Prevalence and evaluation of vitamin B12 deficiency among healthy Libyan people in Zelitin governorate

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Program: Biotechnology

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Dedication

Thanks Allah
Who guided me in every step of my way and gave me his blessings

I dedicate this thesis to:

My country (Libya)

My husband the source of patience and the reason of my success

My Mother the source of love

My father the light of my life

My family the source of power

My dear children Aisha and Moad the source of hope

My wisdom and knowledge
Acknowledgement:

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<th>Full Form</th>
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<tbody>
<tr>
<td>Ado-Cbl</td>
<td>Adenosylcobalamin</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>CBC</td>
<td>Complete Blood Counts</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td>CN-Cbl</td>
<td>Cyanocobalamin</td>
</tr>
<tr>
<td>HC</td>
<td>Haptocorrin</td>
</tr>
<tr>
<td>HCT</td>
<td>Hematocrit</td>
</tr>
<tr>
<td>Hcy</td>
<td>Homocystine</td>
</tr>
<tr>
<td>HGB</td>
<td>Hemoglobin</td>
</tr>
<tr>
<td>holoTC</td>
<td>Holotranscobalamin</td>
</tr>
<tr>
<td>IF</td>
<td>Intrinsic factor</td>
</tr>
<tr>
<td>K2EDTA</td>
<td>Dipotassium Edetate</td>
</tr>
<tr>
<td>μ</td>
<td>Micro</td>
</tr>
<tr>
<td>MCH</td>
<td>Mean Corpuscular Hemoglobin</td>
</tr>
<tr>
<td>MCHC</td>
<td>Mean Corpuscular Hemoglobin Concentration</td>
</tr>
<tr>
<td>MCV</td>
<td>Mean Corpuscular Volume</td>
</tr>
<tr>
<td>Me-Cbl</td>
<td>Methylcobalamin</td>
</tr>
<tr>
<td>MEIA</td>
<td>Microparticle Enzyme Immunoassay</td>
</tr>
<tr>
<td>MMA</td>
<td>Methylmalonic acid</td>
</tr>
<tr>
<td>MPV</td>
<td>Mean Platelet Volume</td>
</tr>
<tr>
<td>OH-Cbl</td>
<td>Hydroxocobalamin</td>
</tr>
<tr>
<td>OR</td>
<td>Odds Ratios</td>
</tr>
<tr>
<td>P-LCR</td>
<td>Platelet-Large Cell Ratio</td>
</tr>
<tr>
<td>PDW</td>
<td>Platelet Distribution Width</td>
</tr>
<tr>
<td>PLT</td>
<td>Platelet</td>
</tr>
<tr>
<td>pg/ml</td>
<td>Picogram per milliliter</td>
</tr>
<tr>
<td>RBC</td>
<td>Red Blood Cell</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>RDW-CV</td>
<td>Red Blood Cell Distribution Width, Coefficient of variation</td>
</tr>
<tr>
<td>RDW-SD</td>
<td>Red Blood Cell Distribution Width-Standard Deviation</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviations</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>SST</td>
<td>Serum-separating tubes</td>
</tr>
<tr>
<td>tHcy</td>
<td>total Homocysteine</td>
</tr>
<tr>
<td>TC</td>
<td>Transcobalamin</td>
</tr>
<tr>
<td>USA</td>
<td>United States Of America</td>
</tr>
<tr>
<td>WBC</td>
<td>White Blood Cell</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>BSTEP</td>
<td>Backward Stepwise</td>
</tr>
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</table>
Prevalence and evaluation of vitamin B12 deficiency among healthy Libyan people in Zelitin governorate

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Abstract

This study aimed to estimate the status of serum vitamin B12 level in healthy Libyan people in Zelitin governorate (Sook Aljoma, Zelitin center, Mager, and Sook Altholata). Also, to examine the relationship between vitamin B12 deficiency and demographic data, chronic illness, dietary habits, haematological parameters and symptoms related to low vitamin B12 levels e.g. loss of appetite and memory loss. One hundred and eighty eight subjects (110 males and 78 females) were volunteered in the study. Participants were asked to fill a detailed questionnaire that covered medical data. The subjects were chosen to be healthy in different ages then they were divided into five age groups in both males and females and four regions in Zelitin. A total of serum vitamin B12 was measured for all volunteers. The prevalence of serum vitamin B12 deficiency (B12 level lower than 208 pg/ml) was 42.6%. The mean and SD values of vitamin B12 were 243.7 pg/ml and 156.1 pg/ml, respectively. No significant differences in the serum B12 level were found between different age groups, gender and Zelitin regions. The older age group (>50 years) showed the highest percent of deficiency of vitamin B12 (45.5%). The serum B12 level was significantly lower among smokers compared to non-smokers in the subjects \( (P = 0.000) \). Vitamin B12 deficiency was associated with smoking, memory impairment,
and loss of appetite. The high frequency of low vitamin B12 leads to development of the correlated symptoms. Vitamin B12 should be evaluated in different places in Libya and correct this problem.

**Keywords:** Serum vitamin B12 deficiency, Libyan people, Zelitin governorate.