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The Relationship Between Dementia and Disease

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I. Introduction

In contemporary society, the accelerated pace of life and alterations in dietary habits have led to a surge in chronic diseases. These ailments are intricately linked to individuals' dietary patterns and exercise habits.

Dementia, considered one of the three poisons in Buddhism alongside greed and hatred, is seen as a significant contributor to both physical and mental ailments in humans. Modern individuals, driven by erroneous beliefs and an excessive pursuit of material desires and palatable flavors, overindulge in fats, salt, and sugar, coupled with a sedentary lifestyle, which predisposes them to metabolic syndrome, characterized by hypertension, hyperlipidemia, and hyperglycemia. Notably, hyperglycemia serves as the hallmark of diabetes.

This paper, adopting a medical perspective, will employ a literature review methodology, drawing upon medical literature and scriptures, to investigate the correlation between dementia and diseases, with a particular focus on the relationship between dementia and diabetes. The primary objective is to substantiate the claim that dementia constitutes the root cause of various ailments, especially diabetes.

The paper will be structured as follows:
Firstly, the definitions of " dementia " and disease will be explored from both medical and Buddhist perspectives.
Secondly, the relationship between " dementia " and diabetes will be examined from a medical standpoint. Through the analysis of specific cases, the connections between fats, salt, sugar, exercise, and diabetes will be elucidated, revealing how the concept of " dementia " can lead to the development of diabetes.
Finally, the conclusion will posit that the unhealthy dietary habits and lifestyles engendered by " dementia " are the fundamental causes of chronic diseases such as diabetes. The excessive consumption of fats, salt, and sugar, as well as a sedentary lifestyle, exert profound negative impacts

on health. Modifying these detrimental habits is pivotal to preventing and managing diabetes. It is hoped that this research will foster a heightened awareness of healthy lifestyles, thereby reducing the incidence of chronic diseases like diabetes and mitigating the deterioration of quality of life and the escalating burden of healthcare costs that ensue.

Ⅱ. Definitions of Dementia and Disease

In the fourteenth issue of our journal, "A Discourse on Doubt and Disease," disease has been defined as a painful condition that impairs both the body and mind. As this definition has already been established, it will not be further elaborated on in this paper.

In Buddhism, " dementia " is synonymous with ignorance, wrong views, and foolishness. This concept has been extensively explored in the fifth issue of our journal, "A Discourse on dementia." As stated in the 8th volume of the Shurangama Sutra: "Eighthly, when views and practices are intertwined, it is like the Sakayan view of precepts, transgressions, and grasping, which leads to a mistaken understanding of karma and a resistance to the arising of phenomena, resulting in kings, ministers, officials, and witnesses citing scriptures as evidence. Just as travelers meet each other on the road, people with distorted views deviate from the right path, remain in a state of ignorance, yet believe they are enlightened. Acting on such foolish views, they fail to achieve their desired goals. This is the consequence of following ' dementia ' – a discrepancy between one's intentions and outcomes."[1]

In contemporary medicine, " dementia " can be interpreted as unhealthy dietary habits and lifestyles, often stemming from a lack of or disregard for health knowledge. For instance, people have long been indoctrinated with erroneous beliefs, foolishly believing that physical labor is too strenuous and that a more leisurely lifestyle is preferable. They assume that consuming a high-quality and abundant diet will guarantee

[1] Paramartha, trans., *The Surangama Sutra*, vol. 8, Taisho Tripitaka, vol. 19, p. 144.

good health. As living standards have improved, people have increasingly indulged in rich and fatty foods, leading to excessive intake of oils, salt, and sugar, coupled with a sedentary lifestyle. This overconsumption has resulted in a range of health problems.

Moreover, the concept of "food as medicine" suggests that each food item has its specific preparation methods and recommended consumption quantities. Arbitrarily altering these methods or excessively consuming certain foods can transform beneficial substances into harmful ones. These practices, rooted in " dementia," contribute to various health ailments.

Ⅲ .Relationship Between Dementia and Diabetes

Ignorance, coupled with a lack of health knowledge and proper lifestyle habits, often drives individuals to indulge in excessive consumption of unhealthy foods, leading to excessive intake of fats, salt, and sugar. These dietary patterns can result in various diseases, including diabetes. Diabetes is a chronic condition that occurs when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar levels, and hyperglycemia, or high blood sugar, is a common consequence of uncontrolled diabetes. Over time, diabetes can cause serious damage to many parts of the body, particularly the nerves and blood vessels. Currently, the diagnosis of diabetes primarily relies on blood glucose levels. Hyperglycemia is the most common clinical manifestation. The cornerstone of diabetes management includes diet, exercise, and medication. Typical symptoms of diabetes include increased thirst, increased urination, increased appetite, and weight loss. However, the symptoms of type 2 diabetes may be mild and may not be diagnosed until years after the onset of the disease and the development of complications. Large-scale studies both domestically and internationally have shown that nearly 40% of cases remain undiagnosed. Therefore, adhering to a healthy

diet and engaging in regular physical activity is crucial for preventing and managing diabetes.[2]

(1) Excessive dietary fat intake, such as from a high-fat diet, can lead to obesity and increase the risk of insulin resistance, thereby contributing to type 2 diabetes. Consuming excessive amounts of saturated and trans fats can exacerbate insulin resistance, making blood glucose control more difficult and also damaging cardiovascular health, further complicating the condition for diabetes patients.

