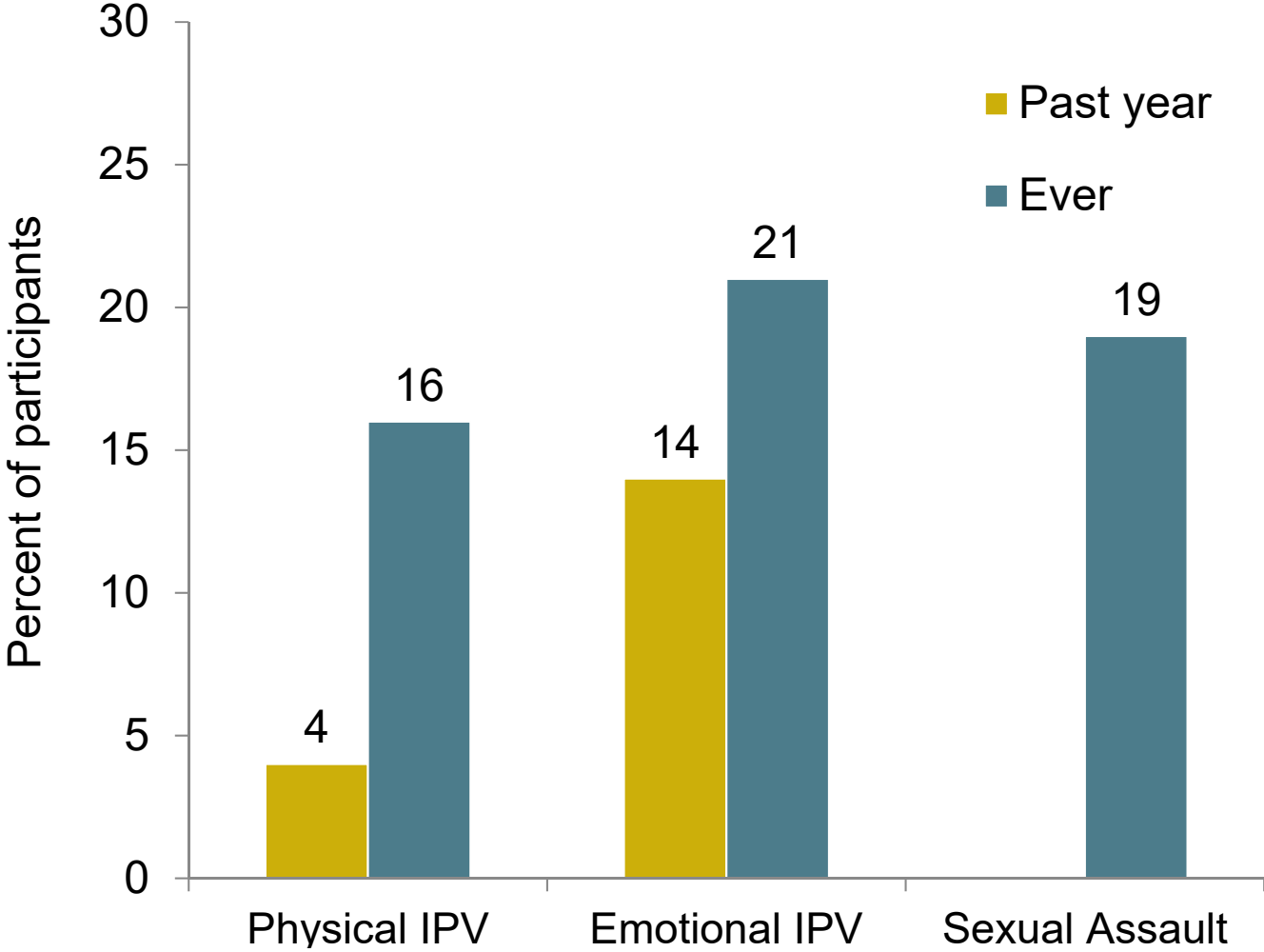
	Total	White	Latina	Black	Asian	P*
Physical IPV	16%	17%	17%	23%	6%	<.01
Emotional IPV	21%	27%	21%	24%	8%	<.01
Sexual assault	19%	25%	17%	22%	8%	<.01

