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An Investigation of College Students with IAD on Blood Sugar and Hemoglobin Parameters

ENQUETE PRELIMINAIRE SUR LES INDICATEURS DE LA GLYCEMIE ET L'HEMOGLOBINE DES ETUDIANTS DE PREMIER CYCLE

LI Daxin[1,*]

[1] LI Daxin (1970-), male, M. A., associate professor, focusing on sports nutriology and psychological health research of college students.
Address: Department of P. E., Qufu Normal university, Qufu, Shandong, China.
[*]Corresponding author.

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Abstract

Purpose: We explore blood sugar and haemoglobin parameters of college students with IAD, to demonstrate their nutrition and health condition.

Methods: 55 college students with IAD and 65 normal students are selected. We measured the level of blood sugar with O-TB, the level of haemoglobin with HIEN, and carry on a comparison with two.

Results: The average blood sugar of college students with IAD is 4.95 mmol/L, and students with IAD suffering from hypoglycaemia take up 40.60%. The average haemoglobin is 120.99g/L, and anaemic students occupy 32.95%. At the same time, the average blood sugar of normal college students is 5.75 mmol/L and normal students with hypoglycaemia take up 15.67%. The average haemoglobin of normal students is 141.74g/L and anaemic normal students occupy 12.67%. These differences are statistically significant ($p<0.01$).

Conclusion: The levels of blood sugar and haemoglobin of college students with IAD decrease obviously. Among college student with IAD, the proportion of hypoglycaemia students increases distinctively as much as anaemic students.

Key words: College students; IAD; Blood sugar; Haemoglobin.

Résumé

Nous avons l'objectif d'étudier la glycémie et de l'indice d'hémoglobine des collèges et des étudiants des universités de traitement des dépendances à Internet de révéler son (sa) à la nutrition et la santé. Dépendance à Internet Méthodes 55 et 65 des élèves et des étudiants sur Internet normales, l'utilisation de l'o-toluidine méthode pour mesurer les niveaux de sucre dans le sang, la méthode de cyanméthémoglobine à mesurer la teneur en hémoglobine, et de les comparer. Les résultats sucre dans le sang de la dépendance à Internet de l'élève est de 4,95 mmol / L, une hypoglycémie représentaient 40,60%, la moyenne d'hémoglobine ou 120.99g L, l'anémie était de 32,95%, tandis que les élèves normaux Internet glycémie moyenne de 5,75 mmol / L, à faible hyperglycémie représentaient 15,67%; étudiants hémoglobine signifie 141.74g / l, l'anémie était de 12,67%, la différence était statistiquement significative ($p <0,01$). Glucose dans le sang des élèves dépendance Conclusion Internet et la teneur en hémoglobine était significativement plus faible, du nombre d'hypoglycémie et le taux d'anémie a été augmenté de façon significative.

Mots clés: Les élèves de collège; Toxicomanies Internet; Glucose; Hémoglobine

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While the whole human society is deeply involved in enjoying benefits of Internet, drawbacks of unwisely using Internet are emerging gradually and fully. Wrongly overusing Internet will infect human health, destroy relationships, and cause numerous problems within family, study and work issues. This is described by socialists and psychologists as "Internet Addiction" (Young, 1996) or "Internet Addiction Disorder" (Ivan Goldberg). The typical symptoms are disorder of body clock, somnipathy, depression, retardation of thinking, decreasing of social events, low self-esteem, etc, even worse, intention and practice of suicide (ZHAO, 2005). Internet Addiction Disorder (IAD) of college students exists in various levels in

the whole China, which has been concerned far and wide. This research, investigating differences of blood sugar and haemoglobin parameters in college volunteers with IAD, reveals the impairment of IAD to nutrition and health of college students. The results are reported as following.

1. SUBJECT AND METHOD

1.1 Subject

55 voluntary examinees (43 males, 12 females) are selected from long-time Internet users in net-bars around a college in Shandong. According to their age, 65 students (50 males, 15 females), who are not long-time Internet users, were randomly selected as a control group. Their average age is 20-22 years old, average heights are 170.4±3.8cm of male and 166.4±2.5cm of female, and average weights are 63.4±2.1kg of males and 50.3±4.2kg of female.

1.2 Method

1.2.1 Blood Sugar Measurement

The examinees continually using Internet and the control group simultaneously took Fasting Glucose in the morning after a certain night. The level of blood sugar was measured by OT (Shanghai, 1979). Hypoglycaemia is determined as glucose levels of adults when limosis is lower than 3.3mmol/L.

1.2.1 HB Measurement

Blood of ring finger endings is drew by routine as 20μl, which is used to determine HB level by the method of HIEN (recommended by WHO). The measuring instrument is 721 spectrophotometer made in Shanghai. The judgment of anemic is based on the standards of *HB Level of Anemic by WHO*, that is, HB<120g/L of female or HB<130g/L of male is diagnosed as anaemic.

1.2.3 Data Processing

The obtained data are carried on statistically, represented by $\bar{x}$ ±s and T-test is applied to test the significance of difference.

