



THE THIRD  
NATIONAL HEALTH AND MORBIDITY SURVEY  
2006  
(NHMS III)

# PSYCHIATRIC MORBIDITY

INSTITUTE FOR PUBLIC HEALTH  
NATIONAL INSTITUTES OF HEALTH  
MINISTRY OF HEALTH  
MALAYSIA  
2008



ISBN 978-983-3887-11-8



9 789833 887118

**THE THIRD  
NATIONAL HEALTH AND MORBIDITY SURVEY  
2006  
(NHMS III)**

**PSYCHIATRIC MORBIDITY**

**INSTITUTE FOR PUBLIC HEALTH  
NATIONAL INSTITUTES OF HEALTH  
MINISTRY OF HEALTH  
MALAYSIA  
JANUARY 2008**

Copyright © Institute for Public Health, National Institutes of Health, Ministry of Health, Malaysia  
2008. All rights reserved

This work is copyright. Institute for Public Health welcomes request for permission to reproduce in whole or part of its publication. Application and inquiries should be addressed to The Third National Health and Morbidity Survey project, Institute for Public Health, Ministry of Health, Malaysia

ISBN: 978-983-3887-11-8

**Suggested citation:**

Institute for Public Health (IPH) 2008. The Third National Health and Morbidity Survey (NHMS III) 2006, Psychiatric Morbidity. Ministry of Health, Malaysia

**Produced and Distributed by:**

The Third National Health and Morbidity Survey Project,  
Institute for Public Health,  
National Institutes of Health,  
Ministry of Health,  
Jalan Bangsar, 50590 Kuala Lumpur,  
Malaysia

Tel: +603-22979400 / +603-22831050  
Fax : +603-22823114 / +603-22832050

Any enquiries about or comments on this report should be directed to:

Principal Investigator,  
The Third National Health and Morbidity Survey Project,  
Institute for Public Health,  
National Institutes of Health,  
Ministry of Health,  
Jalan Bangsar, 50590 Kuala Lumpur,  
Malaysia

Tel: +603-22831050  
Fax : +603-22832050

Published by Institute for Public Health, Ministry of Health, Malaysia



## LIST OF RESEARCH TOPICS

Topic 1	Health Expenditure
Topic 2	Oral Health
Topic 3	Load of Illness
Topic 4	Health Utilization
Topic 5	Injury and Risk Reduction Practice
Topic 6	Physical Disability
Topic 7	Asthma
Topic 8	Dengue Prevention Practice
Topic 9	Health Information
Topic 10	Physical Activity
Topic 11a	Smoking
Topic 11b	Alcohol
Topic 12	Hypertension and Hypercholesterolemia
Topic 13	Diabetes Mellitus
Topic 14	Infant Feeding
Topic 15	Nutritional Status
Topic 16	Women's Health
Topic 17	Sexual Behaviour
<b>Topic 18</b>	<b>Psychiatric Morbidity</b>



**THE THIRD  
NATIONAL HEALTH AND MORBIDITY SURVEY  
2006  
(NHMS III)**

**PSYCHIATRIC MORBIDITY**

**Chapter I: Psychiatric Morbidity in Adult**

**Authors:**

Prof Maniam Thambu  
Universiti Kebangsaan Malaysia

Dr Abdul Kadir Abu Bakar  
Hospital Sentosa

Cik 'Abqariyah Yahya  
Institute of Medical Research

Dr Lim Chong Hum  
Hospital Kuala Lumpur

Dr Nurashikin Ibrahim  
Disease Control Division, MOH

Dr Salina Abd Aziz  
Hospital Kuala Lumpur

Dr Sarfraz Manzoor Hussain  
Hospital Kuala Lumpur

Dr Toh Chin Lee  
Hospital Kuala Lumpur

Dr Fauziah Mohammed  
Hospital Tengku Ampuan Rahimah

Dr Ahmad Faudzi Hj. Yusoff  
Principal Investigator

## Chapter II: Psychiatric Morbidity in Children and Adolescents

### Authors:

Dr Toh Chin Lee  
Hospital Kuala Lumpur

Dr Fauziah Mohammed  
Hospital Tengku Ampuan Rahimah

Prof Maniam Thambu  
Universiti Kebangsaan Malaysia

Dr Nurashikin Ibrahim  
Disease Control Division, MOH

Dr Sarfraz Manzoor Hussain  
Hospital Kuala Lumpur

Dr Lim Chong Hum  
Hospital Kuala Lumpur

Dr Salina Abd Aziz  
Hospital Kuala Lumpur

Cik 'Abqariyah Yahya  
Institute of Medical Research

Dr Ahmad Faudzi Hj. Yusoff  
Principal Investigator

*This research project was sponsored by Ministry of Health  
[Project Code : (P42-251-170000-00500(005000099) Sub code project : 42005000990001)]  
Institute for Public Health,  
Ministry of Health Malaysia.*

## **MESSAGE FROM THE DIRECTOR GENERAL OF HEALTH MALAYSIA**

Since independence, Malaysia has achieved remarkable progress economically and socially, notably in the health sector, through a well planned and comprehensive health care delivery system. However, Malaysia's health care system still has to grapple with many challenges, particularly the rising costs of health care and the increasing demands and expectations for quality care by our consumers. In this respect, the Ministry of Health formed the 'National Institutes of Health' to spearhead health research that will provide the body of evidence to help formulate health policies and create new tools to measure health impacts arising from the series of interventions made in the provision of health care. This will lead to an environment of better governance.

The first National Health & Morbidity Survey (NHMS) was conducted in 1986 by the Institute for Public Health (IPH) which is currently one of the research organizations under the umbrella of the National Institutes of Health (NIH). IPH was also given the task of conducting the second NHMS II in 1996 and the current NHMS III in 2006. Data and information gathered by these surveys are consistently and extensively been used by the Ministry of Health in formulating the Malaysian Health Plans and evaluating the intervention programmes.

