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Original scientific paper

DIABETES AND LACTOSE INTOLERANCE AND CORRELATION BETWEEN MEN AND WOMEN OF DIFFERENT AGE GROUPS

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Abstract

Introduction: Diabetes (diabetes mellitus) is a chronic disease caused by a lack of insulin due to the body's inability to produce insulin at normal levels, or due to insulin resistance, a condition in which insulin-resistant body cells try to regulate of blood sugar levels. Purpose of the paper: Diabetes is also the leading cause of new cases of blindness among adults aged 20-74 and is the leading cause of the last stage of renal failure. In addition diabetes is the leading cause of limb amputation, as well as the leading cause of heart disease. Sugar can raise blood triglyceride levels, they are a fatty substance found in the human body and can contribute to heart disease.Material and Method: A total of 300 patients were included in this study. The results of the lactose intolerance test were obtained at the Skopje Clinic and other biochemical analyzes were obtained from the scientific research laboratory in Tetovo. The surveyed patients were divided into three age groups. Results: In control patients, we encounter a normal glucose level, both in the age groups included in the study, and in the second and third age groups, the glucose level is increasing. Immunoglobulins are the main indicator for the diagnosis of immune reactions, lactose intolerance also exhibits an allergic reaction in the body and it has been observed that in patients with lactose intolerance we have an increase in immunoglobulins A and E.

Discussion: In terms of diabetes and lactose intolerance, there are a large number of people in the world who suffer from this disease. Diagnosis, follow-up, prevention and treatment are important aspects to raise the first barrier to those known as the chain effects of a pathology. Even in the case of diabetes, the biggest threat remains the touch and damage to other organs. Also, diabetes has a high economic cost as a person with diabetes needs medication which must be treated in a timely manner, as it causes serious complications such as cardiovascular disease, blindness, kidney disease up to renal failure and kidney failure, amputations. of feet etc. Conclusions: True lactose intolerance stems from the inability to digest lactose, the sugar in milk and dairy products. Symptoms of lactose intolerance include gas, cramping and bloating after consuming dairy. Many other things including milk allergy can cause digestive symptoms after consuming milk, however, so it isn't safe to assume that you're lactose-intolerant simply because you occasionally have gut trouble. A 1999 article published in the "American Journal of Clinical Nutrition" notes that lactose intolerance is generally over reported and over diagnosed.

Keywords: diabetes, diet, insulin, blood glucose, pancreas

1. Introduction

Diabetes (diabetes mellitus) is a chronic disease caused by a lack of insulin due to the body's inability to produce insulin at normal levels, or due to insulin resistance, a condition in which insulin-resistant body cells try to regulate of blood sugar levels [1].

Due to the fact that type I diabetes is often caused by inherited factors, it is difficult to take preventive measures, but on the other hand there is much that can be done to prevent type II diabetes, which is the most common form of diabetes. Adults who are at high risk for developing type II diabetes may be prevented or delayed from starting by changing their lifestyle, including proper

diet, increased nutritional quality, reduced stress, and exercise. Once one's diet has improved, cleansing and detoxification techniques can be used to further improve health [2].

If you have been diagnosed with diabetes, controlling your glucose levels is of primary importance in preventing or delaying complications. You will also need to check your high blood pressure, high cholesterol and triglyceride levels.

In addition, you should seek the alternative professional care we offer for the detection and treatment of eye, heart, kidney and foot problems. Early detection and treatment of kidney disease can reduce the development of kidney damage by 50-80%.

