

**UNIVERSITI SAINS MALAYSIA
GERAN PENYELIDIKAN UNIVERSITI
PENYELIDIKAN
LAPORAN AKHIR**

**THE PREVALENCE OF REFRACTIVE ERROR AMONG
MALAY SCHOOL CHILDREN AGED 13 TO 16 YEARS OLD
IN KOTA BAHRU, KELANTAN**

PENYELIDIK

DR. AZHANY YAAKUB

PENYELIDIK BERSAMA

2012

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: Azhany Yaakub Name of Research Leader:						
<input type="checkbox"/> Profesor Madya / Assoc. Prof. <input checked="" type="checkbox"/> Pengetikan / Lect. <input type="checkbox"/> Pengetikan / Asst. Lect.						
2. Pusat Tanggungjawab (PTJ): School/Department						
Department of Ophthalmology, School of Medical Sciences						
3. Nama Penyelidik Bersama: Name of Co-Researcher						
4. Tajuk Projek: Title of Project						
The prevalence of refractive error among Malay school children aged 13 to 16 years old in Kota Bharu Kelantan						
5. Ringkasan Penilaian / Summary of Assessment						
	Tidak Mencukupi Inadequate		Boleh Diterima Acceptable		Sangat Baik Very Good	
	1	2	3	4	5	
i) Pencapaian objektif projek: Achievement of project objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Kualiti output: Quality of outputs	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Kualiti impak: Quality of impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iv) Pemindahan teknologi/potensi pengkomersialan: Technology transfer/commercialization potential	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
v) Kualiti dan usahasama : Quality and intensity of collaboration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
vi) Penilaian kepentingan secara keseluruhan: Overall assessment of benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

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)

BAHASA MALAYSIA

Tujuan:

Untuk mengenalpasti prevalens masalah rabun jauh refraktif serta faktor-faktor yang berkaitan dengannya di kalangan pelajar Melayu berumur 13 hingga 16 tahun di Daerah Kota Bharu.

Tatacara:

Kajian rentas ini dijalankan keatas pelajar-pelajar Melayu berumur 13 hingga 16 tahun. Sebanyak tujuh dari 36 buah sekolah menengah harian biasa di Daerah Kota Bharu telah dipilih secara rawak untuk menjayakan kajian ini. Kajian ini mendapat kebenaran bertulis daripada ibubapa dan penjaga. Pemeriksaan mata saringan dijalankan di sekolah-sekolah yang terlibat merangkumi pemeriksaan tahap ketajaman penglihatan, pergerakan bola mata, pemeriksaan luaran mata dan pemeriksaan funduskopi.

Bagi pelajar-pelajar yang mengalami tahap penglihatan asas 20/40 atau kurang, pemeriksaan refraksi tanpa ciklopegik dilakukan. Ia melibatkan pemeriksaan tahap ketajaman penglihatan menggunakan 'pinhole' dan cermin mata (jika ada), pemeriksaan refraksi automatik tanpa agen cyclopegik dan pemeriksaan funduskopi yang menyeluruh. Soalan kaji selidik mengenai latarbelakang pelajar dan keluarga, masalah mata dalam keluarga serta aktiviti harian melibatkan penglihatan jarak dekat seperti aktiviti membaca dan menonton televisyen turut diberikan kepada semua pelajar yang terlibat.

Keputusan Kajian:

Seramai 929 orang pelajar Melayu telah dikumpulkan bagi menjayakan kajian ini. Kadar prevalens kurang daya penglihatan ialah 15.3%. Rabun refraktif merupakan penyumbang utama (93.6%) kepada prevalens ini. Rabun jauh (-0.50D atau kurang) merupakan jenis rabun refraktif yang terbesar iaitu 97.6%, menjadikan kadar prevalens rabun jauh adalah 14.1%. Tiada pelajar mengalami jenis rabun dekat diperolehi daripada kajian ini. Kajian ini juga mendapati lebih separuh (59.4%) daripada pelajar yang mengalami masalah rabun refraksi tidak menggunakan cermin mata atau kanta lekap. Seramai 51 orang daripada pelajar ini didapati tidak menyedari akan masalah kurang penglihatan yang dihadapi. Analisa secara Logistik Regresi terhadap faktor-faktor yang berkaitan dengan rabun jauh juga dilakukan. Didapati, tiga faktor iaitu jantina perempuan ($p = 0.01$), sejarah keluarga yang mempunyai masalah rabun refraksi dikalangan adik-beradik ($p < 0.01$) dan keluarga berpendapatan tinggi ($p = 0.038$) adalah berkait secara ketara dengan masalah rabun jauh ini.

