



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



SF GROWTH-AND-IMAGING LABORATORY

رَبَّنَا هَبْ لَنَا مِنْ أَزْوَاجِنَا وَذُرِّيَّاتِنَا قُرَّةَ أَعْيُنٍ وَاجْعَلْنَا لِلْمُتَّقِينَ إِمَامًا

Our Caretaker! Grant us from among our wives and offspring comfort to our eyes and make us an example for the righteous (Al-Quran 25:74)

Adapted from Sahih International <https://quran.com/25>

GROWTH-AND-OBESITY PROFILES OF S. FAMILY

Authenticity

No handwritten notes except original signatures.
This report becomes 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-20110614-01**

Date of Report (Year-Month-Day): 2012-08-02

COLOR CODES FOR STAUSES	<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; Cell Number: W/H; Best Time-Slot to Call: 1600h; e-mail: W/H

FATHER has 12.81 kg EXCESS mass (OVERWEIGHT by 28 lb 4.07 oz) for height [20.25% OBESE]. MOTHER has 3.83 kg EXCESS mass for height (OVERWEIGHT by 8 lb 7.00 oz) — Father should set a target of losing **1 lb PER WEEK** for **28 weeks**. Mother's weight is all right — cf. Table 1 and endnote [c].

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

Hr. S.

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

Date of Birth: 2005-04-10
Mass at Birth: 3 kg (Birth Length: NA)
School: W/H

Table 1. Parents' Obesity Profiles

Checkup	Father	Mother
Date of Checkup	2012-07-15	2012-07-15
Date of Birth	1974-08-08	1980-02-15
Age (years)	37.94	32.41
Dress Code [a]	2/2	3/3
Undressing [a]	2/2	2/2
Height (cm)	172.01	162.94
Height (ft-in)	5 ft 7.72 in	5 ft 4.15 in
Percentile-for-Height	25.06	46.89
Gross Mass (kg)	76.38	61.63
Clothing Correction (kg)	0.30	0.30
Net Mass (kg)	76.08	61.33
Net Weight (lb-oz)	167 lb 12.10 oz	135 lb 3.72 oz
Percentile-for-Mass	66.41	59.94
BMI: Body-Mass Index (kg/m ²)	25.71	23.10
Optimal Mass (kg)	63.27	57.50 [c]*
Optimal Weight (lb-oz)	139 lb 8.03 oz	126 lb 12.72 oz [c]
Δ Mass-for-Height (kg)	+12.81	+3.83 [c]
Δ Weight-for-Height (lb-oz)	+28 lb 4.07 oz	+8 lb 7.00 oz [c]
Status (pertaining-to-mass) [b]	20.25% OBESE	6.65% OBESE [c]



Table 2. Target (Adult-Mid-Parental) and Army-Cutoff Heights

$BOY/GIRL = (FATHER + MOTHER \pm 13) / 2$	Target Boy	Army-Cutoff Boy	Target Girl	Army-Cutoff Girl
Height (cm)	173.98	162.56 cm	160.98	157.48 cm
Height (ft-in)	5 ft 8.49 in	5 ft 4 in	5 ft 3.38 in	5 ft 2 in
Percentile	35.97	2.56	35.97	19.64

History of Hr. S.: A) biological child, B) blood group B+, C) cardiac patient (paternal grandfather), D) severe scoliosis (paternal cousin), E) diabetes (father, grand parents), F) 37-week baby delivered (forceps) at (name of hospital W/H), G) ob/gyn: W/H, H) jaundice at birth, I) breast-feeding: 1 month, J) shin pain, K) academic: A1, L) co-curricular: good, M) interaction with teachers, peers, family: better, N) dependent, O) shy, P) 9-hour sleep, Q) 2 meals (relaxed), R) 1 or none snacks, S) pediatrician: W/H, T) last check up: 6 months ago

Physical Examination of Hr. S.: School bag not brought, smartly dressed, quiet, sober, right handed, undressed to panties for examination (barefoot, all clothing above the waist removed), i) umbilical cord not properly cut, ii) hair dry, iii) white spots on nails, iv) teeth yellow, v) normal heart sounds (standing and squatting), vi) gait with toes inward, vii) positive Trendelenburg sign (right), viii) forward bending:

Table 3. Growth-and-Obesity Profile of Hr. S.