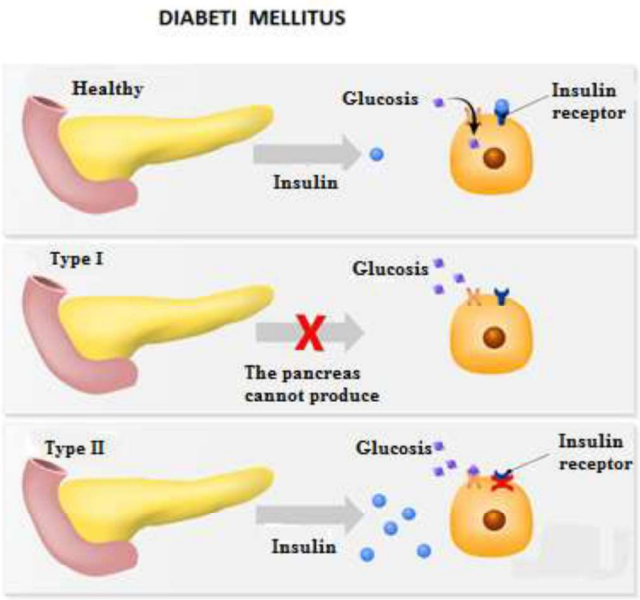


Figure 1. Schematic representation of the types of diabetes mellitus

Aromatherapy: The essential oils of cedar, olive or juniper can relieve symptoms when massaging the lower left side of the body, where the spleen and pancreas are located.

Food: Proper diet is critical for the prevention and treatment of both types of diabetes, especially for type II diabetes [3].

Treating diabetes and taking care of our diet

In general, people self-diagnose lactose intolerance and are reluctant to go to the doctor when they have mild clinical signs. They seek help only when digestive tract concerns are very pronounced. Patients start their own exclusionary diet, a diet that eliminates milk and its products. Eliminating diet is also a way to make a diagnosis. But for it to have value it must be rigorous, so it requires advice from a dietitian and is strictly followed. The diet should also be continuous and sufficient in time to clearly assess whether or not the condition is improving. In this case, the elimination of all dairy products should completely eliminate the symptoms, if the real cause is intolerance to this component of milk. If a person has intolerance, within a few hours after drinking a glass of milk gastrointestinal symptoms will develop. It is important that milk is fat-free in order to eliminate the possibility of fat intolerance [4].

For the accurate determination of lactose intolerance, special laboratory tests are used according to the doctor's advice. Also, the accuracy of the diagnosis is confirmed by biopsy of intestinal cells by measuring the level of lactase in these cells. Biopsy can be obtained through endoscopic examination of the small intestine.

Purpose of the paper

- Changes in diabetes values and lactose intolerance in men and women of different age groups are analyzed.
- Research on the correlation between lactose intolerance values and diabetes values.
- Research on the correlation of sugary drinks, such as carbonated juices, soda, etc.
- Excess sugar is associated with the development of metabolic syndrome.
- Research the correlation between hyperlipidemia and hyperglycemia values in patients of different age groups, a group of health effects related to insulin consumption that includes high blood pressure, obesity, increased triglycerides, high cholesterol and diabetes.
- Research to determine lactose intolerance in patients of different age groups of females and males.

Diabetes is also the leading cause of new cases of blindness among adults aged 20-74 and is the leading cause of the last stage of renal failure. In addition diabetes is the leading cause of limb amputation, as well as the leading cause of heart disease.

Sugar can raise blood triglyceride levels, they are a fatty substance found in the human body and can contribute to heart disease.

Material and Method

A total of **300 patients** were included in this study. The results of the lactose intolerance test were obtained at the Skopje Clinic and other biochemical analyzes were obtained from the scientific research laboratory in Tetovo. The surveyed patients were divided into three age groups:

- First age group - 20 patients (Controls)
- Second age group - 150 patients
- Third age group - 130 patients

Blood samples were taken from these patients, where serum glucose and immunological status such as immunoglobulins A and immunoglobulins E. were analyzed.

Tests for diagnosing lactose intolerance include a test to measure the level of hydrogen in the breath, which is the most commonly used test for diagnosing lactose intolerance.

Air samples are taken at different time intervals as the patient drinks a liquid which contains a standard amount of lactose. With lactose intolerance, the amount of undigested lactose is broken down by bacteria in the small intestine, producing large amounts of hydrogen. Such an amount of hydrogen passes into the circulation and then leaves through exhalation through the lungs. Increasing the level of hydrogen in the breath after a certain time is the main indicator for lactose intolerance.

- Blood tests for lactose intolerance - sometimes this test helps diagnose lactose intolerance, blood samples are collected and tested for glucose at certain time intervals after a standard oral dose of lactose. If glucose levels do not rise, lactose intolerance may occur.

- Fecal pH testing - is a routine test in the laboratory, mainly performed on infants or children in whom no other samples can be taken for research; mainly in patients with lactose intolerance, feces is acidic.

