Foldscope could be a better alternative to clinical microscope

- Foldscope is an affordable **origami-based microscopy device** composed of a series of paper clippings.
- (Origami is the Japanese art of folding paper into decorative shapes and figures)
- Upon assembly, the device can hold a specimen slide for observation, and this specimen can be viewed **via a mobile phone camera** attached to it.

Dr. Alka Rao’s group at the Institute of Microbial Technology (IMTECH), Chandigarh, in collaboration with a team of doctors from a government hospital in Panchkula, Haryana, a private hospital in the National Capital Region (NCR), and a medical college from Imphal, have explored and validated the **clinical utility of Foldscope** in the **diagnosis of diseases using various patient samples**.

- The study evaluated the use of the **Foldscope in the clinical diagnosis** of oral and urinary tract **infections** and evaluated its efficacy as a motivational tool for improving oral health among school children in India.
- The study identifies that Foldscope is particularly convenient to **diagnose urinary tract infection (UTI) and monitor kidney stone**.
- Using this tool, one can easily **monitor own-kidney stone status** at home with a simple **glass-slide**, a **Foldscope** and a **phone in hand**.
- Such monitoring could perhaps avoid kidney stone reaching a painful state or surgery in recurring cases.
- Given the ease of operation and low cost, Foldscope may be employed in **public healthcare centres** for primary diagnosis of oral health and UTI or as personal health monitoring device.
- To do the assessment, a patient sample like **urine is smeared on a transparent glass slide** and visualized under a **Foldscope mounted on a cell phone**.
- Sample images can be enlarged using the **zoom function of the mobile**, which can be stored on mobile memory card for later reference/patient records.
- Foldscope can be **assembled using paper clips** and mounted on cell phone using coupler and glue drops.
- The researchers qualitatively compared the Foldscope to a clinical microscope by examining **five different types of clinical samples**.
- Of the different types of clinical samples, the Foldscope was effective in detecting infection in **dental plaque samples and urine samples**.

- Based on the study findings, Foldscope appeared to be capable of **visualizing calcium oxalate** crystals, which are a major **cause of kidney stones**.
- The Foldscope can be used as an **in-house diagnostic tool** and **personal health monitoring** tool on a routine basis due to its affordability and **zero maintenance cost**.

The study findings have been published in the Journal of Microscopy.