UNIVERSITI SAINS MALAYSIA

LAPORAN AKHIR PROJEK PENYELIDIKAN JANGKA *PENDEK*

FINAL REPORT OF SHORT TERM RESEARCH PROJECT

Sila kemukakan laporan akhir ini melalui Jawatankuasa Penyelidikan di Pusat Pengajian dan Dekan/Pengarah/Ketua Jabatan kepada Pejabat Pelantar Penyelidikan

1. **Nama Ketua Penyelidik:** *Dr Bakiah Shaharuddin*
   Name of Research Leader

   ☐ Profesor Madya/ *Assoc. Prof.* ☒ Dr./ *Dr.* ☐ Encik/Puan/Cik *Mr/Mrs/Ms*

2. **Pusat Tanggungjawab (PTJ):** *Department of Ophthalmology, School of Medical Sciences*
   School/Department

3. **Nama Penyelidik Bersama:** *Dr Wan Hazabbah Wan Hitam, Dr Nor Fadzillah Abd Jalil*
   Name of Co-Researcher

4. **Tajuk Projek:** *A study on the capability of Frequency Doubling Perimetry in the detection of visual field abnormalities in primaary open angle glaucoma*
   Title of Project

5. **Ringkasan Penilaian/*Summary of Assessment*:**	Tidak Mencukupi *Inadequate* 1	2	Boleh Diterima *Acceptable* 3	Sangat Baik *Very Good* 4	5
i) **Pencapaian objektif projek:** *Achievement of project objectives*	☐	☐	☐	☒	☐
ii) **Kualiti output:** *Quality of outputs*	☐	☐	☐	☒	☐
iii) **Kualiti impak:** *Quality of impacts*	☐	☐	☐	☒	☐
iv) **Pemindahan teknologi/potensi pengkomersialan:** *Technology transfer/commercialization potential*	☐	☒	☐	☐	☐
v) **Kualiti dan usahasama :** *Quality and intensity of collaboration*	☐	☒	☐	☐	☐
vi) **Penilaian kepentingan secara keseluruhan:** *Overall assessment of benefits*	☐	☐	☐	☒	☐

6. Abstrak Penyelidikan
(Perlu disediakan di antara 100 - 200 perkataan di dalam **Bahasa Malaysia dan juga Bahasa Inggeris.** Abstrak ini akan dimuatkan dalam Laporan Tahunan Bahagian Penyelidikan & Inovasi sebagai satu cara untuk menyampaikan dapatan projek tuan/puan kepada pihak Universiti & masyarakat luar).

Abstract of Research
(An abstract of between 100 and 200 words must be prepared in Bahasa Malaysia and in English).
This abstract will be included in the Annual Report of the Research and Innovation Section at a later date as a means of presenting the project findings of the researcher/s to the University and the community at large)

Seperti di lampiran

7. Sila sediakan laporan teknikal lengkap yang menerangkan keseluruhan projek ini.
[Sila gunakan kertas berasingan]
Applicant are required to prepare a Comprehensive Technical Report explaning the project.
(This report must be appended separately)

Seperti di lampiran

Senaraikan kata kunci yang mencerminkan penyelidikan anda:
List the key words that reflects your research:

Bahasa Malaysia	*Bahasa Inggeris*
Ujian medan penglihatan "Frequency Doubling"	Frequency doubling perimetry
Klassifikasi system FDT SS2	FDT SS2 staging system
Sensitiviti dan spesifisiti	Sensitivity and spesifisity

8. Output dan Faedah Projek
Output and Benefits of Project

(a) * **Penerbitan Jurnal**
Publication of Journals
(Sila nyatakan jenis, tajuk, pengarang/editor, tahun terbitan dan di mana telah diterbit/diserahkan)
(State type, title, author/editor, publication year and where it has been published/submitted)

1. *Abstract*

Title: "A study on the capability of frequency doubling perimetry in the detection of visual field abnormalities in primary open angle glaucoma patients"
Authors: Nor fadzillah AJ, Bakiah S.
*Publication: **Asian Journal of Ophthalmology** 2007; 9 (suppl 1) pg 129*

2. *Original Article*

Title: "Clinical use of FDT SS2 staging system in the detection of visual field abnormalities in primary open angle glaucoma"
Authors: Shaharuddin, Bakiah, Abd Jalil, Nor Fadzillah, Wan Hitam Wan Hazabbah
*Publication: **Journal of Glaucoma (Submitted)***

(b) **Faedah-faedah lain seperti perkembangan produk, pengkomersialan produk/pendaftaran paten atau impak kepada dasar dan masyarakat.**
State other benefits such as product development, product commercialisation/patent registration or impact on source and society.

Pembentangan kertas di peringkat antarabangsa:

i. *2007 Asia-ARVO Meeting on research in vision and ophthalmology*
Suntec Singapore International Convention Centre
March 2-5, 2007

ii. *World Glaucoma Congress*
Suntec Singapore International Convention Centre
July 18-21, 2007

iii. *23rd Malaysia-Singapore Ophthalmic Congress*
June 1-3, 2007

iv. *Pembentang jemputan – 1st ASEAN Optometric Conference*
Equatorial Hotel, Malacca
April 29 - May 1, 2007

* Sila berikan salinan/*Kindly provide copies*

(c) **Latihan Sumber Manusia**
Training in Human Resources

i) Pelajar Sarjana: M.Med
Graduates Students
(Perincikan nama, ijazah dan status)
(Provide names, degrees and status)

Dr Nor Fadzillah Abd Jalil – M.Med
(Ophthalmology) – Graduate May 2007

ii) Lain-lain: *(2) Optometrists Eye Clinic (HUSM) – handling the FDP machine*
Others

9. **Peralatan yang Telah Dibeli:**
Equipment that has been purchased

Tiada

23 Jun 2008

Tarikh
Date

Komen Jawatankuasa Penyelidikan Pusat Pengajian/Pusat
Comments by the Research Committees of Schools/Centres

Projek diselesaikan dgn baik.
Hasil dibentangkan.
Penerbitan sedang dirujuk.