All reported percentages are column percentages

*P-value for heterogeneity by race/ethnicity

From C. Gibson et al, JAMA Internal Medicine, 2019 (PMID: 30453319)

Past year versus lifetime interpersonal violence exposures in RRISK3



Current incontinence and nocturia symptoms in RRISK3, by race/ethnicity

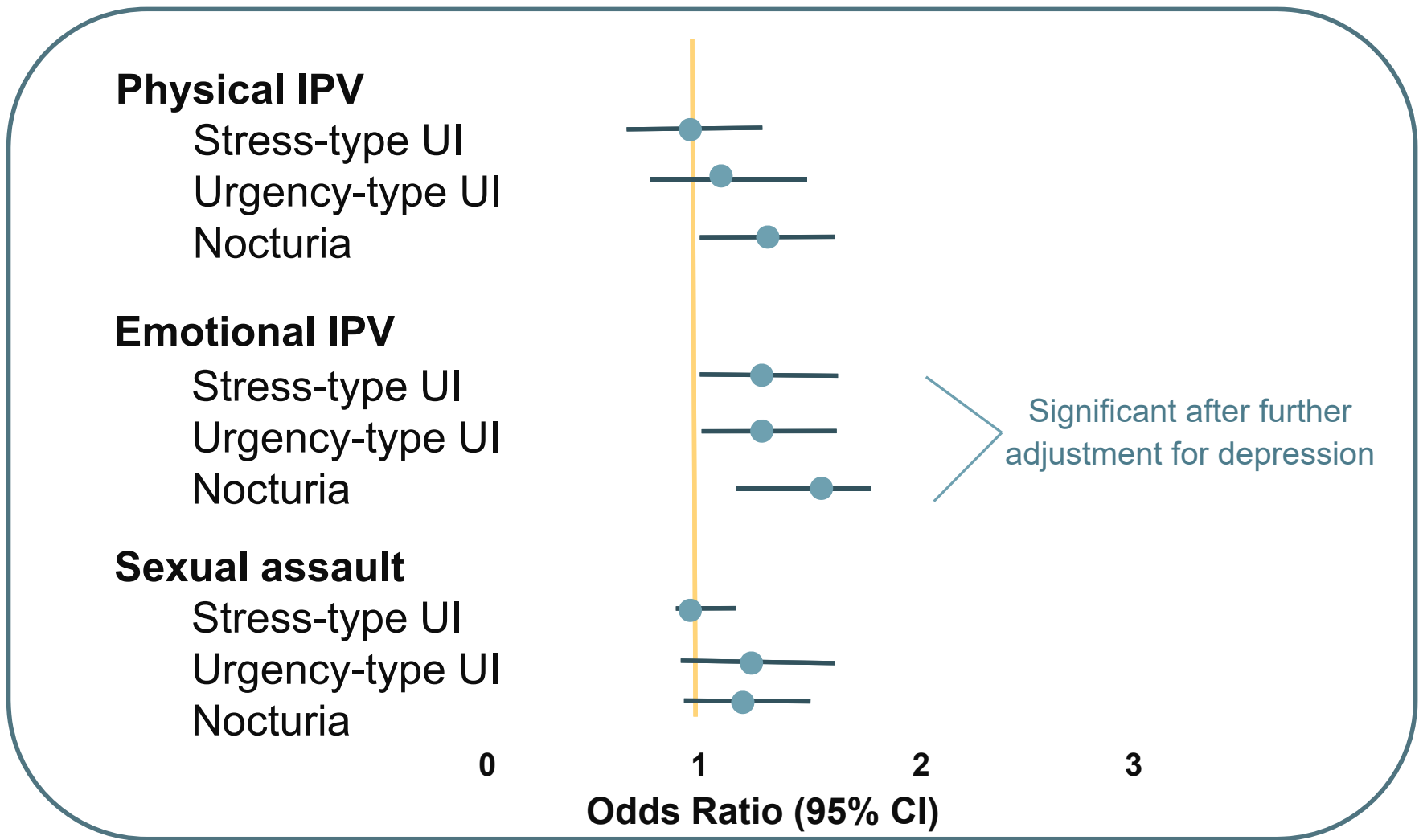
	Total	White	Latina	Black	Asian	P*
Stress-type UI (≥weekly)	23%	29%	28%	14%	13%	<.01
Urgency-type UI (≥weekly)	23%	26%	24%	26%	15%	<.01
Nocturia (≥2 times/night)	35%	34%	44%	26%	28%	<.01

