Data Analysis

## Statistical Analysis

We present descriptive summaries of key sample statistics. We compared baseline sample characteristics between those children found to be at risk of OSA and those not at risk. We used the Fisher’s exact test or chi-square tests for categorical variables. The Wilcoxon rank sum test or Kruskal–Wallis test was used for continuous variables. We considered p-values of <0.05 to be statistically significant.

## Descriptive Analysis

Overall, a total of 79 children with a mean age of 4.6 (2, 10) were recruited. Of these, 47 (59%) were male. Comparing baseline characteristics between children with possible diagnosis of SDB 58 (73) and those without revealed a significant difference in suspected allergic rhinitis (p=0.017) and those with suspected OSA (p < 0.000). There were however no significant differences in other population characteristics as shown in table 1.

Table 1: Baseline characteristics of all participants with and without SDB

| **Characteristics** | **All participants n=79** | **PSQ > 0.33 n=58** | **PSQ < 0.33 n=21** | **p-value** |
| --- | --- | --- | --- | --- |
| Age | 4.57±1.96 | 4.33±1.75 | 5.22±2.4 | 0.153 |
| 2-5 yrs | 57(72) | 44(76) | 13(62) |  |
| 6-10 yrs | 22(28) | 14(24) | 8(38) |  |
| Gender, n(%) |  |  |  | 0.606 |
| Male | 47(59) | 36(62) | 11(52) |  |
| Female | 32(41) | 22(38) | 10(48) |  |
| Asthma,n(%) | 49(62) | 37(64) | 12(57) | 0.973 |
| Allergic rhinitis, n(%) | 42(53) | 36(62) | 6(29) | 0.017 |
| BMI(kg/m^2) | 14.43±2.22 | 14.36±2.41 | 14.62±1.6 |  |
| BMI category |  |  |  | 0.646 |
| Underweight | 4(5) | 3(5) | 1(5) |  |
| Normal | 63(80) | 44(76) | 19(90) |  |
| Overweight | 8(10) | 7(12) | 1(5) |  |
| Obese | 4(5) | 4(7) | 0(0) |  |
| Height | 109.99±17.55 | 109.14±18.07 | 112.36±16.23 |  |
| SDB,n(%) | 58(73) | 58(100) | 0(0) |  |
| OSA,n(%) | 44(56) | 40(69) | 4(19) | 0 |

A total of 14 (18) children and caregivers interviewed after treatment of SDB related symptoms showed signs of SDB (PSQ score >0.33). There were however no significant inter group differences in overall characteristics between children with scores over 0.33 and those with scores lower than 0.33. More descriptive results are as presented in the table 2.

Table 2: Characteristics of participants with and without SDB at endline

| **Characteristics** | **All participants n=79** | **PSQ > 0.33 n=14** | **PSQ < 0.33 n=65** | **p-value** |
| --- | --- | --- | --- | --- |
| Age | 4.57±1.96 | 4.83±1.57 | 4.51±2.05 | 0.301 |
| 2-5 yrs | 57(72) | 8(57) | 49(75) |  |
| 6-10 yrs | 22(28) | 6(43) | 16(25) |  |
| Gender, n(%) |  |  |  | 0.482 |
| Male | 47(59) | 10(71) | 37(57) |  |
| Female | 32(41) | 4(29) | 28(43) |  |
| Asthma,n(%) | 49(62) | 8(57) | 41(63) | 0.857 |
| Allergic rhinitis, n(%) | 42(53) | 9(64) | 33(51) | 0.533 |
| BMI(kg/m^2) | 14.43±2.22 | 14.14±1.44 | 14.49±2.36 |  |
| BMI category |  |  |  | 0.652 |
| Underweight | 4(5) | 0(0) | 4(6) |  |
| Normal | 63(80) | 12(86) | 51(78) |  |
| Overweight | 8(10) | 2(14) | 6(9) |  |
| Obese | 4(5) | 0(0) | 4(6) |  |
| Height | 109.99±17.55 | 111.25±12.95 | 109.72±18.47 |  |
| SDB,n(%) | 58(73) | 14(100) | 0(0) |  |
| OSA,n(%) | 44(56) | 7(50) | 37(57) | 0.86 |

## Logistic regression results

We further performed a logistic regression to explore predictors of SDB scores > 0.33. Overall, having allergic rhinitis contributed a significant change in log odds of SDB by (1.68±0.8134), p-value = 0.0383. A diagnosis of asthma also had an effect of -0.0390 on log odds of having SDB when compared to not having asthma. Having obstructive sleep apnea also significantly contributed an effect of (1.7803±0.87525) when compared to not having OSA, p-value = 0.0180. Age, BMI, and gender did not show any significant effects on odds of having SDB, as shown in table 3. This was a very simple logistic regression model with minimal parametric tuning, but which can be improved if more data indicative of SDB were available. With a sample size of 79, our interpretations of these coefficients are constrained to the data analyzed, with very limited abilities to generalize to the overall population. Our model reported a precision score of 67 percent and a recall of 80.

Table 3: Logistic regression coefficients, SD and p-value

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| term | estimate | std.error | statistic | p.value |
| (Intercept) | 4.2581 | 3.5258 | 1.2077 | 0.2272 |
| age | -0.1607 | 0.1787 | -0.8994 | 0.3684 |
| sex1 | -0.8342 | 0.7813 | -1.0677 | 0.2857 |
| bmi | -0.2440 | 0.2247 | -1.0859 | 0.2775 |
| allergic\_rhinitis\_diag1 | 1.6847 | 0.8134 | 2.0711 | 0.0383 |
| asthma\_diag1 | -0.0390 | 0.7888 | -0.0494 | 0.9606 |
| osa\_binary1 | 1.7803 | 0.7525 | 2.3658 | 0.0180 |