Check up	1 st
Photograph [d]	
Scanned Signatures [d]	HrS
Date of Checkup	2012-07-15
Age (years)	7.26
Dress Code [a]	1.5/1.5
Undressing [a]	0/0.5
Cumulative-Scoliosis-Risk Factor [e]	9.5
Height (cm)	119.36
Height (ft-in)	3 ft 10.99 in
Percentile-for-Height	25.07
Estimated-Adult Height (cm) [f]	159.01
Estimated-Adult Height (ft-in) [f]	5 ft 2.60 in
Current-Age-MP Height (cm)	120.99
Δ Height-for-Age (cm)	-1.63
Δ Height-for-Age (in)	-0.64
Status (pertaining-to-height) [b, e]	1.35% STUNTED [g]
Current-Age-Army-Cutoff Height (cm)	118.18
Δ Height w. r. t. Army-Cutoff (cm)	+1.18
Δ Height w. r. t. Army-Cutoff (in)	+0.46
Gross Mass (kg)	19.19
Clothing Correction (kg)	0
Net Mass (kg)	19.19
Net Weight (lb-oz)	42 lb 5.02 oz
Percentile-for-Mass	8.08
Estimated-Adult Mass (kg) [f]	47.58
Estimated-Adult Weight (lb-oz) [f]	104 lb 14.56 oz
BMI: Body-Mass Index (kg/m ²)	13.47
Estimated-Adult BMI (kg/m ²)	18.82
Optimal Mass (kg)	21.03
Optimal Weight (lb-oz)	46 lb 6.10 oz
Δ Mass-for-Height (kg)	-1.84
Δ Weight-for-Height (lb-oz)	-4 lb 1.08 oz
Status (pertaining-to-mass) [b, e]	8.77% WASTED [g]



Table 4. Scoliosis-Risk Weightage [e]

#	Hr. S.	Hk. S.
01	2.0	2.0
02	0.5	
03		1.0
06	0.0	1.0
07	0.0	1.0
12	1.5	1.5
13	1.5	1.5
14	1.0	1.0
15	0.5	0.5
16	0.5	0.5
18	1.5	1.0
19	0.5	0.5
Σ	9.5	11.5

positive — opposite sides from front and back, *ix*) posture: (from back) left shoulder drooping, left scapula down, and body triangles unequal, spinal dimples level, midline of back showing S curve — not corrected upon mild stretching, (from front) right shoulder drooping, right nipple down

Cumulative-Scoliosis-Risk Weightage for Hr. S. [e]: **9.5** (cf. Table 4 for individual contributions), extremely high

Height Profile of Hr. S. (mid-parental percentile = 35.97, taken as reference): At the age of 7.26 years, height of Hr. S. is 119.36 cm (3 ft 10.99 in), which lies at 25th (25.07 to be exact) percentile [1.35% STUNTED]. Hr. S. is 1.63 cm (0.64 in) SHORTER with respect to the mid-parental height at the current age. However, she has 1.18 cm (0.46 in) EXCESS height (at the current age) as compared to army-cutoff height. Based on this percentile, her estimated-adult height comes out to be 159.01 cm (5 ft 2.60 in).

Mass (Weight) Profile of Hr. S.: At the age of 7.26 years, net mass (weight) of Hr. S. is 19.19 kg (42 lb 5.02 oz), which lies at 8th (8.08 to be exact) percentile [5.82% WASTED], corresponding to BMI of 13.47 kg/m². The student has 1.19 kg LESSER mass (UNDERWEIGHT by 2 lb 9.83 oz) for her height. Based on this percentile, her estimated-adult mass (weight) comes out to be 47.58 kg (104 lb 14.56 oz), corresponding to an estimated-adult BMI of 18.82 kg/m².

Recommendations for Hr. S.: There are serious issues highlighted in the history and the physical examination. Continuous monitoring is needed. A summary appears below:

1. During studies, computer and TV watching (limit to 2 hours), at the end of hour, there should be 5-minute exercise (stretching, bending on sides, focusing eyes to infinity and moving eyeballs to relax eye muscles, moving fingers and wrists to increase circulation after computer work or writing).

