

***DESCRIPTION OF URINE SEDIMENT IN DIABETES  
MELITUS PATIENTS AT BUNDA THAMRIN HOSPITAL  
MEDAN IN 2023***

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***ABSTRACT***

*Diabetes Mellitus (DM) is a group of chronic diseases caused by the pancreas being unable to produce the hormone insulin to meet the body's needs. This disease is characterized by an increase in blood glucose levels or hyperglycemia. Patients with diabetes mellitus are at risk of developing urinary tract infections due to immune factors, namely in the form of leukocyte disorders. High concentrations of sugar in the urine (glucoseuria) can inhibit leukocyte activity, in connection with that we need to look at the description of urine sediment in DM patients. The purpose of this study was to find out the results of examining the appearance of urine sediment in diabetes mellitus patients at Bunda Thamrin Hospital Medan in 2023. This type of research is descriptive analytic. The sample used is morning urine as much as 20 samples. Urine Sediment Examination Results in Patients with Diabetes Mellitus at Bunda Thamrin Hospital Medan in 2023 found that Erythrocytes increased entirely in 20 samples and Leukocytes obtained normal results in 12 samples (60%) and results increased by 7 samples (35%), then in epithelium found 12 samples (60%) normal and 8 samples (40%) increased, and in oxalate crystals found in 15 samples (75%) and 5 samples (25%) increased. It can be concluded that people with diabetes mellitus must maintain a healthy diet and exercise diligently, and always control blood sugar levels.*

**Keyword : Diabetes Mellitus, urine sediment**

## **PRELIMINARY**

Diabetes Mellitus (DM) is a group of chronic diseases caused by the pancreas being unable to produce the hormone insulin (a hormone that regulates blood glucose) to meet the body's needs. Diabetes is a non-communicable disease but has a priority for follow-up by the world because the number of cases and prevalence has continued to increase over the last few decades. Diabetes Mellitus is a metabolic disease characterized by hyperglycemia due to abnormalities in insulin secretion, insulin action, or both. Chronic hyperglycemia in diabetes is associated with long-term damage, dysfunction, failure of various organs (eyes, kidneys, nerves, heart, and blood vessels). (Indonesian Ministry of Health 2018).

Diabetic nephropathy is a complication of diabetes mellitus in the kidneys which can end in kidney failure. Kidney disease (nephropathy) is the main cause of death and disability in diabetes mellitus. Risk factors associated with the occurrence of end-stage renal failure in diabetic nephropathy are increased blood pressure, poor blood sugar control, dyslipidemia, old age, insulin resistance, smoking, gender, race, and high protein intake (Etiek Nurhayati, 2018).

Overall, diabetes mellitus (DM) occurs due to lifestyle, especially causing the accumulation of large amounts of sugar in the blood and above the normal threshold which is chronic and long-term. Under normal

conditions, glucose is the main source of energy for cells in the body that form muscles and tissue, including the brain, but if it is in excess it can be dangerous because it triggers blood sugar/diabetes (Martina, 2019).

## **RESEARCH METHODS**

The research method used is descriptive analytical research method which aims to see the picture of urine sediment in diabetes mellitus sufferers.

## **RESEARCH SITE**

This research was conducted at Bunda Thamrin Hospital, Medan.

## **RESEARCH TIME**

The research was conducted in October- December 2023.

## **POPULATION**

All patients who have been diagnosed with diabetes mellitus who visit Bunda Thamrin Hospital, Medan.

## **SAMPLE**

The sample used in this research was accidental sampling of diabetes mellitus patients who visited Bunda Thamrin Hospital, Medan Tahun.

## **RESULTS AND DISCUSSION**

Research has been carried out on the image of urine sediment in diabetes mellitus patients at Bunda Thamrin Hospital, Medan in 2023, as follows:

Table 4.1 Results of Urine Sediment Examination Tests in Diabetes Mellitus Patients at Bunda Thamrin Hospital, Medan, 2023