All reported percentages are column percentages

*P-value for heterogeneity by race/ethnicity

From B. Boyd, et al. Obstetrics & Gynecology, 2020 (PMID: 31809425)

Adjusted odds of incontinence and nocturia with exposure to intimate partner violence and sexual assault



*Adjusted for age, race/ethnicity, education, pelvic surgery, parity, menopause, body mass index, medications

Other evidence of unique and potent effects of emotional abuse on health

- Childhood and adult emotional abuse (not physical abuse) associated with sexual dysfunction in the Boston Area Community Health survey
 - K. Lutfey, et al, *Fertility and Sterility*, 2008
- Physical and emotional abuse with similarly adverse and broad psychiatric consequences in low-income children
 - D. Vachon, et al, *JAMA Psychiatry*, 2015
- Past-year emotional abuse associated with a >70% increased odds of urinary incontinence and urinary problems among older women in the National Social Life Health and Aging Project
 - C. Gibson, et al, *American Journal of Obstetrics & Gynecology*, 2019

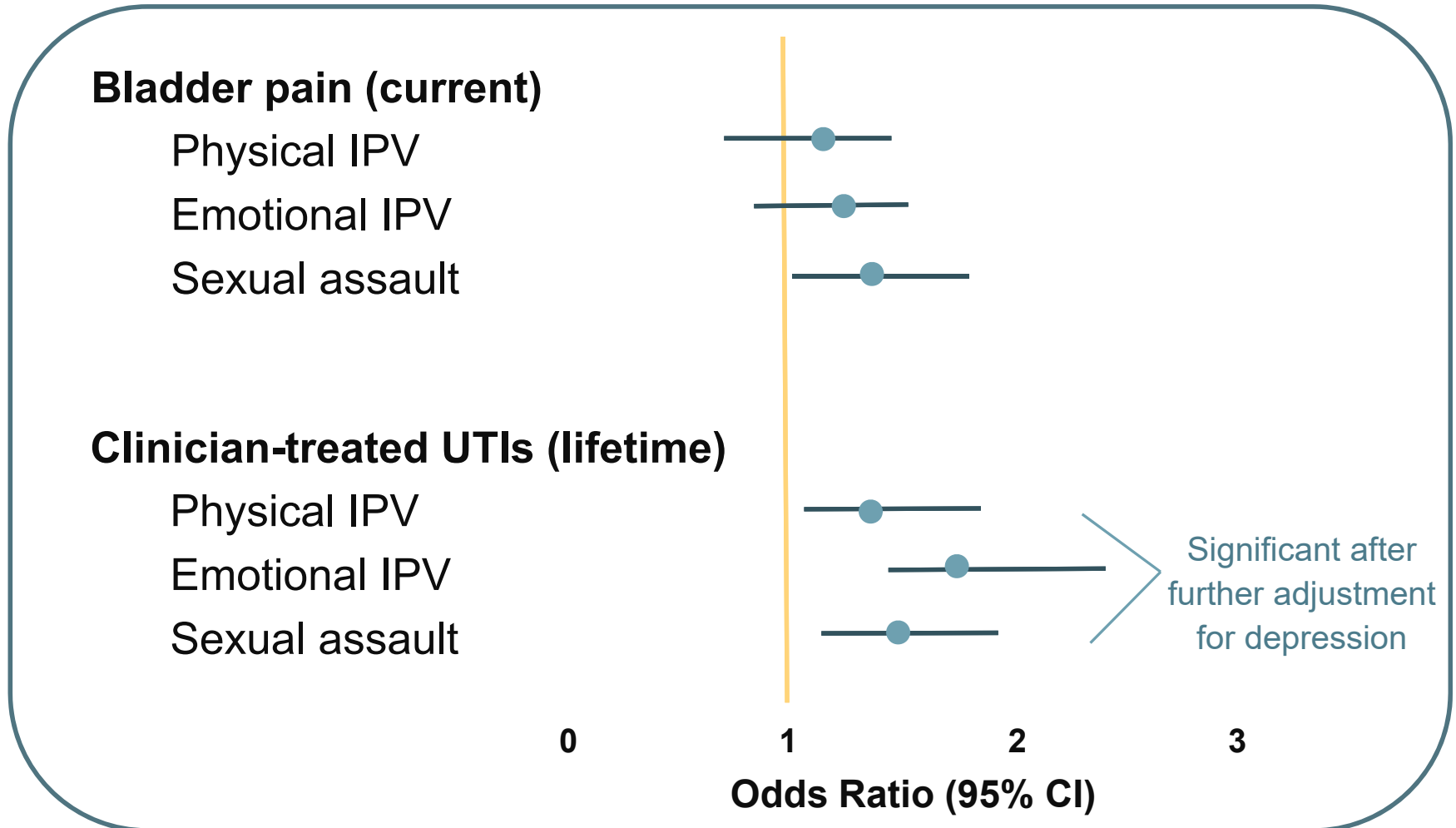
Self-reported bladder pain and urinary tract infections in RRISK3, by race/ethnicity

