Peak Expiratory Flow Rate(PEFR) in Normal School Children of Bangladesh

Dr. M Al-Amin Mridha, MCPS, FCPS, MD

Paediatric Specialist

Naogaon, Bangladesh

Prof. M Ruhul Amin, FCPS

Professor of Paediatrics

BICH, Dhaka Shishu Hospital, Dhaka

Introduction

- **PEFR is the maximal expiratory flow rate sustained by a subject for at least 10 msec. expressed in l/min.**
- **It is a simple, reproducible and reliable ventilatory lung function test, easily measured by mini-Wright's peak flow meter.**

Objective

- **To establish normal values of PEFR for school children of Bangladesh.**

Methodology

- A Cross sectional study
- Duration: February-July'00
- Place of study: BICH, DSH
- Randomly selected children from five different schools of Dhaka city

Inclusion criteria

- **Age: 5 to15 years.**
- **Boys and Girls**
- **Normal healthy school children of Dhaka city.**

Exclusion criteria

- **Children suffering from asthma or having history of asthma or wheeze**
- **Children having thoracic deformity, or history of ARI within two weeks**
- **Children having atopic conditions such as eczema or allergic rhinitis**

Instruments used

- **Mini-Wright's peak flow meter**

(Low range 50-350 l/min and

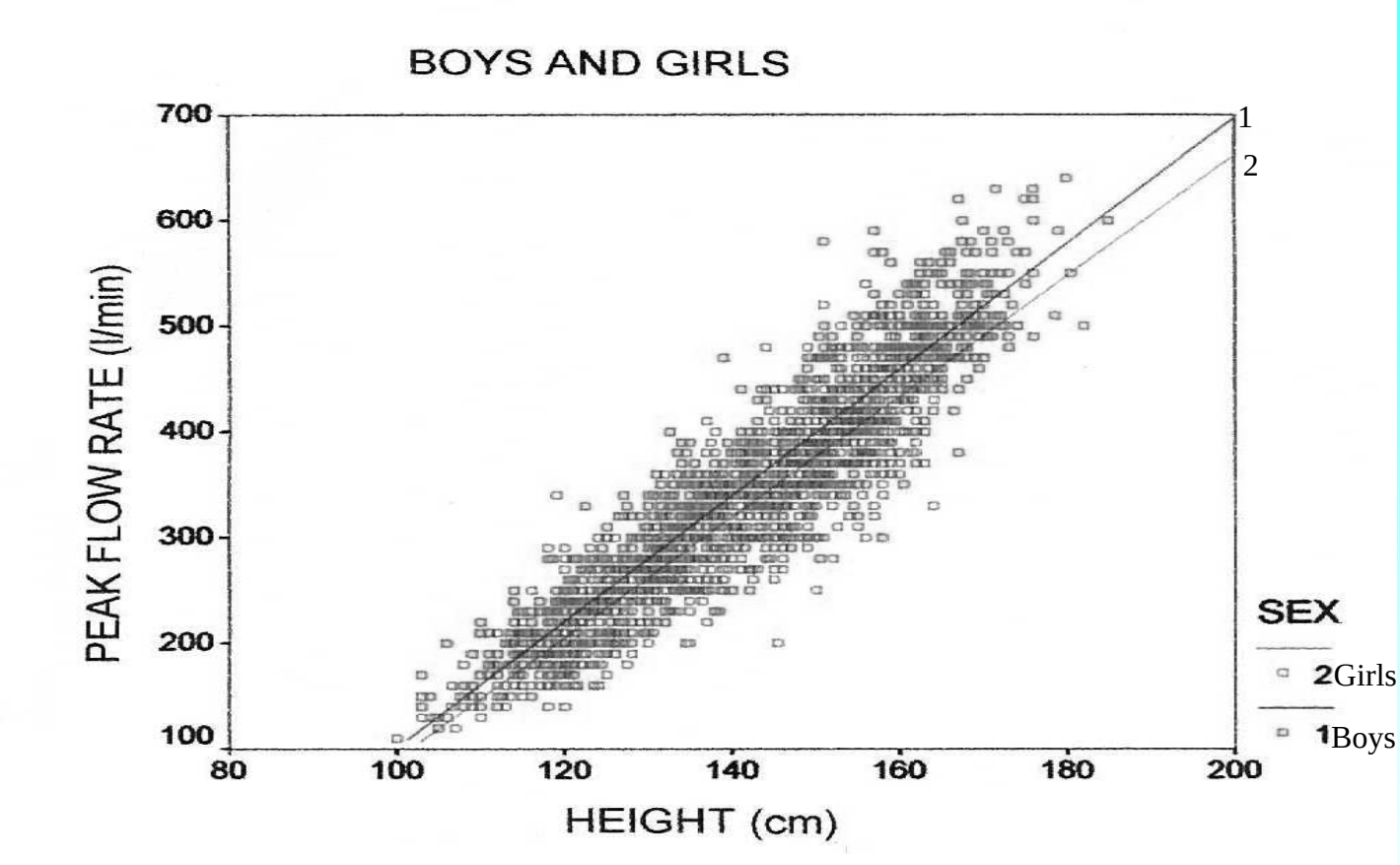
High range 60-800 l/min)