The publication of the current NHMS III report would generate much interest amongst of all health care stakeholders in the country as well as international health organizations. It is my sincere wish that the data and information generated by NHMS III be fully distributed, discussed and utilized to enhance further the provision of health care in this country. The data generated on the national health and health - related prevalence would be useful in assessing the national health burden as well as allowing for international comparison of health systems achievements.

I would like to take this opportunity to congratulate all those directly involved in the conduct of the survey, namely members of the National Steering Committee, the Advisory Committee, Research Groups and the Working Committee for their untiring efforts in the planning and conduct of the survey as well as publication of the reports. I would like to specially place on record the Ministry's appreciation of the excellent work done by the Principal Investigator and his team and for their dedication and tenacious efforts in spearheading this project to fruition. The Ministry of Health is committed to conduct these National Health and Morbidity Surveys on a regular basis and hope that IPH will continue to provide the leadership in conducting future National Health and Morbidity Surveys in this country.

Thank you.



**Tan Sri Datuk Dr Hj. Mohd Ismail Merican**  
**Director General of Health, Malaysia.**



## **MESSAGE FROM THE DEPUTY DIRECTOR GENERAL OF HEALTH (RESEARCH AND TECHNICAL SUPPORT)**

The Research and Technical Support Programme of the Ministry of Health emphasizes the need for research in supporting decision making and planning the activities in the Ministry. Only then can we ensure that every decision made either in planning resources or providing services to the people is supported by evidence based information and ensuring better results and outcome. We would certainly prefer local expertise rather than depend on foreign experts to carry out local research.

Under the umbrella of the National Institutes of Health, the Institute for Public Health has actively been involved in conducting research in public health and the National Health and Morbidity Survey is one of the major research conducted by IKU. This is the third time IKU has been given the responsibility to conduct such a mammoth task. I am very pleased that a lot of improvement have been made in the way this survey was conducted based on the experience learnt during the first and second surveys. However, due to the nature of the community survey, not all diseases and health issues were able to be covered in this survey. The research teams had to conduct an extensive literature reviews for relevant and up to date information on the health status of the Malaysian population.

I believe that the information in these reports are extremely valuable to all decision makers at the National State and district levels as well as those interested in the health of the Malaysian population. It can be a tool in providing guidance in developing and implementing strategies for the disease prevention and control programme in Malaysia.

I would like to take this opportunity to congratulate the research team members who have successfully undertaken and completed this survey. I would also like to thank all individuals and agencies who directly or indirectly made the completion of this survey possible.

The Institute for Public Health again gained a feather in its cap by successfully completing the Third National Health and Morbidity Survey.



**Datuk Ir. Dr. M. S. Pillay,  
Deputy Director General of Health (Research and Technical Support).**

## **MESSAGE FROM THE DIRECTOR OF INSTITUTE FOR PUBLIC HEALTH**

This is the third time the Institute for Public Health (IPH) was given the task to conduct the National Health and Morbidity Survey. The frequency of the study is every 10 years and I am proud that the Institute is able to conduct the surveys successfully since it was first initiated in 1986.

I would like to take this opportunity to thank the Director-General of Health Malaysia, Tan Sri Datuk Dr. Hj. Mohd Ismail Merican, and the Deputy-Director General of Health (Research and Technical Support), Datuk Ir Dr. M.S. Pillay, whose invaluable support and guidance were instrumental in the successful completion of the third National Health and Morbidity Survey (NHMS III). Our appreciations are also extended to all members of the Steering Committee and the Advisory Committee of NHMS III.

I would like also to take this opportunity to congratulate the Principal Investigator and his Project Team Members in completing the NHMS III study and the publication of its report. The NHMS III was made possible through the collaboration of all agencies. The meetings, workshops and conferences that were organised, met their intended objectives and the hard work put up by the field staffs, ensured the three months data collection productive and successful.

My sincere gratitude also goes to Dr. Nirmal Singh, the former Director of the Institute for Public Health, Chairman of the Advisory Committee for his continuous support and guidance which contributed towards the successful completion of the study.

I hope the documentation of this report will be beneficial for future reference.

Finally, I would like to thank all those involved in the survey for a job well done, in making the NHMS III a success and finally producing the national report of this survey.



**Dr. Yahya Baba,**  
**Director, Institute for Public Health.**

## **MESSAGE FROM THE PRINCIPAL INVESTIGATOR NHMS III**

It is indeed a challenging task when the responsibility was given to me to conduct this survey. I learned the hard way and gained a lot of valuable experience in leading the survey. The survey also taught me lots of new techniques and how it should be addressed which is not available in the textbook. In doing so, I also learned the meaning of friendship and honesty, how to manage people involved and manage properly the given budget.

I would like to take this golden opportunity to thank the Director General of Health Malaysia, Tan Sri Datuk Dr. Hj. Mohd Ismail Merican, Chairman of the Steering Committee for giving me the confidence, valuable support and guidance for the success of this survey.

I would also like to thank the Deputy Director General of Health Malaysia (Research & Technical Support), Datuk Ir. Dr. M.S. Pillay as Co-chairman of the Steering Committee for his patience in seeing through the survey until its completion the production of the national report.

My sincere appreciation to current Director of Institute for Public Health (IPH), Dr. Yahya Baba and former Directors of IPH, Dr. Nirmal Singh, Dr. Sivashamugam and Dr. Sulaiman Che Rus for their trust in me to carried out this survey. Their support for the survey has resulted the smooth conduct and success of the survey.

Special thanks to all State Directors, State Liaison Officers, Field supervisors, Scouts, Data Collection Team members for their full cooperation and efforts to ensure the success of the data collection. My appreciation is also extended to the Assistant Principal Investigator, Dr. Mohd Azahadi Omar, Main Research Group members, members of the Working Committee, Data Management group members, Statistics Consultant, Research group members, Research Officers and Research Assistants for their patience and tolerance of my behaviour to ensure the success of the study. Nevertheless I acknowledge a lot more can be done in strengthening the study.