(2) Excessive salt intake can lead to hypertension, a common complication of diabetes. Hypertension can also damage kidney function, which is particularly harmful for people with diabetes as they are already at increased risk of kidney disease.

(3) Excessive sugar intake can cause blood sugar levels to fluctuate, increasing the risk of insulin resistance and contributing to obesity, further increasing the risk of developing diabetes.

Numerous medical case studies support these findings. Patients who have adopted unhealthy dietary habits characterized by high fat, salt, and sugar intake have been diagnosed with type 2 diabetes. By modifying their diets to reduce the intake of these substances, many patients have experienced significant improvements in their blood glucose control. A specific research study, for example, has demonstrated a clear link between dietary fat intake and the risk of developing diabetes.

> A research team led by Professor Zheng Jusheng at West Lake University published a study in *Diabetes Care* exploring the relationship between n-6 polyunsaturated fatty acids (PUFAs), such as those found in corn oil and sunflower oil, and the risk of diabetes.
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> Based on the Guangzhou Nutrition and Health Cohort, the team conducted a six-year follow-up study of approximately 4,000 urban

[2] Diabetes Prevention Handbook, Department of Health, Executive Yuan, Republic of China (Taiwan), https://www.hpa.gov.tw/Pages/Detail.aspx?nodeid=359&pid=1235, accessed August 11, 2024.

middle-aged and elderly residents (aged 45-75) recruited between 2008 and 2013 in Guangzhou. By analyzing participants' fecal, blood, and urine samples, as well as medication and dietary questionnaires, the researchers found a positive correlation between γ-linolenic acid, a blood biomarker of n-6 PUFAs, and the risk of developing diabetes.

The results indicated that dietary n-6 PUFAs may reduce the diversity of the gut microbiome, thereby increasing the risk of diabetes. This implies that excessive intake of n-6 fatty acids (a major source of which is cooking oil) may negatively impact the gut microbiota, leading to an elevated risk of diabetes. [3]

This research case demonstrates a positive correlation between the excessive consumption of certain cooking oils and the risk of diabetes.

Let's examine another case: the increased risk of type 2 diabetes associated with high-salt diets. According to a study, individuals who frequently add salt to their food have nearly a 40% higher risk of developing type 2 diabetes. Since salt enhances the taste of food, people tend to add various salty seasonings to their meals, leading to overeating and increasing the risks of obesity and inflammation. [4] Additionally, excessive salt intake can inhibit insulin secretion, leading to elevated blood glucose levels. These factors collectively contribute to an increased risk of diabetes. A large-scale cohort study conducted in Sweden supports these findings:

A new study revealed that for every gram of sodium (or 2.5 grams of salt) consumed daily, the risk of developing type 2 diabetes

[3] The Association Between Dietary Oil and Diabetes Risk, ScienceNet, https://news.sciencenet.cn/htmlpaper/2020/8/20208101584667358024.shtm, accessed August 11, 2024.

[4] Diabetes | High Salt Increases Diabetes Risk by 40%! 3 Types of People at Highest Risk, 10 Foods to Lower Blood Sugar: Walnuts, Avocado, HK01, 糖尿病｜高鹽增糖尿風險 40%！3 類人最高危 10 食物降血糖合桃牛油果 (hk01.com)，accessed August 11, 2024.

> increased by 43%. For individuals with latent autoimmune diabetes in adults (LADA), a subtype of type 1 diabetes, the risk increased by a staggering 73% for each additional gram of sodium consumed. Among those with high sodium intake, the risk of developing type 2 diabetes was 58% higher compared to those with low intake. Notably, individuals with a high genetic predisposition to diabetes who consumed high amounts of sodium had nearly quadruple the risk compared to those with low intake. [5]

The research findings clearly demonstrate a significant correlation between high salt intake and an increased risk of diabetes.

