**Suppl Table 1A: Antenatal and perinatal history**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Obese**  **n (%)** | **Overweight**  **n (%)** | **Normal BMI**  **n (%)** | **p-value** |
| **Conception**  Normal  IVF | 525 (58.9)  42 (48.3) | 260 (29.1)  32 (36.8) | 107 (12.0)  13 (14.9) | 0.162 |
| **Delivery (number)**  **I**  **II**  **III**  **IV** | 318 (58.3)  200 (57.0)  37 (61.7)  5 (62.5) | 161 (29.5)  101 (28.8)  21 (35.0)  2 (25.0) | 66 (12.1)  50 (14.2)  2 (3.3)  1 (12.5) | 0.306**°** |
| **Gestation (weeks)** | 38.21 ± 1.75 | 38.02 ± 1.90 | 38.07 ± 1.95 | 0.293 |
| **Complications during pregnancy**  Yes  No  **If yes,**  Diabetes mellitus  Hypertension  Smoking  Other | 205 (56.8)  331 (58.9)  68 (55.3)  25 (73.5)  19 (54.3)  93 (55.0) | 114 (31.6)  159 (28.3)  43 (35.0)  6 (17.6)  9 (25.7)  56 (33.1) | 42 (11.6)  72 (12.8)  12 (9.8)  3 (8.8)  7 (20.0)  20 (11.8) | 0.544  0.286**°** |
| **Birth weight (g)** | 3215.81 ± 521.22 | 3117.41 ± 569.37 | 3062.64 ± 560.86 | **0.003** |
| **Birth length (cm)** | 50.41 ± 2.91 | 50.32 ± 2.85 | 50.07 ± 2.69 | 0.173 |
| **Birth HC (cm)** | 34.28 ± 1.44 | 34.17 ± 1.49 | 34.04 ± 1.40 | 0.125 |
| **Mode of delivery**  Normal Delivery  Cesarean Section  Vacuum Extraction | 266 (59.2)  270 (56.5)  12 (63.2) | 126 (28.1)  148 (31.0)  6 (31.6) | 57 (12.7)  60 (12.6)  1 (5.3) | 0.807**°** |
| **SGA**  Yes  No | 24 (50)  368 (59.5) | 19 (39.6)  184 (29.8) | 5 (10.4)  66 (10.7) | 0.350 |
| **LBW**  Yes  No | 17 (60.7)  373 (58.4) | 8 (28.6)  199 (31.1) | 3 (10.7)  67 (10.5) | 0.961**°** |
| **Hospitalization in NICU**  Yes  No  **If yes, duration of hospitalization in NICU (days)** | 100 (56.5)  387 (58.8)  9.42±13.71 | 52 (29.4)  197 (29.9)  12.75±17.25 | 25 (14.1)  74 (11.2)  12.55 ±17.77 | 0.572  0.290• |
| **Hypoglycemia**  Yes  No | 5 (83.3)  542 (58.5) | 1 (16.7)  269 (29.0) | 0 (0.0)  116 (12.5) | 0.599**°** |
| **Neonatal Jaundice**  Yes  No | 299 (58.4)  262 (57.8) | 149 (29.1)  134 (29.6) | 64 (12.5)  57 (12.6) | 0.984 |
| **Phototherapy**  Yes  No  **If yes, duration (days)**  1  2  3  ≥4 | 82 (55.0)  475 (59.2)  18 (51.4)  21 (55.3)  10 (58.8)  7 (46.7) | 45 (30.2)  231 (28.8)  10 (28.6)  12 (31.6)  4 (23.5)  7 (46.7) | 22 (14.8)  97 (12.1)  7 (20.0)  5 (13.2)  3 (17.6)  1 (6.7) | 0.555  0.821**°** |

Abbreviations: HC: Head Circumference, NICU: Neonatal Intensive Care Unit, LBW: Large Birth Weight, SGA: Small for Gestational Age; Continuous variables are presented as mean ± standard error of the mean (SEM) and categorical as frequencies (percentages); p values were derived by comparisons between the three categories of BMI using one-way ANOVA for normally distributed variables and ∙ Kruskal-Wallis H test for skewed variables; Pearson’s χ2 or ◦ Monte Carlo test for categorical variables; Statistically significant associations are shown in bold.