I believe this report will serve as a useful reference for future surveys and helps in improving the local data sources and also add new valuable information for the Ministry of Health to use in the planning process. I also would like to encourage all research members to participate in further analysis of the data and publish the findings in peer review journals.

Thanks to everyone.



**Dr. Hj. Ahmad Faudzi Hj. Yusoff,  
Principal Investigator, The Third National Health and Morbidity Survey,  
Institute for Public Health.**

## *D*EDICATION

The authors dedicate this volume to the innumerable people who suffer from the consequences of emotional disorders, sometimes without adequate assistance, often misunderstood and always burdened by the stigma of mental illness.

May this study help to shed some light along their path.

## *A*UTHORS' STATEMENT

Since the National Health Morbidity Survey (NHMS) III was conducted in 1996 there has been increasing awareness in this country of the importance of mental health and this has been reflected by policy makers and purse string holders.

The many limitations evident in the survey of 1996 are unfortunately still present in NHMS III. A screening questionnaire without a second-stage diagnostic interview cannot provide accurate data. Diagnoses cannot be made. Due to circumstances beyond our control we were unable to rectify these in this present study. Furthermore, the response rate was unusually low. The authors wish to inform readers that the conclusions from this study are to be taken with caution because of the limitations inherent in this survey. We present these findings with the full awareness that they are merely rough indicators of the areas of need in this country and hope that in the next NHMS, a decade from now, researchers would be able to generate more accurate and reliable data.

We welcome constructive comments and suggestions from readers.



## *A*CKNOWLEDGEMENT

### **Chapter I :**

The authors wish to thank all those who contributed to the preparation of this report. Special thanks go to the staff of the IKU and to Mr. C. Karuthan who provided invaluable statistical support. Their untiring efforts and uncomplaining responses to our many requests are deeply appreciated.

Special thanks is also extended to those who were directly or indirectly involved in data collection and data editing process. Their invaluable input to this survey has made it possible for the research subgroup members to produce this report.

Finally, we wish to express our gratitude to the NHMS Steering Committee and Advisory Committee for their guidance and support and to the Ministry of Health, Malaysia, for funding this research project.

### **Chapter II :**

The Research Group would like to thank the NHMS III secretariat for facilitating their work. We would also like to thank the World Health Organization for their permission for the use of the Reporting Questionnaire for Children in this study. Thanks are also due to all those who have made this work possible.

## Table of contents

<b>Message from the Director General of Health Malaysia</b>	<b>i</b>
<b>Message from the Deputy Director General of Health (Research and Technical Support)</b>	<b>ii</b>
<b>Message from the Director of Institute for Public Health</b>	<b>iii</b>
<b>Message from the Principal Investigator NHMS III</b>	<b>iv</b>
<b>Dedication</b>	<b>v</b>
<b>Authors' statement</b>	<b>vi</b>
<b>Acknowledgement</b>	<b>vii</b>
<b>Table of contents</b>	<b>viii</b>
<b>List of figures</b>	<b>xi</b>
<b>List of tables</b>	<b>xii</b>
<b>Abbreviations</b>	<b>xiii</b>
<b>Glossary of terms</b>	<b>xv</b>

## **Chapter I Psychiatric morbidity in adult**

---

<b>Abstract</b>	<b>3</b>
<b>Introduction</b>	<b>4</b>
<b>Literature review</b>	<b>5</b>
Studies and instruments	5
Prevalence of mental disorders	6
<b>Objectives</b>	<b>7</b>
General objective	7
Specific objectives	7
<b>Methodology</b>	<b>8</b>
Scope of the study	8
Sampling designs and sample size	9
Preparation of field areas and logistic support	10
Method of data collection	10
Field preparations	11
Quality control	12

Data management	12
<b>Findings</b>	<b>13</b>
Generals findings	13
Specific findings	14
<b>Discussion</b>	<b>24</b>
Limitation of study	26
<b>Conclusion</b>	<b>26</b>
<b>Recommendations</b>	<b>27</b>
Policy	27
Mental health promotion targeted to high risk groups	27
Training of primary care personnel and general practitioners	27
Inter-sectoral collaboration	28
Creating posts for specific categories of staff	28
Insurance coverage for treatment of mental illness	28
<b>References</b>	<b>29</b>
<b>Appendix</b>	<b>31</b>

## **Chapter II Psychiatric morbidity in children and adolescents**

---

<b>Abstract</b>	<b>51</b>
<b>Introduction</b>	<b>52</b>
<b>Literature review</b>	<b>53</b>
<b>Objectives</b>	<b>56</b>
General objective	56
Specific objectives	56
<b>Methodology</b>	<b>57</b>
Scope of the study	57
Sampling designs and sample size	57
Preparation of field areas and logistic support	59
Method of data collection	59
Field preparations	60

Quality control	60
Data management	61
Definition of terms	61
<b>Findings</b>	<b>63</b>
Generals findings	63
Specific findings	63
<b>Discussion and conclusions</b>	<b>69</b>
<b>Recommendations</b>	<b>72</b>
<b>References</b>	<b>73</b>

**LIST OF FIGURES**

<b>CHAPTER I</b>		<b>PAGE</b>
Figure 5.1	Number of respondents	13
Figure 5.2	Distribution of prevalence of recent psychiatric morbidity by age groups	15
Figure 5.3	Recent psychiatric morbidity by educational level	16
Figure 5.4	Prevalence of long-term psychiatric morbidity by educational level	19
Figure 5.5	Prevalence of ong-term psychiatric morbidity by marital status	19
Figure 5.6	Prevalence of long-term psychiatric morbidity by household income	20
Figure 5.7	Prevalence of long-term psychiatric morbidity by employment status	20
Figure 5.8	Prevalence of long-term psychiatric morbidity by other illnesses	21
Figure 5.9	Suicidal ideation A by age group	22
Figure 5.10	Distribution of subscale scores of GHQ	24



