



**GROWTH-AND-OBESITY PROFILES OF CHILDREN OF  
KARACHI USING BOX-INTERPOLATION METHOD:  
PROFILES OF M. FAMILY**

**SGPP-KHI-20080104-02**

Syed Arif Kamal, Nida Jamil and S. A. Khan



**Additional File 1**



کراچی یونیورسٹی

University of Karachi  
**THE NGDS PILOT PROJECT**  
The Sibling Growth Pilot Project



THE SYED FIRDOUS GROWTH AND IMAGING LABORATORY

*Authenticity*

No handwritten notes except original signatures.  
This report is official only after signed by Project  
Director. [a], [b]..... represent ENDNOTES.

*Abbreviations*

MP mid-parental NC non-computable  
NA not available ND non-determinable  
ft feet in inch(es)

SGPP Case Number: **SGPP-KHI-20080104-02**

Date of Report (Year-Month-Day): 2009-04-02

COLOR CODES FOR STATUSES	<1%	1-10%	>10%	Hue 085, Sat 255, Lum 064	Hue 042, Sat 255, Lum 128	Hue 000, Sat 255, Lum 092	Red 000, Green 128, Blue 000	Red 255, Green 255, Blue 000	Red 184, Green 000, Blue 000

Father's Name: W/H (withheld to protect privacy); Mother's Name: W/H; Paper Mail (Mailing Address): W/H; Telephone Numbers: W/H; Best Time-Slot to Call: anytime; e-mail: none

Table 1. Parents' Obesity Profiles [a]

Checkup	Father	Mother
Date of Checkup	2009-02-05	2009-02-05
Date of Birth	1970-01-13	1973-11-04
Age (years)	39.08	35.25
Dress Code [b]	2/2	3/3
Height (cm)	169.30	154.90
Height (ft-in)	5 ft 6.65 in	5 ft 0.98 in
Percentile-of-Height	16.00	10.53
Gross Mass (kg)	71.4	50.7
Clothing Correction (kg)	0.4	0.5
Net Mass (kg)	71.0	50.2
Net Weight (lb-oz)	156 lb 8.88 oz	110 lb 11.06 oz
Percentile-of-Mass	51.47	17.31
BMI: Body-Mass Index (kg/m <sup>2</sup> )	24.77	20.92
Optimal Mass (kg)	60.25	48.39 [c]
Optimal Weight (lb-oz)	132 lb 13.62 oz	106 lb 11.24 oz [d]
Δ Mass-for-Height (kg)	+10.75	+1.81 [c]
Δ Weight-for-Height (lb-oz)	+23 lb 11.26 oz	+3 lb 15.82 oz [d]
Status (pertaining-to-mass) [c]	<b>17.84% OBESE</b>	<b>3.74% OBESE [d]</b>

FATHER has 10.75 kg EXCESS mass (OVERWEIGHT by 23 lb 11.26 oz) for height [17.64% OBESE]. MOTHER has 1.81 kg EXCESS mass (OVERWEIGHT by 3 lb 15.82 oz) for height [3.74% OBESE] — Father should set a target of losing **1 lb PER WEEK** for **23 weeks**. Mother's weight is all right. She should maintain it (please see endnote [c] regarding pregnancy).

**Warning:** DO NOT try to lose weight rapidly. It could be dangerous for the father's health.

ADDITIONAL FILE 1: PROFILES OF M. FAMILY

Table 2. Adult-mid-parental (Target) heights [a]

$BOY/GIRL=(FATHER+MOTHER \pm 13)/2$	Boy	Girl
Adult-MP (Target) Height (cm)	168.60	155.60
Adult-MP Height (ft-in)	5 ft 6.38 in	5 ft 1.26 in
Percentile-of-MP Height	13.67	13.00

**E. M.**

Gender: Female  
 GR Number: W/H  
 Class & Section: IV-A

Date of Birth: 1999-12-05  
 Birth Weight: 6 lb  
 School: W/H

*Height Profile of E. M.* (mid-parental percentile = 13.00, taken as reference): At the age of 9.17 years, (average) height of E. M. comes out to 128.15 cm (4 ft 2.45 in), which lies at 18<sup>th</sup> (18.45 to be exact) percentile [1.00% (+)]. E. M. has 1.27 cm (0.50 in) EXCESS height with respect to current-age-mid-parental height (126.88 cm), but is not considered tall. Based on height percentile, her estimated -adult height comes out to be 157.14 cm (5 ft 1.87 in).

