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# Study on the Influence of Life Style on Constitution, Health and Disease of Residents in Guanzhong Area of Shaanxi Province

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***Abstract:*** *In order to understand the life style, health status, physical type and frequent diseases of residents in Guanzhong area of Shaanxi province, and to provide scientific basis for the prevention of local chronic diseases. This survey adopts the method of random sampling, and selects 1500 permanent residents in Guanzhong area, according to their health status (disease history, self-health cognition, obesity status, mental status, etc.), lifestyle (smoking, drinking, exercise, diet, sleep, etc.), physical type, frequent diseases, etc. A total of 1427 cases were included in the survey, including 837 males and 590 females, and the residents' self-health cognition was good; The average body mass index (BMI) was 23.68 kg /m2 for males and 20.90 kg /m2 for females, and the obesity rate was 14.9%. The BMI of residents increased with age before 60 years old, but decreased after 60 years old. Phlegm-dampness constitution was the most common constitution, followed by peace constitution and Yin deficiency constitution, and the distribution of other constitution types was less than these three constitution types. The main chronic diseases were diabetes, hypertension, hyperlipidemia and cardiovascular and cerebrovascular diseases. Residents had higher salt intake and more irregular diet. Smoking, drinking and second-hand smoke inhalation are more serious; Fewer residents took exercise in their spare time. More than half of the patients experienced major events and bad mental state in 1 year; Local residents sleep poorly, often staying up late or poor sleep quality affecting the next day workers accounted for 56.3%. Through investigation, it is found that the residents in Guanzhong area have unhealthy lifestyle such as high-oil and high-salt diet, lack of exercise, smoking, drinking, etc., which leads to phlegm-dampness constitution and Yin deficiency constitution. Diabetes, hypertension, hyperlipidemia, cardiovascular and cerebrovascular diseases are high incidence diseases. Adjusting the way of life can help improve the health condition of local residents, and carry out targeted prevention and treatment of residents' physical disease-related diseases.*

***Keywords:*** *Guanzhong Area; Urban and rural residents; Lifestyle; State of health; Constitution; Chronic diseases; The prevention and treatment of diseases*

## 1. Introduction

The special human and geographical environment in Guanzhong area of Shaanxi province has created some special eating habits and lifestyles (such as liking pasta, liking spicy food, etc.), so it has its different physical characteristics and morbidity tendency. By analyzing the lifestyle behavior, health status, self-health cognition, physical characteristics and multiple diseases of Guanzhong residents, this survey explores the bad behaviors and habits that affect the healthy lifestyle of local residents and their effects on residents' physique, residents' physical health and related chronic diseases, which is helpful to carry out targeted research on the prevention and treatment of residents' physique related diseases. In order to provide scientific basis for the prevention of chronic diseases and effective prevention and control suggestions for local residents.

## 2. Materials and Methods

### *2.1. Respondent*

The survey objects are permanent urban and rural residents in Guanzhong area of Shaanxi Province,

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including Weinan, Xi 'an, Xianyang and Baoji. By means of multi-stage random sampling, 1,427 permanent urban and rural residents in Guanzhong area are selected from February to May 2022.

### *2.2. Inclusion and exclusion criteria*

#### *2.2.1. Inclusion criteria*

①Age: 35 ~ 75 years old; (2) Permanent urban and rural residents in Guanzhong area of Shaanxi Province who voluntarily participated and signed the informed consent; ③ Healthy and able to communicate normally;

#### *2.2.2. Exclusion criteria*

Permanent residents or floating population in non-Guanzhong areas and unable to complete the questionnaire due to physical reasons. Exclusion criteria: incomplete questionnaires.

### *2.3. Investigation method*

The questionnaire of "Guanzhong Residents' lifestyle and physical health Survey and Related Disease Prevention Research" and physical identification table were used to collect information in the form of face-to-face question and answer with the informed consent of the residents. The information is available from September 2021 to October 2022. ① The contents of the survey included: basic information (age, gender, etc.), health status (cognition, disease history, obesity, etc.), lifestyle (smoking, drinking, diet, exercise, sleep, etc.). (2) The contents of the physical questionnaire include past history, allergy history, genetic history, family history, mental state, and eating habits. It also includes tobacco, alcohol and tea habits, sleep status, urinary and bowel movements, sex-specific indicators and other physical characteristics.

