Analysis of the Current Situation of Workers' Physical Fitness and Health Status and Countermeasures in Liuzhou under the Background of Healthy China

Qin Tingnv, Wen Xiaoqing, Zhang Haoran

School of Physical Education and Health, Guangxi Normal University, Guilin, Guangxi, China

Abstract: In the context of health China rising as a national strategy, based on the examination and analysis of the results of the health physical examination data of the employees of a unit in Liuzhou City, the physical health status of the employees of the unit is grasped and relevant disease prevention strategies and personalized recommendations are put forward to do a good job in health management in a targeted manner. Methods: the physical examination data of 1216 personnel from various units in Liuzhou City who underwent health examination in a health management center in Liuzhou area from March 2024 to June 2024 were selected, Excel form was applied to enter the data and organize the data, and SPSS23.0 was used to conduct ANOVA to compare the abnormal detection or disease detection of health examination of the unit workers, and the chi-square test was used to conduct a significance analysis, and P < 0.05 was used to indicate that the difference was statistically significant. RESULTS: Prostate abnormality was the highest incidence of male diseases, with a prevalence rate of 67.5%, accounting for more than half of the cases, followed by liver and gallbladder abnormalities, lipid metabolism abnormalities, overweight and obesity. Conclusion: Through the analysis, we found that the detection rate of physical examination abnormality in the age group of the workers in the unit showed a younger trend, as well as blood pressure abnormality, electrocardiogram abnormality, and other diseases in the gender difference there is a significant difference in the current situation of the workers' health is not optimistic, it is very necessary to carry out regular physical examination of the patients, and to strengthen the health education for the patients to advocate a scientific diet, and to carry out a moderate amount of exercise, in order to prevent more serious metabolic diseases, cardiovascular and cerebrovascular disease, and to prevent the occurrence of the disease. It is also necessary to strengthen health education for patients, advocate scientific diet, and carry out moderate exercise to prevent the occurrence of more serious metabolic diseases and cardiovascular diseases.

1. Introduction

1.1 Background of the Study

With the passage of time and the development of society, health is not only seen as an important social responsibility, but also increasingly as a social obligation, not just a financial one. At the same time, employee health has become an important part of national development, and both the state and society regard it as an important social responsibility. the "Healthy China 2030 Program" clearly states that healthcare should be a top priority for development. China is currently in a transition period from high-speed development to high-quality development, and the demand for health checkups is becoming increasingly urgent. How to promote the comprehensive development of human beings through health checkups is an issue that China must pay attention to and solve in the process of moving towards a new era and building a modern socialist country. By adopting health checkups or regular checkups, risk identification can be realized, disease factors hidden under abnormal indicators and disease trends can be identified, and through the statistics of checkup

results, targeted health publicity can be carried out to actively promote a healthy lifestyle, etc., which in turn can promote the improvement of the health level of the whole population. ([1]).

1.2 Purpose of the Study and Significance

Since "Healthy China 2030" has been recognized as a national strategy, China's healthcare system has shifted from a "disease-focused" to a "health-promotion-focused" approach[2] . By examining and analyzing the results of the health examination data of workers in a unit in Liuzhou City, we can grasp the physical health status of workers in this enterprise, statistically analyze the abnormal detection rate of all physical examination items of the physical examination population, analyze the grade of the abnormal index detection rate, identify the types of common and frequent diseases affecting the health of the body, and discuss the potential health risk factors, so as to predict the trend of the onset of disease in the foreseeable future, and provide reliable data support for the work on health interventions. Reliable data support, based on the perspective of public health, better promote the health of enterprise workers and other issues, and put forward relevant disease prevention strategies and recommendations, targeted health management and health education and other work [3] , enhance the people's participation in the health checkup of conscientiousness, reduce the morbidity rate, to achieve the early detection of the disease and early treatment, and sustained improvement of people's health indices, to enhance the population's health literacy, enhance the prevention of diseases, and to improve the health of the population. health literacy of the population, enhance the awareness of disease prevention, reduce the occurrence of chronic diseases, to provide a basis for the prevention and control of chronic diseases, so that the quality of life of the people continue to improve.