Work progress:

In the test tubes are pipetted:

Reagents	**Proof (µL)**	**Standards (µL)**	**Analysis (µL)**
Copy	-	-	10
Standard	-	10	-
GOD-PAP Reagent	1000	1000	1000

The test tubes are mixed, left for 25 minutes, at room temperature (+ 25ºC). The absorbance of the standard and analysis is measured according to the blind test at 500-546 nm.

Costing:

Glucose (mmol/L) $= \frac{A\ analisys}{A\ standard}$ x 5.55

Referent values:

3.52 – 6.5 mmol/L

Vidas apparatus - is designed automatically that enables fast identification, it is also highly valued worldwide for its flexibility, simplicity and accuracy. This type of apparatus is composed of two independent panels that possess 6 - test sections, where the processing of different parameters can be done at the same time, is suitable for several types of tests (up to 80 parameters of immunity and infectious diseases). Kit reagents are based on specific doses, with ready-to-use reagents (1 patient = 1 test), their identification is automatic through the barcodes they possess. These reagents are special tracks dedicated to specific types of analysis. , a reagent kit is divided into several small fields where each field has an adequate content for the type of analysis to be performed, at the beginning of the reagent kit there is a blank field which is dedicated to the patient's serum to be performed analysis.

Figure 2. Vidas mini apparatus - apparatus for measuring immunoglobulins - immuno essey method (Albimedika Laboratory - Tetovo)

Principity of work: first after we have turned on the apparatus, the calibration of the apparatus is done (calibration is done every 14 days), then we take the kit tracts which are packaged in special boxes and we put a kit in the apparatus and then we take it with 100 serl serum pipettes and place in the appropriate place (which has a kit traka), then put the trak kit well in the apparatus and close the lid, then give the patient data (Name, surname, patient number, year el indie, date of receipt) in the menu of the device, at the same time we make the selection of the type of analysis (depending on which analysis we want to do) and finally we press the start button.

Vidas method - Vidas is a device that determines the level of immunoglobulins in the blood-serum. This is a method of detecting IgG antibodies in the human or plasma serum (EDTA) using the ELFA (Enzim fluerescent assay) technique.

The serological method (as is the case with immunosuppressed enzymes) is a rapid method, with a very high sensitivity, non-invasive and inexpensive. One kit contains 60 ready-made strips (tests) and for standardization of the test the screw apparatus must be calibrated with:

- C1- ready-to-use controls
- S1- ready-to-use calibrator - duplicates
- R1- diluents
- Barcode card-read in vidas

The strip consists of 10 spaces:

- the serum is placed in the first space
- the second, third and fourth are empty
- the fifth contains conjugates of alkaline phosphates and sodium asides
- The sixth and seventh contain laundry buffer
- The eighth contains diluents
- the ninth contains lafer puffer
- substrate kiveta

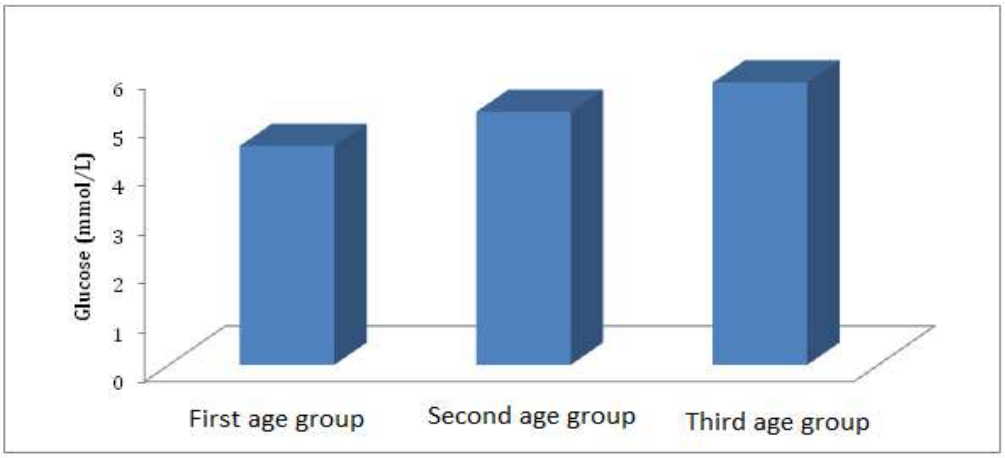
Figure 3. Giving insulin to patients with diabetes

Results

From the samples analyzed by these patients, the level of glucose and immunoglobulins A and E. The achieved results are presented in tabular form and by means of graphs.