Similarly, a close relationship exists between sugar consumption and diabetes. While there is currently no direct evidence proving that high sugar intake causes diabetes, excessive sugar consumption can overburden the pancreas. As the pancreas produces insulin to convert glucose from food into energy, a long-term high-sugar diet may accelerate the deterioration of pancreatic function, increasing the risk of diabetes. For instance, sugary drinks and sweets rapidly elevate blood glucose levels, leading to a surge in insulin secretion. If insulin is unable to effectively convert glucose into energy, blood glucose levels will continue to rise, eventually leading to insulin resistance and type 2 diabetes.[6]A case study examining the relationship between excessive sugar intake and diabetes illustrates this point:

> A 43-year-old female patient with a history of elevated blood glucose levels and a family history of diabetes reported a preference for sweet foods and a sedentary lifestyle.

[5] New Research: High Salt Diet May Increase Risk of Type 1 and Type 2 Diabetes, MedSci, https://www.medsci.cn/article/show_article.do?id=45dc11356321, accessed August 11, 2024.

[6] Understanding Diabetes: Causes, Symptoms, Diagnosis, Prevention, Heho Health, 認識糖尿病：原因、症狀、診斷、預防 (helloyishi.com.tw)，accessed August 11, 2024.

According to a "1+X" personalized health check-up, she was diagnosed with prediabetes, overweight, moderate fatty liver, a right thyroid nodule, and reduced bone mineral density, along with gut dysbiosis.

A multidisciplinary and digital health management model was applied to provide comprehensive care for this patient. A nutritionist and an exercise physiologist developed personalized dietary and exercise plans, while a health coach utilized the "TangGuanJia" WeChat mini-program to provide health education, supervision, and follow-up.

After three months of lifestyle intervention, the patient's metabolic indicators, including BMI, postprandial 2-hour blood glucose, and triglycerides, showed significant improvement. Therefore, this multidisciplinary and digital health management model for prediabetes can be widely promoted.[7]

This case highlights the severe harm that excessive sugar intake can inflict on individuals with prediabetes. Conversely, adopting a healthy diet with reduced intake of oils, salt, and sugar can significantly lower the incidence of diabetes.

According to the International Diabetes Federation (IDF), the global prevalence of diabetes continues to rise. The case patient successfully controlled prediabetes symptoms through multidisciplinary and digital health management, demonstrating the importance of comprehensive care. Lifestyle interventions, a key component of this comprehensive management, are considered the first-line strategy for individuals with prediabetes. The Da Qing Study, along with subsequent studies like the US Diabetes Prevention Program (DPP) and the Finnish Diabetes Prevention

[7] A case study of "Multidisciplinary and Digital Health Management for Individuals with Prediabetes," Chinese Medical Association, 糖尿病前期者 〞多学科+数字化 〞健康管理 1 例 - 中国临床案例成果数据库(yiigle.com), accessed August 11, 2024.

Study (DPS), are considered landmark studies in the field of primary prevention of type 2 diabetes. These studies have consistently demonstrated that lifestyle interventions can effectively reduce the incidence of diabetes and cardiovascular disease in individuals with prediabetes. While dietary and exercise interventions are the cornerstones of lifestyle modifications, individualized plans and long-term monitoring are crucial for enhancing adherence among individuals with prediabetes.[8] A case study of a patient who successfully controlled diabetes through dietary intervention exemplifies this point:

> A 40-year-old female patient was diagnosed with prediabetes on September 6, 2021, with a fasting blood glucose level of 6.59 mmol/L and a BMI of 36 kg/m². Subsequently, under the guidance of healthcare professionals, the patient adopted a high-protein, calorie-restricted diet for weight management. After four months of intervention, on December 21, 2021, the patient's BMI decreased to 29.8 kg/m², representing a 24% weight loss, and fasting blood glucose normalized at 5.87 mmol/L.[9]

The case study underscores the positive impact of a healthy diet on diabetes management, while simultaneously confirming the increased risk of diabetes associated with unhealthy eating habits. A healthy eating plan involves making informed choices about both the types and quantities of food consumed daily. For individuals with diabetes, understanding how different foods affect blood glucose levels is particularly crucial. This knowledge encompasses not only the types of food ingested but also the portion sizes and combinations of foods consumed at meals and snacks. Additionally, selecting low-fat, low-sodium, and low-sugar foods, coupled with regular physical activity, is essential for managing blood glucose and blood pressure, thereby effectively preventing and controlling diabetes. However, the

[8] Same as note 7.

[9] "Five Classic Cases of Diabetes Management in 2021: Do You See Yourself in Them?", Tencent News, https://new.qq.com/rain/a/20220130A09KOT00, accessed August 11, 2024.

implementation of these dietary and lifestyle modifications hinges upon accurate and informed understanding. Conversely, misguided beliefs that lead to the consumption of high-fat, high-sodium, and high-sugar foods, combined with a sedentary lifestyle, inevitably increase the risk of developing diabetes.