### *2.4. Observation index and its significance*

(1)Obesity index: According to body mass index (BMI) : BMI ≤18.5 kg /m2 is considered to be underweight; Normal if BMI < 18.5 kg /m2 ≤24.0 kg /m2; 24.0 kg /m2 < BMI≤ 27.9 kg /m2 overweight; BMI > 27.9 kg /m2 is considered obese [1].

(2)Smoking: Smokers who smoke more than 100 cigarettes and still smoke.

(3)Alcohol consumption: Except for the use of alcohol containing drugs, other alcohol consumption routes are counted as alcohol consumption.

### *2.5. Quality control*

Questionnaire survey was conducted face-to-face to ensure questionnaire quality and response rate, and was checked and verified again after the survey.

Entry and rejection criteria: ① Data entry requires complete and logical information. In case of repeated questionnaires, only one valid questionnaire should be retained; ② Discard key information missing and fill in the illogical questionnaire.

### *2.6. Statistical method*

Data were recorded using Epidata3.1 and analyzed statistically with SPSS25.0 software. Chi-square test was used. $P < 0.05$ indicated statistically significant difference.

## 3. Result

### *3.1. Basic information*

A total of 1,427 residents were included in the survey, including 837 males (58.65%) and 590 females (41.35%). The subjects ranged in age from 35 to 75, with an average age of 54. Among them, 240 were males aged from 35 to < 45, 181 were 45 to < 55, 205 were 55 to < 65, and 211 were 65 to 75. In females, 148 were 35 ~ < 45 years old, 150 were 45 ~ < 55 years old, 143 were 55 ~ < 65 years old,

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and 149 were 65 ~ 75 years old. Married residents 1,338 (93.76%); 89 were unmarried, accounting for 6.24%, See Table 1.

*Table 1 Basic information (count)*

| gender | count | 35～＜45years old | 45～＜55years old | 55～＜65years old | 65～75years old |
|---|---|---|---|---|---|
| male | 837 | 240 | 181 | 205 | 211 |
| female | 590 | 148 | 150 | 143 | 149 |

### *3.2.Cognitive status survey results*

Among the local residents, 283 people (19.83%) think their health condition is very good, 609 people (42.68%) think it is good, 484 people (33.92%) think it is fair, 43 people (3.01%) think it is bad, and 8 people (0.56%) cannot self-assess their health condition. In addition, 205 people (14.36%) thought their health conditions were better than those of their peers, 976 people (68.40%) thought they were similar to their peers, 159 people (11.14%) thought they were worse than their peers, and 87 people (6.10%) could not make a comparison. See Figure 1.

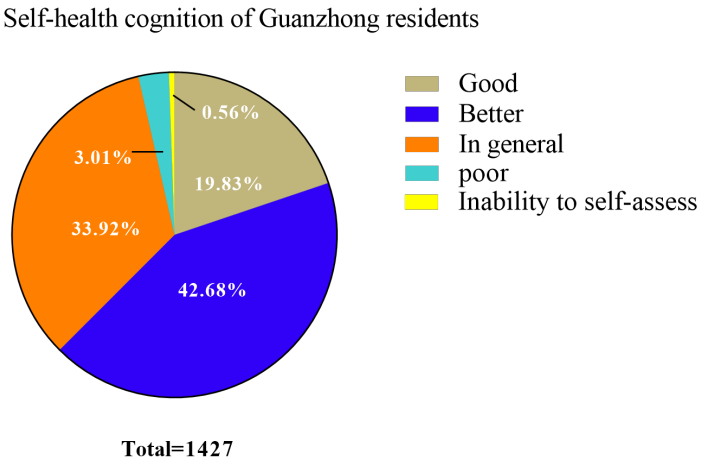


*Figure 1 Self-health cognition of residents in Guanzhong area*

### *3.3. Obesity status survey results*

As shown in Table 2, there were 366 underweight (25.6%), 545 normal (38.2%), 303 overweight (21.2%) and 213 obese (14.9%). The average BMI of male residents was 23.68kg /m2 and that of female residents was 20.90kg/m2. The BMI of local residents increases with age before the age of 60, but decreases after the age of 60. People aged 45-65 are the main overweight and obese population. There was significant difference in obesity status between male and female residents ($\chi 2$= 165.959, P < 0.05).