Kesimpulan:

Prevalens rabun jauh di kalangan pelajar Melayu berumur 13 hingga 16 tahun di daerah Kota Bharu didapati hampir sama dengan prevalens kajian di tempat-tempat lain. Namun begitu, sebahagian besar daripada mereka tidak menggunakan cermin mata atau kanta lekap. Pendidikan kesihatan dan saringan penglihatan perlu dititikberatkan untuk mengatasi masalah ini di masa akan datang.

BAHASA INGGERIS

Purpose:

To determine the prevalence of myopia and the associated factors in Malay school children age 13 to 16 years old in Kota Bharu District.

Method:

A cross sectional study was conducted among Malay school children, age ranging from 13 to 16 year old. Seven out of 36 secondary schools in Kota Bharu District were randomly selected. Written consent was obtained from parent prior to examination. Visual assessment includes visual acuity, ocular motility, external eye examination and direct funduscopy were conducted at the selected schools. Noncyclopegic automated refraction using Retinomax Nikon was performed to those students who had visual acuity of 20/40 or less. Direct questionnaires regarding student's background and near work activity such as time spend for reading and writing , and also watching television were also obtained from the students.

Result:

A total of 929 Malay students aged 13 to 16 years old were recruited. The prevalence of visual impairment was 15.3% and refractive error was the major cause (93.6%). Myopia (-0.50D or less) was found in 97.9% of students with refractive error and gave the prevalence of 14.1%. No hyperopia noted in this study. The uncorrected refractive error was 59.4%. Fifty one students were unaware of their visual problems. Based on multivariate study analysis, there was significant association of refractive error with female gender ($p = 0.01$), positive family history of refractive error among sibling ($p < 0.01$) and parental income ($p=0.038$).

Conclusion:

Although the prevalence of myopia (14.1%) among Malay teenagers aged 13 to 16 years old in Kota Bharu District almost similar to other reported studies but higher number of them was uncorrected (59.4%). Visual screening and health education should be emphasized to overcome this problem.

7. Sila sediakan laporan teknikal lengkap yang menerangkan keseluruhan projek ini.

[Sila gunakan kertas berasingan]

Applicant are required to prepare a Comprehensive Technical Report explaining 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:

<u>Bahasa Malaysia</u>	<u>Bahasa Inggeris</u>
Rabun refraktif	Refractive error
_____	_____
Rabun jauh	Myopia
_____	_____
Masalah penglihatan	Visual impairment
_____	_____

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)

- (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.

Recommendation to School Health Team not only to do eye screening for primary school only but also to secondary school student as well.

* Sila berikan salinan/Kindly provide copies.

- (c) **Dapatkan Sumber Manusia**
Training and Human Resource

i) **Polisi**
Policy
ii) **Objektif**
Objectives
iii) **Penilaian**
Evaluation
iv) **Keputusan**
Decision

- ii) **Lain-lain:**
Others

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



Tandatangan Penyelidik
Signature of Researcher

3 Januari 2012

Tarikh
Date

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

Project was been completed successfully
and all objectives achieved

The output include a manuscript
submitted to Health Education Journal.
This report was been assessed and
approved by the PTJ panel committee

PROFESSOR AHMAD SUKARI HALIM
Chairman of Research Committee
School of Medical Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Keratan, Kelantan

TANDATANGAN PENERUSI
JAWATANKUASA PENYELIDIKAN
PUSAT PENGAJIAN/PUSAT

Signature of Chairman
[Research Committee of School/Centre]

4/3/12
Tarikh
Date

Comprehensive Technical Report

This study was primarily aimed to provide a baseline data regarding the prevalence of visual impairment and refractive error in Malay school children ranging from 13 to 16 years old in east coast of peninsular Malaysia. Malay ethnic was chosen as it is a major population in Kelantan as well as west coast of peninsular Malaysia. This range of age group (13 to 16 years old) is a crucial period where the emmetropization as well as development of refractive error were established. Detection of the problems will benefit both the students and local health authority in planning further eye programs in future.

There were a few technical difficulties encountered during the study. First, the main tool used in this study was handheld Nikon Retinomax K-Plus Autorefractometer. We rent the instrument for the study and there was some delayed in getting the instrument. The same instrument also being used for another study by other researcher which means the tool not always with us, however this problem had being overcome by fixed schedule time agreed by both team. Second obstacle was recruitment of the secondary school students. There was a delay to get the permission letter from State Education Department to recruit the students. However the delay not affecting the study time as it be finished within time permitted. Cooperation from the schools especially the head masters involved were excellent, most of the school allocated one teacher in charged to help out during the eye examination and filling up the questionnaires. Apart from that, the study was run smoothly.