- **Stadiometer**
- **Weighing machine(Bathroom scale)**

Results

- **Total children - 2033**
- **M-1026, F-1007; M:F ratio-1.02:1**
- **Age range : 5 to 15 years**
- **Height range: Boys -103 to 185cm**
  Girls -100 to 165cm
- **PEFR range: Boys-120 to 640 l/min**
  Girls-110 to 540 l/min

Scatter Diagram



Mean PEFR (l/min) in relation to *height* (Boys and Girls)

Regression equation

- **Boys:**

PEFR (l/min)=5.96xHeight(cm) - 495,

SEE ± 40.0

Girls:

PEFR (l/min) = 5.70xHeight(cm)- 479,

SEE ± 41.7

Nomogram: Boys

Figure 1

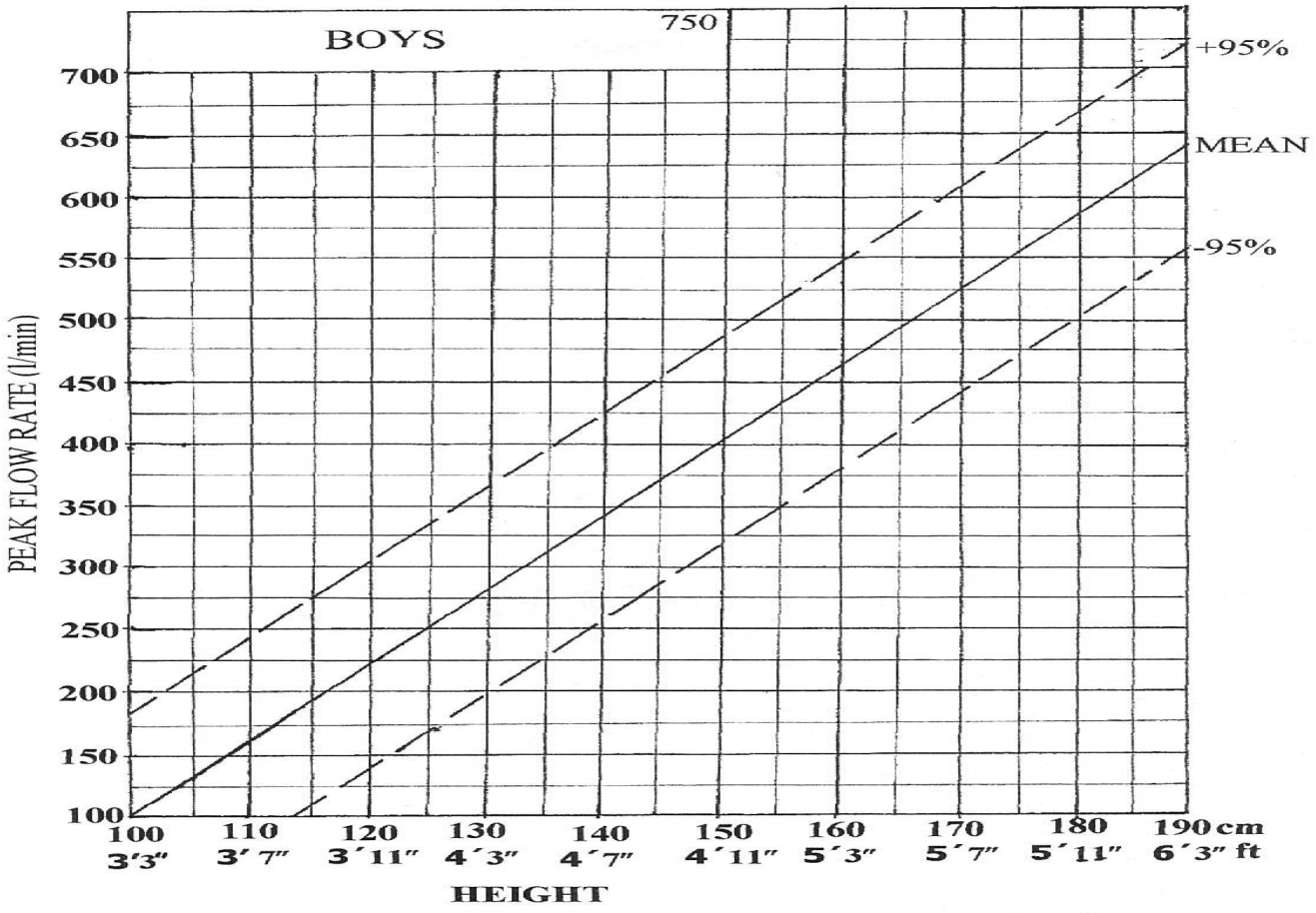


Figure 1: Nomogram of normal PEFR (l/min) in relation to ***height*** (Bangladeshi boys).