*Table 2 Obesity of 1427 residents included in Guanzhong area( %)*

| gender | count | lean | normal | overweight | obesity | $X^2$value | Pvalue |
|---|---|---|---|---|---|---|---|
| male | 837 | 117( 14) | 342( 40.9) | 206( 24.6) | 172( 20.5) | 165.959 | ＜0.05 |
| female | 590 | 249( 42.2) | 206( 34.9) | 94( 15.9) | 41( 6.9) | | |

### *3.4. Results of a survey of the disease*

As shown in Figure 2, 1370 people suffer from diabetes, hypertension, hyperlipidemia and other chronic diseases. Among them were diabetes mellitus (214), hypertension (642), hyperlipidemia (455), cardiovascular and cerebrovascular diseases (411), gastrointestinal diseases (281), chronic bronchial diseases (170), chronic ear, nose and throat diseases (376) and rheumatoid arthritis (14).

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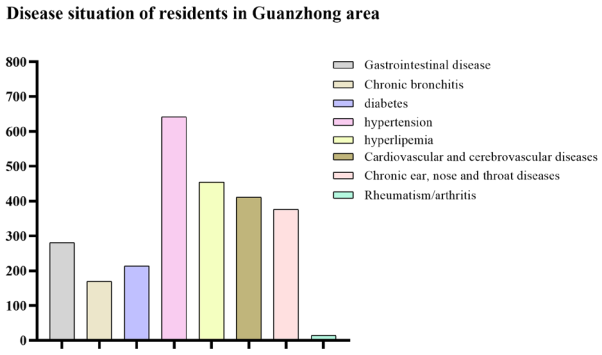


*Figure 2 Disease situation of residents in Guanzhong area*

### *3.5. Lifestyle analysis*

#### *3.5.1. Diet structure*

According to the survey, 416 people (29.2 percent) do not eat breakfast every day, and 1,011 people (70.8 percent) eat breakfast every day. 363 people (25.4%) often ate midnight snacks, and 1064 people (74.6%) rarely or never ate midnight snacks. 709 people (49.7%) often binged, 718 people (50.3%) rarely or never binged; 720 people (50.5%) had an unreasonable diet structure and 707 people (49.5%) had a reasonable diet structure and a regular diet. 221 people (15.5%) had a greasy diet, 230 people (16.1%) liked spicy food, 200 people (14.0%) had salty taste, 440 people (30.8%) had pasta and 444 people (31.1%) had meat, as shown in Figure 3.

