Introduction: Obesity is associated with several chronic disorders in adults and children. It has also been linked to a number of acute postoperative complications. There is a growing body of evidence that obesity is associated with worse postoperative pain experience in adults (1). It is unclear whether this is due to enhanced nociception or therapeutic selection bias (under-dosing of pain medications). To date, no data exists exploring the association of high body mass index (BMI) with postoperative pain experience in children. Therefore we explored the association of BMI group with pain outcome in children undergoing elective adeno-tonsillectomy (T&A) at our institution.

Objective: The purpose of this investigation was to determine whether there is a relation between high body mass index (BMI) in children and the occurrence of moderate to severe early post-tonsillectomy pain (PTP) in children. The hypothesis tested was that high BMI increases the severity of early PTP.

Methods: Using a retrospective cohort study design, we extracted data on all children aged 3-17yr that underwent adeno-tonsillectomy (T&A) over a two-year period from our anesthesia clinical information system. Patients were classified into normal or high BMI group thus: (normal BMI indicates BMI < 85th percentile for age and gender, while high BMI denotes BMI ≥ 85th percentile according to reference growth charts). Early post-tonsillectomy pain scores were compared between the groups. Early PTP requiring treatment was defined as numeric pain score > 5 within the first 15min of admission to the post anesthesia care unit (PACU).

Results:
Among 462 patients, 45.7% were age <5yr, 39.6% were aged 5-11yr while 14.7% were aged >12yr. The overall prevalence of high BMI (overweight and obese) was 35.1%. The overall incidence of moderate to severe early PTP was 19.3%. All the patients received at least one or more intraoperative opioid (morphine 94.2% and fentanyl 21.9%). High BMI patients had higher overall pain scores (Fig. 1). At the same time a child with moderate to severe pain has 3 times higher odds of belonging to the overweight/obese category (OR = 3.2; 95% CI =2.0-5.2, p<0.001). Of note, total intraoperative morphine dose was higher in children with moderately severe PTP (3.3+/-2.4mg vs. 2.1+/-1.5mg; p<0.001).

Conclusion: These results indicate that overweight and obese children suffer worse PTP experience than their lean peers. Mechanisms underlying this differential pain experience deserve further elucidation.

References
Fig. 1. Box plot displaying the highest recorded PACU pain score according to BMI groups. The lower and upper borders of each box mark the 25th and 75th percentiles respectively while the dark horizontal line within each box indicates the median pain scores. The whiskers above and below each box mark the 90th and 10th percentiles respectively. Between-group median pain comparisons were significantly (p<0.001) different. Abbreviations: PACU = post anesthesia care unit; BMI = body mass index.