YOUTH PROFILE IN SOME SUBURBAN AREAS IN EAST JAVA
(PRELIMINARY SURVEY OF THE INDONESIAN YOUTH STATURE
AT THE FIFTIETH ANNIVERSARY OF INDONESIA)

Johan Tumonggor and Hari K. Lasmono

ABSTRACT

The truth of the success claim of the Long Term Development I (Pembangunan Jangka Panjang I) & Family Planning Program during the New Order Regime could be verified through facts of improvement of posture & nutritional status of youth, born and grown during that period. Such success should have impact on various fields including sport, manpower potentials as well as other aspects of human resources. This survey sought to extend previous work on the measurement of some anthropometric parameters as well as nutritional status of youth in some suburban areas in East Java (N = 8040), namely: Mojokerto, Sidoarjo, Jombang, and Gresik. The standardized method of the Directorate of Community Nutrition Development (Direktorat Bina Gizi, 1994) was used to obtain measurements from 1972-1976 born youth and their parents, older brothers and sisters. Samples were taken following the Economic Census (SUSENAS 1995) target population. Instruments used are the Imundex and My-Convey 15656 apparatus for height and weight measurements respectively. Results show the mean height of boys, girls, fathers, mothers, brothers, and sisters are as follows: 162.43 cm (n = 1685), 151.30 cm (n = 2117), 160.10 cm (n = 1643), 150.44 cm (n = 1979), 161.35 cm (n = 322), and 152.60 cm (n = 300). The mean weight of these same subjects are: 53.54 kg, 47.33 kg, 55.19 kg, 52.61 kg, 54.69 kg, and 49.14 kg. Other anthropometric parameters, TS Index, correlation of height, weight, adverse economic, status related, and psychosocial conditions are discussed.

Keywords: anthropometric data, height, weight, nutritional status, TS Index

INTRODUCTION

Old anthropology books (such as one by Martin) always show a table indicating the mean height of various ethnic groups on the assumption that body height is determined by hereditary factors of these groups (The, 1958). According to Mysberg, the steady significant rise in height of European people are caused by drastic improvements in nutrition and socio-hygienic conditions. He drew the conclusion that hereditary factors only determine the potential growth capacity and the manifested height is determined by external factors based on the determined hereditary factors. Thus body height is not a trait of a nation, but as a measure of the socio-hygienic life condition of that nation (The, 1958). Reports by Postmus and Lyken in 1956 show existing significant differences between socio-economic components of a nation. Chao Lin in 1954 draws the conclusion that there were negative affects due to war on growth and also significant differences between generations in successions from a good socio-economic component (Ferdinandus, 1977).


The purpose of the national development among others is building a complete /integrative Indonesian human being. With the success claim of the First Long Term Development (PJP I), it is necessary to proof such a claim as including the improvement of the Indonesian youth posture & stature.

The 1993 Basic Guidelines of the Nation's Development Plan also reminded the importance of developing human resources (HRD). One of the criteria of such improvement is the physical condition of the people. The nutritional status and community's health represent...
the physical qualities of the people. Constraining factors in the development suffered during childhood until adolescent due to diseases and nutritional hindrance will be reflected on someone's measure, especially the height (Dirbinkesra and Dirbin Gizi Masyarakat, 1994). Preliminary reports on certain groups (Tumonggor 1994, 1996) show a significant difference of subjects' height born around the years 1972 until 1976 compared to subjects born before the PJP I (1960-1970) and around Independence (1911-1960).

Thus it is necessary to further investigate the matter by observing the change of the Indonesian posture/stature more clearly and widespread. It could not be ignored that postures are influential in obtaining achievements in various fields such as sport, army, work force, and ergonomics-so improvement in posture and stature clearly become a significant contribution in coping with furious competitions in all fields among nations in this era of globalization.

The purpose of this survey at the golden Independence anniviserary is to observe the results of the first PJP in significantly enhancing the posture and stature of the Indonesian youth. This survey should reflect the physical quality of the Indonesian youth, so as to detect areas which are not yet benefitting the PJP I programs. Thus the regional or the central government could reschedule their plans and evaluate the development in the socio-economic field.