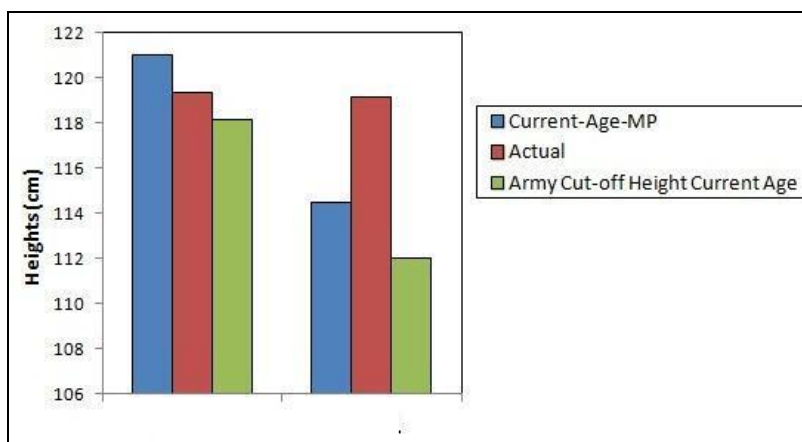


Fig. 1. Bar chart representing heights of girls — left Hr. S. and right Hk. S.

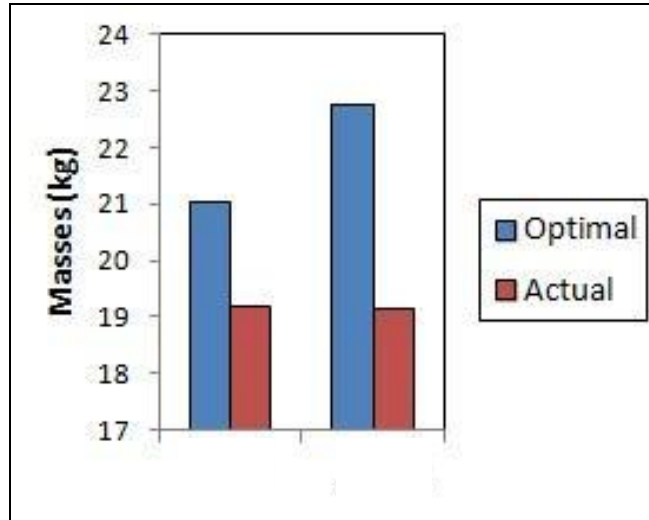


Fig. 2. Bar chart representing masses of girls — left Hr. S. and right Hk. S.

2. Exam indication [i] suggests protecting lower abdomen from infection and regular cleaning using disinfectant soap.

3. Exam indication [ii] suggests leaving the hair unbraided and open all the time, hair band may be used to keep hair from falling in eyes. Do not use pony. Massage hair, thoroughly, using olive oil or mustard (*sarsoon*) oil. Never, ever, use coconut oil; it'll turn hair gray. Leave the hair oily for 1-2 hours and then wash them thoroughly using shampoo for dry hair.

4. Extremely high scoliosis risk factor (7.5), history [D] and physical exam indications [viii, ix] suggest vigilant observation in the coming years. A very thorough examination with function testing would be conducted in the next session. Gait exam [vi] suggests avoiding high heels, using flat shoes, indoors barefoot, most of the time.

5. History [J] and exam [vii] suggest weak skeleton, in particular, weak hip abductors — may be the probable cause of [viii, ix]. Introduce calcium-rich diet (milk, ice cream, etc.) and overcome vitamin-D deficiency, which prevents *rickets* and *tuberculosis* (during early childhood), *scoliosis*, *kyphosis* and *lordosis* (during later childhood and adolescence) as well as *osteoporosis* (during later years). A guarded-graduated (guarded means strict surveillance of overexposure and possible harmful effects; graduated means a systematic increase of exposure so that the body may condition itself to increased doses) approach should build up sun-exposure tolerance and resistance to common colds. A 20-minute exposure (initially, start with 10 minutes and increase in small steps) to the morning or the later-afternoon sun

