A systematic review of the effect of increased fluid intake for the prevention of urinary tract infections

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Background and Aim

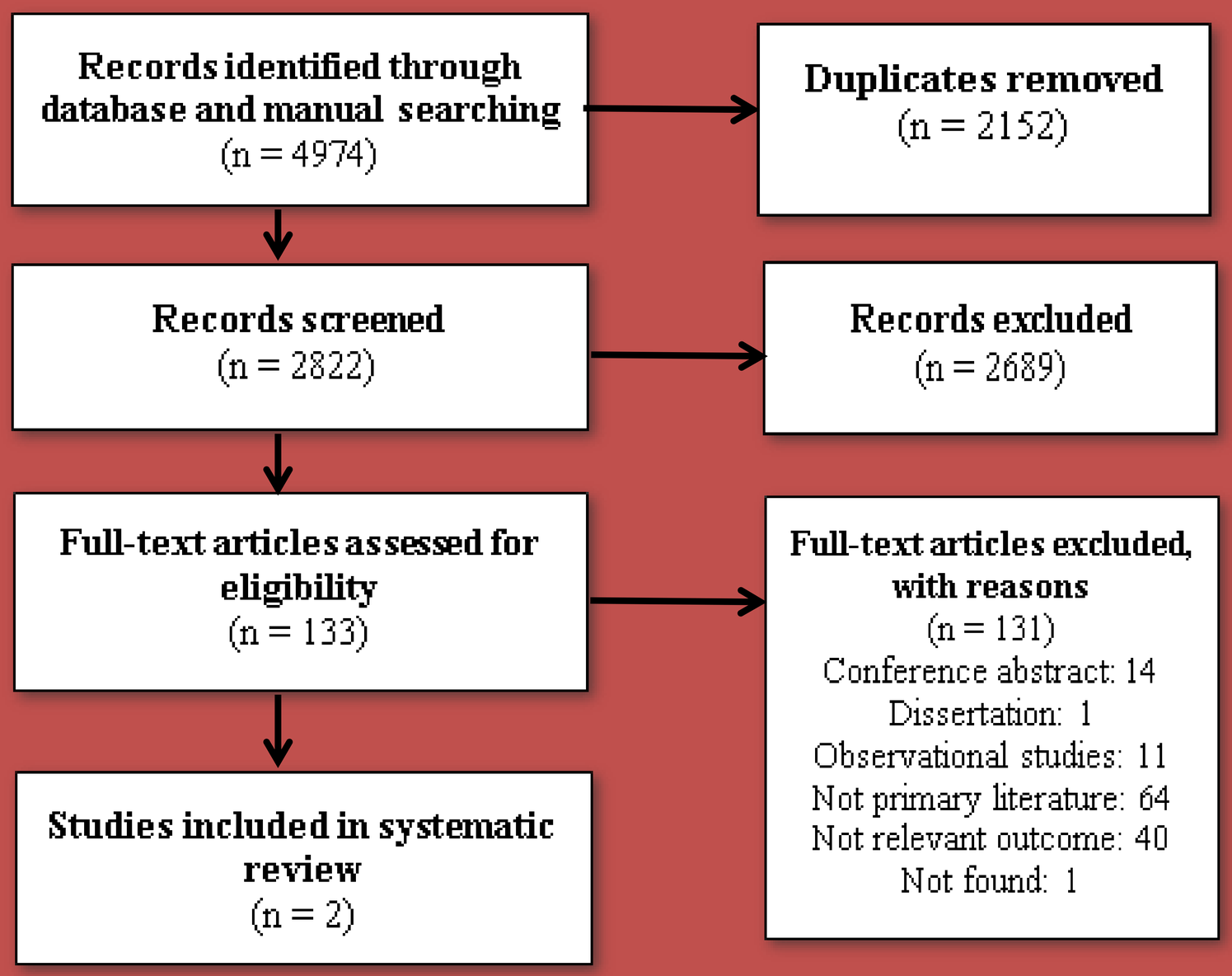
- Urinary tract infection (UTI) is one of the most frequently occurring bacterial infections in hospital and community settings.
- Despite inconsistency in evidence, the practice of increasing hydration for UTI prevention is still widely recommended.
- This study systematically reviewed the published literature to investigate the effectiveness of increased fluid intake as a preventive intervention for UTI.

Methods

- The Cochrane Library, PubMed, EMBASE, CINAHL and Medline databases were searched from inception to February 2019.
- Randomized controlled trials (RCTs) and quasi-experimental studies evaluating the effectiveness of high (≥1.5 litres/day) versus low (<1.5 litres/day) fluid intake for prevention of UTI were identified.
- Risk of bias was assessed using the Cochrane Collaboration's tool.[1]
- Due to the small number of studies identified, meta-analysis was not possible hence narrative synthesis was undertaken.

Results

Figure 1: Study selection process



- **Two studies were eligible for inclusion (Figure 1).**
- **Only Hooton et al.,[2] which included healthy premenopausal women visiting primary care clinics, demonstrated statistical significance for the effect of high fluid intake for UTI prevention (Table 1).**

Table 1: UTI rates

Author, year	Study design	Risk of bias	Intervention UTI rates	Control UTI rates
Hooton et al., 2018[2]	RCT	Low	111 episodes of UTI; mean=1.7 (95%CI: 1.5-1.8)	216 episodes of UTI; mean= 3.2 (95%CI: 3.0-3.4)
Mentes et al., 2003[3]	Cluster-RCT	High	0 episodes of UTI	1 episode of UTI

Conclusion

Current evidence is insufficient to make recommendations on the efficacy of increased fluid intake for UTI prevention. Global increases in antibiotic resistance necessitate consideration of non-antibiotic prevention strategies for UTI. Hence, rigorous and sufficiently powered RCTs are needed to further evaluate the effect of this potential intervention.

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References

1. Higgins J, Green S. Cochrane handbook for systematic reviews of interventions version 5.1.0 [updated March 2011]: The Cochrane Collaboration; 2011.
2. Hooton TM, Vecchio M, Iroz A, Tack I, Dornic Q, Seksek I, et al. Effect of increased daily water intake in premenopausal women with recurrent urinary tract infections: a randomized clinical trial. JAMA Intern Med 2018;178:1509-15.
3. Mentes JC, Culp K. Reducing hydration-linked events in nursing home residents. Clin Nurs Res 2003;12:210-25.