**Suppl Table 1B: Past medical history and systems review**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Obese**  **n (%)** | **Overweight**  **n (%)** | **Normal-BMI**  **n (%)** | **p-value** |
| **Hypertension**  Yes  No | 16 (88.9)  528 (56.8) | 2 (11.1)  279 (30.0) | 0 (0.0)  123 (13.2) | **0.021°** |
| **Congenital Heart Diseases**  Yes  No | 26 (59.1)  512 (57.5) | 14 (31.8)  262 (29.4) | 4 (9.1)  117 (13.1) | 0.729 |
| **Arrhythmias**  Yes  No | 1 (16.7)  539 (58.1) | 4 (66.7)  268 (28.9) | 1 (16.7)  121 (13.0) | 0.073**°** |
| **Dyslipidemia**  Yes  No | 65 (53.3)  479 (58.2) | 42 (34.4)  240 (29.2) | 15 (12.3)  104 (12.6) | 0.486 |
| **Peripheral Vascular Disease**  Yes  No | 1 (50.0)  531 (57.3) | 1 (50.0)  273 (29.5) | 0 (0.0)  122 (13.2) | 0.999**°** |
| **Bronchial Asthma**  Yes  No | 76 (62.8)  485 (56.7) | 36 (29.8)  254 (29.7) | 9 (7.4)  116 (13.6) | 0.150 |
| **Respiratory Infections**  Yes  No | 163 (65.7)  396 (54.5) | 66 (26.6)  225 (30.9) | 19 (7.7)  106 (14.6) | **0.002** |
| **Snoring**  Yes  No | 139 (66.8)  426 (55.2) | 45 (21.6)  245 (31.7) | 24 (11.5)  101 (13.1) | **0.007** |
| **Obstructive Sleep Apnea**  Yes  No | 11 (91.7)  538 (56.8) | 0 (0.0)  286 (30.2) | 1 (8.3)  124 (13.1) | **0.029°** |
| **Hyperthyroidism or Hypothyroidism**  Yes  No | 47 (54.7)  479 (58.1) | 35 (40.7)  237 (28.8) | 4 (4.7)  108 (13.1) | **0.015** |
| **Diabetes Mellitus**  Yes  No | 1 (100.0)  547 (57.5) | 0 (0.0)  284 (29.8) | 0 (0.0)  121 (12.7) | 0.999**°** |
| **Hypopituitarism**  Yes  No | 1 (100)  554 (57.4) | 0 (0.0)  288 (29.8) | 0 (0.0)  123 (12.7) | 0.999**°** |
| **Precocious Puberty**  Yes  No | 7 (46.7)  545 (57.7) | 6 (40.0)  280 (29.7) | 2 (13.3)  119 (12.6) | 0.605**°** |
| **Premature Adrenarche**  Yes  No | 18 (54.5)  534 (57.4) | 14 (42.4)  275 (29.6) | 1 (3.0)  121 (13.0) | 0.103**°** |
| **CAH or PCOS**  Yes  No | 1 (50.0)  554 (57.8) | 1 (50.0)  283 (29.5) | 0 (0.0)  121 (12.6) | 0.999**°** |
| **Celiac Disease**  Yes  No | 0 (0.0)  554 (57.7) | 0 (0.0)  287 (29.9) | 1 (100)  119 (12.4) | 0.124**°** |
| **IBD**  Yes  No | 1 (50)  560 (57.9) | 0 (0.0)  288 (29.8) | 1 (50)  120 (12.4) | 0.323**°** |
| **Hepatitis or Pancreatitis**  Yes  No | 3 (100.0)  555 (57.7) | 0 (0.0)  286 (29.7) | 0 (0.0)  121 (12.6) | 0.703**°** |
| **Esophagitis or Gastritis**  Yes  No | 24 (64.9)  534 (57.3) | 10 (27.0)  280 (30.0) | 3 (8.1)  118 (12.7) | 0.678**°** |
| **Inflammatory Bowel Disease**  Yes  No | 5 (71.4)  551 (57.6) | 2 (28.6)  285 (29.8) | 0 (0.0)  121 (12.6) | 0.873° |
| **Rheumatic Disease**  Yes  No | 3 (60.0)  553 (57.5) | 2 (40.0)  285 (29.6) | 0 (0.0)  124 (12.9) | 0.999**°** |
| **Osteomyelitis or Infectious Arthritis**  Yes  No | 1 (100.0)  555 (57.4) | 0 (0.0)  288 (29.8) | 0 (0.0)  124 (12.8) | 0.999**°** |
| **Arthralgia**  Yes  No | 45 (58.4)  515 (57.3) | 21 (27.3)  269 (30.0) | 11 (14.3)  114 (12.7) | 0.849 |