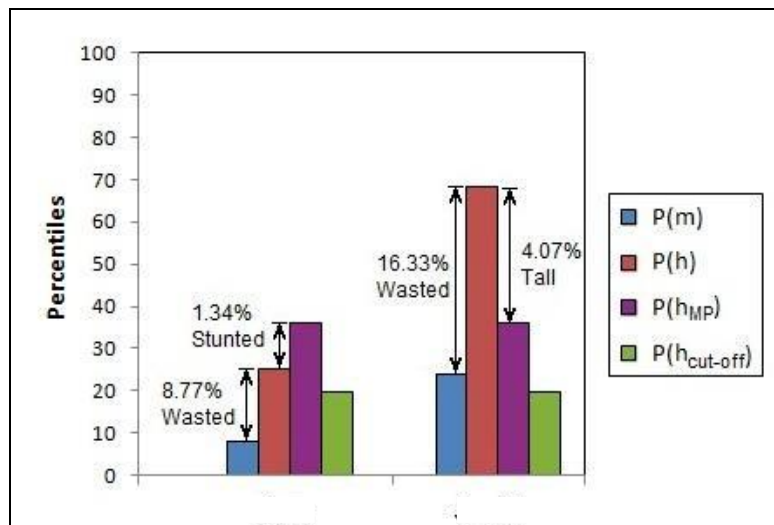


Fig. 3. Percentiles of heights and masses of girls — left Hr. S. and right Hk. S.



(eventually, exposure may be increased to 30 minutes after acclimatizing your child to sun) and 2-3-hour, fresh-air exposure in the shade (there are no risks involved in this practice, the duration may be increased as per wishes of the family), with your child minimally dressed (clothing style to be adapted, which exposes backbone and back skin from external auditory meatus to waistline, legs from mid thigh to feet) — in order, not to make this child conscious, all children in the family should have their outdoor-clothing style changed to vitamin-D-friendly pattern. It is very, very important that vitamin-D deficiency be overcome, through natural sun exposure, as soon as possible, because this condition shall prevent calcium to be, properly, absorbed and contribute towards strengthening the bones. This would, also, nullify all attempts to introduce calcium-rich diet items. A body massage using olive oil or mustard (*sarsoon*) oil before bath would, also, strengthen bones.

6. Hr. S. needs to put on 3 *lb* during the next 4 months to bring her weight in line with her height. 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 combined with light stretching exercises. To gain weight, her diet should include high protein content (meat, fish, milk, *etc.*). A relaxed (unhurried), complete breakfast, followed by proper lunch and proper dinner are keys to good nutrition. Avoid junk food and snacks except mid-morning one.

Warning: Your children have fair skin. Use discretion in sun-exposure practices.

Hk. S.

Gender: Female

GR Number: W/H

Class & Section: KG-Planet

Date of Birth: 2006-03-23

Mass at Birth: 2.9 kg (*Birth Length:* NA)

School: W/H

History of Hk. S.: A) biological child, B) blood group N/A, C), D), E), (from history of Hr. S.) F) 37-week baby delivered (normally) at (name of hospital W/H), G) ob/gyn: W/H, H) jaundice at birth, I) breast-feeding: 9-10 months, J) academic: A1, L) co-curricular: N/A, M) interaction with teachers, peers, family: hesitant, N) dependent, O) shy, P) 9-hour sleep, Q) 2 meals (relaxed), R) 1 or none snacks, S) pediatrician: W/H, T) last check up: 6 months ago

Physical Examination of Hk. S.: School bag not brought, smartly dressed, quiet, friendly, right handed, stripped to waist for examination (barefoot), *i*) hair mildly dry, *ii*) teeth yellow, *iv*) normal heat sounds (standing and squatting), *v*) forward bending: positive — opposite sides from front and back, *vi*) posture: (from back) left shoulder drooping, left scapula down, body triangles unequal, spinal dimples not visible, midline of back showing S curve — corrected upon mild stretching, (from front) right shoulder drooping, right nipple down

Cumulative-Scoliosis-Risk Weightage for Hk. S. [e]: **11.5** (individual contributions are listed in Table 4), extremely high, see relevant entry for Hr. S.

