

## Tear Ferning: Effect of Gender and Menstrual Cycle (Corak Pempakisan Air-mata: Kesan Jantina dan Kitaran Haid)

MUHAMMAD AFZAM SHAH AR, MOHD RADZI H & ASMAHUL HUSNA I &  
ARIFFIN AE

### ABSTRACT

This study aimed to investigate whether tear ferning (TF) pattern is affected by gender and the menstrual cycle. The first phase of this study investigated if there were any TF pattern differences between genders. The second phase of this study investigated the changes in TF pattern during the menstrual cycle. For each subject, 10 microliters of tear fluid was collected and dropped onto a microscope slide using a micro capillary tube and then dried in a temperature and humidity-controlled room i.e., at temperature of  $22.9 \pm 1.6^\circ\text{C}$  and relative humidity (rH) of  $51 \pm 1.5\%$ . The dried droplet was divided according to distinct morphological features based on four types according to Rolando's classification of TF patterns. For the first phase of the study we found no significant changes in TF pattern between genders. We found that approximately 37.5% (N=30) of our study population obtained TF pattern of type II. Type III consisted of 21 subjects (26.3%) while type IV consisted of 17 subjects (21.2%). The least number of TF patterns observed was type I (N=12, 15.0%). The majority of our subjects obtained TF pattern of type II whereas the type I pattern was found in the least number of subjects. For the second phase of our study Type II pattern was the most frequently recorded during the "in-between menstruation" visit. However, Types III and IV were more frequently recorded during "menstruation"; ANOVA showed a significant difference in TF pattern during "menstruation" and "in-between menstruation" ( $p < 0.001$ ) visits. This study showed no clinically significant difference in TF pattern between genders, implying that both genders of our sample generally have a similar risk of developing dry eye. However, since there was a significant difference in the TF pattern during the menstrual cycle, there appears to be an increased risk of a female patient developing dry eye during menstruation because of the prevalence of Types III and IV TF patterns found during menstruation.

*Keywords: Tear ferning, Menstrual cycle, Gender, Malay*

Muhammad Afzam Shah Bin Abdul Rahim,  
Asmahul Husna Binti Ishak & Mohd. Radzi Bin Hilmi,  
Department of Optometry & Visual Science,  
Kulliyah of Allied Health Sciences,  
International Islamic University Malaysia,  
Jalan Sultan Ahmad Shah,  
25200 Kuantan, PAHANG.

Prof. Dr. Azrin Esmady Ariffin,  
Faculty of Optometry and Vision Sciences,  
No. 9, Jalan Teknologi, Taman Sains Selangor,  
Kota Damansara, PJU 5,  
47810 Petaling Jaya, SELANGOR.

Corresponding author: Muhammad Afzam Shah Abdul Rahim  
Email address: [afzamshah@iium.edu.my](mailto:afzamshah@iium.edu.my) / [r.afzam2003@yahoo.com](mailto:r.afzam2003@yahoo.com)