Table 1. Glucose levels in patients with lactose intolerance

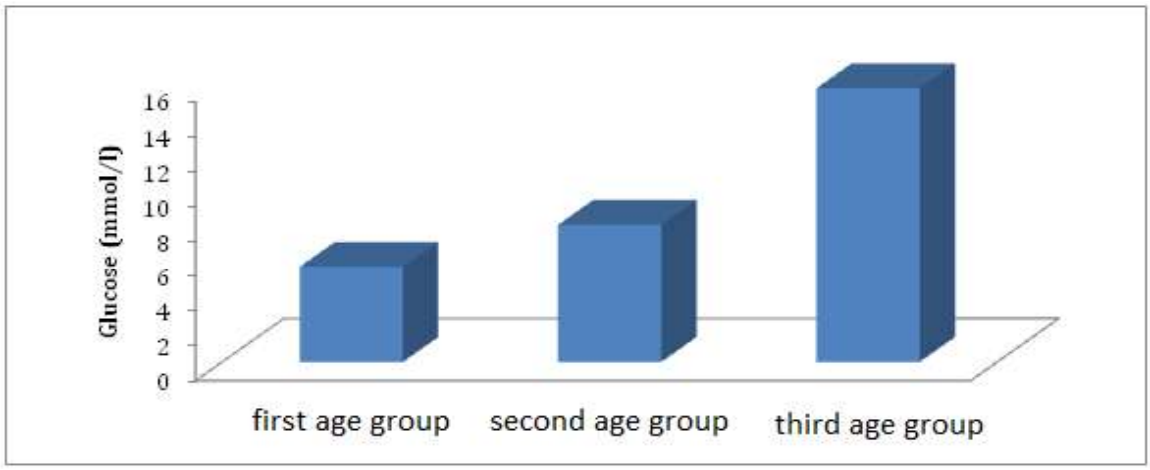
	The first age group	The second age group	The third age group
Glucose (mmolL)	4.5	5.2	5.8



Graph 1. Glucose levels in patients diagnosed with lactose intolerance

Table 2. Glucose levels in patients diagnosed with diabetes.

	The first age group	The second age group	The third age group
Glucose (mmolL)	5.5	7.9	15.7



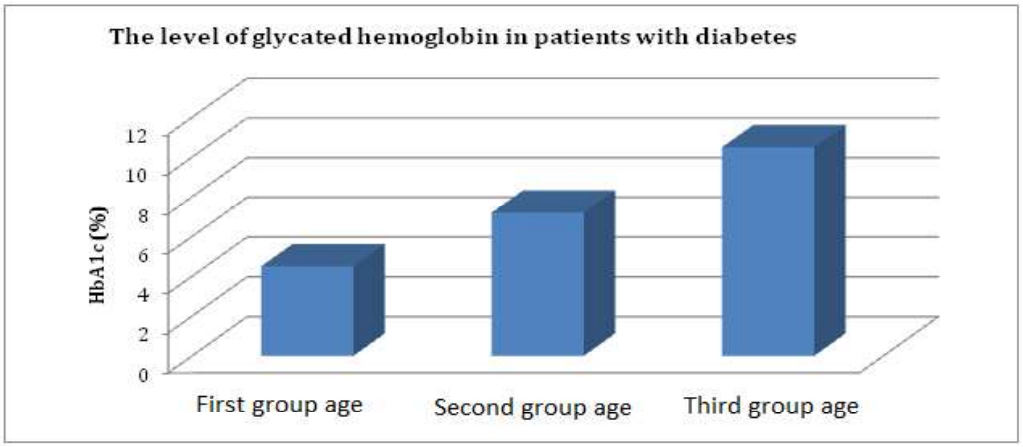
Graph 2. Glucose level in patients with diabetes

In control patients, we encounter a normal glucose level, both in the age groups included in the study, and in the second and third age groups, the glucose level is increasing.