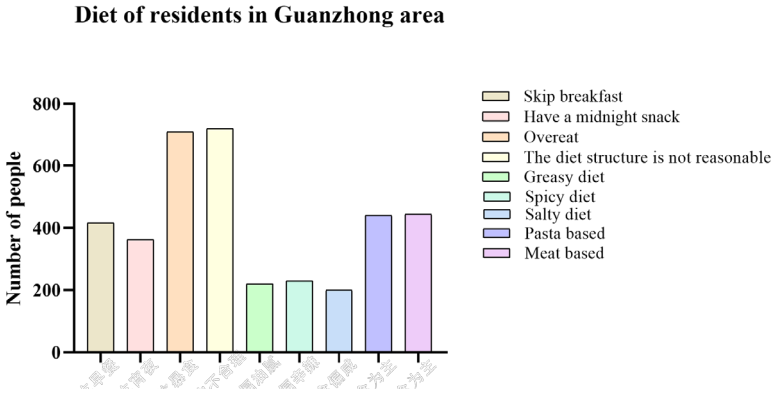


*Figure 3 The diet of residents in Guanzhong area*

#### *3.5.2. Daily life*

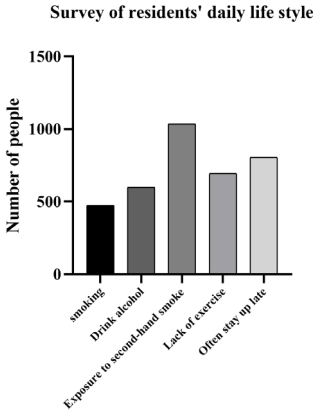


*Figure 4 Survey of residents' daily lifestyle*

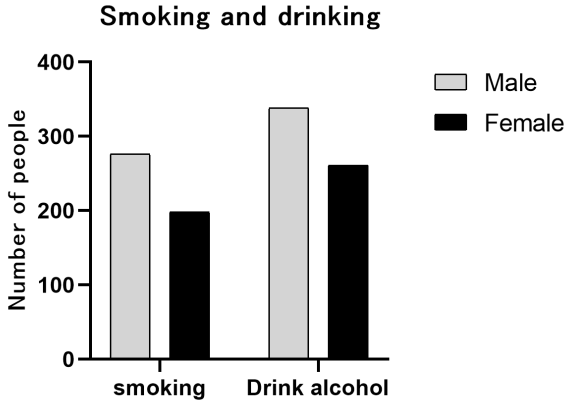


*Figure 5 Smoking and drinking*

Results of the survey: There were 474 smokers (33.2%), among which 276 were male smokers

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(19.3%) and 198 were female smokers (13.9%). In a year, 1034 people (72.5%) would inhale second-hand smoke almost every day on different occasions. Among 599 drinkers (42%), 338 (23.7%) were male drinkers and 261 (18.3%) were female drinkers. In addition, 734 people (51.4%) often exercise in the past year, and 693 people (48.6%) lack of exercise in their spare time; There were 623 people (43.7%) who had regular work and rest on weekdays, and 804 people (56.3%) who often stayed up late or had poor sleep quality affected the next day's work (see Figure 4 and Figure 5).

#### *3.5.3. Mental emotion*

During this survey period, 561 people (39.3%) were in a state of constant calm and energy, and 866 people (60.7%) had experienced the following major events (e.g. Physical and mental, life, work, economy, social, natural disasters and so on depression, loss of interest, appetite, etc.), anxiety, anxiety, mood swings, inexplicable sudden fear and even a series of mental illness, so as to affect daily life.

### *3.6. Physical distribution*

The results of this survey showed that the physical distribution in Guanzhong area was as follows: 270 people (18.9%) had peace quality, 477 people (33.4%) had phlegm-dampness quality, 210 people (14.7%) had Yin deficiency quality, 182 people (12.7%) had qi deficiency quality, 113 people (7.9%) had Yang deficiency quality, 69 people (4.8%) had dampness-heat quality, 58 people (4.1%) had blood stasis quality, 31 people (2.2%) had qi stagnation quality, There were 17 persons (1.2%) with special qualities, as shown in Figure 6. In Guanzhong area, phlegm-dampness constitution and yin-deficiency constitution are most common, because residents in this area like to eat meat and pasta and spicy food, and there are many drinkers, so pasta, meat and wine belong to the fat and thick taste, and the body is full of fat. However, excessive eating of fat and gan will lead to the formation of phlegm-dampness constitution or damp-heat constitution, among which damp-heat constitution is mostly caused by long-term drinking[2]. Therefore, there are more overweight and obese people in Guanzhong area. However, hot and spicy food can easily damage Yin and generate wind from fire[2], so there are more Yin deficiency in local residents. Moreover, the pressure of modern society increases rapidly, the pressure of work and family increases accordingly, and the middle-aged and elderly people are depressed, Qi deficiency, Yang deficiency and other physical problems have become normal. With the emergence of Qi stagnation and other problems, followed by the emergence of blood stasis, as well as excessive salt intake in the local diet will lead to the formation of blood stasis. In daily public health intervention, it is still necessary to increase the publicity and education on the formation and improvement of bad physique, so as to improve residents' cognition of healthy life and their own physique.

