

Research paper 24

Efficacy of modified Papanicolaou staining method used in a Sri Lankan government sector laboratory: a cost-effective method for resource limited settingsA. H. M. Sewwandi¹, E.H. Silva², C. Senerath³¹ Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka² Department of Medical Laboratory Science, Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka³ District General Hospital, Matara, Sri Lanka

Introduction and objectives: The study investigates the efficacy of a modified Papanicolaou staining method for cervical screening, currently practiced at District General Hospital Matara (DGHM), Sri Lanka, as the conventional method requires a high amount of alcohol.

Methodology: A prospective study was conducted between September and November 2023 in the histopathology laboratory at DGHM. A total of 161 cervical smears were collected from Medical Officer of Health (MOH) areas in Matara. Paired smears were stained using conventional and modified methods. The modified method involved replacing the alcohol series for hydration with 70% alcohol. After staining with Harris' haematoxylin and rinsing with tap water, differentiation step in 0.5% HCl and dehydration step with an alcohol series were omitted. Tap water replaced the use of 95% alcohol for rinsing after staining with OG6 and EA50. Smears were air-dried, mounted, and screened blindly by the primary investigator, two cyto-screeners, and the consultant histopathologist. Smears were scored according to a scoring system. The quality index was calculated.

Results: Of all paired 152 satisfactory smears, 98.7% of conventional pap smears showed distinct cytoplasmic borders, while 96.7% that were stained by the modified method showed distinct cytoplasmic borders. 60.5% of smears stained by the conventional method showed satisfactory cytoplasmic staining whereas 57.2% smears stained by the modified method showed satisfactory cytoplasmic staining. All the smears stained by both methods showed distinct nuclear borders and crisp chromatin staining. No significant difference was observed between the cytomorphological parameters of two methods ($p < 0.05$). Quality index of the modified and conventional methods were 0.911 and 0.932 respectively. The cost of the modified method was 80% less than the conventional method due to limited alcohol use.

Discussion and conclusions: The modified method is cost-effective and simple and offers a cost-effective alternative to conventional staining methods, ensuring high quality preservation and diagnostic standards in resource-limited settings.

Keywords: cervical screening, Papanicolaou smear, modified Papanicolaou staining

Corresponding author: Ms. AHM Sewwandi
Faculty of Allied Health Sciences, University of Ruhuna,
Sri Lanka
madushikasewwandi854@gmail.com



This is an open access article licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/). (CC BY-SA 4.0), which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are attributed and materials are shared under the same license.