Pediatric Health and Nutritional Assessment: Baseline and Disease Profile Analysis

Analysis for Client Areeba Shaikh

## Preamble:

* **Background**: This analysis was conducted as part of a cross-sectional biostatistical assessment aimed at evaluating the health, nutritional, and disease status of children and adolescents. The study integrates anthropometric, demographic, and clinical data collected through a standardized questionnaire and field measurements.
* **Objectives**:
  + Describe the baseline demographic, socioeconomic, and health characteristics of the study population.
  + Quantify the prevalence of reported diseases and health conditions, overall and stratified by age group.
  + Assess nutritional status using internationally standardized WHO Z-scores and classify children according to defined thresholds for stunting, wasting, underweight, thinness, overweight, and obesity.
* **Analytical Outputs**:
  + **Baseline Descriptive Table:**
    - Continuous variables summarized as Mean (SD)
    - Categorical variables summarized as n (%)
  + **Disease-by-Age Group Table:**
    - Comparison across defined age categories (3–5, 6–11, 12–18 years)
    - Chi-square (χ²) tests performed for group differences
* **Software:** All statistical analyses were performed using R Statistical Language (Version 4.5.1; R Foundation for Statistical Computing, Vienna, Austria).

## Baseline Descriptive Characteristics

| **Characteristic** | **N = 1,911***1* |
| --- | --- |
| Age (Years) | 12.0 (3.6) |
| Sex |  |
| Female | 1,910 (100%) |
| Age Group |  |
| 3–5 | 60 (3.2%) |
| 6–11 | 735 (39%) |
| 12–18 | 1,106 (58%) |
| Mother's Education |  |
| Primary | 579 (30%) |
| Secondary (Matric) | 834 (44%) |
| Secondary (Intermediate) | 313 (16%) |
| Higher (Graduation) | 181 (9.5%) |
| Father's Education |  |
| Primary | 552 (29%) |
| Secondary (Matric) | 798 (42%) |
| Secondary (Intermediate) | 332 (17%) |
| Higher (Graduation) | 228 (12%) |
| Weight (kg) | 32 (14) |
| Height (cm) | 137 (18) |
| MUAC (cm) | 18.6 (6.3) |
| BMI (kg/m²) | 16.3 (4.5) |
| Height-for-Age Z-score (HAZ) | -1.53 (1.61) |
| Stunted (HAZ < -2) | 613 (33%) |
| Severely Stunted (HAZ < -3) | 206 (11%) |
| Weight-for-Age Z-score (WAZ) | -1.87 (1.97) |
| Underweight (WAZ < -2) | 251 (50%) |
| Severely Underweight (WAZ < -3) | 111 (22%) |
| Weight-for-Height Z-score (WHZ) |  |
| -2.37 | 1 (20%) |
| -1.37 | 1 (20%) |
| -1.21 | 1 (20%) |
| -0.94 | 1 (20%) |
| -0.52 | 1 (20%) |
| Wasted (WHZ < -2) | 1 (20%) |
| Severely Wasted (WHZ < -3) |  |
| 0 | 5 (100%) |
| BMI-for-Age Z-score (BAZ) | -1.23 (1.48) |
| Thinness (BAZ < -2) | 542 (29%) |
| Severe Thinness (BAZ < -3) | 177 (9.5%) |
| Overweight (BAZ > +1) | 134 (7.2%) |
| Obese (BAZ > +2) | 33 (1.8%) |
| Systolic BP (mmHg) | 102 (12) |
| Diastolic BP (mmHg) | 69 (20) |
| Pulse (bpm) | 101 (228) |
| Respiratory Rate (breaths/min) | 23 (8) |
| Temperature (°C) | 58 (83) |
| SpO₂ (%) | 99.54 (29.49) |
| Right Eye Vision |  |
| 5 | 14 (0.7%) |
| 6 | 1,890 (99%) |
| 9 | 2 (0.1%) |
| 10 | 1 (<0.1%) |
| Left Eye Vision |  |
| 5 | 207 (11%) |
| 6 | 1,249 (65%) |
| 8 | 1 (<0.1%) |
| 9 | 362 (19%) |
| 12 | 75 (3.9%) |
| 18 | 8 (0.4%) |
| 24 | 2 (0.1%) |
| 36 | 3 (0.2%) |
| Vaccination Status |  |
| Full | 1,872 (98%) |
| None | 10 (0.5%) |
| Partial | 29 (1.5%) |
| Knows Junk/Healthy Food Difference | 1,347 (71%) |
| Diet Type |  |
| Healthy Food | 1,053 (55%) |
| Junk Food | 853 (45%) |
| Participates in Sports (Never) | 143 (7.5%) |
| Participates in Sports at School | 1,725 (90%) |
| Participates in Sports Outside School | 154 (8.1%) |
| H/O Speech Delay | 58 (3.1%) |
| H/O Autism/Developmental Disability | 9 (0.5%) |
| H/O Prenatal Alcohol Exposure | 11 (0.6%) |
| Family Relationships |  |
| Conflict | 7 (10%) |
| Supportive | 61 (90%) |
| School Attendance |  |
| Grades dropping/absenteeism | 9 (17%) |
| On track | 43 (83%) |
| Academic Grades |  |
| Grades dropping/absenteeism | 22 (18%) |