Immunoglobulins are the main indicator for the diagnosis of immune reactions, lactose intolerance also exhibits an allergic reaction in the body and it has been observed that in patients with lactose intolerance we have an increase in immunoglobulins A and E. are shown in the following graph:

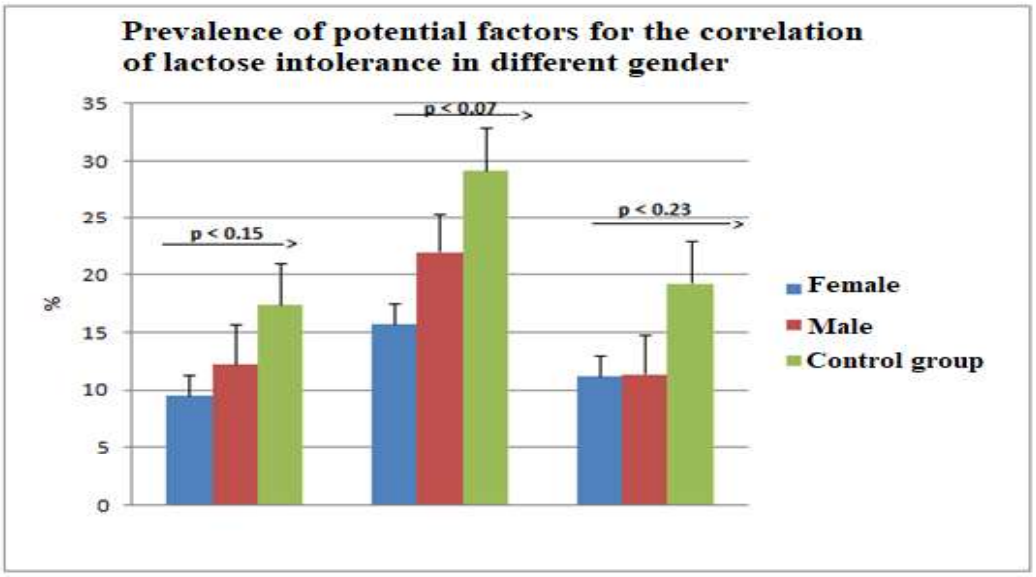
Table 3. The level of glycated hemoglobin (HbA1c) in patients with diabetes

	The first age group	The second age group	The third age group
HbA1c (%)	4.5	7.2	10.5



Graph 3. The level of glycated hemoglobin in patients with diabetes

From the graphs we understand that patients lactose intolerant also have lower blood glucose levels or present with a current hypoglycemia because we do not have the breakdown of lactose into glucose and galactose.



Graph 4. Prevalence of potential factors for the correlation of lactose intolerance in different gender

Discussion

According to this study, we have concluded that diabetes is one of the main causes that lead to many serious health consequences, greatly affecting human metabolism. In this paper, as a result, we have attacked patients of different age groups, mainly from the vicinity of Tetovo.

In terms of diabetes and lactose intolerance, there are a large number of people in the world who suffer from this disease. Diagnosis, follow-up, prevention and treatment are important aspects to raise the first barrier to those known as the chain effects of pathology. Even in the case of diabetes, the biggest threat remains the touch and damage to other organs. Also, diabetes has a high economic cost as a person with diabetes needs medication which must be treated in a timely manner, as it causes serious complications such as cardiovascular disease, blindness, kidney disease up to renal failure and kidney failure, amputations of feet etc.

Diabetes increases the cost of a diabetic patient by 2-2.5 times. Also a very common disease is lactose intolerance which leads to the appearance of many diseases and health problems which are manifested by abdominal pain and bloating and other distinguishing symptoms of the digestive tract. This is due to the fact that the body cannot absorb the milk components, thus leading to the appearance of allergies, which in medical language is known as lactose intolerance.

These concerns can affect different human age groups of both sexes. Depending on the symptoms, the care that should be followed to avoid pain or other complications in the body is determined. In the milder stages it is advisable to reduce to zero the consumption of dairy products, while in the more severe stages other medical therapies are prescribed that the patient should follow.