## LIST OF TABLES

		PAGE
<b>CHAPTER I</b>		
Table 5.1	Characteristics of respondents (aged 16 years and above) compared with population of Malaysia in 2006 (aged 16 years and above).	14
Table 5.2	Prevalence of recent psychiatric morbidity by gender, age, marital status, educational and household income	16
Table 5.3	GHQ-28 scoring by other illness	18
Table 5.4	Prevalence of long-term psychiatric morbidity by other illness	21
<b>CHAPTER II</b>		
Table 5.1	Distribution of response and non response	63
Table 5.2	Prevalence of child psychiatric morbidity by state	64
Table 5.3	Estimated prevalence of psychiatric morbidity by socio-demographic characteristics	65
Table 5.4	Estimated prevalence of psychiatric morbidity in children and adolescents by residence	66
Table 5.5	Estimated prevalence of psychiatric morbidity in children and adolescents by associated factors	67
Table 5.6	Distribution of positive responses on each item of RQC	67
Table 5.7	Distribution of positive responses for concentration / hyperactivity items	68
Table 6.1	Prevalence of psychiatric morbidity in children and adolescents by residence: NHMS II & III	69
Table 6.2	Prevalence of psychiatric morbidity by socio-demographic characteristics: NHMS II & NHMS III	70
Table 6.3	Distribution of positive responses on each item of RQC - NHMS II	71
Table 6.4	Distribution of positive responses on each item of RQC - NHMS III	71

## **ABBREVIATIONS**

ADHD	Attention Deficit Hyperactivity Disorder
APA	American Psychiatric Association
CI	Confidence Interval
CIDI	Composite International Diagnostic Interview
DAWBA	Development and Well-Being Assessment
DE	Design effect
DIS	Diagnostic Interview Schedule
DSM	Diagnostic and Statistical Manual of Mental Disorders
EB	Enumeration Blocks
ECA	Epidemiologic Catchment Area
e.g	Example
GHQ	General Health Questionnaire
GP	General Practitioner
i.e	Example
K-SADS	Schedule for Affective Disorders and Schizophrenia for School-aged Children
LQ	Living Quarters
NCS	National Co morbidity Survey
NGO	Non Governmental Organization
NHMS	National Health and Morbidity Survey
OR	Odds Ratio
PPS	Probability Proportionate to Size

SA	Self-Administered
SCID	Structured Clinical Interview for DSM-III-R Diagnosis
SRQ	Self-Report Questionnaire
RQC	Reporting Questionnaire for Children
RR	Response rate
vs	Versus
WHO	World Health Organization

## GLOSSARY OF TERMS

**Accepted and valid responses** - responses where a sufficient number of responses were made to enable classification of a person as a case (where at least 6 positive responses were made) or non-case.

**CGHQ-scoring** - this refers scoring using the 2nd, 3rd and 4th columns for each item and identifies longer lasting or chronic symptoms.

**Eligible population** - adults aged 16 and above

**General Health Questionnaire (GHQ-28)** - this is one of the versions of the GHQ developed by David Goldberg as a screening instrument for largely non-psychotic disorders, though some psychotic disorders may be picked up as well.

**GHQ-scoring** - this refers to scoring using only the 3rd and 4th columns for each item on the questionnaire. It identifies recent (within a few weeks) symptoms.



# CHAPTER |



## PSYCHIATRIC MORBIDITY IN ADULT



## **ABSTRACT**

This is a cross-sectional survey of psychiatric morbidity among adults using the 28-item version of the General Health Questionnaire (GHQ-28), being part of the National Health and Morbidity Survey 2006. A two-stage stratified random sampling design was employed utilizing the sampling frame maintained by the Department of Statistics, Malaysia. The objectives of this study were to estimate the prevalence of psychiatric morbidity among adults aged 16 years and above and to provide recommendations to relevant stakeholders providing mental health services.

The GHQ-28 has previously been validated for use in the local population and a cut-off score of 6 and above to qualify for caseness, was used. In addition, the GHQ-28 also yielded data on insomnia and suicidal ideation, as well as on the four domains of depression, anxiety, social dysfunction and somatic symptomatology. Of the 36,519 eligible respondents aged 16 years and above, 22,153 (61%) completed enough items to enable classification as cases or non-cases. The overall adjusted prevalence was 11.2% for the country. Females had significantly higher rates [12.1% versus 10.4%; adjusted OR 1.17 (CI : 1.1 - 1.3)] The older people, 70 - 74 years of age, and the youngest, 16 - 19 years of age had higher prevalence than the rest (19.5% and 14.4% respectively). The widowed, the single and the divorced had higher rates than the married. People with no education and those in the lowest income group had higher prevalence. The overall prevalence of psychiatric caseness is 48.1% by CGHQ-28 scoring. It was found that 13.9% of the respondents had acute insomnia and 47.7% had chronic insomnia. Overall there was a 6.3% rate of acute suicidal ideation and 25.8% rate of chronic suicidal ideation. The 16 - 24 years age group had the highest prevalence of suicidal ideation of 11%. Those experiencing chronic pain and those who have had a recent admission to hospital had higher rates of psychiatric morbidity. It is important to note that causality is not implied in this study. The high non-response rate of 39% indicates that caution is warranted in interpreting these findings.

This study reveals considerable psychiatric morbidity in the Malaysian population. Suicidal ideation among the younger age groups should be addressed. Other vulnerable groups who need special attention are women, the elderly, the widowed, the single and the divorced. As such there is a great need for the training of primary health care personnel at all levels in the detection and treatment of milder forms of psychiatric illnesses and in the referral of more serious conditions.