METHODS

This survey was carried out on January-April 1996, implementing co-operation between the Faculty of Psychology of University of Surabaya and East Java Provincial, Municipal and Regency, Central Bureau of Statistics.

The survey was carried out at three regencies and one regency's capital of Gerbangkertosusila, comprising of:

- Mojokerto regency's capital (M)
- Jombang regency (J)
- Sidoarjo regency (S)
- Gresik regency (G)

The survey's subjects comprising some successive generations:

- Group 3, boys and girls born on 1972 till 1976;
- Group 2, subject,'s older brother and sister, who were born on 1960-1970;
- Group 1, subjects' father and mother, who were born on 1911-1960.

Survey's targets are the families chosen by random sampling following the Sistem Survai Sosial Ekonomi Nasional (SUSENAS) system.

Tools used consist of portable weight scales (Imundex) and anthropometric toolbox. (My-Convey 156656). Parameters looked for are:

- a. Height (H)
- b. Weight (W)
- c. Height while sitting (HS)
- d. Height till eyes (BE)
- e. Arm length (AL)
- f. Foot length (FL)
- g. Tumonggor Sastropanular Index (TSI)

The data are analyzed statistically, with notes as follows:

- a. n = total of subjects
- b. x = mean score = \( \frac{\Sigma x}{n} \)
- c. e = the difference between each variant and the mean score
- d. SD = standard deviation = \( \sqrt{\frac{\Sigma e^2}{n-1}} \)
- e. m = standard error of the mean = \( \frac{S}{\sqrt{n}} \)
- f. D = the difference between the mean score of the two groups
- g. mD = standard error of the deviation of two means = \( \sqrt{\frac{m1^2 + m2^2}{n}} \)
- h. \( D > 3 \) mD = statistically significant differences
RESULTS

Table 1. Results of Subject's Parameter Measurement

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Subject</th>
<th>Boy</th>
<th>Brother</th>
<th>Father</th>
<th>Girl</th>
<th>Sister</th>
<th>Mother</th>
</tr>
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<tbody>
<tr>
<td>N</td>
<td>1685</td>
<td>322</td>
<td>1643</td>
<td>2117</td>
<td>300</td>
<td>1979</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>162.43</td>
<td>161.30</td>
<td>160.10</td>
<td>151.80</td>
<td>152.60</td>
<td>150.44</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>53.50</td>
<td>54.69</td>
<td>55.19</td>
<td>47.32</td>
<td>49.14</td>
<td>52.61</td>
<td></td>
</tr>
<tr>
<td>TSI</td>
<td>2.03</td>
<td>2.10</td>
<td>2.14</td>
<td>2.07</td>
<td>2.11</td>
<td>2.31</td>
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<tr>
<td>HS</td>
<td>81.70</td>
<td>81.15</td>
<td>80.09</td>
<td>77.12</td>
<td>77.68</td>
<td>75.95</td>
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<td>5.48</td>
<td>4.71</td>
<td>4.66</td>
<td>3.99</td>
<td>3.55</td>
<td>4.85</td>
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</tr>
<tr>
<td>AL</td>
<td>78.14</td>
<td>78.05</td>
<td>77.92</td>
<td>73.33</td>
<td>74.14</td>
<td>73.81</td>
<td></td>
</tr>
<tr>
<td>FL</td>
<td>93.67</td>
<td>92.70</td>
<td>93.27</td>
<td>87.98</td>
<td>89.63</td>
<td>88.86</td>
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</tr>
<tr>
<td>sd</td>
<td>6.12</td>
<td>6.52</td>
<td>5.99</td>
<td>5.59</td>
<td>5.83</td>
<td>5.52</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.18</td>
<td>5.68</td>
<td>8.15</td>
<td>7.04</td>
<td>5.86</td>
<td>9.87</td>
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<tr>
<td></td>
<td>0.24</td>
<td>0.28</td>
<td>0.48</td>
<td>0.23</td>
<td>0.28</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.24</td>
<td>1.13</td>
<td>1.00</td>
<td>0.80</td>
<td>0.79</td>
<td>0.84</td>
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</tr>
</tbody>
</table>

Note.

