Survey of Health Indices in New Entering Students in Zahedan University of Medical Sciences in Southern Iran

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Abstract
Young people represent a large proportion of each population and attention to their health indicators improve the community health. This paper aimed to study health indices in new entering students of the Zahedan University of Medical Sciences in Southern Iran. A total number of 361 new entering students, 260 (72.02%) girls and 101 (27.98%) boys, were participated in this cross-sectional study. weight and height of the students were measured and then body mass index was calculated through dividing weight in Kilogram by height in square meters (kg/m²). Two ml blood in a tube containing EDTA anticoagulant for hematologic parameters and two ml blood for blood sugar test were taken from students. Among the participants, 29.6% of the students lived with their parents, 3% of the boys and 15% of the girls were underweight, meanwhile, 5% of the boys and 2.4% of the girls were overweight and 0.8% of the students were obese. Result showed that, blood glucose in 2.8% of the students was higher than normal, hemoglobin in 11.1% of participants was less than 12 g/dl, mean corpuscular volume (MCV) and mean corpuscular hemoglobin (MCH) were less than normal range in 14.1% and 22.7% of the students, respectively. Hypochromic and microcytic anemia was a health problem among college students in this area of Iran. Accurate assessment of the causes of anemia is recommended, which can be effective in improving new entering students health.

Key words: Body mass index, Health, Hematologic parameter, Student

INTRODUCTION

One of the most important indices of countries development is health level and well-being of the community. The future of a community is based on its adolescents and youth dynamism and mental and physical health, so having healthy and strong people can be considered as one of the greatest national capital for a community. In recent years, health is known as a human right and a worldwide social goal which is necessary to meet basic needs and improve quality of human life and should be available to all people.¹

Health has many dimensions, including physical, mental, spiritual, emotional and social aspects among which physical dimension is the easiest to assess. Physical health signifies a full normal body performance and that body organs size is normal and operate properly.² For this reason, in the United Nations third millennium Development Programs, concept of “health” is one of the important parameters and is considered as one of the main indicators of community development.³

Young and teenage students are a wide class of the population who make up a community and due to the vulnerability of this big group, paying attention to their health and maintaining that has a great undeniable impact on national health promotion.⁴⁵ Among health assessment indicators hematological parameters of individuals can be noted.

Paying attention to hematological indices is necessary in monitoring individuals health and helping physicians to diagnose diseases.⁶ Physical growth parameters including
height, weight and body mass index (BMI) are the other indicators of student health. Given that today’s students are the future parents and administrators of our society, assessing their health status is very important. Therefore, knowing the use of health indicators in diseases prevention and improving health standards as a key component of health can provide efficient life continuance and healthy advancement of college students. Hence, in this study we examined hematologic and health indicators of students at Zahedan University of Medical Sciences.

METHODS

This cross-sectional study examined health and hematologic indicators of new entering students in 2013 (361 cases). The study protocol was approved by the ethics committee in Research Deputy of Zahedan University of Medical Sciences. Students’ demographic information was collected using a questionnaire which was designed for this purpose. The students’ height and weight were measured using SECA microbalance (Germany) and then their BMI was calculated dividing weight in Kilogram by height in square meters (kg/m²). Two ml blood in a tube containing EDTA anticoagulant and 2 ml blood in tubes without anticoagulant were taken from students. White blood cell (WBC), red blood cell (RBC), platelets (PLT), hemoglobin (Hb), hematocrit (HCT), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), the amount of hemoglobin a certain red blood cell (MCHC) and red cell distribution width (RDW) count parameters were measured on anticoagulant sample by Sysmex automatic counting machine (Japanese model K1000). FBS with specific sets of QQ was examined using QQ auto-analyzer made in QQ and hepatitis B surface antigen was analyzed using QQ on serum blood. Demographic information analyzed blood parameters and students’ weight and height were recorded in a questionnaire and each student was assigned a code. Then, the data were entered in SPSS software and were analyzed using descriptive statistics indices.

RESULTS

In this study, 361 students, 101 (27.98%) male and 260 (72.02%) females, were studied. Regarding ethnicity 124 (34.35%) were Sistani, 59 participants (16.34%) were Balouch and 178 (49.31%) were from other provinces of Iran. 107 students (29.64%) lived with their parents, while 254 students (72.36%) were at the dormitory. In terms of their educational levels: 261 (72.30%) of the university students were educating for bachelor’s degree, 13 (3.60%) for a MSc degree and 88 (24.38%) for MD degree. The mean age, height, weight and BMI of the student were 21±4 years, 163.7±7.5 cm, 56.1±8.6 kg and 20.8±2.2, respectively. Frequency distribution of the parameters mentioned above according to the gender is shown in Table 1. The WHO has divided the subjects into four groups according to BMI: underweight, normal, overweight and obese. The results of the study results, based on this classification, are shown In Table 2.

The mean blood glucose level for the population studied was 89.5±10.4 mg/dl. In the case of, blood glucose in 87% of students was less than 100, in 10.2% of the students was between 100 to 110, and in 2.8% of them was higher than normal. Among the participants, two students were positive for HBs Ag.

Hematological parameters indices in the students studied are shown in Table 3 and their distribution by gender is shown in Table 4.