| On track | 100 (82%) |
| Relationship with Friends |  |
| Normal activities | 25 (76%) |
| Reduced activities/peer conflicts | 8 (24%) |
| Activities for Fun / Bullying |  |
| Normal activities | 31 (91%) |
| Reduced activities/peer conflicts | 3 (8.8%) |
| Drug/Alcohol Use Frequency |  |
| Frequent/daily | 1,779 (100%) |
| No or infrequent | 5 (0.3%) |
| Occasional | 2 (0.1%) |
| Suicidal Thoughts |  |
| Ideation | 5 (0.3%) |
| No thoughts | 15 (1.0%) |
| Plan or gesture | 1,427 (99%) |
| Suicidal Thoughts Changed |  |
| No | 158 (8.3%) |
| Not applicable | 1,744 (91%) |
| Yes | 5 (0.3%) |
| Trouble with Authority |  |
| Mild | 9 (0.5%) |
| Moderate | 8 (0.4%) |
| Severe | 1,808 (99%) |
| Mental Health Help Status |  |
| None/waitlist/non-compliant | 1,814 (99%) |
| Ongoing/connected | 4 (0.2%) |
| Some/not meeting needs | 15 (0.8%) |
| Anemia | 1,149 (60%) |
| Worms Infestation | 628 (35%) |
| Jaundice | 286 (15%) |
| Measles | 364 (20%) |
| Mumps | 294 (16%) |
| URTI | 89 (4.9%) |
| Pharyngitis | 367 (20%) |
| Otitis Media | 252 (14%) |
| Chicken Pox | 387 (21%) |
| Pneumonia | 144 (7.7%) |
| Asthma / RAD | 116 (6.2%) |
| Tuberculosis (TB) | 18 (1.0%) |
| Congenital Heart Disease (CHD) | 11 (0.6%) |
| Convulsions | 22 (1.2%) |
| Surgical History | 40 (2.1%) |
| Skin Disease | 264 (14%) |
| Blood Disorder | 80 (4.4%) |
| History of Medication | 162 (9.1%) |
| Gastroenteritis | 103 (5.6%) |
| Co-morbidity | 146 (7.9%) |
| Hospital Admission | 84 (4.5%) |
| Tooth Brushing Frequency |  |
| Before bed | 40 (2.1%) |
| Every time I eat | 34 (1.8%) |
| Morning only | 1,080 (57%) |
| Never | 266 (14%) |
| Twice a day | 488 (26%) |
| Teeth Cleaning Method |  |
| Brush/Paste | 1,592 (98%) |
| Dental floss | 5 (0.3%) |
| Only water | 3 (0.2%) |
| Others | 8 (0.5%) |
| Traditional instrument | 12 (0.7%) |
| Has Regular Dentist |  |
| Don't know | 42 (2.3%) |
| No | 1,693 (93%) |
| Yes | 84 (4.6%) |
| Dental Visit Frequency |  |
| About once a year | 7 (0.4%) |
| Less than once a year | 14 (0.8%) |
| More than once a year | 14 (0.8%) |
| Never | 1,231 (68%) |
| Only for emergency care | 553 (30%) |
| Aware of Bad Oral Hygiene Effects | 732 (40%) |
| Normal Oral Status | 135 (7.1%) |
| Toothache | 54 (2.8%) |
| Tooth Sensitivity | 16 (0.8%) |
| Pain Around Jaw | 38 (2.0%) |
| Bleeding Gums | 5 (0.3%) |
| Dry Mouth | 33 (1.7%) |
| Bad Breath | 5 (0.3%) |
| Patch on Tongue | 490 (26%) |
| Hole in Teeth | 5 (0.3%) |
| Persistent Ulcers | 7 (0.4%) |
| Excessive Bleeding Gums | 19 (1.0%) |
| Loosening of Teeth | 6 (0.3%) |
| Swelling Around Neck | 2 (0.1%) |
| Mouth Pain at Night | 5 (0.3%) |
| Tooth Pain at Night | 3 (0.2%) |
| Pain in Jaw | 23 (1.2%) |
| Not Happy with Teeth Appearance | 678 (35%) |
| Dental Caries | 18 (0.9%) |
| Stains/Plaques | 98 (5.1%) |
| Menstruation Started | 768 (40%) |
| Age at Menarche (Years) | 12.87 (6.96) |
| Knew About Menstruation Before First Period | 411 (53%) |
| Source of Menstrual Knowledge |  |
| Family | 213 (52%) |
| Friends | 47 (11%) |
| Media | 3 (0.7%) |
| Reading | 1 (0.2%) |
| School | 148 (36%) |
| Uses Cloth or Towel | 155 (8.1%) |
| Uses Disposable Sanitary Pad | 701 (37%) |
| Uses Reusable Sanitary Pad | 5 (0.3%) |
| Uses Toilet Paper |  |
| No | 1,911 (100%) |
| Uses Cotton Wool | 1 (<0.1%) |
| Uses Mattress or Foam |  |
| No | 1,911 (100%) |
| Uses Underwear Alone | 6 (0.3%) |
| Uses Natural Material (Leaves, Sand, etc.) | 1 (<0.1%) |
| Uses Period Underwear | 2 (0.1%) |
| Uses Menstrual Cup |  |
| No | 1,911 (100%) |
| Uses Tampons | 3 (0.2%) |
| Washes and Reuses Menstrual Materials | 135 (18%) |
| Changes Per Day (Heaviest Day) |  |
| 1 time | 43 (5.6%) |
| 2 times | 269 (35%) |
| 3 times | 332 (43%) |
| 4 times | 104 (14%) |
| More than 4 times | 21 (2.7%) |
| Frequency of Changing During Period |  |
| Every day | 610 (90%) |
| Never | 2 (0.3%) |
| One day | 17 (2.5%) |
| Some days | 52 (7.6%) |
| *1*Mean (SD); n (%) | |