## **1. INTRODUCTION**

The vital importance of the mental health of a nation for the overall well being of the population and socio-economic development is increasingly recognized. The oft-repeated slogan "There is no health without mental health" has become a truism, but its implication in the world of competing healthcare demands, has perhaps not been fully explored. Burden of disease studies and computations of disability adjusted life years have incontrovertibly shown that psychiatric illnesses figure prominently in the top ten conditions with great potential to negatively affect economic growth. The National Health Morbidity Survey in 1996 found that people with emotional disorders are at higher risk of developing physical illnesses and also have disproportionately higher rates of utilization of healthcare services (MOH 1996). Delay in recognizing mental disorders worsens prognosis, necessitating more intensive and consequently more expensive interventions. In such situations treatment tends to be prolonged, and often leaves much disability. Hence early identification and assistance to them will benefit both the suffering individual as well as society.

Epidemiological data on the prevalence and distribution of psychiatric morbidity is vital for the planning of mental health services. Such data cannot be obtained from hospital records, which only reflect the more severely ill or those who utilise hospital services. Studies have shown that vast majority of psychiatrically ill people do not consult psychiatrists (Carr & Donovan 1992). Goldberg and Huxley's study (1992) showed that less than 10% of all people who have a psychiatric disorder have ever been seen in a mental health facility. Psychiatric illnesses causes considerable suffering even in its mildest forms. This is often not recognised even by medical personnel who may have the misconception that a person with mental illness must be psychotic. In actuality, a vast majority of psychiatrically ill persons have non-psychotic illnesses. Their suffering is, nevertheless, significant and often seriously impairs their functioning. This is reflected in their increased hospitalization rates as well as higher rates of utilization of hospital services (MOH1996)

Data on the prevalence of mental disorders in Malaysia is sparse. Ramli et al. (1991) study was the first to attempt a community survey, but was conducted on a rural population, hence cannot be generalized to the country as a whole. There have been more recent, but yet to be published studies. The NHMS studies reference are the most ambitious in terms of sample size and coverage, but unfortunately use only screening instruments. The absence of detailed data seriously hampers many aspects of the mental health field. Planning for training of personnel, allocation of resources, and provision of services in needy areas are some of the activities affected. Policy planners cannot be given a clear picture of the gravity, or otherwise, of the burden of illness due to mental ill-health.

Some sectors of the population are at greater risk than others. Younger people, women and the elderly are particularly vulnerable populations that have been highlighted in most studies. For example, young women attempt suicide more often than their male counterparts and contribute significantly to the morbidity associated with suicidal behaviour (Beautrais 2006). Mental health programs must differentially address such issues.

In any population the vast majority of people would not have diagnosable clinical illness. Nevertheless they may have psychiatric symptomatology below the threshold level. Some of these

symptoms may have significant impact on the sufferers' psychosocial functioning, and may even be debilitating. An example is insomnia. In many studies about 20% of the populace has been found to be suffering from this very distressing affliction. Insomnia is known to lead to difficulties in handling activities involving high speed machinery and contributes to accidents at work as well as on the roads. Knowledge about the magnitude of this problem would be helpful.

## **2. LITERATURE REVIEW**

### **2.1 Studies And Instruments**

The diagnosis of psychiatric disorders depends almost entirely on signs and symptoms (phenomenology), and there are rarely any biological diagnostic tests that can be performed. For the purpose of an epidemiological study, the elicitation of signs and symptoms through an unstructured clinical interview is problematical. Unstructured interviews may be unreliable, and studies have demonstrated low inter-rater reliability of these interviews (Cooper et al. 1972). Unstructured clinical interviews are time consuming and require trained psychiatrists for their administration, therefore consume huge amounts of resources if used in a large epidemiological survey.

In the United States of America (US), the recognition of the need for a structured research diagnostic interview that could generate reliable psychiatric diagnoses in general population samples led to the developments of the Diagnostic Interview Schedule (DIS) (Robins et al. 1981). The DIS generated DSM-III (APA 1980) diagnoses, and could be used by trained non-clinician interviewers. It was first used in the Epidemiologic Catchment Area (ECA) Study, a landmark study that interviewed over 20,000 respondents in a series of five community epidemiological surveys. For a considerable period of time, the ECA had been the main source of data in the US on the prevalence of psychiatric disorders and service utilization related to these disorders (Bourdon et al. 1992, Regier et al. 1993, Robins, Locke & Regier 1991). The DIS, however, has been criticized for having poor sensitivity particularly for schizophrenia and antisocial personality disorders (Folstein et al. 1985).

The National Comorbidity Survey (NCS) (Kessler 1994) was the first psychiatric epidemiological survey to administer a broad based research diagnostic interview to a nationally representative sample of the United States. While the ECA was carried out on a small number of local samples, the NCS was carried out on a national sample.

The NCS psychiatric diagnoses were based on DSM-III-R (APA 1987) criteria and were generated from a modified version of the Composite International Diagnostic Interview (CIDI) (WHO 1990), a structured diagnostic interview based on the DIS and designed to be used by trained non-clinician interviewers (Kessler 1994). Field trials of the CIDI have documented good inter-rater reliability, test-retest reliability, and validity of almost all diagnoses (Wittchen 1994). For acute psychotic disorders, structured instruments like the CIDI have been shown to have low reliability and validity. The NCS therefore included clinical re-interviews with respondents who reported evidence of schizophrenia or other non-affective psychoses, using an adapted version of the Structured Clinical Interview for DSM-III-R Diagnosis (SCID) (Spitzer et al. 1992), an instrument with demonstrated reliability in the

diagnosis of schizophrenia (William et al. 1992).

The instruments mentioned above entail long interviews, and therefore may introduce difficulties in a community survey which covers various aspects of physical health in addition to mental health aspects. Therefore it was decided that a shorter, self-reporting questionnaire be used for the National Health and Morbidity Survey III. Several such questionnaires are available, including the Self-Report Questionnaire (SRQ-20) (Harding et al. 1980) and the General Health Questionnaire (Goldberg 1978). Both of these instruments do not provide diagnoses, but rather, are indicator of "caseness". That is, they indicate whether the respondent is likely to have psychiatric morbidity. The SRQ had been used in a study in rural Selangor, but demonstrated relatively low validity coefficients in the local population (Ramli et al. 1991).