The summary of findings of the study as follows. The prevalence of visual impairment (15.3%) and refractive error (14.6%) among Malay school children, aged 13 to 16 years old is lower compare to other Asian's countries but higher compare to some undeveloped countries. Myopia (14.1%) is the primary type of the refractive error and significantly associated with female gender ($p=0.001$), siblings with refractive error ($p<0.001$) and higher parental income group ($p=0.038$). Large proportion of refractive error is not corrected (59.4%) and the main barrier is the unawareness of the problems (64.5%).

The limitations of the study include school population based study which might not reflect the actual population. The use of cycloplegic autorefraction was more superior than non cycloplegic but were chosen as the method acceptably used worldwide. From the study, we would like to recommend a few points. The first one is health education and the second is vision screening programme. Health education for public is a key point to success in any medical issues. Public awareness should be emphasized from a grass root level. Refractive error as an avoidable visual impairment with the easiest treatment should be advertised. Vision Screening Program by Local School Health Team as conducted in Primary Schools should be practiced in Secondary Schools too. As the manpower and cost effective screening are limited, vision screening is suggested to be done in the mid course of secondary school for example in Form 3 (15 years old).

BORANG LAPORAN HASIL PENYELIDIKAN

PPSP

Tajuk geran: The prevalence of refractive error among Malay school children aged 13 to 16 years old in Kota Bharu Kelantan

Penyelidik: Dr Azhany Yaakub

Jenis geran: Geran Penyelidikan Jangka Pendek

Tempoh geran: 2 Tahun

Jenis laporan: Laporan Kemajuan Alatan di beli Ya:nyatakan.....

Laporan Akhir*: Tidak

OBJEKTIF SPESIFIK KAJIAN (sama spt dalam proposal asal)	SECARA RINGKAS TERANGKAN PENCAPAIAN/HASIL	OBJEKTIF TERCAPAI ATAU TIDAK
1. To determine the prevalence of visual impairment among Malay secondary school children age 13 to 16 years old in Kota Bharu	The prevalence of visual impairment (15.3%) among Malay school children aged 13 to 16 years old is lower compare to other Asian's countries but higher compare to some undeveloped countries.	Achieved
2. To determine the prevalence of refractive error among Malay secondary school children age 13 to 16 years old in Kota Bharu	The prevalence of refractive error (14.6%) among Malay school children aged 13 to 16 years old is lower compare to other Asian's countries but higher compare to some undeveloped countries.	Achieved
3. To determine the prevalence of myopia among Malay secondary school children age 13 to 16 years old in Kota Bharu	Myopia (14.1%) is the primary type of the refractive error.	Achieved
4. To determine the factors (age, gender, parental income and education, sibling of refractive error, watching television and reading activity) associated with myopia among Malay secondary school children age 13 to 16 years old in Kota Bharu	Myopia is significantly associated with female gender ($p=0.001$), siblings with refractive error ($p<0.001$) and higher parental income group ($p=0.038$).	Achieved

- *Laporan Akhir perlu disertakan salinan manuskrip dan surat yang dihantar kepada mana-mana jurnal untuk penerbitan.*

Nama Penyelidik Utama (PI): Dr Azhany Yaakub
Tarikh: 3 Januari 2012

t.t.:

Vision Screening among Malay Teenagers in Sub-Urban Area of Kota Bharu, Malaysia

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Vision Screening among Malay Teenagers in Sub- Urban Area of Kota Bharu, Malaysia

ABSTRACT

Purpose:

To determine the prevalence of visual impairment and identify the causes of visual impairment amongst Malay teenagers aged between 13 to 16 years old in sub-urban area of the Kota Bharu district in Malaysia.

Methods:

A cross sectional study was conducted among 13 to 16 year-old Malay school children. Ocular assessment including visual acuity, ocular motility; cover test; external and anterior segment eye examination, and direct funduscopy were conducted at the seven selected schools. Noncyclopegic automated refraction using handheld automated refractometer Retinomax K-Plus (Nikon) was performed with those students who had baseline visual acuity of 20/40 or worse.

Results:

A total of 929 Malay students aged between 13 to 16 years were recruited. The prevalence of visual impairment was 15.3 per cent. Refractive error was the major cause of visual impairment (93.7 per cent prevalence 14.6 per cent). Other causes of visual impairment include amblyopia (4.2 per cent) and cornea opacity per cent. Types of refractive error include myopia (130 students, 97.0 per cent, prevalence 14.1 per cent) and astigmatism (39 students, 29.1 per cent, prevalence 0.5 per cent). There was no hyperopia noted from this study. The uncorrected refractive error was 59.4 per cent.

Conclusions:

The prevalence of visual impairment among Malay teenagers was 15.3 per cent in sub-urban area of Kota Bharu and the refractive error was the main cause (93.7 per cent). More than half of refractive error was uncorrected. Visual screening and health education should be emphasized to overcome this problem.

Key words: Vision, Screening, Visual impairment, Refractive error, Myopia.