H = Body Height    W = Body Weight
TSI = Tumonggor Sastropanular Index  HS = Height while Sitting
HE = Height Till Eyes   AL = Ann Length   FL = Foot Length

Table 2. Comparison Between Subjects Data and The Three Groups Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Boy : Brother</th>
<th>Boy – Father</th>
<th>Brother – Father</th>
<th>Girl – Sister</th>
<th>Girl – Mother</th>
<th>Sister : Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>162.43 : 161.30</td>
<td>161.30 : 160.10</td>
<td>160.10 : 151.80</td>
<td>151.80 : 152.60</td>
<td>152.60 : 150.44</td>
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</tr>
<tr>
<td>D ≥ 3 md</td>
<td>1.13 : 3 x 0.37</td>
<td>2.33 : 3 x 0.21</td>
<td>1.20 : 3 x 0.39</td>
<td>-0.80 : 3 x 0.36</td>
<td>1.36 : 3 x 0.17</td>
<td>2.16 : 3 x 0.36</td>
</tr>
<tr>
<td>Note (+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(-)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>W</td>
<td>55.5 : 54.69</td>
<td>53.50 : 55.19</td>
<td>54.69 : 55.19</td>
<td>47.32 : 49.14</td>
<td>47.32 : 52.61</td>
<td>49.14 : 52.61</td>
</tr>
<tr>
<td>D ≥ 3 md</td>
<td>-1.19 : 3 x 0.36</td>
<td>-1.69 : 3 x 0.26</td>
<td>-0.50 : 3 x 0.38</td>
<td>-0.82 : 3 x 0.37</td>
<td>-2.34 : 3 x 0.25</td>
<td>-2.34 : 3 x 0.39</td>
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<tr>
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<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>TSI</td>
<td>2.03 : 2.10</td>
<td>2.03 : 2.14</td>
<td>2.10 : 2.14</td>
<td>2.07 : 2.11</td>
<td>2.07 : 2.31</td>
<td>2.11 : 2.31</td>
</tr>
<tr>
<td>D ≥ 3 md</td>
<td>-0.07 : 3 x 0.17</td>
<td>-0.11 : 3 x 0.13</td>
<td>-0.04 : 3 x 0.02</td>
<td>0.04 : 3 x 0.16</td>
<td>-0.24 : 3 x 0.12</td>
<td>0.20 : 3 x 0.16</td>
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<tr>
<td>Note (+)</td>
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<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>HS</td>
<td>81.70 : 81.15</td>
<td>81.70 : 80.99</td>
<td>81.15 : 80.90</td>
<td>77.12 : 77.68</td>
<td>77.12 : 75.95</td>
<td>77.68 : 75.95</td>
</tr>
<tr>
<td>D ≥ 3 md</td>
<td>0.55 : 3 x 0.29</td>
<td>1.61 : 3 x 0.17</td>
<td>1.06 : 3 x 0.28</td>
<td>-0.56 : 3 x 0.21</td>
<td>1.17 : 3 x 0.13</td>
<td>1.75 : 3 x 0.23</td>
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<td>(+)</td>
<td>(+)</td>
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<td>(+)</td>
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<tr>
<td>HE</td>
<td>71.38 : 70.80</td>
<td>71.38 : 70.24</td>
<td>70.80 : 70.24</td>
<td>66.75 : 67.35</td>
<td>66.75 : 65.92</td>
<td>67.35 : 65.92</td>
</tr>
<tr>
<td>D ≥ 3 md</td>
<td>0.58 : 3 x 0.48</td>
<td>1.14 : 3 x 0.13</td>
<td>1.56 : 3 x 0.48</td>
<td>-0.60 : 3 x 0.26</td>
<td>0.83 : 3 x 0.14</td>
<td>1.43 : 3 x 0.26</td>
</tr>
<tr>
<td>Note (+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
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<td>73.33 : 73.81</td>
<td>74.14 : 73.81</td>
</tr>
<tr>
<td>D ≥ 3 md</td>
<td>0.09 : 3 x 0.36</td>
<td>0.22 : 3 x 0.22</td>
<td>0.13 : 3 x 0.37</td>
<td>-0.81 : 3 x 0.36</td>
<td>0.48 : 3 x 0.17</td>
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<td>Note (+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
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<tr>
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<td>93.67 : 93.27</td>
<td>92.70 : 93.27</td>
<td>87.98 : 89.63</td>
<td>87.98 : 88.86</td>
<td>89.63 : 88.86</td>
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<tr>
<td>D ≥ 3 md</td>
<td>0.97 : 3 x 0.39</td>
<td>0.40 : 3 x 0.2</td>
<td>0.57 : 3 x 0.39</td>
<td>-1.65 : 3 x 0.13</td>
<td>-0.88 : 3 x 0.18</td>
<td>0.77 : 3 x 14</td>
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<tr>
<td>Note (+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
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<td>(+)</td>
</tr>
</tbody>
</table>