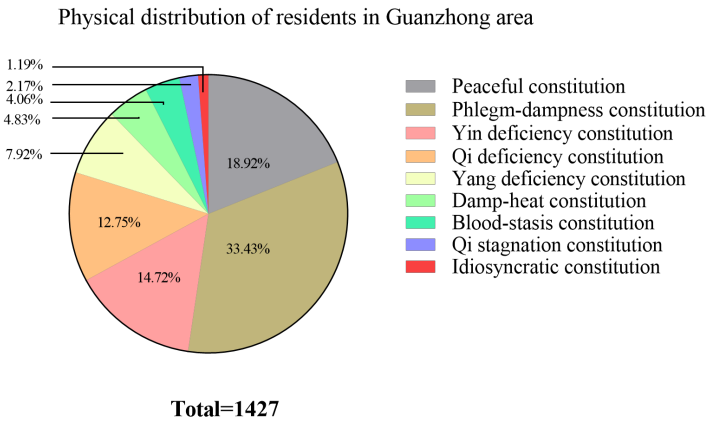


*Figure 6 Physical distribution of residents in Guanzhong area*

## 4. Discuss

The Outline of "Healthy China 2030" emphasizes that improving people's health should be the core, promoting healthy lifestyle and building a green and safe lifestyle[3]. According to the Health formula released by the World Health Organization in 2015, lifestyle accounts for 60% of physical health and is the main influencing factor of health[4]. Therefore, through the analysis of the health status and lifestyle of residents in a region, scientific, specific and targeted recommendations and strategies for the

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prevention of chronic diseases can be put forward for local residents.

### *4.1. Major health problems*

According to the results of the survey, only 39.3 percent of the residents are in a state of calm and energetic for a long time, and only 19.8 percent of the residents think they are in good health. Local residents have poor sleep conditions, 56.3% of them often stay up late or poor sleep quality affects the next day's work. The common diseases of Guanzhong residents are diabetes, hypertension, hyperlipidemia, cardiovascular and cerebrovascular diseases and other chronic diseases. Studies have shown that the prevalence of diabetes in this region is as high as 8.2%[5] and that of hypertension is 47.4% [6]. In addition, the blood pressure detection rate, awareness rate, control rate and treatment rate of hypertension in Shaanxi Province were lower than the national average level. Hypertension is the first risk factor of cardiovascular diseases, and the death of cardiovascular and cerebrovascular diseases such as acute myocardial infarction and stroke accounted for 41.24% of the total number of deaths. 13.1% of patients with dyslipidemia were aware, 7.7% were treated, and only 4.8% of patients with high cholesterol reached the blood lipid standard through treatment[7]. Local diabetes, cardiovascular and cerebrovascular diseases seriously affect the health of local residents, and the occurrence of chronic diseases is closely related to residents' daily life, behavior and eating habits.

### *4.2. The impact of lifestyle on health*

Daily living habits not only affect the disease situation of local residents, but also affect the physical distribution of local residents. The investigation showed that phlegm-dampness constitution was the most common, and peace constitution and Yin deficiency constitution were the second. The research shows that fat people have more phlegm and dampness, and phlegm and dampness constitution is one of the predisposition constitution of diabetes. In addition, residents in Guanzhong like spicy food, and there are a large number of residents with Yin deficiency constitution, which is also one of the pathological constitutions susceptible to diabetes[8]. The proportion of phlegm-dampness constitution and Yin deficiency constitution increased with the increase of obesity rate. The diet and life style of the residents in Guanzhong area determine their physical characteristics and easy occurrence of diseases.Local residents mainly eat pasta and meat, and their diet is rich in oil, salt and spicy. Compared with other areas, the pastan-based diet will make local residents ingest more maltose. Maltose is decomposed into glucose by digestive system and absorbed by small intestine, and the excess part is formed into liver glycogen and muscle glycogen, which are stored in the liver. Muscle glycogen can only supply energy to muscles. When exercise reaches a certain intensity, it will be consumed and converted into lactic acid. However, when the human body has enough energy or surplus, the excess glucose will be converted into free fatty acids distributed in the blood. Nearly half of local residents (48.6%) lack of exercise, so a large intake of pasta food will greatly increase the obesity rate and overweight rate, so there are more overweight and obese local residents, and mainly concentrated in the 45-60 years old group. With the increase of age, the BMI and waist circumference of the elderly population are increased. Obesity will make the level of leptin in the body higher than that of the normal population. Leptin can activate the renal sympathetic nerve and increase the arterial blood pressure. Mild obesity increases systolic blood pressure, while severe obesity increases diastolic blood pressure[9], and the risk of hypertension increases by 8.5% for every standard deviation increase in BMI[10]. Therefore, Guanzhong area hypertension population is relatively large. High salt diet is an important cause of diabetes and hypertension[11, 12, 13]. Residents in Guanzhong area have salty and high salt diet, accounting for 14%, and the average daily salt intake is 10.02g /d. The dietary guidelines for Chinese residents advocates that the daily salt intake should be controlled within 6 g[14], and the daily salt intake of local residents has been seriously exceeded. Public health authorities still need to strengthen health education on "limiting salt and reducing blood pressure" to make residents aware of the dangers of high salt intake. In addition, the health department should publicize and educate residents on the prevention of chronic diseases such as obesity, diabetes and hypertension, such as the advantages of low salt and low fat diet in the prevention and treatment of diabetes and hypertension, and the harm of spicy overeating on residents' physical health and related chronic diseases. It should be the primary task of health departments to make residents realize the importance of their own health and the harm of bad living habits.