	Total	White	Latina	Black	Asian	P*
Bladder pain						
Any pain	22%	23%	22%	20%	23%	.79
Moderate-severe	15%	14%	17%	13%	16%	.65
Clinician-treated UTI						
Any lifetime	60%	65%	60%	59%	51%	<.01
Past 12 months	13%	16%	15%	10%	11%	.06

All reported percentages are column percentages
 *P-value for heterogeneity by race/ethnicity

Previously presented by E. Raphael, pending UCSF UroEpi K12 scholar

Adjusted odds of bladder pain and urinary tract infections with exposure to interpersonal violence



*Adjusted for age, race/ethnicity, education, pelvic surgery, parity, sexual activity, menopause, body mass index, diabetes

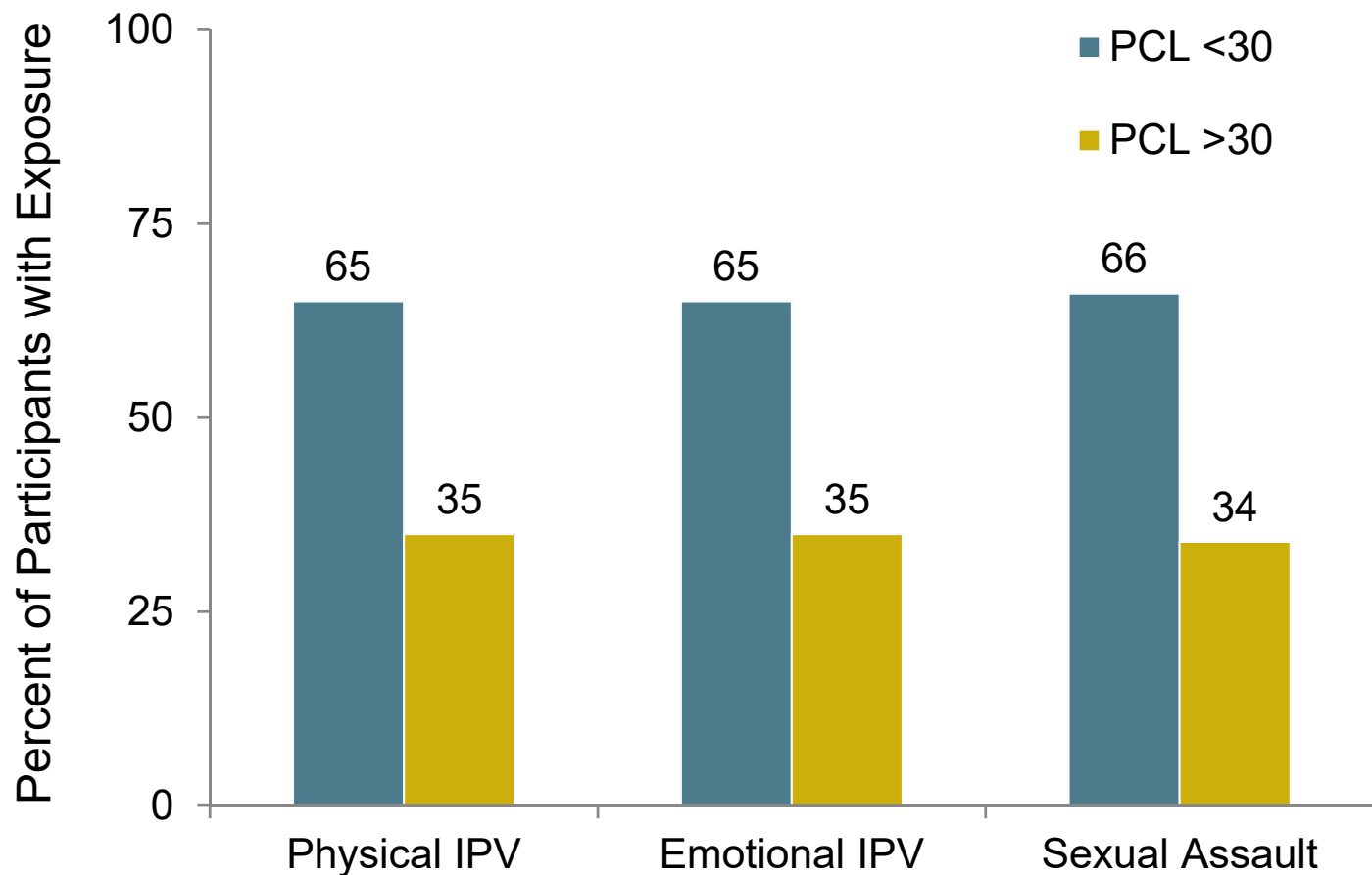
Assessment of post-traumatic stress disorder (PTSD) in RRISK3

Self-administered **PTSD Checklist-Civilian Version** questionnaire:

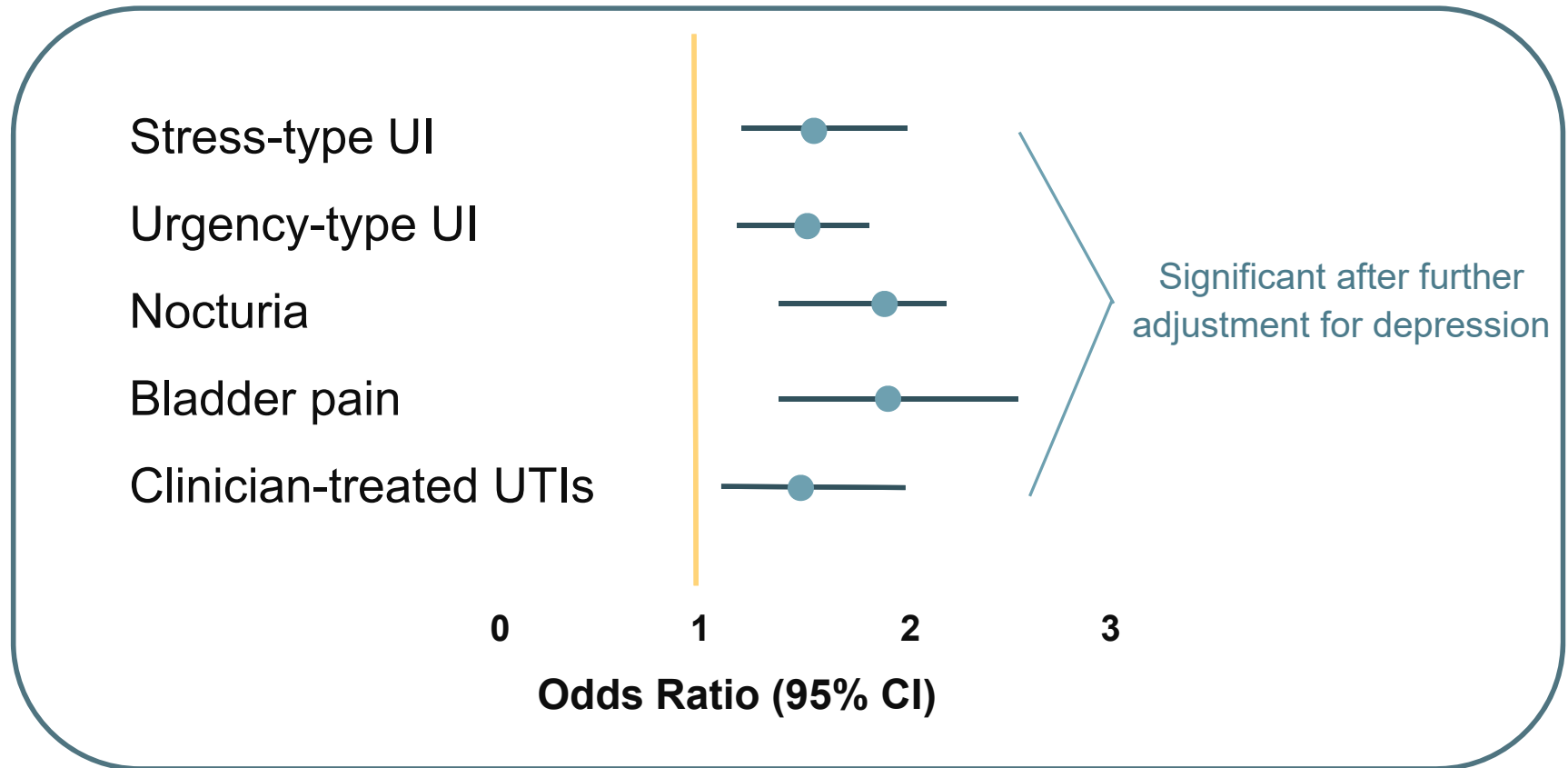
- Based on DSM-IV criteria for PTSD and validated against gold-standard structured interview
- Past month re-experiencing, avoidance, hypervigilance, and mood symptoms related to past stressful experiences
- Threshold for clinically significant PTSD symptoms: score ≥ 30 in primary care populations

Walker et al., Gen Hosp Psychiatry, 2002

Over a third of women in each interpersonal violence exposure group report PTSD symptoms



Adjusted odds of incontinence, nocturia, bladder pain, and UTIs associated with PTSD symptoms



*Adjusted for age, race/ethnicity, education, pelvic surgery, parity, body mass index, menopause, medications

Limitations and caveats

- Limited information about duration or severity of traumatic exposures
- Urinary symptoms and infections assessed by questionnaire, without further clinical or laboratory evaluation
- Cross-sectional study limiting ability to draw conclusions about causality

Primary findings

- Interpersonal abuse may be an under-recognized marker of risk for urinary tract dysfunction in midlife and older women
- Physical abuse may be a less potent marker of risk than emotional abuse or sexual assault for some common urinary symptoms
- PTSD, as opposed to just exposure to violence or abuse, is most strongly associated with symptomatic urinary tract dysfunction
- Relationships between traumatic exposures or PTSD and urinary outcomes are not solely explained by depression

Trauma-informed care

1. Realizes the widespread impact of trauma and understands potential paths for recovery
2. Recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system
3. Responds by fully integrating knowledge about trauma into policies, procedures, and practices
4. Seeks to actively resist re-traumatization

Substance Abuse and Mental Health Services Administration (SAMHSA)

Future research directions

- Prospective evaluation of temporal associations and dose relationships between trauma exposures and urinary outcomes
- Clinical evaluation of therapies directed at ameliorating trauma to assess effects on urinary outcomes
- Mechanistic research to identify pathways linking trauma, psychological stress, and urinary tract dysfunction
- Evaluation of relationships between trauma and urinary tract dysfunction in men

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