*Mass Profile of E. M.:* At the age of 9.17 years, (average) net mass (weight) of E. M. comes out to 18.9 kg (41 lb 10.79 oz), which lies below 3<sup>rd</sup> percentile [24.73% WASTED]. E. M. has 6.21 kg LESSER mass (UNDERWEIGHT by 13 lb 11.06 oz) for her height. Based on mass (weight) percentile, her estimated-adult mass (weight) comes out to be less than 45.25 kg (less than 99 lb 12.42 oz). Her body-mass index (BMI) is computed as 11.51 kg/m<sup>2</sup>.

*Implications for E. M.:* Extremely low weight (below 3<sup>rd</sup> percentile) of E. M. may

- a) Affect vital organs
- b) Cause diabetes
- c) Hamper to achieve the desired-adult height

The child is, already, showing signs of trunk deformity and gait with toes converging. See endnote [h] for informative article, explaining these issues.

*Recommendations for E. M.:* Detailed orthopedic assessment for presence of scoliosis as well as gait analysis to be done. Being 14 lb underweight, the child needs to consume diet with high protein content (meat, fish, milk, etc.) as well as potato items. To gain height (tissue synthesis), she must consume food with fiber (bread, etc.), which, also, prevents constipation. In addition, her sleep duration may be increased (minimum sleep recommended = 9 hours) combined with light stretching exercises. A relaxed (unhurried), complete breakfast, followed by nutritious lunch and proper dinner are keys to good nutrition. Avoid junk food and snacks except mid-morning one.

**L. M.**

Gender: Female  
 GR Number: W/H  
 Class & Section: KG-II

Date of Birth: 2002-10-28  
 Birth Weight: 7 lb  
 School: W/H

*Height Profile of L. M.* (mid-parental percentile = 13.00, taken as reference): At the age of 6.27 years, (average) height of L. M. comes out to 117.15 cm (3 ft 10.12 in), which lies at 57<sup>th</sup> (56.67 to be exact) percentile [6.04% TALL]. L. M. has 6.68 cm (2.63 in) EXCESS height with respect to current-age-mid-parental height (110.47 cm). Based on height percentile, her estimated-adult height comes out to be 164.57 cm (5 ft 4.79 in).

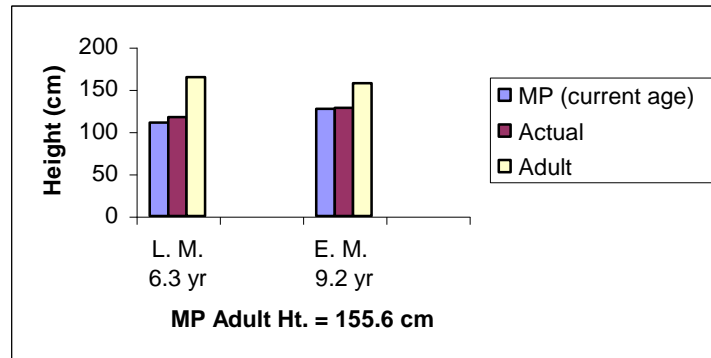


Fig. 1. Bar chart representing heights of girls

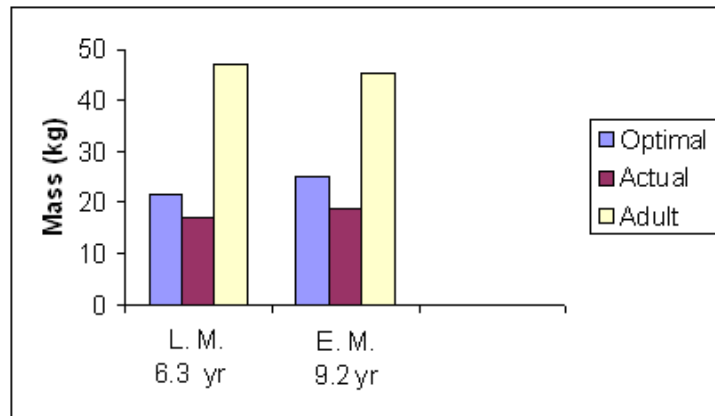


Fig. 2. Bar chart representing masses of girls; yellow bar for E. M. gives upper limit (her mass lies at less than 3 percentile)