| **Injuries or Fractures**  Yes  No | 70 (70.7)  495 (56.3) | 24 (24.2)  267 (30.4) | 5 (5.1)  117 (13.3) | **0.010** |
| **Epilepsy**  Yes  No | 8 (61.5)  556 (57.6) | 2 (15.4)  289 (29.9) | 3 (23.1)  120 (12.4) | 0.310**°** |
| **Headaches**  Yes  No | 48 (55.8)  520 (57.8) | 28 (32.6)  265 (29.4) | 10 (11.6)  115 (12.8) | 0.823 |
| **Myopathy**  Yes  No | 0 (0.0)  567 (57.9) | 1 (100.0)  288 (29.4) | 0 (0.0)  124 (12.7) | 0.416**°** |
| **Traumatic Brain Injury**  Yes  No | 0 (0.0)  570 (57.9) | 1 (100.0)  290 (29.5) | 0 (0.0)  124 (12.6) | 0.416**°** |
| **Meningitis or Encephalitis**  Yes  No | 1 (50.0)  569 (57.8) | 1 (50.0)  292 (29.6) | 0 (0.0)  124 (12.6) | 0.999**°** |
| **UTI or VUR**  Yes  No | 58 (62.4)  510 (57.2) | 22 (23.7)  271 (30.4) | 13 (14.0)  111 (12.4) | 0.400 |
| **Congenital Malformations**  Yes  No | 7 (63.6)  562 (57.9) | 2 (18.2)  288 (29.7) | 2 (18.2)  121 (12.5) | 0.684**°** |
| **CKD**  Yes  No | 1 (100)  568 (57.8) | 0 (0.0)  290 (29.5) | 0 (0.0)  124 (12.6) | 0.999**°** |
| **Nephrotic Syndrome or Glomerulonephritis**  Yes  No | 0 (0.0)  568 (58.0) | 1 (100.0)  290 (29.6) | 0 (0.0)  122 (12.4) | 0.415**°** |
| **Other Infectious Diseases**  Yes  No | 1 (100.0)  543 (57.8) | 0 (0.0)  279 (29.7) | 0 (0.0)  118 (12.6) | 0.999**°** |
| **Hematologic Disorders**  Yes  No | 45 (58.4)  514 (57.7) | 21 (27.3)  266 (29.9) | 11 (14.3)  111 (12.5) | 0.838 |
| **Coagulation Disturbances**  Yes  No | 0 (0.0)  559 (57.7) | 1 (100.0)  288 (29.8) | 0 (0.0)  121 (12.5) | 0.422**°** |
| **Hematologic Malignancies**  Yes  No | 1 (50.0)  556 (57.7) | 0 (0.0)  287 (29.8) | 1 (50.0)  120 (12.5) | 0.321**°** |
| **Affective Disorders**  Yes  No | 82 (60.3)  443 (56.9) | 36 (26.5)  235 (30.2) | 18 (13.2)  100 (12.9) | 0.676 |
| **Behavioral or Sleep Disorders**  Yes  No | 110 (61.1)  412 (56.1) | 44 (24.4)  232 (31.6) | 26 (14.4)  91 (12.4) | 0.169 |
| **Psychosis**  Yes  No | 2 (50.0)  512 (57.0) | 2 (50.0)  269 (30.0) | 0 (0.0)  117 (13.0) | 0.771**°** |
| **Eczema**  Yes  No | 31 (49.2)  521 (58.2) | 20 (31.7)  261 (29.2) | 12 (19.0)  113 (12.6) | 0.244 |
| **Psoriasis or Alopecia or Vitiligo**  Yes  No | 2 (100.0)  547 (57.1) | 0 (0.0)  287 (30.0) | 0 (0.0)  124 (12.9) | 0.658**°** |
| **Acne or Hirsutism**  Yes  No | 46 (65.7)  510 (56.6) | 15 (21.4)  274 (30.4) | 9 (12.9)  117 (13.0) | 0.259 |
| **Acanthosis Nigricans**  Yes  No | 49 (86.0)  509 (55.9) | 8 (14.0)  277 (30.4) | 0 (0.0)  125 (13.7) | **<0.001°** |
| **Red Purple or white streaks**  Yes  No | 72 (80.9)  483 (55.0) | 14 (15.7)  273 (31.1) | 3 (3.4)  122 (13.9) | **<0.001** |

Abbreviations: CAH: Congenital Adrenal Hyperplasia, CKD: Chronic Kidney Disease, PCOS: Polycystic Ovary Syndrome, UTI: Urinary Tract Infection, VUR: Vesicoureteric reflux; Data presented as frequencies (percentages); p values were calculated using the Pearson’s χ2 test; **°** Monte Carlo test; Statistically significant associations are shown in bold.