2. RESULTS

2.1 Level Change of Blood Sugar of College Students with IAD

The results of blood sugar measurement suggest that it diminishes significantly in the blood sugar level of college examinees with IAD. Average level of blood sugar of the control group is 5.75 mmol/L; this number of college examinees with IAD is 4.95 mmol/l, which represents the average decreasing of 14.01%. Contrast to the control group, this decreasing trend is vitally distinctive (p<0.01=. Yet in terms of gender variety, the decreasing trend between male and female students is not that obvious (p>0.05).On the other hand, despite this apparent drop of blood sugar within college examinee with IAD, the number of who suffer from hypoglycaemia is also bigger than that of the control group. There are 15.67% students with hypoglycaemia in the control group, when there are 40.60% in the examinee group. The data are showed as Table 1.

Table 1
Blood Sugar Average and Hypoglycaemia Condition between the Examinee and the Control

Group	Gender	Examinee number	Average blood sugar	Average decreasing ($\bar{X}$±s，mmol · l^{-1})	The lowest blood sugar level	Students with hypoglycaemia
Examinee with IAD	Male	43	5.06±0.51*	13.65	2.68	17（39.53）
	Female	12	4.83±0.37*	14.36	2.54	5（41.67）
The control	Male	50	5.86±0.27		2.94	9（18.00）
	Female	15	5.64±0.41		3.07	2（13.33）

Noted: * comparing with the control, p<0.01;inside<>, the number is the ratio of how many hypoglycaemia students be determined /%.

2.2 Haemoglobin Content Change of College Examinee with IAD

Results of haemoglobin tests show that the average haemoglobin of both male and female students within the control group is 141.74g/L. At the same time, the average is 120.99g/L within the examinee group. Contrary to the control group, HB of the college examinee decreases inevitably (p<0.01=,with average rate of decrease 14.63%.

The average number of students suffering from anaemia is 32.95%, while the control group number is 12.67%. This difference between the examinee and the control is statistically significant. And the difference between male and female students within the same group makes no statistically meaning (p>0.05), as showed in Table 2.

Table 2
Haemoglobin Average and Anaemia Detection between the Examinee and the Control

Group	Gender	Examinee number	Haemoglobin content ($\bar{x}$±s，g · L^{-1})	Rate of HB reduction	Anaemia
Examinee with IAD	Male	43	121.57±11.24*	15.06	14（32.56）
	Female	12	120.41±11.17*	14.21	4（33.33）
The control	Male	50	143.12±12.38		6（12.00）
	Female	15	140.36±12.05		2（13.33）

Noted: * comparing with the control, $p<0.01$; inside<>, the number is the ratio of anaemia detection.

DISCUSSION

Some surveys have found that there are about 11.4% college students suffering from IAD or with the intention to IAD. Once college students addict to overusing Internet, they would be involved in net bars careless of days or nights and their time spent on sleep would decrease dramatically, which will lead to disorder of body clock. Furthermore, continuingly long time using of Internet would always excite brain nerve centres, so as to trigger the disorder of autonomic nervous function and the unbalance of hormone levels, which will lead to lower the immunity and initiate various diseases. Sedentariness before computers will easily cause such unhealthy physiological reaction as the impaired vision and twisted backs, which would seriously affect the quality of life (GAO, et al., 2008); (XIAO, et al, 2010).

Sugar is the major energy source needed by human body actions, so it will reflect immediately the bodily ingestion of sugar that whether the blood concentration is high or low. Many situations would cause serious hypoglycaemia, for example, woefully inadequate or badly ingestion of sugar, too much energy consumption of tissues, and long-term starvation. College students with IAD carry on an irregular life, an improper diet, and extreme lack of sleep, therefore they often show huger sensation, myasthenia of limbs, and sympathetic nerve excitation that is symptomatized as pale face, heart palpitation, and cold sweat. Even worse, they will feel dizzy or, under extreme conditions, hypoglycaemia shock. Our research results prove that the blood concentration of IAD students has significantly decreased, and IAD students suffering from hypoglycaemia are more than those normal students, which means that it could not be secured that the basic energetic source serving to IAD students.

Haemoglobin content is a vital index to reflect nutrition condition of human body. IAD students take foods irregularly, sometimes satiated and sometimes hungry, so the nutrition is easily thought of and never to mention reasonable digestion and nutrition balance, which leads to dramatically reduction of haemoglobin content. Our measurement results show that haemoglobin contents in IAD students are apparently lower than those in normal students, and the ratio of anaemic students with IAD exceedingly increases. All these will be enough to demonstrate the low nutrition condition of IAD students.

In conclusion, the health condition of IAD students is very badly, assuming the clear descending of some IAD students, who are even suffering from physiological and nutrition diseases of variety degrees (LI, et al., 2006), which influence seriously the nutrition condition and growing of young college students. Therefore we appeal that professionals should reveal psychological mechanism of IAD as soon as they can. Academics and human society should give the scientifically management and the positive and efficient guidance to Internet use of college students, helping every IAD student to free from addiction, cultivating the learning interest of young college students, letting them out of playing and joyful circle, and provoking that Internet use should be scientific, healthy and rational, which means students should use net for study and research.

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