*Mass Profile of L. M.:* At the age of 6.27 years, (average) net mass (weight) of L. M. comes out to 17.2 kg (37 lb 14.82 oz), which lies at 7<sup>th</sup> (6.87 to be exact) percentile [19.80% WASTED]. L. M. has 4.29 kg LESSER mass (UNDERWEIGHT by 9 lb 7.30 oz) for her height. Based on mass (weight) percentile, her

Table 3. Growth-and-Obesity Profile of E. M. [a]



Check up	1 <sup>st</sup>
Photograph [e]	
Scanned Signatures [e]	EM
Date of Checkup	2009-02-05
Age (years)	9.17
Dress Code (Undressing) [b]	1.5/2 (0/0.5)
Height (cm)	128.15
Height (ft-in)	4 ft 2.45 in
Percentile-of-Height	18.45
Estimated-Adult Height (cm) [f]	157.14
Estimated-Adult Height (ft-in) [f]	<b>5 ft 1.87 in</b>
<b>Cutoff height for induction in the Armed Forces: 5 ft 2 in</b>	
Mid-Parental-Height Percentile	13.00
Current-Age-Mid-Parental Height (cm)	126.88
Δ Height-for-Age (cm)	+1.27
Δ Height-for-Age (in)	+0.50
Status (pertaining-to-height)	<b>1.00% (+)</b>
Gross Mass (kg)	18.9
Clothing Correction (kg)	0
Net Mass (kg)	18.9
Net Weight (lb-oz)	41 lb 10.79 oz
Percentile-of-Mass	< 3
Estimated-Adult Mass (kg) [f]	< 45.25
Estimated-Adult Weight (lb-oz) [f]	< 99 lb 12.42 oz
BMI: Body-Mass Index (kg/m <sup>2</sup> )	11.51
Optimal Mass (kg)	25.11
Optimal Weight (lb-oz)	55 lb 5.85 oz
Δ Mass-for-Height (kg)	-6.21
Δ Weight-for-Height (lb-oz)	-13 lb 11.06 oz
Status (pertaining-to-mass)	<b>24.73% WASTED [g]</b>

Table 4. Growth-and-Obesity Profile of L. M. [a]

Check up	1 <sup>st</sup>
Photograph [d]	
Scanned Signatures [d]	LM
Date of Checkup	2009-02-05
Age (years)	6.27
Dress Code (Undressing) [b]	1.5/1.5 (0/0.5)
Height (cm)	117.15
Height (ft-in)	3 ft 10.12 in
Percentile-of-Height	56.67
Estimated-Adult Height (cm) [e]	164.57
Estimated-Adult Height (ft-in) [e]	<b>5 ft 4.79 in</b>
<b>Cutoff height for induction in the Armed Forces: 5 ft 2 in</b>	
Mid-Parental-Height Percentile	13.00
Current-Age-Mid-Parental Height (cm)	110.47
Δ Height-for-Age (cm)	+6.68
Δ Height-for-Age (in)	+2.63
Status (pertaining-to-height)	<b>6.04% TALL</b>
Gross Mass (kg)	17.2
Clothing Correction (kg)	0
Net Mass (kg)	17.2
Net Weight (lb-oz)	37 lb 14.82 oz
Percentile-of-Mass	6.87
Estimated-Adult Mass (kg) [e]	47.15
Estimated-Adult Weight (lb-oz) [e]	103 lb 15.58 oz
BMI: Body-Mass Index (kg/m <sup>2</sup> )	12.53
Optimal Mass (kg)	21.49
Optimal Weight (lb-oz)	47 lb 6.17 oz
Δ Mass-for-Height (kg)	-4.29
Δ Weight-for-Height (lb-oz)	-9 lb 7.30 oz
Status (pertaining-to-mass)	<b>19.80% WASTED [g]</b>

estimated-adult mass (weight) comes out to be 47.15 kg (103 lb 15.58 oz). Her body-mass index (BMI) is computed as 12.53 kg/m<sup>2</sup>.