Height Profile of Hr. S. (mid-parental percentile = 35.97, taken as reference): At the age of 6.31 years, height of Hk. S. is 119.15 cm (3 ft 10.91 in), which lies at 68th (68.15 to be exact) percentile [2.32% TALL]. Hk. S. is 2.66 cm (1.05 in) TALLER with respect to the mid-parental height at the current age. In addition, she has 7.15 cm (2.81 in) EXCESS height (at the current age) as compared to army-cutoff height. Based on this percentile, her estimated-adult height comes out to be 166.40 cm (5 ft 5.51 in).

Mass (Weight) Profile of Hk. S.: At the age of 6.31 years, net mass (weight) of Hk. S. is 19.04 kg (41 lb 15.73 oz), which lies at 24th (24.03 to be exact) percentile [16.33% WASTED], corresponding to BMI of 13.41 kg/m². The student has 3.72 kg LESSER mass (UNDERWEIGHT by 8 lb 3.09 oz) for her height. Based on this percentile, her estimated-adult mass (weight) comes out to be 51.99 kg (114 lb 10.22 oz), corresponding to an estimated-adult BMI of 18.78 kg/m².

Recommendations of Hk. S.: There are certain issues highlighted in the history and the physical examination. They are summarized below:

1. Limit TV to 2 hours. At the ticking of each hour, ask your child to exercise for 5 minutes — stretching, bending on sides, focusing eyes to infinity and moving eyeballs to relax eye muscles, moving fingers and wrists to increase circulation after computer work or writing.

2. Exam indication [*i*] suggests hair care. Hair to be unbraided and left open all the time. Use hair band to keep hair from falling in eyes, no pony. Massage using olive oil or mustard (*sarsoon*) oil. Leave for



Table 5. Growth-and-Obesity Profile of Hk. S.

Check up	1 st
Photograph [d]	
Scanned Signatures [d]	HkS
Date of Checkup	2012-07-15
Age (years)	6.31
Dress Code [a]	2.5/2
Undressing [a]	0/2
Cumulative-Scoliosis-Risk Factor [e]	11.5
Height (cm)	119.15
Height (ft-in)	3 ft 10.91 in
Percentile-for-Height	68.15
Estimated-Adult Height (cm) [f]	166.40
Estimated-Adult Height (ft-in) [f]	5 ft 5.51 in
Current-Age-MP Height (cm)	114.49
Δ Height-for-Age (cm)	+4.66
Δ Height-for-Age (in)	+1.84
Status (pertaining-to-height) [b, e]	4.07% TALL
Current-Age-Army-Cutoff Height (cm)	112.00
Δ Height w. r. t. Army-Cutoff (cm)	+7.15
Δ Height w. r. t. Army-Cutoff (in)	+2.81
Gross Mass (kg)	19.14
Clothing Correction (kg)	0.10
Net Mass (kg)	19.04
Net Weight (lb-oz)	41 lb 15.73 oz
Percentile-for-Mass	24.03
Estimated-Adult Mass (kg) [f]	51.99
Estimated-Adult Weight (lb-oz) [f]	114 lb 10.22 oz
BMI: Body-Mass Index (kg/m ²)	13.41
Estimated-Adult BMI (kg/m ²)	18.78
Optimal Mass (kg)	22.76
Optimal Weight (lb-oz)	50 lb 2.82 oz
Δ Mass-for-Height (kg)	-3.72
Δ Weight-for-Height (lb-oz)	-8 lb 3.09 oz
Status (pertaining-to-mass) [b, e]	16.33% WASTED [g]

1-2 hour before washing with dry-hair shampoo, no coconut oil.

3. Extremely high scoliosis risk factor (10.5), history [D] and physical exam indications [v, vi] suggest vigilant observation in years to come. Expect thorough examination with function testing in the next session.