**Suppl Table 1C: Diet, exercise and lifestyle habits**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Obese**  **n (%)** | **Overweight**  **n (%)** | **Normal-BMI**  **n (%)** | **p-value** |
| **Exclusive Breastfeeding**  Yes  No  **If yes, duration of Exclusive Breastfeeding (mo)** | 342 (57.2)  211 (59.8)  5.58 ± 5.80 | 180 (30.1)  97 (27.5)  4.99 ± 4.28 | 76 (12.7)  45 (12.7)  6.20 ± 4.73 | 0.678  0.057• |
| **Mixed Diet**  Yes  No  **If yes, duration of Mixed Diet (mo)** | 294 (59.5)  131 (55.0)  4.24 ± 5.87 | 146 (29.6)  75 (31.5)  3.99 ± 4.39 | 54 (10.9)  32 (13.4)  5.64 ± 8.62 | 0.445  0.278• |
| **Sweets**  Yes  No | 540 (57.8)  15 (57.7) | 278 (29.8)  7 (26.9) | 116 (12.4)  4 (15.4) | 0.846**°** |
| **Frequency of Sweets’ Consumption**  1-2 times per week  3-5 times per week  daily | 106 (62.4)  138 (56.6)  290 (56.6) | 48 (28.2)  70 (28.7)  160 (31.3) | 16 (9.4)  36 (14.8)  62 (12.1) | 0.443 |
| **Fruits**  Yes  No | 480 (56.3)  71 (68.9) | 262 (30.8)  22 (21.4) | 110 (12.9)  10 (9.7) | 0.050 |
| **Frequency of Fruits’ Consumption**  1-2 times per week  3-5 times per week  daily | 57 (60.0)  133 (61.9)  284 (53.8) | 27 (28.4)  57 (26.5)  174 (33.0) | 11 (11.6)  25 (11.6)  70 (13.3) | 0.324 |
| **Vegetables**  Yes  No | 447 (57.2)  104 (60.8) | 235 (30.1)  47 (27.5) | 100 (12.8)  20 (11.7) | 0.681 |
| **Frequency of Vegetables’ Consumption**  1-2 times per week  3-5 times per week  daily | 62 (67.4)  141 (63.8)  231 (52.1) | 20 (21.7)  60 (27.1)  146 (33.0) | 10 (10.9)  20 (9.0)  66 (14.9) | **0.009** |
| **Soft drinks**  Yes  No | 269 (64.4)  253 (51.5) | 112 (26.8)  160 (32.6) | 37 (8.9)  78 (15.9) | **<0.0001** |
| **Frequency of Soft drinks’ Consumption**  1-2 times per week  3-5 times per week  daily | 118 (58.4)  67 (72)  61 (70.9) | 68 (33.7)  17 (18.3)  18 (20.9) | 16 (7.9)  9 (9.7)  7 (8.1) | **0.043** |
| **Vaccination**  Complete  Incomplete | 503 (57.5)  62 (60.8) | 257 (29.4)  29 (28.4) | 115 (13.1)  11 (10.8) | 0.743 |
| **Place of Residence**  Urban area  Rural area | 504 (57.5)  64 (60.4) | 261 (29.8)  28 (26.4) | 112 (12.8)  14 (13.2) | 0.774 |
| **Residence**  Block of flats  Detached house | 343 (55.6)  228 (61.8) | 186 (30.1)  104 (28.2) | 88 (14.3)  37 (10.0) | 0.078 |
| **Stay in an Institution**  Yes  No | 4 (100.0)  560 (57.7) | 0 (0.0)  287 (29.6) | 0 (0.0)  123 (12.7) | 0.439**°** |
| **Adoption**  Yes  No | 3 (50.0)  562 (58.1) | 2 (33.3)  286 (29.5) | 1 (16.7)  120 (12.4) | 0.855**°** |
| **Single parent family**  Yes  No | 79 (56.8)  488 (58.0) | 47 (33.8)  242 (28.8) | 13 (9.4)  111 (13.2) | 0.294 |
| **Stay with Relatives**  Yes  No  **If yes, Relatives:**  Grandparents  Aunt-Uncle | 142 (57.5)  423 (58.3)  131 (58)  7 (58.3) | 76 (30.8)  210 (28.9)  66 (29.2)  5 (41.7) | 29 (11.7)  93 (12.8)  29 (12.8)  0 (0.0) | 0.819  0.430**°** |