The GHQ was developed by Goldberg as a screening instrument, for use in community settings, primary care or general medical outpatients. It exists in several versions, viz. the 60, 30, 28, 20 and 12 item scales. There have been many published validity studies of the GHQ performed in different settings, and the instrument has been translated into many languages. Goldberg and Williams (1988) showed that the instrument had a median specificity of 80% and sensitivity of 86%. Factor analysis by Huppert et al. (1987) showed that on the whole the GHQ is a robust instrument. For this survey, the GHQ-28 was chosen, as it is relatively short, and exists in a scaled version with the following subscales: somatic symptoms, anxiety and insomnia, social dysfunction and severe depression.

## **2.2 Prevalence Of Mental Disorders**

Cross-sectional studies of the prevalence of psychiatric disorders are the most common type of psychiatric epidemiological investigation. Estimates have been based on treatment records (treated prevalence) or general population samples ("true" prevalence studies).

Most of the earliest investigations were based solely on treatment records (Dohrenwend & Dohrenwend 1969). A treated prevalence study by Faris and Dunham (1939) carried out in Chicago found that rates of schizophrenia were highest for those living in deteriorated rooming house areas in the inner city. Since then, other studies have also examined the psychosocial correlates of psychiatric disorders, including socioeconomic status. In general, the median prevalence rate among the first generation studies was about 4% (Dohrenwend & Dohrenwend 1982).

Second generation studies arose after World War II. Among the early studies initiated to examine the prevalence of and risk factors associated with psychosomatic and effective symptoms in the general population were the studies by Strole et al. (1962) in Manhattan, and the Nova Scotia Stirling Country Study (Leighton et al. 1963). In these second generation studies, subjects were directly interviewed, and data was supplemented from other sources. The Stirling Country Study estimated the prevalence of mental illness to be 20%. Using a similar methodology, the Midtown Manhattan Study (Strole et al. 1962) reported that 23% of the sample was severely impaired. Hollingshead and Redlich (1958) in New Haven conducted a study on the impact of social class on the treatment experience of psychiatric patients. They found a higher treated prevalence for the lower social classes, and also that the type of therapy patients received differed according to their

class of origin.

Third generation studies were characterized by their use of structured diagnostic assessment tools. Changes in nosology resulted in the development of operationalised diagnostic criteria, culminating in the creation of the DSM-III. This development made it possible to create structured diagnostic assessment instruments, which were then used, in population-based studies. Among the largest third generation studies were the Epidemiological Catchment Area (ECA) studies and the National Comorbidity Survey.

The ECA found that overall, about 32% of the adults surveyed met criteria for at least one of the assessed mental disorders in their lifetime, and about 15% had a DIS-DSM-III mental disorder in the last month. The lifetime prevalence was 36% for men and 30% for women. Among the subgroup differences noted were higher rates for those with the lower educational attainment, unemployment and separated or divorced marital status. The instrument used was the University of Michigan Composite International Diagnostic Interview (CIDI) (WHO 1990). Because of the ECA finding that reliability and validity were poor when psychotic disorders were assessed by non-clinicians, persons who had psychotic symptoms were re-interviewed by a clinician with the Structured Clinical Interview for DSM-III-R (Spitzer et al. 1992). The survey found that the lifetime prevalence for any DSM-III-R disorder was 49% and the one year prevalence was 28%. The lifetime prevalence rates were 25% for anxiety disorders, 27% for substance abuse and dependence, and 19% for affective disorders. A high level of comorbidity was found. In those with a lifetime disorder, 54% had three or more lifetime disorders.

No comparable data regarding psychiatric disorders are available for Malaysia. The two stage study by Ramli et al. (1991) was done in a limited rural population, and the screening instrument used in the first stage had low validity coefficients. Furthermore, the second stage consisted of an unstructured clinical interview. The National Health and Morbidity Survey II (NHMS II 1996) used the General Health Questionnaire-12 and found an adjusted prevalence of psychiatric morbidity of 10.7%. However, no psychiatric diagnoses could be generated, and therefore no information could be derived regarding the prevalence rates of individual psychiatric disorders.

### **3. OBJECTIVES**

#### **3.1 General Objective**

To determine the estimated prevalence of psychiatric morbidity in the adult Malaysian population.

#### **3.2 Specific Objectives**

3.2.1 To determine the estimated prevalence of recent and long-term psychiatric morbidity in the adult Malaysian population.

- 3.2.2 To determine the severity of symptoms according to the subscale scores on the GHQ-28.
- 3.2.3 To determine the prevalence of suicidal ideation in the general population.
- 3.2.4 To determine the prevalence of insomnia in the general population.
- 3.2.5 To determine the association of psychiatric morbidity, suicidal ideation and insomnia with socio-demographic characteristics.
- 3.2.6 To determine the association of psychiatric morbidity, suicidal ideation and insomnia with comorbid disorders and lifestyle factors.

## **4. METHODOLOGY**

### **4.1 Scope of the Study**

Research problems, scopes and main issues to be included in NHMS III were obtained from discussions and feedbacks from Ministry of Health state health managers, as well as experts from the local universities and individuals. The main research team members of the NHMS III reviewed and studied closely the feasibility and practicality of the suggested research topics for this community-based household survey. Extensive literature review was initiated. Technical and research experts in relation to the identified research areas were consulted for further advise and comments. The main research group used the following criteria in considering the suggested scopes for this survey:

- a) The issue/problem is current or has potential high prevalence.
- b) The issue/problem is focused on disease/disorders associated with affluence, lifestyle, environment and demographic changes.
- c) The issue/problem is causing physical, mental or social disability.
- d) The issue/problem has important economic implications.
- e) It is feasible to implement interventions to reduce the problem.
- f) The information related to the issue/problem is not available through the routine monitoring system or other sources.
- g) The information is more appropriately obtained through a nation-wide community survey, and
- h) It is feasible to obtain through a nation-wide community-based survey.