The relationship between physical activity and diabetes has become increasingly evident in recent decades. As industrialization has transformed our lifestyles, reducing the need for physical labor, muscle tissue no longer requires significant energy storage in the form of carbohydrates and fats. Consequently, excess energy is stored as fat, contributing to the prevalence of obesity and, subsequently, diabetes in industrialized nations. Muscle is a primary site for glucose uptake and storage. With decreased physical activity, insulin sensitivity declines, leading to impaired glucose uptake and hyperglycemia. The sedentary lifestyle, coupled with excessive caloric intake, has been identified as a major contributing factor to the development of diabetes, particularly type 2 diabetes, which is closely linked to obesity. The modern preference for sedentary activities and the belief that less movement is better have exacerbated this issue. Regular physical activity not only aids in weight management but also improves insulin sensitivity, leading to rapid reductions in blood glucose levels. These benefits are crucial for both preventing and managing diabetes and can also help prevent or manage the development of large vessel diseases.

The Diabetes Prevention Program (DPP) in the United States has also demonstrated that 30 minutes of moderate-intensity physical activity daily, primarily brisk walking, coupled with a weight loss of 4.5-6.8 kilograms, can reduce the incidence of diabetes by 58% in individuals at high risk due to obesity and slightly elevated blood glucose levels over a three-year period. Even in non-diabetic individuals, physical inactivity can lead to glucose intolerance, and a significant proportion of diabetes cases are linked to a general lack of regular exercise. Regular physical activity enhances insulin sensitivity, particularly in individuals with obesity, leading to significant improvements in glucose metabolism.[10] Clearly, regular exercise plays a critical role in both the prevention and management of diabetes. Conversely, a sedentary lifestyle increases the risk of developing diabetes.

[10] Same as note 2.

The aforementioned cases provide compelling evidence of the pivotal role of a healthy diet and regular physical activity in maintaining overall health. Erroneous beliefs leading to excessive consumption of fats, sodium, and sugars, coupled with a sedentary lifestyle, have detrimental effects on health. By adopting a healthier lifestyle that emphasizes a balanced diet and regular exercise, individuals can significantly reduce their risk of developing diabetes. Conversely, indulging in unhealthy eating habits due to ignorance or a desire for immediate gratification can lead to the development of diabetes and its associated complications, including hypertension, hyperlipidemia, cardiovascular disease (stroke and heart disease), kidney disease, and retinopathy. These cases underscore the detrimental impact of ignorance and poor lifestyle choices on the development of diabetes.

Similarly, in Buddhist scriptures, " dementia" is considered one of the root causes of various afflictions and diseases. According to the Āgama S ū tras, dementia leads to erroneous views and actions, ultimately causing both physical and mental suffering. [11]Furthermore, the Mah ā y ā na Mah ā parinirv ā na S ū tra states that dementia and delusions give rise to samsara, the cycle of birth, aging, sickness, and death. [12]Additionally, the Buddha, in the *Buddha-Physician Sūtra*, mentions that excessive eating due to dementia can lead to various ailments.[13]

In conclusion, whether from a medical perspective, as evidenced by specific cases linking " dementia " to diseases like diabetes, or from Buddhist scriptures, it can be inferred that " dementia " is a fundamental cause of various diseases, including diabetes.

[11] Lin, Cheng-de. "A Comparative Study of Views in the Āgama S ū tras." ,https://ndltd.ncl.edu.tw/cgi-bin/gs32/gsweb.cgi?o=dnclcdr&s=id=%22103NTU05259016%22.&searchmode=basic, accessed August 11, 2024.

[12] Zhang, Xiaofen. "The Integration of Reality and Illusion in the Mahāyāna Mahāparinirvāna Sūtra: A Study Based on the Zhancha Shan'e Yebaō Jing." ,https://cbhc.crs.cuhk.edu.hk/main2/wp-content/uploads/2019/07/9.-%E5%BC%B5%E6%9B%89%E8%8A%AC.pdf, accessed August 11, 2024.

[13] Zhū Lǜ Yán Gōng Zhī Yuè, trans. *Buddha-Physician Sūtra*, vol. 1. "Eating too much has five faults: first, excessive sleep; second, many illnesses; third, excessive lust; fourth, inability to recite sutras; fifth, excessive attachment to the world." Taishō Tripitaka, vol. 17, p. 738.

Ⅳ. Conclusion

This paper aims to explore the relationship between dementia and diseases, particularly focusing on the connection between dementia and diabetes from a medical perspective. Through the analysis of specific cases, it is evident that the unhealthy lifestyles and dietary habits induced by dementia are the root causes of chronic diseases such as diabetes. Excessive consumption of oils, salt, and sugar, coupled with a lack of physical activity, poses significant health risks.

However, this paper does not delve deeply into specific methods for preventing and controlling diabetes, nor does it extensively discuss the possibility of dementia leading to other diseases. It is hoped that future research opportunities will allow for a more in-depth exploration of these areas, providing the public with more comprehensive and up-to-date information.

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Ⅱ. Others

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