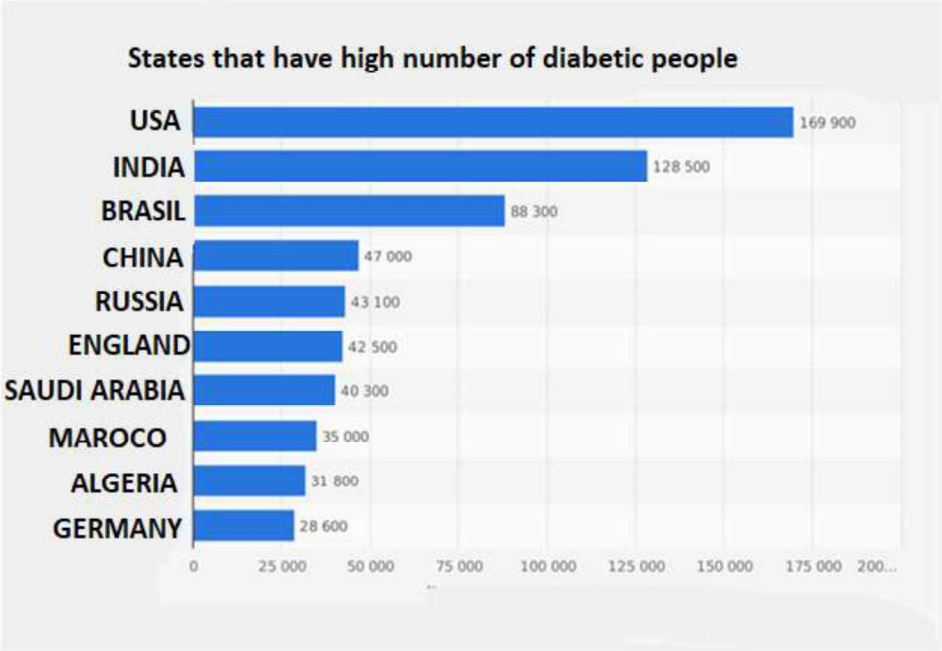


Figure 4. Percentage of diabetes in children and adolescents.

Some health reports indicate that about 33% of people worldwide are lactose intolerant. It is known that women who show intolerance during pregnancy, have previously shown some symptoms of hypolactasia, it remains to be done more detailed research on the effect of maternal intolerance on the developing child. According to statistics, Europe is known as the region with the lowest prevalence of hypolactasia, according to data in Greece hypolactasia is somewhere around 38-45%, while in Italy 18-52% and in France 37-47%.

Conclusion

True lactose intolerance stems from the inability to digest lactose, the sugar in milk and dairy products. Symptoms of lactose intolerance include gas, cramping and bloating after consuming dairy. Many other things including milk allergy can cause digestive symptoms after consuming milk, however, so it isn't safe to assume that you're lactose-intolerant simply because you occasionally have gut trouble. A 1999 article published in the "American Journal of Clinical Nutrition" notes that lactose intolerance is generally over reported and over diagnosed.

For many women, the ability to digest lactose improves during pregnancy, especially later in pregnancy. As a result, even if you're normally lactose intolerant, you might be able to drink milk and eat other dairy products without discomfort.

Calcium helps build your baby's bones and teeth. The Institute of Medicine recommends 1,000 milligrams of calcium a day during pregnancy. Pregnant teens need 1,300 milligrams a day. It can be hard to meet this requirement if you don't include milk or other dairy products in your diet.

However, if you experience lactose intolerance during pregnancy or dislike milk or other dairy products, consider these tips:

- Choose other calcium-rich foods, such as sardines, salmon with bones, tofu, broccoli, spinach, and calcium-fortified juices and foods.
- Take calcium supplements.
- Many people who are lactose intolerant can usually drink small portions of milk, such as a half cup, with a meal and have minimal or no symptoms.
- Try lactose-free or lactose-reduced products, including milk, cheese and yogurt.
- Yogurt and fermented products, such as cheeses, are often better tolerated than is regular milk. The lactose in yogurt is already partially digested by the active bacteria cultures in yogurt.

If you're concerned about how much calcium you're getting, talk to your health care provider.

During pregnancy, your digestive tract slows down significantly due to the hormones that your body is producing. The purpose of this digestive slow down is to help maximize your ability to extract nutrients from your food. Unfortunately, side effects of a slower gut include more gas, cramping, bloating and constipation. This makes it quite easy to assume that you've become lactose-intolerant. Still, most research suggests that pregnancy doesn't negatively impact a woman's ability to digest lactose.

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