In Guanzhong, second-hand smoke inhalation was serious, with smoking and drinking accounting for 33.2% and 42% respectively. Nicotine, carbon monoxide and other harmful substances produced by tobacco combustion are easy to lead to COPD, lung cancer, etc[15]. The harm of second-hand smoke is

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more serious than that of direct smoking, and its impact on human lung function is very serious. Chronic bronchitis and emphysema are mostly caused by long-term inhalation of second-hand smoke[16]. The survey shows that drinkers in Guanzhong area account for 42%, among which male drinkers (23.7%) are more than female drinkers (18.3%). Heavy drinking will increase the risk of liver damage, gout, colorectal cancer and other diseases[17-18]. Drinking alcohol will lead to endogenous phlegm-dampness in human body, and the number of residents with phlegm-dampness constitution is more than that of other types of constitution, so the residents in Guanzhong area have more obvious diabetes and rheumatic joint diseases. Smoking and drinking are very serious not only in Guanzhong but also in all provinces and cities in China[19-24]. Therefore, in daily public health interventions, smoking in public places should be prohibited, control measures should be strengthened, irregular behaviors should be warned or punished appropriately when necessary, and corresponding reward and punishment mechanisms should be established. To discourage alcohol abuse and take measures if necessary to reduce the occurrence of drink-driving, sudden death and other health hazards to oneself and others. At the same time, the residents' awareness of healthy life should be raised, and residents should be encouraged to quit smoking, abstain from alcohol or drink moderately to improve their own health and further reduce the physical and mental harm caused by second-hand smoke and drinking to others.

### *4.3. Disease prevention*

Currently, there are three internationally recognized health indicators: adequate sleep, balanced diet and moderate exercise[25]. Among them, proper exercise plays an important role in the prevention of chronic diseases. According to the analysis of the survey, only a minority of residents do exercise regularly, and nearly half (48.6%) of the residents lack exercise. Sitting for more than 3 hours in daily spare time will increase the risk of developing metabolic syndrome, and the longer the sitting time, the higher the risk[26]. Therefore, when formulating the residents' health protection strategy, the health department should consider how to encourage the residents to improve their awareness of independent exercise, increase the effective activity time, improve the health security system, and improve the sports health service mode, such as the promulgation of "national fitness", "public sports service" and other policies.

## 5. Conclusions

To sum up, residents in Guanzhong area have bad living behaviors such as smoking, drinking, high-fat and high-salt diet, lack of exercise and pasta, and their hot and spicy eating habits seriously affect the health of residents. When carrying out local basic public health services, health departments can strengthen the publicity of health concepts, popularize the concept of healthy diet management, promote the construction of local sports culture, promote residents to actively conduct physical exercise in their spare time, encourage residents to smoke less, prohibit smoking in public places, drink moderately in order to reduce the harm of drinking and second-hand smoke to others. In the mean while, corresponding reward and punishment mechanism should be established to warn or punish non-standard behavior, to improve the health awareness level of residents, guide them to establish a correct health concept and healthy life behavior, and provide a guarantee for the prevention of chronic diseases and a healthy life.

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