Nomogram: Girls

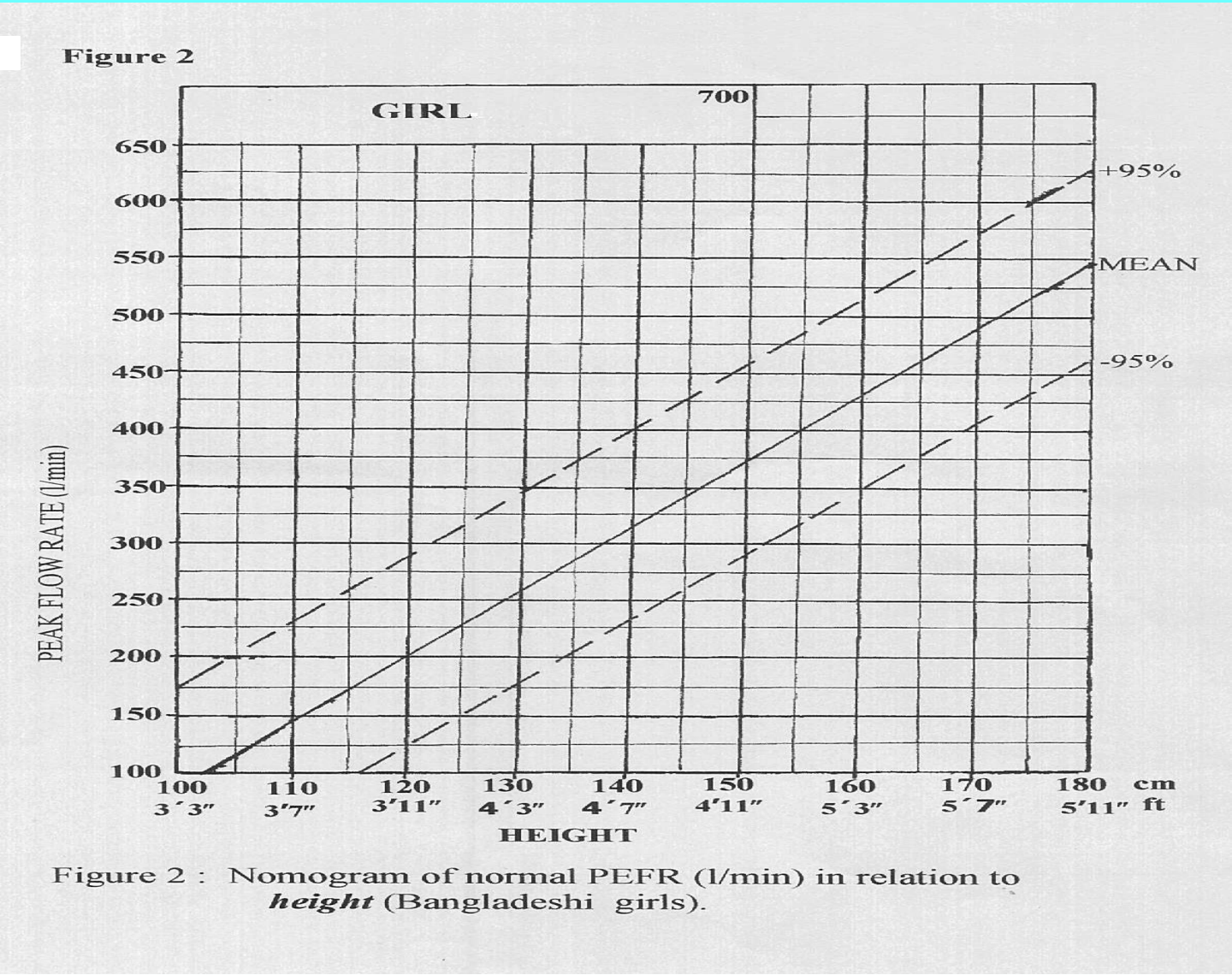