29/7/08
Tarikh
Date

1. ABSTRAK (Bahasa Malaysia):

Pengenalan: 'Frequency Doubling Perimetry' (FDP) telah digunakan secara meluas untuk tujuan saringan dan rawatan susulan medan penglihatan bagi pesakit glaukoma. Ianya dikatakan sensitif dalam mengesan kehilangan medan penglihatan di peringkat lebih awal.

Objektif: Untuk menentukan keupayaan FDP di dalam mengesan ketidaknormalan medan penglihatan dikalangan pesakit glaukoma sudut terbuka.

Bentuk Kajian: Prospektif, perbandingan dan kajian rentang.

Metodologi: Seramai 150 pesakit POAG telah menjalani ujian medan penglihatan menggunakan FDP bagi kedua-dua modul saringan dan tahap upaya (threshold) 30-2 dan mesin medan penglihatan Humphrey 30-2 di klinik mata Hospital Universiti Sains Malaysia (HUSM). Kesemua pesakit juga menjalani pemeriksaan oftalmologi Lengkap. Data dianalisa menggunakan SPSS versi 12.0 bagi mengetahui sensitiviti, spesifisiti, kawasan di bawah lengkungan "receiver operating characteristic" (ROC) dan ujian persetujuan diantara FDP dan "Humphrey visual field" (HVF).

Keputusan: Data 120 pesakit POAG telah dianalisa mengikut kriteria inklusi dan eksklusi serta kebolehan guna pakai (reliability) ujian medan penglihatan. Untuk FDP dalam modul saringan, apabila "sekurang-kurangnya satu poin tercicir" digunakan sebagai definisi ketidak normalan medan penglihatan, apabila dibandingkan dengan HVF sensitiviti yang diperolehi adalah diantara 92.2% hingga 96.2% dan spesifisiti di Antara 24.2% hingga 50.0%. Apabila "2 atau lebih poin" yang tercicir, dijadikan sebagai definisi untuk ketidak normalan medan penglihatan, sensitiviti yangdiperolehi adalah diantara 89.5% hingga 95% dan spesifisiti diantara 33.3% hingga 47.0%. Bagi FDP dalam modul tahap upaya dengan pelbagai definisi yang digunakan untuk ketidaknormalan medan penglihatan, sensitiviti yang diperolehi terletak diantara 83.5% hingga 100% dan spesifisiti pula berada di antara 0.0% hingga 47.0%. Nilai persetujuan kappa di antara FDP dan HVF didapati diantara 0.155 hingga 0.391 iaitu terletak diantara persetujuan yang "poor" hingga "slight".

Kesimpulan : Kajian ini menunjukkan FDP memberi sensitiviti yang tinggi tetapi spesifisiti yang rendah di dalam mengenalpasti ketidaknormalan medan penglihatan di kalangan pesakit POAG. Klasifikasi baru bagi keterukan glaukoma menggunakan 'Glaucoma Scoring System 2 (GSS2) dan 'Frequency Doubling Technology Scoring System 2' (FDT SS2) berupaya memberikan klasifikasi dengan segera dan boleh digunapakai untuk menentukan tahap keterukan glaukoma dan ciri-ciri ketidaknormalan medan penglihatan.

2. ABSTRACT (English):

Introduction: Frequency Doubling Perimetry (FDP) has become a widely used technique for both screening and follow up of glaucomatous field loss. It is thought to be sensitive and superior in the detection of early visual field loss

Objective: To determine the capability of FDP in the detection of visual field abnormalities in the primary open angle glaucoma (POAG) patients.

Design: Prospective, comparative, cross sectional study.

Method: 150 POAG patients underwent both FDP in screening and threshold mode 30-2 and Humphrey Visual Field (HVF) 30-2 tests in Eye clinic Hospital Universiti Sains Malaysia (HUSM). All patients had a comprehensive ophthalmology assessment. Data analysis including sensitivity, specificity, area under the receiver operating characteristic (ROC) curve and kappa agreement between FDP and HVF was performed using SPSS system version 12.0.

Results: Data from 120 POAG patients were analyzed following inclusion, exclusion criteria and reliability of the visual field testing. For FDP in screening mode, when "at least 1 missed point" was used as the definition for abnormal FDP, the sensitivity was high between 92.2% to 96.2% and specificity was between 24.2% to 50.0%. When " 2 or more missed points", was used as definition for abnormal visual field, the sensitivity was 89.5% to 95.0% and specificity between 33.3% to 47.0% was achieved. For FDP in threshold mode and HVF with various definitions for abnormal visual field, the sensitivity was between 83.5% to 100% and specificity between 0.0% to 47.0%. Kappa value for FDP and HVF was between 0.155 to 0.391 which showed poor to slight agreement.

Conclusion: FDP showed high sensitivity but low specificity in the detection of visual field abnormalities among our patients. The new classification for severity of glaucoma with Glaucoma Scoring System 2 (GSS2) and Frequency Doubling Technology Scoring System 2 (FDT SS2) was able to provide immediate and reliable classification for both severity and characteristic of visual field.