Implications for L. M.: Low weight of L. M. may:

- a) Affect vital organs
- b) Cause diabetes
- c) Hamper to achieve the desired-adult height

The child is, already, showing some signs of trunk deformity — cf. endnote [h].

Recommendations for L. M.: Detailed orthopedic assessment for presence of scoliosis/condition of knees to be done. L. M. needs to put on 10 lb to bring her weight in line with her height. To gain weight, her diet should include high protein content (meat, fish, milk, etc.) as well as potato items. To increase her height (tissue synthesis), she must consume food with fiber (bread, etc.), which, also, prevents constipation. In addition, her sleep duration may be increased (minimum sleep recommended = 10 hours) combined with light stretching exercises. A relaxed (unhurried), complete breakfast, followed by nutritious lunch and proper dinner are keys to good nutrition. Avoid junk food and snacks except mid-morning one.

Concluding Remarks [i]: Kindly, refer to SGPP Case Number (page 1, line 5) in each correspondence. Please, SMS on cell number and e-mail:

Timeline	Purpose
Immediately	To confirm receipt of report
Within one week	To set-up appointment for discussing report <sup>¶</sup>
Between 4 <sup>th</sup> & 5 <sup>th</sup> months from checkup date	To schedule a follow-up visit

<sup>¶</sup>Kindly, bring along a PRINTED COPY OF THIS REPORT at the time of discussion [j].

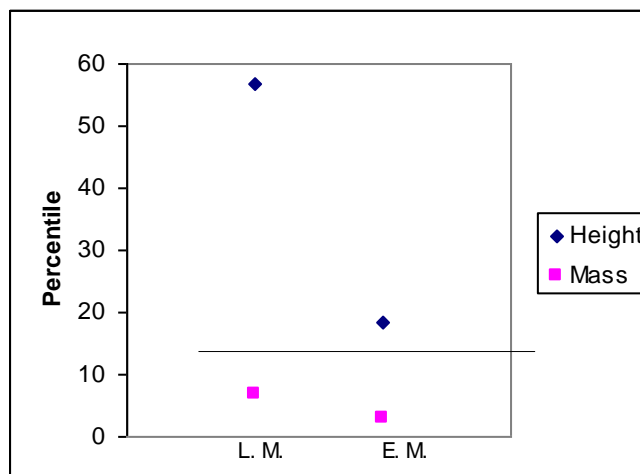


Fig. 3. Percentiles of heights and masses of girls; pink square for E. M. gives upper limit (her mass lies below 3 percentile) — solid line gives mid-parental (reference) percentile

Experts agree that a follow-up examination, scheduled within 6 months of this checkup, would ensure a healthy and a happy childhood, adolescence and old age — the best gifts parents can give to their kids. The NGDS Pilot Project [k] is awaiting your valued input to make our services more useful for you and your family.

*End Notes:* Listed, sequentially, as they are referred to in the text.