## Disease by Age Group Analysis

| **Characteristic** | **3–5** N = 60*1* | **6–11** N = 735*1* | **12–18** N = 1,106*1* | **p-value***2* |
| --- | --- | --- | --- | --- |
| Anemia | 32 (53%) | 409 (56%) | 702 (64%) | 0.002 |
| Worms Infestation | 22 (38%) | 250 (35%) | 350 (34%) | 0.7 |
| Jaundice | 9 (15%) | 80 (11%) | 192 (18%) | <0.001 |
| Measles | 13 (22%) | 102 (14%) | 246 (23%) | <0.001 |
| Mumps | 8 (14%) | 87 (12%) | 196 (18%) | 0.001 |
| URTI | 4 (6.9%) | 29 (4.0%) | 54 (5.2%) | 0.4 |
| Pharyngitis | 7 (12%) | 109 (15%) | 248 (23%) | <0.001 |
| Otitis Media | 9 (15%) | 98 (14%) | 142 (13%) | >0.9 |
| Chicken Pox | 1 (1.7%) | 84 (12%) | 298 (28%) | <0.001 |
| Pneumonia | 7 (12%) | 45 (6.2%) | 90 (8.4%) | 0.086 |
| Asthma / RAD | 2 (3.4%) | 39 (5.4%) | 73 (6.8%) | 0.4 |
| Tuberculosis (TB) | 0 (0%) | 2 (0.3%) | 16 (1.5%) | 0.036 |
| Congenital Heart Disease (CHD) | 1 (1.7%) | 7 (1.0%) | 3 (0.3%) | 0.079 |
| Convulsions | 3 (5.1%) | 9 (1.2%) | 10 (0.9%) | 0.045 |
| Surgical History | 1 (1.7%) | 10 (1.4%) | 29 (2.7%) | 0.13 |
| Skin Disease | 4 (6.8%) | 80 (11%) | 178 (16%) | 0.001 |
| Blood Disorder | 3 (5.1%) | 27 (3.8%) | 50 (4.7%) | 0.5 |
| History of Medication | 6 (10%) | 58 (8.2%) | 96 (9.5%) | 0.6 |
| Gastroenteritis | 4 (6.7%) | 35 (4.8%) | 62 (5.9%) | 0.6 |
| Co-morbidity | 2 (3.4%) | 63 (8.8%) | 81 (7.6%) | 0.3 |
| Hospital Admission | 4 (6.8%) | 27 (3.7%) | 52 (4.9%) | 0.3 |
| *1*n (%) | | | | |
| *2*Pearson's Chi-squared test; Fisher's exact test | | | | |