(+ ) = statistically significant difference
(- ) = statistically insignificant difference
DISCUSSION

To show the positive effects of the Long Term Development I (PJP I) on the Indonesian youth stature, a specific measurement on subjects' height was held. The rationale behind this is that height is directly influenced by the improvement in sociohygienic, socio-economic and time factor, of the examined subjects. These subjects are taken from families consisting the father and mother (group 1), brother and sister (group 2) and boys and girls (group 1) born on 1972-1976 (details are shown at appendix- A).

1. Positive differences in boys' height from their older brother's and father's height are assumed as the result of the Long Term Development I.
2. Negative differences in girls' height from their older sister's and mother's height are assumed as a reflection of a number of adverse economic, status related and psychosocial conditions (Nystrom & Lundberg, 1995). The same reason can be used to explain the insignificant positive differences between the subjects and their older brother/sister and father/mother.

CONCLUSION

Boys (162.43 cm) are taller than than their older brothers (161.30 cm) and father (160.10 cm), which are statistically significant. These results show that the Long Term Development I have positively affect boys' H. On the other hand, the girls (151.80 cm) though higher than their mothers (150.44 cm), are shorter than their older sisters (152.60 cm). It seems that the Long Term Development I doesn't have much positive effect on girls' H. Boys (53.50 kg) are lighter than their older brothers (54.69 kg) and their parents (55.19 kg). This phenomenon also happens on girls (47.32 kg) which are lighter than their sisters (49.14 kg) and mothers (52.61 kg). It means the Long Term Development I doesn't have positive effect on the subjects' W.

Like the previous phenomenon, the subjects' TSI is also shorter than their older sisters', older brothers' and parents. (boys: 2.03, older brothers: 2.10, fathers: 2.14; girls: 2.07, older sisters: 2.11, mothers: 2.31). It means that the Long Term Development I doesn't have enough positive effects on subjects' TSI. Boys (81.70 cm) are taller than their brothers (81.15 cm) and fathers (80.09 cm). It seems that the Long Term Development I have positive effect on boys' HS. Girls (77.12 cm) are taller than mothers (75.95 cm), but still shorter than their older sisters (77.68 cm). It seems the Long Term Development I doesn't positively affect the girls' HS.

The EH of boys (71.38 cm) are taller than their brothers (70.80 cm) and their fathers (70.24 cm), meaning that the results of the Long Term Development I had positively affect the boys' EH. Girls (66.75 cm) are higher than their mothers (65.92 cm), but shorter than their older sisters (67.35 cm). It shows that Long Term Development I hasn't much positively affect girls' EH. Boys' AL (78.14 cm) are longer than older brother's (78.05 cm) and father's (77.92 cm), although the differences are statistically insignificant. It means the Long Term Development I has mild effect on Boys' AL. Girls' AL (73.33 cm) is shorter than sister's (74.14 cm) and mother's (73.81 cm). Boys' FL (93.67 cm) is longer than their older brother's (92.70 cm) and father's (93.27 cm), although statistically insignificant. We can assume that the Long Term Development I has positive impact on boys' FL. Girls' FL (87.98 cm) are shorter than their older sister's (89.63 cm) and mother's (88.68 cm). These results are statistically significant.

This preliminary survey shows that besides the genetics, adverse economic, and status related conditions, psychosocial conditions are assumed to also contribute to the development and fate of the stature of the youth concerned.

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REFERENCES


BIBLIOGRAPHY