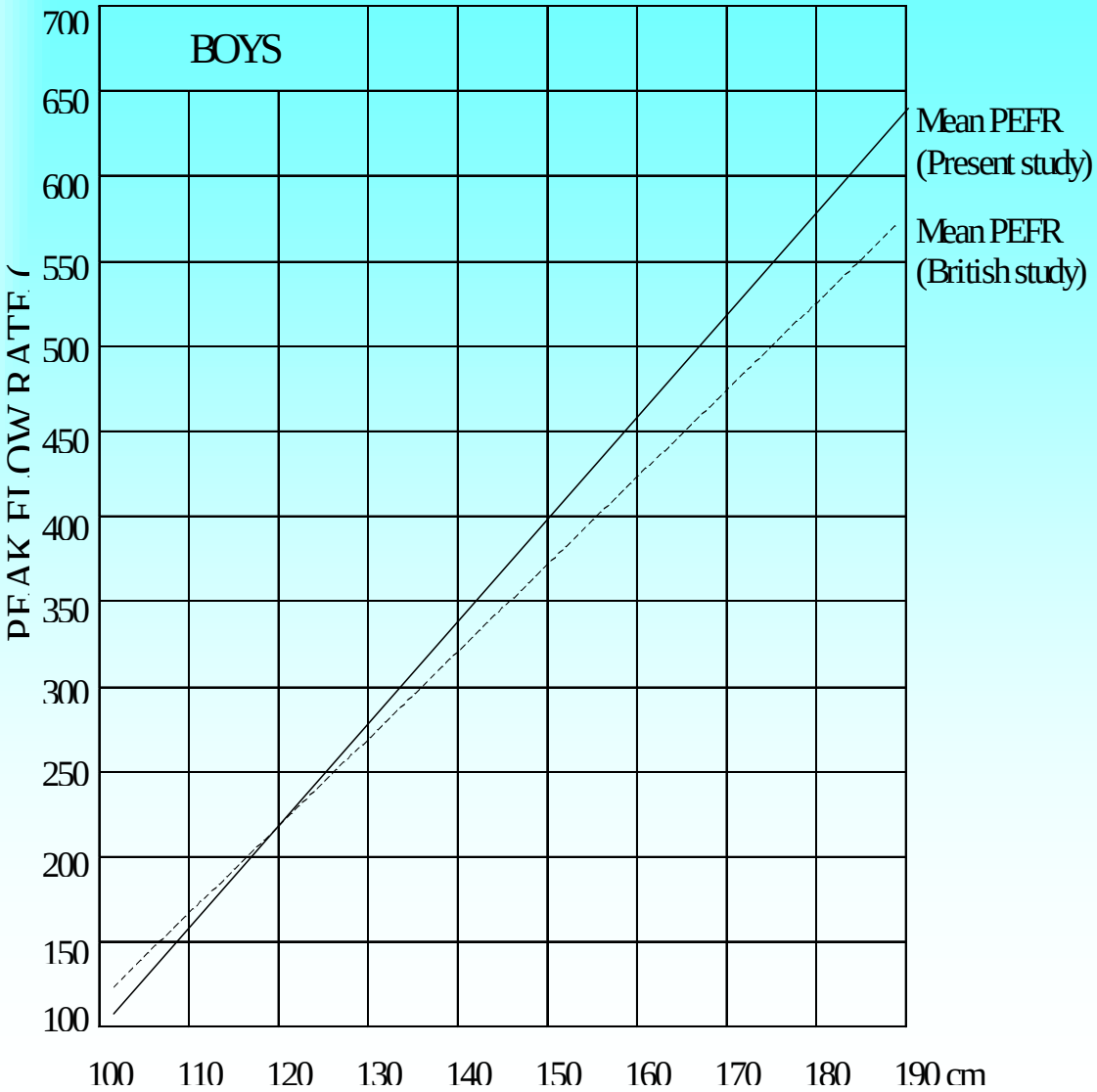
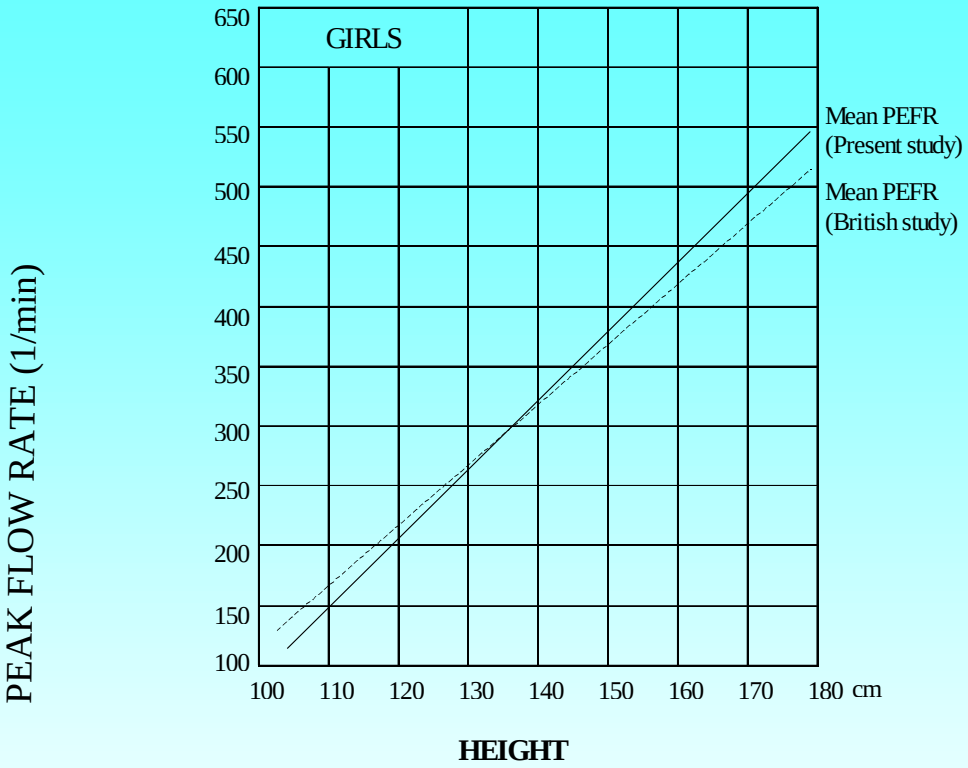