1.3 Literature Review

Health is indispensable to the comprehensive development of human beings, and health is also the most basic requirement for the economic and social development of human beings, which can enable human beings to have more time to engage in all kinds of activities and thus make greater contributions to society. National progress and national rejuvenation cannot be achieved without the health and longevity of the people. Only with a healthy body can we have more energy to engage in various activities, thus promoting social progress and national rejuvenation. Through health checkups and health care management, a dynamic balance between the body and the mind can be realized, so that people are always in the best working condition and full of energy [4] . Disease prevention and health promotion are actively carried out to realize the goal of "more comprehensive and better-quality medical services for all".

2. Information and Methods

2.1 Sources of Information

Through a tertiary hospital in the Liuzhou City area, the relevant medical examination data information of unit employee personnel who received health checkups at the hospital's medical checkup center during the period from March 2024 to June 2024 was retrieved from the hospital's information technology system. In total, there were 1, 216 personnel's medical examination data, including 719 males and 497 females.

2.2 Research Methodology

2.2.1 Literature research method
According to the purpose of this research, through China Knowledge Network, Wipo and other databases to carefully review the relevant literature, to understand the research conducted by scholars in different regions of China on the results of the current unit workers' health checkups and to categorize and analyze them, to refer to the relevant research methodology and ideas, and to inspire innovation.

2.2.2 Investigative methods
We went to the health management center of a tertiary hospital in Liuzhou City to conduct a field survey to understand the information related to the current situation of health checkups such as the flow of medical checkups for workers in Liuzhou City unit, medical checkup items, etc., and selected 1, 216 cases of reports on the results of the health checkups for workers in a certain unit for the next step in the analysis.

2.2.3 Statistical analysis
The SPSS 23.0 statistical software was used to

analyze this completed collated data by chi-square test.

2.3 Medical Examination Items and Determination Criteria

Examination items include: routine medical examination, routine surgical examination, routine examination of ophthalmology, oral cavity, ear, nose and throat, chest X-ray, 12-lead electrocardiogram, ultrasonography (liver, gallbladder, pancreas, spleen and kidneys), height, weight, and blood pressure examination, etc. Laboratory examination includes: three items of liver function (alanine aminotransferase (ALT), azelaic aminotransferase (AST), and total bilirubin (TBIL));

four lipids (triglyceride TG, total cholesterol CHOL, high-density lipoprotein cholesterol HDL-C, low-density lipoprotein cholesterol LDL-C); fasting blood glucose test, routine blood test, routine urine test and so on.

2.3.1 Related definitions: (1) Overweight/obesity check: underweight "BMI<18.5kg/m(2)", "normal weight $18.5 \leqslant$ BMI$\leqslant$23.9kg/m(2)", "Overweight $24.0 \leqslant$ BMI $\leqslant$27.9kg/m(2)", "Obese BMI$\geqslant$28kg/m(2)". (2) Blood Pressure Normal blood pressure for checking adults is: systolic blood pressure $\geqslant$ 90 mmHg and <140 mmHg, diastolic blood pressure $\geqslant$ 60 mmHg and <90 mmHg. (3) Blood Sugar Checking: fasting blood glucose (FPG) is normal: 3.9 <FPG <6.1 mmol/L.

(4) Liver function tests: Reference value of alanine aminotransferase (ALT) is 5-40 U/L for men and 5-35 U/L for women. Normal value of alanine aminotransferase (AST) is 8-40 U/L. When ALT is significantly elevated and the ratio of alanine (AST)/glutamic acid (ALT) is >1, it is suggestive of liver parenchyma damage; total bilirubin (TBIL):3.0-20.0 umol/L. (5) Renal function tests:Blood creatinine (Scr): male (79.6-132.6 6 umol/L): male (79.6-132.6 umol/L). Total bilirubin (TBIL):3.0-20.0 umol/L. (5) Renal function tests: blood creatinine (Scr): male (79.6-132.6 μmol/L); female (70.7-106.1 μmol/L); blood uric acid (UA) (UA) adult: male (149-417 μmol/L); female (89-357 μmol/L); urea (UREA) adult: 3.2-7.1 mmol/L. (6) Lipid quadruple test:High triglyceride (TG): abnormal: TG $\geqslant$ 1.80 mmol/L; high cholesterol (TC): abnormal: TC $\geqslant$ 6.5 mmol/L;