4. Exam indications [v, vi] suggest weak skeletal muscles. Put Hk. S. on calcium-rich diet (milk, ice cream, etc.) and reduce vitamin-D deficiency, in order to safeguard from *rickets* and *tuberculosis* (during early childhood), *scoliosis*, *kyphosis* and *lordosis* (during later childhood and adolescence) as well as *osteoporosis* (during later years), by a guarded-graduated approach, which should build up sun-exposure tolerance and resistance to common colds. Initially, start with a 10-minute exposure to the morning or the later-afternoon sun, gradually increase to 20 and later to 30 minutes, after acclimatizing your child to sun accompanied with 2-3-hour, fresh-air exposure in the shade (as there are no risks in this one, you may increase duration), with your child scantily dressed (exposing backbone and back skin from external auditory meatus to waistline, legs from mid thigh to feet). It is imperative that vitamin-D deficiency be worked out, through exposing maximum body skin to sun, without delay, because lack of this vitamin is going to make absorption of calcium by human body extremely difficult and become a factor towards strengthening the bones. This would, also, annul all attempts to introduce calcium-rich diet items. To strengthen bones, give your child body massage using olive oil or mustard (*sarsoon*) oil before bath.



5. Hk. S., being severely underweight, needs to put on 9 lb during the next 4 months to bring her weight in line with her height. 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 combined with light stretching exercises. To gain weight, her diet should include high protein content (meat, fish, milk, etc.). A relaxed (unhurried), complete breakfast, followed by proper lunch and proper dinner are keys to good nutrition. Avoid junk food and snacks except mid-morning one.

Warning: Same as given for Hr. S.

Concluding Remarks: Kindly, refer to SGPP Case Number (page 1, line 5) in each correspondence. 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.

NEXT APPOINTMENT: SUNDAY, DECEMBER 16, 2012 at 1007h

The Project Director was assisted by Mrs. Samira Sahar Jamil, Coördinator, the NGDS Pilot Project (Child-Growth-and-Obesity Modeling) and Urooj (Anthropometry) during the checkup on Sunday, July 15, 2012 at 1007h. Report of the next checkup shall be available on **Tuesday, December 18, 2012 at 1007h** for discussion.

End Notes: Sequentially listed as they are referred to in the text.

- a) Dress code (undressing) is explained in *Manual for Anthropometric Measurements*, web address: https://www.ngds-ku.org/ngds_folder/M02.pdf
- b) 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.
- c) 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.
- d) Photograph and scanned signatures on the day, check up was conducted. In order to protect the privacy of U. 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.
- e) Detailed protocols to determine *Scoliosis Risk Weightages* are uploaded at: https://www.ngds-ku.org/BLA/Scoliosis_Risk.pdf
Please read, informative article *How to Guard Against Curvatures of Spinal Column in Children:*
https://www.ngds-ku.org/ngds_folder/art1.htm (HTML version)
<https://www.ngds-ku.org/Articles/A14.pdf> (printable PDF version)
- 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, e-publication of the NGDS Pilot Project, University of Karachi, available at: https://www.ngds-ku.org/BLA/Growth_Monitoring_BLA.pdf
- i) 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: <https://www.ngds-ku.org/Papers/J29.pdf> — detailed calculations, which generated this report are placed at: https://www.ngds-ku.org/Papers/J36/Growth_n_Obesity_Calculations.pdf
- j) 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.
- k) 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 c). The NGDS Pilot Project is monitored by Transparency International Pakistan (TIP). Project Director is Convener of Sub-Committee (Schools) of the Education Committee, TIP.



- 1) 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 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.

The NGDS Pilot Project is awaiting your valued input to make our services more useful for you and your family. Many thanks for your interest in the NGDS Pilot Project.

Professor Dr. Syed Arif Kamal

PhD, Mathematical Neuroscience, MA, Johns Hopkins, Baltimore, MD, USA
Guest Speaker, Harvard Medical School, Boston, MA, USA
Visiting Faculty, the Albert Einstein College of Medicine, New York, NY, USA
Associated Professor of Orthopedics, Malmö General Hospital, Malmö, Sweden
Research Assistant in Orthopedic Surgery, James W. Riley Hospital for Children, Indianapolis, IN, USA
Sessional Faculty, the Aga Khan University Medical College
Master Trainer for Anthropometric Measurements, Tawana Pakistan/Pediatrics, the Aga Khan Hospital
Head, Mathematical Biology Group and Project Director
 The NGDS Pilot Project/The Sibling Growth Pilot Project
 SF-Growth-and-Imaging Laboratory
 Room No. 006, Department of Mathematics
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END OF REPORT

Web address of this document: Growth-and-Obesity Profiles of S. Family
https://www.ngds-ku.org/Profiles/Growth_n_Obesity_Profile.pdf