

UGM Students Develop Non-Invasive Blood Sugar Level Measuring Instrument


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Diabetes mellitus is one of the non-communicable diseases that still becomes a serious health issue in various parts of the world. In fact, the disease which is caused by the increase of blood sugar level is predicted to be the seventh leading cause of death in the world in 2030.

Despite being incurable, diabetes is a disease that still can be controlled by living a healthy lifestyle. In addition, regular blood sugar level is important for diabetics. Unfortunately, blood sugar level monitoring is quite complicated for the diabetics because the blood sugar level measurement using glucometer still requires invasive action in the form of pricking finger using lancet needle for taking the blood drops.

This condition encourages five UGM students to make a non-invasive blood sugar level measuring instrument or non-invasive glucometer named as Glucosaga. Those students are Ayu Rahmawati Kautsar Dieni from Information Technology, Nurul Fajriati Seyaningrum and Atika Nurul Haniyyah from Health Nutrition, as well as Abdullah Ibnu Hasan and Ardi Yusri Hilmi from Electronics and Instrumentation study program. They develop the instrument by the funding from Indonesian Ministry of Research, Technology, and Higher Education through the Students Creativity Programme 2017 and succeed to compete in PIMNAS (National Students Scientific Week) 2017 in Makassar.



Nurul said the glucometer that exists in the markets generally consists of several expensive components, including lancet needle, lancet device, blood glucose strip, and glucometer instrument, The measurement starts by the invasive action in the form of injecting the needle to the patient's finger to take a blood sample.

“The needle injecting on the patient's finger sometimes needs to be repeated several times due to the lack of blood sample,” said Nurul on Wednesday (2/8) in UGM.

The instrument they develop has a simple procedure. The first step is putting the sensor on the lower ear and then pressing the start button. After that, the result of blood glucose level measurement can be seen on the LCD screen.

Ayu said this instrument is also equipped with a smartphone application, Glucosaga, that can help the diabetics to recognize their disease history. The data of blood glucose level measurement can be sent and saved periodically in the application.

The application also has features that can help the users in managing their lifestyle, such as SagaDiary, Reminder, and Activity Track. SagaDiary is used to see the history of blood glucose level and daily calories consumption. The Reminder is used to remind several activities such as taking medicine, exercising, etc. while Activity Track is a facility to record all activities done by the users.

“We hope we can actively participate in encouraging Indonesia to be self-sufficient in producing health instruments. Currently, we are still in the research and development stage, thus we hope we can start the production as soon as possible,” she Ayu.

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