Figure 2 : Nomogram of normal PEFR (l/min) in relation to ***height*** (Bangladeshi girls).

Comparison of mean PEFR (BOYS)



Comparison of mean PEFR(GIRLS)



Mean PEFR (l/min) of Bangladeshi normal girls (5-15 years) in comparison to British standard.

Comparison of PEFR values of the present study with other studies

Studies	120 cm (Height)		140 cm (Height)		160 cm (Height)	
	Boys	Girls	Boys	Girls	Boys	Girls
Present study, 2000	***220***	***205***	***340***	***319***	***458***	***433***
Bejaponpitak et al,1999; Thiland[47]	236	214	306	283	377	352
Host et al,1994; Denmark.[32]	236	219	321	308	420	416
Udupihille,1994,Srilanka[46]	271	254	403	367	507	478
Swaminathan et al,1993;Madras.[53]	205	193	386	272	368	350
Kashyap et al, 1992;Tribal, Indian[32]	202	170	304	263	405	352
Sanz et al, 1990;Spain[54].	252	237	352	341	452	445
Carson et al, 1989;Dublin[48].	222	213	342	324	461	435
Malik et al, 1981/82;Punjab[41-42].	222	216	320	314	418	412
Wall et al 1982; North America[52].	240	228	327	319	450	427
Parmar et al, 1977; India[34].	198	229	300	312	400	398
Godfrey et al, 1970; UK[32].	212	211	318	317	423	422

Conclusions

- **Significant difference of PEFR between Bangladeshi boys and girls**

- **Height is the best predictor of PEFR.**
- **Age, body wt. and body surface area also correlate with PEFR but less predictive than height.**

- **PEFR of Bangladeshi children is nearly similar to other countries**

Recommendation

- **Results of this study can be used as normal PEFR values for Bangladeshi boys and girls**


Thank You