The short-listed research topics then presented to the Advisory Group Members for further deliberation and decisions. These topics were later refined by the research team members based on the decisions made at the Advisory Committee meeting. It was tabled to the Steering Committee and 18 research topics were approved to be included in the NHMS III.



## 4.2 Sampling Design and Sample Size

In calculating the sample size, stratification and sampling design, advice was sought from the Methodology Division Department of Statistics Malaysia as well as from several other biostatistics consultants.

### 4.2.1 Sampling frame

The sampling frame for this survey is an updated until 2004; an effort undertaken prior to the implementation of Labour Force Survey (LFS) 2004. In general, each selected Enumeration Blocks (EB) comprised of 8 sampled Living Quarters (LQ). The EBs was geographically contiguous areas of land with identifiable boundaries. Each contains about 80-120 LQs with about 600 persons. Generally, all EBs are formed within gazetted boundaries.

The EBs in the sampling frame was also classified by urban and rural areas. The classification into these categories was in terms of population of gazetted and built-up areas as follows:

Stratum	Population of gazetted areas and built-up
Metropolitan	75,000 and above
Urban large	10,000 to 74,999
Urban small	1,000 to 9,999
Rural	rest of the country

For sampling purposes, the above broad classification was found to be adequate for all states in Peninsular Malaysia and the Federal Territories of Kuala Lumpur and Labuan. However, for Sabah and Sarawak, due to problems of accessibility, the rural stratum had to be further sub-stratified based on the time taken to reach the area from the nearest urban centre.

For the purpose of urban and rural analysis, Metropolitan and Urban Large strata are combined together thus referred to as 'urban' stratum, while for Urban Small and the various sub-divisions of the rural areas they are combined together to form to a 'rural' stratum.

### 4.2.2 Sampling design

A two stage stratified sampling design with proportionate allocation was adopted in this survey. The first stage sampling unit was the EB and within each sampled EB, the LQs were selected as second stage unit. One LQ was estimated to comprise of 4.4 individuals. All households (HH) and persons within a selected LQ were studied.

### 4.2.3 Sample size

The sample size was determined based on 95% Confidence Interval (CI) and the following factors were taken into consideration:

a) Expected prevalence rate

The prevalence rate of the health problems for Malaysia obtained from the National Health and Morbidity Survey II (NHMS II) were used to estimate the overall sample size. Using the previous finding of 10% prevalence rate, the initial sample size at the state level was calculated in order to come up with overall sample size. The size was further apportioned for each state using the probability proportionate to size (PPS) method.

b) Response rate of the NHMS II

The response rates, which ranged from 83 to 97% for the NHMS II of each state, were taken into consideration in the course of the determination of sample size.

c) Margin of error and design effect

As the factors of precision and efficient of the survey are paramount, the decision reached for the targeted margin of error is 1.2 and the design effect valued at 2. These values were used at the initial stage of the calculation of the sample size of each state.

The survey findings addressing the specific objectives of this survey are expected to be used for state level programmed planning. Thus, the calculation for the sample size has taken into consideration that the data is to be analyzed at the state level.

In addition to the major factors mentioned earlier, the availability of resources, namely, financial and human resources, and the time taken to conduct this survey also becomes part of the process of the determination of sample size.

### **4.3 Preparation of Field Areas and Logistic Support**

A number of state liaison officers were recruited in preparation for the survey proper. Strong networking with state liaison officers and District Health Officers (MOH and local authorities) from the areas sampled for the survey was established. Field scouts were mobilized from these areas to identify and tag the LQ's selected for the survey, as well as to inform the community and related government agencies of the importance and schedule of the planned survey. State liaison officers were also assisting Field Supervisors in the arrangement of transportation, accommodation and other logistics for the survey teams.

### **4.4 Method of Data Collection**

#### **4.4.1 The questionnaire**

The study instrument was a self-administered (SA) questionnaire, the General Health Questionnaire GHQ-28 which was designed to be used as a screening test for detecting psychiatric disorders

(Goldberg 1978). Permission for its use was obtained from the publishers. The questionnaire has been validated for use in the Malaysian population. A cut-off score of 6 and above was used to indicate caseness. The GHQ-28 is able to provide additional information regarding symptoms of anxiety, depression, somatic symptomatology and social dysfunction. Additionally, the GHQ-28 identifies the presence of suicidal ideation and insomnia.

Two ways of scoring the GHQ-28 have been reported (Goldberg and Williams 1988). The conventional method is to score the last 2 columns as indicating a positive response. This would indicate the presence of symptoms in recent weeks. However, an alternative method of scoring the GHQ-28 is to include the second, third and fourth columns which would identify persons with long standing symptoms. The former method of scoring is called "GHQ scoring" indicating acute symptoms and the later method is called "CGHQ scoring" indicating the presence of chronic symptoms. Both these methods of scoring were employed in this study.

The questionnaire was translated into the following local languages: Malay, Chinese and Tamil. All versions were back-translated into English by independent translators to ensure the accuracy of the translations.

The self-administered questionnaires were left with the selected household members and were collected by the research team at a later time. Respondents were required to fill in the questionnaires themselves and submit the completed questionnaires to the data enumerators in a sealed envelope as their responses were deemed confidential.

## **4.5 Field Preparations**

Two main survey implementation groups had been formed: the Central Coordinating Team (CCT) and the field team. The CCT's main role was to monitor and coordinate the progress of implementation and provide administrative support in terms of financial and logistic arrangement for the field survey. The Field Teams were responsible to oversee and manage the field data collection process as well as undertake quality control.

The field data collection was conducted throughout Malaysia simultaneously, spanning within a continuous period of 4 months starting from April 2006. Teams were organized to move into 5 regions in Peninsular Malaysia, 2 regions in Sabah and 4 regions in Sarawak for data collections.