| **School**  Yes  No  **If yes, type of school**  Private  Public | 555 (57.5)  9 (90.0)  42 (59.2)  264 (54.3) | 286 (29.6)  0 (0.0)  13 (18.3)  158 (32.5) | 125 (12.9)  1 (10.0)  16 (22.5)  64 (13.2) | 0.063**°**  **0.017** |
| **School Record**  Good  Moderate/Bad | 304 (52.8)  109 (70.3) | 192 (33.3)  32 (20.6) | 80 (13.9)  14 (9.0) | **<0.001** |
| **Foreign Languages**  None  English  English and French  English and German  Other | 114 (59.4)  92 (47.9)  29 (46.0)  32 (52.5)  6 (50.0) | 59 (30.7)  70 (36.5)  25 (39.7)  21 (34.4)  4 (33.3) | 19 (9.9)  30 (15.6)  9 (14.3)  8 (13.1)  2 (16.7) | 0.463**°** |
| **Regular Exercise**  Yes  No | 288 (51.2)  260 (67.7) | 183 (32.5)  96 (25.0) | 92 (16.3)  28 (7.3) | **<0.001** |
| **Sports at school**  Yes  No | 441 (55.7)  59 (67.0) | 249 (31.4)  20 (22.7) | 102 (12.9)  9 (10.2) | 0.122 |
| **Sports**  No  Yes  **If yes, the sport was:**  Basket  Football  Running/ Walking/ Cycling  Swimming  Martial arts  Tennis  Voleyball  Other  Combination | 121 (68.0)  291 (51.1)  54 (59.3)  33 (55.0)  8 (53.3)  46 (56.1)  49 (53.8)  10 (41.7)  14 (36.8)  32 (42.7)  45 (48.4) | 45 (25.3)  188 (33.0)  26 (28.6)  21 (35.0)  3 (20.0)  24 (29.3)  31 (34.1)  9 (37.5)  18 (47.4)  24 (32.0)  32 (34.4) | 12 (6.7)  90 (15.8)  11 (12.1)  6 (10.0)  4 (26.7)  12 (14.6)  11 (12.1)  5 (20.8)  6 (15.8)  19 (25.3)  16 (17.2) | **<0.001**  0.332**°** |
| **Sports’ Frequency**  1 time per week  2 times per week  3 times per week  ≥4 times per week | 15 (48.4)  64 (50.0)  112 (49.3)  75 (52.4) | 11 (35.5)  43 (33.6)  74 (32.6)  50 (35.0) | 5 (16.1)  21 (16.4)  41 (18.1)  18 (12.6) | 0.913**°** |
| **Hobbies**  No  Yes  **If yes, the hobby was:**  Music  Dancing  Chess  Other | 87 (58.8)  201 (52.5)  17 (68.0)  65 (45.1)  8 (80.0)  111 (54.4) | 42 (28.4)  130 (33.9)  6 (24.0)  53 (36.8)  1 (10.0)  70 (34.3) | 19 (12.8)  52 (13.6)  2 (8.0)  26 (18.1)  1 (10.0)  23 (11.3) | 0.397  0.114° |
| **Hobby Frequency**  1 time per week  2 times per week  3 times per week  >3 times per week | 25 (51.0)  22 (48.9)  11 (44.0)  3 (25.0) | 17 (34.7)  14 (31.1)  10 (40.0)  7 (58.3) | 7 (14.3)  9 (20.0)  4 (16.0)  2 (16.7) | 0.680**°** |
| **Smoking**  Yes  No | 3 (75.0)  554 (57.6) | 1 (25.0)  285 (29.6) | 0 (0.0)  123 (12.8) | 0.999° |
| **Alcohol**  Yes  No | 3 (60.0)  555 (57.7) | 0 (0.0)  286 (29.7) | 2 (40.0)  121 (12.6) | 0.104° |

Abbreviations: mo: months; Continuous variables are presented as mean ± standard error of the mean (SEM) and categorical as frequencies (percentages); p values were derived by comparisons between the three categories of BMI using ∙ Kruskal-Wallis H test for skewed variables; Pearson’s χ2 or ◦ Monte Carlo test for categorical variables; Statistically significant associations are shown in bold.