high-density lipoprotein (HDL): abnormal: HDL $\leqslant$ 0.96 mmol/L [5] ; (7) Ophthalmologic examination:The general checking of visual acuity is performed at a distance of 5 meters, and the 1.0 row of the visual acuity chart is located at the same height as the examinee's eyes; a visual acuity of 1.0 can only indicate that part of a person's vision is normal. (8) Color ultrasonography: Refer to "Clinical Ultrasonography Diagnostic Examination Specification and Analysis of Difficult Cases and Ultrasonic Anatomical Atlas Practical Manual" [6] for assessment. (9) Electrocardiography: Rated with reference to "International Guidelines for Recommendations and Clinical Application of Electrocardiography Standardization and Interpretation 2009" [6] .

2.4 Quality Control

Strictly in accordance with the requirements of the relevant health examination, study subjects who do not meet the enrollment conditions, such as: unknown age and gender, incomplete examination content, incomplete data, and serving non-staff members, etc., will be screened out; all doctors conducting the examination must have industry-recognized qualifications for practicing medicine and have received uniform professional training, so as to maintain consistency and standardization of their judgments and criteria for judging conditions; all kinds of instruments and equipment used for examination should be measured, appraised and calibrated before examination, and ensure that the examination is conducted during fasting; the data of medical examination are double-entered for consistency and reliability of data. All instruments and equipment used in the examination should be measured, identified and calibrated before the examination, and the examination should be carried out on an empty stomach; the data of the physical examination is entered in a dual way to check the consistency and reliability of the data.

3. Findings

3.1 General Characteristics of The Study Population

The total number of subjects in this study was 1216, of which 719 were males, accounting for about 59%, and 497 were females, accounting

for about 41% of females, with a male-to-female ratio of about 1.45:1. the age of the study subjects ranged from 30~ 57 years. the specifics of age and gender characteristics are shown in **Table 1**.

Table 1. General Information on Survey Respondents

Age/sex	distinguishing between the sexes		add up the total	Composition ratio (%)
	Male	Female		
30-39	0	234	234	19
40-49	305	239	544	45
50-59	414	24	438	36
(grand) total	719	497	1216	100

3.2 General Status of Medical Examination Results

In this thesis, the unit personnel who participated in the physical examination were recognized as having abnormal physical examination indicators if they had at least one abnormal physical examination indicator in the results of the physical examination program, as shown in **Table 2**. the number of people who participated in the medical examination was 1, 216, of which 1, 210 had abnormalities, accounting for 99.5% of the total number of people.

3.2.1 Detection of abnormal indicators in medical examinations of workers of different genders

The results of the physical examination of the unit workers of both sexes are shown in **Table 3**. The X2 test shows that the detection rate of abnormalities in the physical examination of females and the detection rate of abnormalities in the physical examination of males were higher in the physical examination. the difference is not statistically significant (P>0.05).

Table 2. Overall Detection of Staff Indicators

Testing Indicators	total number of people	percentage
Normal indicators	6	0.5
Abnormal indicators	1210	99.5

Table 3. Abnormal Medical Examination Indicators by Sex

distinguishing between the sexes	total number of people	Abnormal indicators	Detection rate (%)	X2	P
a male	719	713	99	2.642	0.104
females	497	497	100		

3.2. 2 Detection status of abnormal indicators in medical examinations of workers of different age groups

Indicators of differences in the physical examination of unit workers in different age segments are shown in the following **Table 4**. The chi-square test shows that in the age segments 30-39 and 40-49, all workers have abnormal physical examination indicators. However, in the age group of 50-59, the detection rate of abnormal indicators is lower, and this difference P < 0.005, in which there is a statistically significant difference.

Table 4. Abnormal Physical Examination Indicators by Age

Age grouping	total number of people	Abnormal indicators	Detection rate (%)	X2	P
30-39	234	234	100		
40-49	544	544	100	12.143	0.002
50-59	432	426	98.6		

3.3 Detection of High Prevalence Indicators Among Enterprise Workers

3.3.1 Ranking of the high incidence of detection of anomalous indicators

The high incidence of detection in the physical examination indicators for unit workers is shown in **Table 5**. the first high incidence of detection is prostate abnormalities in male diseases (67.5%), followed by liver and gallbladder abnormalities (62.4%), prostate abnormalities (61.2%), dyslipidemia (58.5%), renal abnormalities (49.5%), overweight and obesity (47%), hepatic abnormalities (44.7%), uric acid abnormalities (41.7%), electrocardiographic abnormalities (35.7%), blood pressure abnormalities (28.6%), and fasting glucose abnormalities (11.2%).

