

**Abstract Type : Oral**

**Abstract Submission No. : OR-1276**

**Underweight, overweight, and obesity as risk factors for urinary tract infection in pre-school children: a comprehensive nationwide study in South Korea**

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**Objectives:** We aimed to evaluate the association of body weight status and increased risk for urinary tract infection (UTI) in pre-school children using the Korean National Health Screening (NHS) dataset.

**Methods:** nationwide population-based study was conducted using data from the NHS for infants and children and from the National Health Insurance Service. A sample cohort was first selected from the 2014 and 2015 NHS for infants and children aged from 4 months to 6 years, and followed up through 2017. Subjects were classified as underweight, normal reference group, overweight, or obese based on weight-for-age (< 2 years) or body mass index (≥ 2 years). The hazard ratios (HRs) and 95% confidence interval (CI) for developing UTI, cystitis, and acute pyelonephritis (APN) were calculated using a Cox proportional hazard model

**Results:** Of 1,653,106 infants and children obtained from the sample cohort, 94,185 patients (5.7%) developed UTI during follow-up of 37.6 months. Underweight, overweight or obesity had a higher risk of UTI, cystitis or APN, compared to the normal reference group, after adjusting for age, sex, birth weight, and prematurity. Under 2 years of age, overweight and obese female infants showed a higher risk of APN relative to control girls (HR 1.18 [1.07-1.29], 1.23 [1.10-1.37], respectively). Between 2 and 6 years of ages, the HR of APN in underweight boys relative to control boys was 1.46 (95% CI 1.03-2.07) and that in obese girls was 1.41 (95% CI 1.13-1.75) after adjusting for age, birth weight, and prematurity.

**Conclusions:** Underweight, overweight, and obesity may be associated with increased incidence of UTI in infants and children.

Figure 1. Flow chart of study enrollment

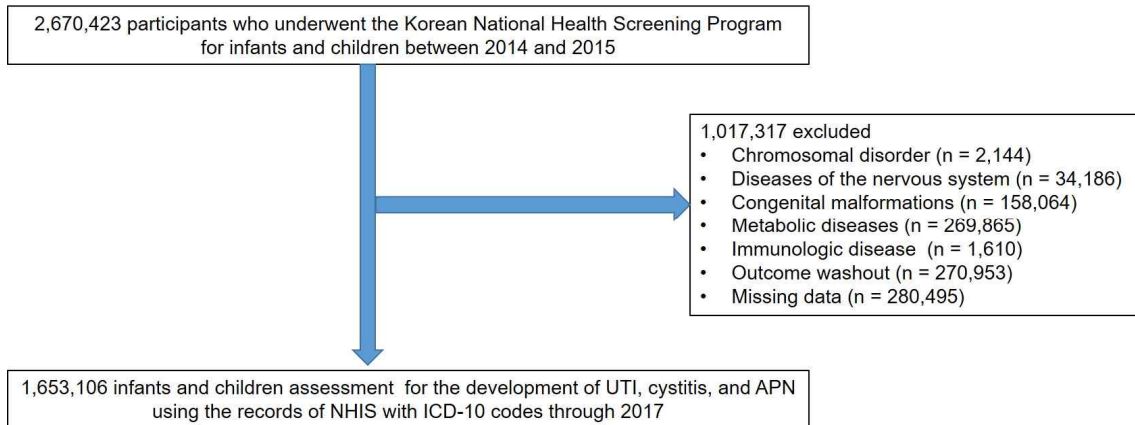


Figure 2. Incidence rates of UTI (A), cystitis (B), and APN (C) by age groups and BMI category