No	Sampel Code	Age (Years)	Gender	Glucose Levels mg/dl	Urine Sediment Results			
					Eritrosit	Leukosit	Epitel	Kristal oxalat
1	S1	48	Famale	254	2-5/LPB	5-10/LPB	5-10/LPB	-
2	S2	65	Male	180	0-5/LPB	2-5/LPB	0-5/LPB	-
3	S3	65	Famale	270	5-10/LPB	2-5/LPB	0-5/LPB	2-5/LPB
4	S4	66	Male	643	2-5/LPB	5-10/LPB	10-25/LPB	0-5/LPB
5	S5	69	Famale	244	2-5/LPB	5-10/LPB	5-10/LPB	-
6	S6	51	Male	282	5-10/LPB	2-5/LPB	2-5/LPB	-
7	S7	65	Famale	172	2-5/LPB	2-5/LPB	0-5/LPB	0-5/LPB
8	S8	62	Male	203	10-25/LPB	5-10/LPB	5-10/LPB	-
9	S9	57	Famale	270	2-5/LPB	5-10/LPB	10-25/LPB	0-5/LPB
10	S10	51	Male	345	0-5/LPB	2-5/LPB	0-5/LPB	-
11	S11	56	Male	323	0-5/LPB	2-5/LPB	0-5/LPB	-
12	S12	40	Male	183	5-10/LPB	2-5/LPB	0-5/LPB	2-5/LPB
13	S13	50	Famale	280	2-5/LPB	5-10/LPB	10-25/LPB	0-5/LPB
14	S14	60	Famale	534	0-5/LPB	2-5/LPB	0-5/LPB	-
15	S15	64	Famale	191	5-10/LPB	2-5/LPB	0-5/LPB	-
16	S16	66	Famale	276	10-25/LPB	10-25/LPB	10-25/LPB	-
17	S17	66	Famale	324	2-5/LPB	2-5/LPB	0-5/LPB	-
18	S18	60	Famale	255	0-5/LPB	2-5/LPB	0-5/LPB	-
19	S19	59	Male	267	0-5/LPB	2-5/LPB	0-5/LPB	-
20	S20	62	Male	203	10-25/LPB	5-10/LPB	5-10/LPB	-

Source: Research at Bunda Thamrin Hospital, Medan, 2023

Note : F = There are 11 women  
M = There are 9 men

Based on the table above, diabetes mellitus patients were found to have sediments in the urine in the form of erythrocytes, leukocytes, epithelium and calcium oxalate crystals. Based on the results of research that has been carried out, namely looking at the picture of urine sediment in diabetes mellitus patients at Bunda Thamrin Hospital, Medan in 2023, urine sediment results were obtained for 20 samples and erythrocytes, leukocytes, epithelium and oxalate crystals were found in increased quantities.

Where from 20 urine sediment samples it was found that the number of erythrocytes increased completely.

Erythrocytes experienced an increase in all, namely by 20 samples, as seen in table 4.1. In theory, large numbers of erythrocytes should not be found. However, in this study, 100% of the samples experienced an increase in erythrocytes in increasing numbers. The presence of erythrocytes obtained needs to be alert to the possibility of inflammation and bleeding which makes red blood cells high in the urine sediment. Hematuria is an increase in the number of erythrocytes in the urine, due to glomerular damage, tumors that erode the urinary tract, kidney trauma, urinary tract stones, infection, inflammation, kidney infarction, urinary tract infections. This can also be seen in the patient's physical condition, where the skin

feels itchy, pale, and experiences rapid weight loss. (Gandasoebrata, 2016).

The leukocytes obtained in this study were 12 samples (60%) normal and 8 samples (40%) abnormal. The presence of leukocytes obtained in urine samples shows that the number of leukocytes has increased by almost 50% of the sample number as a manifestation of inflammation in the urinary tract in patients, possibly caused by bacterial attack, the number of which has also increased. A condition where there are leukocytes in the urine that exceed normal values is called leukocyturia. Leukocyturia is a sign of inflammation of the urinary tract (including the kidneys, ureters, bladder and urethra). (Gandasoebrata, 2016)

The epithelium obtained from the results of this study found 12 samples (60%) normal and 8 samples (40%) increased. Epithelium is an organic sedimentary element which in pathological conditions the amount of epithelium can increase, such as in inflammation and infection in the urinary tract. (Gandasoebrata 2017).

Oxalate crystals obtained normal results in 15 samples (75%) and increased results in 5 samples (25%). Oxalate crystals are a form of addition or accumulation of minerals that form in the urinary tract and are usually found in the pelvis and kidney calyces. An increased number of oxalate crystals can cause the formation of stones in the kidneys. (Allelign, 2018)

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