Table 5. Abnormal Indicator Detection High Frequency Ranking

position	abnormal detection index	Number of participants	number of detections	Detection rate (%)
1	prostate gland	719	485	67.5
2	hepatobiliary abnormalities	967	603	62.4

3	dyslipidemia	967	566	58.5
4	abnormal kidney function	950	470	49.5
5	Overweight and obesity	1185	557	47
6	abnormal liver function	1216	544	44.7
7	Uric acid abnormalities	967	403	41.7
8	electrocardiogram (EKG)	884	316	35.7
9	refractive error	967	280	29
10	hypertension	967	277	28.6
11	Abnormal fasting blood sugar	967	108	11.2

3.3.2 Detection of high prevalence of abnormal indicators among workers of different genders
The indices of high-risk abnormality detection in different genders are shown in **Table 6**. Based on the chi-square test, it was found that except for the three items of abnormal kidney function, abnormal uric acid, and refractive error, which did not have statistically significant differences, all the other high-risk abnormality indexes, which had significant gender differences, were statistically significant.

Table 6. Detection of High Prevalence of Anomalies by Gender

Abnormal indicators	Male (N=719)		Female (N=497)		X2	P
	N%		N%			
hepatobiliary abnormalities	475	66	128	51.6	16.405	0.000
dyslipidemia	459	64	107	43	32.532	0.000
abnormal kidney function	350	48.7	120	52	0.353	0.553
Uric acid abnormalities	338	47	122	49.2	0.748	0.387
Overweight and obesity	394	55	163	35	44.588	0.000
abnormal liver function	146	20.3	61	12.3	13.423	0.000
electrocardiogram (EKG)	246	34.2	70	42.4	3.938	0.047
refractive error	214	29.8	66	26.6	0.890	0.346
fasting blood sugar	90	12.5	18	7.2	5.141	0.023
hypertension	239	33.2	38	15.3	28.904	0.000

3.2.3 Detection of high incidence of abnormal indicators in workers of different age groups
The detection rates of high values of abnormal indices for workers of all ages are shown in **Table 7**. In this thesis, the non-normal indices with high prevalence in the public were selected as the study object of age abnormalities. the detection rates of various high-value abnormal indices, such as overweight and obesity, cardiac abnormalities, dyslipidemia, hepatobiliary abnormalities, and blood pressure abnormalities, were associated with increasing age and were statistically significant ($P<0.05$).

Table7. Detection of High Prevalence of Abnormal Indicators by Age

Abnormal indicators	30-39 years		40-49 years		50-59 years		X2	P
	N%		N%		N%			
hepatobiliary abnormalities	33	48.5	298	64	273 63		6.381	0.041
dyslipidemia	34	50	325	71	288 66		120.151	0.000
Overweight and obesity	63	27	272	50	50 11.2		167.640	0.000
electrocardiogram (EKG)	45	66	162	35	100 23		54.563	0.000
hypertension	10	15	130	28	137 31.6		8.338	0.015

4. Discussion

4.1 Analysis of Abnormal Detection of Unit Workers

4.1.1 Analysis of the detection status of anomalies among workers of different sexes
The results of this paper found a significant difference in the prevalence of obesity, liver and gallbladder, blood glucose, lipids and blood pressure abnormalities compared to all of them in men than in women. the anomalies of these indicators are usually related to some incorrect and recurring lifestyles, such as smoking and drinking, laziness, not exercising, and unhealthy dietary habits: for example, they always eat sugar-oil mixtures that are high in carbon and fat, and foods that are high in salt and saccharin. In addition, some factors such as: prolonged high intensity mental stress and overload amount of work also have a great connection [7] . With the accelerated pace of life, men often pick up bad habits such as smoking and alcoholism. In addition, there is

also a certain relationship with women's tendency to pay attention to the body, as well as the individual's blind pursuit of "white, young and thin" and other unhealthy aesthetics.

