

The role of socioeconomic welfare in the prevalence of severe vitamin D deficiency, vitamin B12 deficiency and glucose metabolic changes in population of Karaj, Iran

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Abstract

Introduction: Online Medicare is a method in which parts of a medical process, whether its diagnostics, monitoring or the treatment itself will be completed by using online services. At the first step the students were registered for using the system. They participated in estimating depression scale; anxiety scale and clinical interview by online medical care system. Subsequently, the lab examination tests were performed on persons specified by the system. The lab examinations include: serum level of vitamin D^{3&4}, serum level of vitamin B12^{5&6}, fasting blood sugar^{7&8}, HbA1c^{7&8}, thyroid function test^{9&10} and CBC. All of the students were solely treated by vitamins or minerals therapy and/or treatment of medical problems (such as hypothyroidism).

Methods: For detecting the role of socioeconomic welfare in the prevalence of the diseases, we implement the system in a low middle class boy's state high school, and in an above average boy's state high school and in an above average boy's private high school. The prevalence of severe vitamin D deficiency, hypoglycemia, impaired fasting glucose level and vitamin B12 deficiency were compared in students who lay in different socioeconomic situation.

Results: Severe vitamin D deficiency is significantly higher in above average neighborhoods than low middle class neighborhoods with $p \text{ value} = 0.024 < 0.05$. Significant difference in vitamin B12 deficiency, hypoglycemia and impaired fasting glucose were seen in deferent high schools, but it is not related to socioeconomic situation.

Conclusion: In Karaj, Iran, in societies with better socioeconomic situation, we can find higher severe vitamin D deficiency, it can be due to urbanization, living in apartment, over protection, preferring indoor games to outdoor games.

Declaration of Interest: None.

Key words: Depression, Anxiety, Vitamin D Deficiency, Socioeconomic.

Introduction

Online Medicare is a method in which parts of a medical process, whether its diagnostics, monitoring or the treatment itself will be completed by using online services(1). For detecting the role of socioeconomic welfare in the prevalence of the diseases, we implement the system in a lower middle class boy's state high school, and in an

above average boy's state high school and in an above average boy's private high school.

Methods

At the first step the students were registered for using the system. It was not mandatory and not free. They participated in estimating depression scale; anxiety scale and clinical interview by online medical care system. During this estimation, we

could find out about the existence and severity of depression and anxiety in each one of the participants. Also we could determine the consequent needs of each one, such as supportive therapy¹ in mild depression or anxiety, need to be visited by psychologist in moderate cases(1), need to be visited by psychiatrist in moderate-severe cases¹, need to be visited by psychiatrist and psychologist in severe cases and need to perform medical lab examination tests (2). The lab examination tests were performed on persons specified by the system. The lab

examinations included: serum level of vitamin D(3-4), serum level of vitamin B12^{5&6}, fasting blood sugar(7-8), HbA1c(7-8), thyroid function tests(9-10) and CBC. All of the students were solely treated by vitamins or minerals therapy and/or treatment of medical problem (such as hypothyroidism).

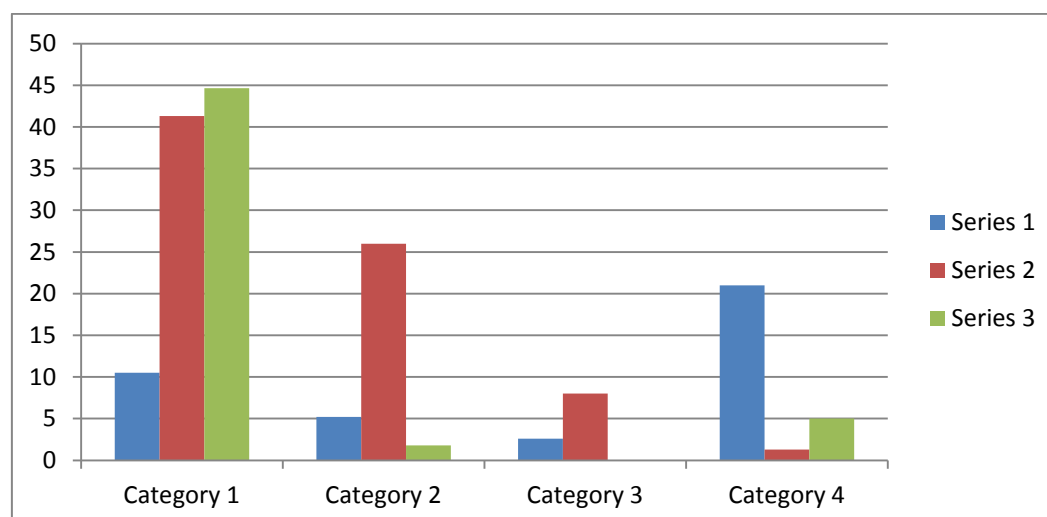
Results

Descriptive findings related to variables including mean and standard deviation.

Table 1. The prevalence of severe vitamin D deficiency, vitamin B12 deficiency and glucose metabolism changes in different neighborhoods.

	Vit D<10	Vit B12 <200	Hypoglycemia	Impaired Fasting Glucose Level
Lower middle class boy's state high school	4 %10.52	2 %5.2	1 %2.6	8 %21
Above average boy's state high school	31 %41.3	20 %26	6 %8	1 %1.3
Above average boy's private high school	25 %44.64	1 %1.78	0 %0	8 %14.28

Chart 1. The prevalence of severe vitamin D deficiency, vitamin B12 deficiency and glucose metabolism changes in different neighborhoods.



Series 1- Low middle class boy's state high school
 Series 2- Above average boy's state high school
 Series 3- Above average boy's private high school
 Category 1-Vit D<10
 Category 2-Vit B12 <200
 Category 3-Hypoglycemia
 Category 4-Impaired Fasting Glucose Level

Statistical Results:

- Severe vitamin D deficiency is significantly higher in above average neighborhoods than lower middle class neighborhoods with p value = $0.024 < 0.05$.
 - Hypoglycemia is higher in the state high schools in above average neighborhood than state high schools in lower middle class neighborhood and private high school above average neighborhood.
 - Severe vitamin B12 deficiency is significantly higher in the state high schools in above average neighborhood than state high schools in lower middle class neighborhood and private high schools above average neighborhood.
- Impaired fasting glucose level is lower in the state high schools in above average neighborhood than state high schools in lower middle class neighborhood and private high schools above average neighborhood

Conclusion

Reasons of higher severe vitamin D deficiency in above average neighborhood than lower middle class neighborhood:

- Urbanization: Apartment living is very popular in above average neighborhoods. Most of these apartments have not enough outdoor space available, thus direct sunlight availability is rare¹¹.
- Over protection: In above average neighborhoods the students are not permitted to exit home alone. Transferring to school is mostly performed by private vehicle or school vehicle. Naturally they do not have enough direct sunlight exposure time¹¹.
- Change in habits: Computer games, computer and internet is primary entertainment of students in above average neighborhoods, outdoor games such as football is not as popular as a few years ago. Thus, there is not enough interest for exposure to sunlight¹¹.
- The other results cannot be interpreted by available information; the future studies can help interpreting this data.

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