DISCUSSION

In this study, health-related factors were assessed in 361 students of Zahedan University of Medical Sciences. The results indicated that the mean BMI was 21.2 in boys and 20.6 in girls, 11.6% of the students were overweight, while 4.4% were underweight and 0.8% were obese. In a previous study in 2001, in Zahedan medical University, BMI was 21.7 and 21.6 in boys and girls, respectively, 18.3% were underweight and 12.9% were overweight and 1.3% were obese. The results showed that after 10 years; 6.7% reduction in the number of low-weight and 8.5% in over weight and 0.5% in the obese students were happened. WHO defined individuals with BMI less than 18.5 as low weight, between 18.8-25 as normal-weight, between 25-29.5 as overweight and over 30 as obe.
and 2.2% in the range of obese. Among the causes of changes that lead to an increase in the normal range, the increase in people’s awareness during a ten-year period, paying attention to the daily calorie balance and also a lot of interest in having a fit body can be noted.

Given that students studying in different universities have different requirements for economic, social and life style differences are justified.

The results also showed that the parameters of hemoglobin, hematocrit and RBC values mean in male and female students have a statistically significant difference (p < 0.05). 40(11.1%) participants have less than 12g/dl hemoglobin.

Table 2: Frequency distribution of body mass index (BMI) in Zahedan University of Medical Sciences students

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight</td>
<td>3</td>
<td>3</td>
<td>39</td>
<td>15</td>
</tr>
<tr>
<td>Normal</td>
<td>92</td>
<td>91.1</td>
<td>208</td>
<td>80</td>
</tr>
<tr>
<td>Overweight</td>
<td>5</td>
<td>5</td>
<td>11</td>
<td>4.2</td>
</tr>
<tr>
<td>Obese</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>100</td>
<td>260</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3: Descriptive statistics of hematological parameters for the students studied in Zahedan University of Medical Sciences

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBC (10^6/mm³)</td>
<td>361</td>
<td>3.44</td>
<td>7.2</td>
<td>4.8±0.5</td>
</tr>
<tr>
<td>Hb (g/dl)</td>
<td>361</td>
<td>9.4</td>
<td>19.7</td>
<td>13.7±1.6</td>
</tr>
<tr>
<td>HCT (%)</td>
<td>361</td>
<td>30.4</td>
<td>54.1</td>
<td>41.8±3.9</td>
</tr>
<tr>
<td>MCV (fl)</td>
<td>361</td>
<td>59</td>
<td>99.6</td>
<td>86.5±6.8</td>
</tr>
<tr>
<td>MCH (pg)</td>
<td>361</td>
<td>17.7</td>
<td>96.1</td>
<td>28.9±5.5</td>
</tr>
<tr>
<td>MCHC (g/dl)</td>
<td>361</td>
<td>27.7</td>
<td>9.37</td>
<td>32.8±1.7</td>
</tr>
<tr>
<td>RDW (%)</td>
<td>361</td>
<td>10.1</td>
<td>19.9</td>
<td>12.9±1.2</td>
</tr>
<tr>
<td>WBC (10^3/mm³)</td>
<td>361</td>
<td>3.2</td>
<td>13.6</td>
<td>6.5±1.6</td>
</tr>
<tr>
<td>PLT (10^3/mm³)</td>
<td>361</td>
<td>109</td>
<td>529</td>
<td>245.3±54.3</td>
</tr>
</tbody>
</table>

Table 4: Descriptive statistics of hematological parameters in students studied by gender in Zahedan University of Medical Sciences

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Minimum</td>
<td>Maximum</td>
<td>Mean±SD</td>
<td>Minimum</td>
</tr>
<tr>
<td>RBC (10^6/mm³)</td>
<td>0.6±5.3</td>
<td>3.4</td>
<td>7.2</td>
<td>0.4±4.6</td>
<td>7.3</td>
</tr>
<tr>
<td>Hb (g/dl)</td>
<td>1.6±15.1</td>
<td>10.4</td>
<td>19.7</td>
<td>1.2±13.2</td>
<td>9.4</td>
</tr>
<tr>
<td>HCT (%)</td>
<td>3.8±45.4</td>
<td>31.6</td>
<td>54.1</td>
<td>3.4±40.0</td>
<td>30.4</td>
</tr>
<tr>
<td>MCV (fl)</td>
<td>6.6±55.8</td>
<td>63.7</td>
<td>99.6</td>
<td>6.9±86.8</td>
<td>59</td>
</tr>
<tr>
<td>MCH (pg)</td>
<td>3.3±28.8</td>
<td>17.7</td>
<td>39.9</td>
<td>6.2±28.9</td>
<td>18.8</td>
</tr>
<tr>
<td>MCHC (g/dl)</td>
<td>1.6±33.3</td>
<td>27.9</td>
<td>38.6</td>
<td>1.7±32.7</td>
<td>28</td>
</tr>
<tr>
<td>RDW (%)</td>
<td>1.312.9</td>
<td>1.10</td>
<td>19.9</td>
<td>1.3±1.1</td>
<td>3.10</td>
</tr>
<tr>
<td>WBC (10^3/mm³)</td>
<td>1.4±6.2</td>
<td>2.3</td>
<td>11</td>
<td>1.6±6.7</td>
<td>6.3</td>
</tr>
<tr>
<td>PLT (10^3/mm³)</td>
<td>49.9±241.8</td>
<td>109</td>
<td>433</td>
<td>55.9±246.7</td>
<td>127</td>
</tr>
</tbody>
</table>

CONCLUSIONS

Anemia was prevalent among college students. In this area of Iran this can be a health problem the students future and therefore, accurate assessment of the causes of anemia is recommended to improve their health.
ACKNOWLEDGMENT

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REFERENCES


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