4.1.2 Analysis of the detection status of abnormal indices in workers of different age groups

Analysis of the differences in the abnormal detection rates of the main abnormal findings in different age groups showed that there were significant differences between the abnormal detection rates of liver and gallbladder, overweight and obesity, four lipid items, and blood pressure in different age groups, and that the abnormal detection rates of all these abnormal items increased with age. Many studies have shown that the onset of many chronic diseases is related to aging, of which hypertension and diabetes mellitus are among the most common [8] . With the increase of age, the function of the body decreases, and the body's resistance to disease decreases, which leads to the incidence of chronic diseases. the results of the study found that the lowest incidence of abnormal blood pressure was found in the 30-39 year olds, and there was an increasing trend in the 40-49 and 50-59 year olds, which is related to the fact that patients' atherosclerosis increases with age, the role of elastic reservoirs of the large arteries and aorta decreases, and the fluctuation of arterial blood pressure changes in the elderly are greater. Although age is a factor that cannot be intervened, measures can be taken to prevent hypertension in patients in the high-risk age group. Whereas the detection rate of ECG abnormalities is lowest in the 50-59 age group, it is higher in the 30-39, and 40-49 age groups. The specific manifestations of ECG abnormalities are: T-wave changes, sinus arrhythmia, premature ventricular contractions, complete or incomplete right bundle branch block, atrial fibrillation, and others (preterm contractions, ventricular tachycardia, sinus bradycardia with irregularities, etc.). the main factors contributing to this condition may be: the stress of the current work of workers aged 30-39, 40-49, the need to participate in frequent social activities, eating out, an irrational lifestyle, irregular work and rest, lack of sleep, and so on. Therefore, people in this age group should adjust their routine, maintain a healthy diet, and reduce smoking and alcohol consumption.

4.2 Analysis of the Detection of High Incidence Indicators Among Unit Workers

4.2.1 Analysis of detection of hepatobiliary diseases

Worldwide, the incidence of liver cysts ranges from 4.5% to 7.0%, but only 5% of the chances are that treatment is necessary. the gallbladder is characterized by diseases such as cholecystitis, gallbladder cancer, gallbladder stones, and gallbladder polyps. Gallstones are stones in the biliary system, which mainly includes the gallbladder and bile ducts. the enlargement of stones causes long-term inflammation of the gallbladder mucosa, leading to tumors in about 1-2% [8] . the unit workers may like to be quiet and less active, and some of them have little or no exercise, coupled with long-term work sedentary, etc., will inevitably affect the contraction of the gallbladder, thus affecting the discharge of bile and increasing the occurrence of gallstones. the reason for the occurrence of gallstones may be the body obesity, like to drink milk tea, carbonated beverages, eat fried cooking food. Irregular routine, unhealthy eating habits and so on. All of the above are causes of liver cysts, so you must pay attention to developing good habits in your daily life to avoid liver abnormalities or gallbladder diseases.

4.2.2 Analysis of detection of dyslipidemia

With the evolution of time, the pressure of people's work and life is increasing, people's dietary habits and behaviors are changing, dyslipidemia is becoming more and more common, and hyperlipidemia and comorbidities such as chronic diseases have begun to appear widely in people's view. the four blood lipids mainly refer to total cholesterol, triglycerides, low-density cholesterol and high-density cholesterol. Surveys have shown that the detection rate of abnormal lipid metabolism is high among our workers, and that disorders of lipid metabolism are the main independent risk factors for coronary heart disease, myocardial infarction, cerebral thrombosis and other pathologies [9] . the results of related studies found that with the increase of age, the incidence of lipid metabolism disorders in the population shows a trend of gradual increase, and is accompanied by the occurrence of hyperlipidemia, which is an important cause of the occurrence of atherosclerosis.

4.2.3 Analysis of the detection of renal function abnormalities

In this paper, three indicators of renal function were selected for evaluation of renal function in more people's physical examination, which are uric acid, creatinine and urea. the results of the study found that the renal function abnormality of the employees in this unit ranked fourth among the sorted high prevalence diseases, which is a serious situation. There is a relationship between elevated blood uric acid and metabolic diseases. Uric acid concentration is the final metabolism of purines in the body, and hyperuricemia has a strong relationship with purine metabolism disorders [10] . Hyperuricemia has become a major disease that seriously jeopardizes human health, and its prevalence is increasing year by year and tends to become younger. In the present study, the main reason for the high uric acid in the workers of this organization because of the abnormal renal function may be because the workers of this enterprise are closely related to the dietary habits of consuming foods high in purines, such as seafood, various types of beef and mutton, beer and other foods.