- a) This report is prepared according to the methods and the protocols reported in: Kamal SA, Jamil N, Khan SA, Growth-and-Obesity Profiles of Children of Karachi using Box-Interpolation Method, *International Journal of Biology and Biotechnology* **8 (1)** 2011, 87-96, downloadable from the address: <http://www.ngds-ku.org/Papers/J29.pdf> (somewhat modified). Detailed calculations, which generated this report, are placed at: [http://www.ngds-ku.org/Papers/J29/Growth\\_Calculations.pdf](http://www.ngds-ku.org/Papers/J29/Growth_Calculations.pdf)
- b) Dress code (undressing) is explained in *Manual for Anthropometric Measurements*, web address: [http://www.ngds-ku.org/ngds\\_folder/M02.pdf](http://www.ngds-ku.org/ngds_folder/M02.pdf)
- c) Status, pertaining-to-mass, is considered normal if mass (weight) varies around  $\pm 1\%$  of the optimal mass (weight). For example, 0.98% (+) means, more weight than optimal, in the normal range. Similarly, 0.98% (-) means, lesser weight than optimal, in the normal range. Likewise, in children's report, Status, pertaining-to-height, is considered normal around  $\pm 1\%$  of the mid-parental height.
- d) Valid if the mother is NOT PREGNANT. In case of pregnancy, add estimated weight of fetus and re-determine difference of mass (weight)-for-height and status.
- e) Photograph and scanned signatures on the day, check up was conducted. In order to protect the privacy of M. Family, the photographs, inserted in these Growth-and-Obesity Profiles, do not show the actual children. Further, family labels and children's initials do not correspond to first letters in actual names (as per confidentiality standards). Same is true about case number appearing in this report and the associated document (detailed calculations). They are not the ones, which are used to classify patient record and appear on the reports issued to patients.
- f) Estimated-adult height and estimated-adult mass (weight) are based on percentiles of current height and current mass (weight), respectively.
- g) STUNTED means child is short for age, based on mid-parental height, taken as reference; WASTED means child/adult has lesser weight for height (do not confuse with everyday meaning of 'wasted')
- h) Before coming for discussion, read the informative article: Kamal SA, Growth-and-Obesity Monitoring of Primary-School Children at Beacon Light Academy, e-publication of the NGDS Pilot Project, University of Karachi, available at: [http://www.ngds-ku.org/BLA/Growth\\_Monitoring\\_BLA.pdf](http://www.ngds-ku.org/BLA/Growth_Monitoring_BLA.pdf)
- i) By filling out the participation form, you have agreed to support the research and the community-outreach objectives of the NGDS Pilot Project (so that we can continue to provide state-of-the-art services to you and your family), which means that you'll cooperate in data-collection, primarily used for research, teaching and training purposes. In the appointment form, you'll be informed about the procedures, which generate data for research purposes.
- j) In order to maintain transparency of our procedures and operations, the NGDS Pilot Project has provided you with links to documents in endnotes [a] and [b]. The NGDS Pilot Project is monitored by Transparency International Pakistan (TIP). Project Director is Convener of Sub-Committee (Schools) of the Education Committee, TIP.
- k) These services are provided to you, free-of-charge, through the NGDS Pilot Project of University of Karachi, initiated under the directives of this University's Chancellor — Governor Sindh, in strict compliance with the ethical and the human-rights (developed on the North-American model) protocols applicable in your region. We have a strong publication record and liaisons with local and

ADDITIONAL FILE 1: PROFILES OF M. FAMILY

international pediatricians. The reports are generated on the basis of the NCHS Growth Charts, released by Centers of Disease Control, Atlanta, GA, USA: <http://www.cdc.gov> — including parents' heights as estimator of children's target heights provides realistic estimates for growth profiling of the Pakistani children.

Many thanks for your interest in the NGDS Pilot Project.

**Professor Dr. Syed Arif Kamal**

*Project Director*

The NGDS Pilot Project/Sibling Growth Pilot Project

SF-Growth-and-Imaging Laboratory

Room No. 006, Department of Mathematics

University of Karachi, Karachi 75270.

*URL:* <http://ngds-ku.org>

*e-mail:* [profdrakamal@gmail.com](mailto:profdrakamal@gmail.com)

*Tel:* +92 21 9926 1300-15 ext. 2293

*Cell:* +92 300 xxx xxxx

*Directions:* <http://www.ngds-ku.org/kamal/contact.htm#Directions>

END OF REPORT

*Web address of the main document:*

**GROWTH-AND-OBESITY PROFILES OF CHILDREN OF KARACHI  
USING BOX-INTERPOLATION METHOD**

<http://www.ngds-ku.org/Papers/J29.pdf>

*Detailed calculations:*

**Additional File 2: CALCULATIONS OF M. FAMILY**

[http://www.ngds-ku.org/Papers/J29/Additional\\_File\\_2.pdf](http://www.ngds-ku.org/Papers/J29/Additional_File_2.pdf)

*Additional data (updated regularly):*

**Additional File 3: PRACTICE DATA SET**

[http://www.ngds-ku.org/Papers/J29/Additional\\_File\\_3.pdf](http://www.ngds-ku.org/Papers/J29/Additional_File_3.pdf)

*Web address of this document:*

**Additional File 1: PROFILES OF M. FAMILY**

[http://www.ngds-ku.org/Papers/J29/Additional\\_File\\_1.pdf](http://www.ngds-ku.org/Papers/J29/Additional_File_1.pdf)