4.2.4. Analysis of the detection of overweight and obesity

In the past 40 years, our country's economy has developed rapidly, and the diet of our residents has been transformed from a traditional diet dominated by plant-based foods to a Western diet, and this change is manifested in our increasing intake of animal-based foods [11] , and our increasing consumption of refined grains, sugary beverages, and partially deep-processed foods. With the increase in the number of people eating out, takeaway food contains a large amount of high-sugar, high-salt, high-fat and high-energy foods. Mental brain activity has replaced physical physical labor. Sedentary habits are also on the rise, which can likewise make us fatter. In addition, the quality of our sleep is less optimistic. About half of all young people do not get enough sleep, and the percentage of adults who do not get enough sleep, i. e. less than seven hours a day, is also high. And all of this contributes to us gaining weight as well.

5. Conclusion

The physical health status of unit workers is very serious. Physical examinations revealed a high detection rate of dyslipidemia, abnormal liver and gallbladder function, abnormal kidney function and overweight and obesity, and, among male diseases, the detection rate of prostate abnormalities was 67.5%, of which more than half of the men suffered from the disease. Abnormalities of blood pressure and blood lipids gradually increase with age. Their interaction and mutual influence, which accelerates the decline of the body's functions, has become a problem that needs to be solved. Based on the current status of the findings of this unit, with the help of occupational health management, the following recommendations can be taken: (1) The unit needs to improve the management system; (2) The relevant departments should strengthen the fitness education; (3) Individuals need to raise the awareness of hygiene to protect their own health.

References

[1] Xue Hanbing. Exploring the development trend of combining health management and health insurance in China [J]. China Insurance, 2020, No. 387(03):41-46.

[2] Gao Xiaojian. A new path for health promotion by integrating Chinese and Western medicine: postural resonance exercise [J]. Bulletin of Sports Science and Technology Literature, 2024, 32(10):271-275.

[3] Guo Jia. Analysis of the health status of workers in an enterprise in Changchun City and countermeasures research [D]. Changchun University of Traditional Chinese Medicine, 2022.

[4] Fang Honglin. New Path and New Mode of Digital Technology to Promote the Development of Industrial Integration - Based on the Analysis of Great Health Industry [J/OL]. Journal of Zhejiang Gongshang University, 1-9[2024-12-23].

[5] LIANG Hengmiao, HUANG Strontzhe, CHEN Yuting, et al. A retrospective study of the relationship between blood uric acid levels and the degree of insulin resistance in a population undergoing health checkup [J/OL]. Chinese Family Medicine, 1-9[2024-12-23].

[6] Lei Tao, Gu Siyu, Yang Jinman. Demand-side survey analysis of health insurance payment for chronic disease prevention

and control [J]. Health Economics Research, 2024, 41(12):37-40.

[7] Huang Juan. Reflections on the high-quality development of health industry in the context of Chinese-style modernization [J/OL]. Enterprise Economy, 2024, (12):5-13+2[2024-12-23].

[8] Aguilar, M., Bhuket, T., Torres, S., Liu, B., & Wong, R. J. (2015). Prevalence of the Metabolic Syndrome in the United States, 2003-2012. jama, 313(19), 1973.

[9] FENG Xiang, HUA Zhaolai, ZHOU Qin, et al. Analysis of the prevalence status and influencing factors of major chronic diseases among residents aged 40~ 70 years in Yangzhong City [J]. Chinese Family Medicine, 2020, 23(20):2564-2570.

[10] Cheng Xiaotong. Analysis of the health status of some physical examination population in a physical examination center [D]. Changchun University of Traditional Chinese Medicine, 2022.

[11] LI Jiongran, WANG Hongyun, LIU Yamin, et al. Current situation of the development of China's health service industry and suggestions for future development [J]. Health Economics Research, 2024, 41(12):68-71.