### **4.5.1 Pilot study**

A pilot study was conducted on a sample of EB's (not included in the NHMS III) about 2 months prior to the actual nationwide survey. It was conducted in three different areas in and around the Klang Valley, namely Sepang, Klang and Bangsar. The population in these locations comprised of three distinct socio-demographic strata that are rural, semi-urban and urban respectively. The pilot study focused on the following aspects of the survey such as testing of the questionnaire, testing of the field logistic preparation, testing of the scouting activities and testing of the central monitoring and logistic support.



#### **4.5.2 Training of data collection teams**

A two weeks training course was held for field supervisors, team leaders, nurses and interviewers to familiarize them with the questionnaire, develop their interpersonal communication skills and appreciate the need for good teamwork. Briefing on the questionnaire, mock interview in the classroom and individual practice under supervision was conducted during the training.

#### **4.6 Quality Control**

Quality control procedures for the data collection were done at two stages, field and central. Detail description of quality control process has been described in NHMS III protocol.

#### **4.7 Data Management**

##### **4.7.1 Data screening**

The following data screening exercises had been conducted at field and central levels prior to data entry:

- a) Field data screen by each interviewers at the end of his/her interview.
- b) Field data screen of each question by peer interviewers through exchanging questionnaire booklets.
- c) Field data screen by team leaders and field supervisors.
- d) Central data screening of the questionnaire by the quality control team.

##### **4.7.2 Data entry**

The data entry system was developed to record the information collected during the data collection phase. It is a web based system that allows multiple simultaneous accesses to the database. The NHMS III used a double manual data entry method and any discrepancy between both entries was verified by the supervisors. The data entry started simultaneously with data collection (first week of April 2006) and was completed at the end of January 2007. The data entered was stored in the database according to the module. The databases were designed using Structured Query Language (SQL) which is a standard language for relational database management system.

##### **4.7.3 Data analysis**

Data analysis was done by exporting the data into other analysis tools such as Microsoft Excel, SPSS and STATA. The data in database (text form) was exported to the Microsoft Excel form then to the SPSS and STATA. The raw data was cleaned and analysed according to the terms, working definition and dummy table prepared by the research groups. All the analysis process were monitored and advised by the NHMS III Statistics Consultant.

## 5. FINDINGS

### 5.1 General Findings

There was a total of 36,519 respondents aged 16 years and above in this study of whom 20,446 (55.9%) responded to all items in the GHQ, 3,014 (8.3%) responded to <28 items and 13,059 (35.8%) did not respond at all (Figure 5.1). However, among the 3,014 incomplete responders, 1707 completed enough items to enable classification as cases or non-cases giving a proportion of 60.7%.

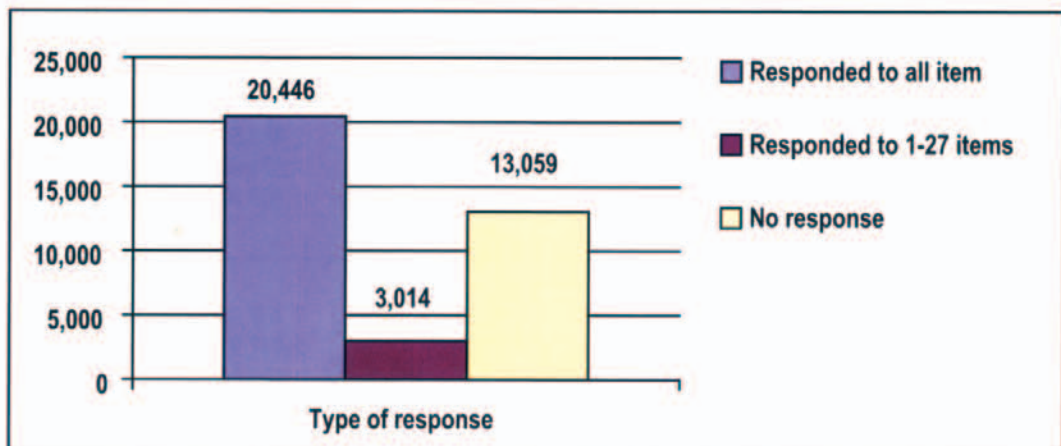


Figure 5.1: Number of respondents

The non-response rate per item ranges from 37% - 40% and there was no particular item that the respondents avoided altogether (i.e. non-response rate was spread fairly uniformly among all items). Reasons for non-response were not systematically collected. However, comparisons between responders and non-responders did not show significant differences in terms of sociodemographic variables such as education and income, except for the relatively higher response rates among urban dwellers. Hence, because of the rather high non-response rate the prevalence figure should be interpreted with caution. However, comparisons between demographic groups may be made.

As shown in Table 5.1, the characteristics of the respondents compared with population of Malaysia in 2000 aged 16 and above are comparable i.e the sample population is broadly representative of the Malaysian population.

**Table 5.1: Characteristics of respondents (aged 16 years and above) compared with population of Malaysia in 2006 (aged 16 years and above)**

Characteristics of respondents	% Respondents (unweighted)		% Malaysian population (age 16 years and above)	
	N = 36,519		N = 13,653,884	
	n	%	n	%
<b>Gender</b>				
Male	16,455	45.1	6,132,811	45.0
Female	20,064	54.9	7,521,073	55.0
<b>Age</b>				
16-24	7,567	20.7	2,812,676	21.0
25-34	7,333	20.1	2,753,444	20.0
35-44	7,530	20.6	2,818,220	21.0
45-54	6,618	18.1	2,488,554	18.0
55-64	4,197	11.5	1,571,603	12.0
>=65	3,274	9.0	1,209,387	9.0
<b>Race</b>				
Malays	20,176	55.3	7,457,909	55.0
Chinese	7,351	20.1	2,947,221	22.0
Indians	2,992	8.2	1,195,862	9.0
Other Bumis	4,209	11.5	1,405,864	10.0
Others	1,791	4.9	647,028	5.0
<b>Residence</b>				
Urban	21,584	59.1	8,820,450	65.0
Rural	14,935	40.9	4,833,434	35.0

## 5.2 Specific Findings

### 5.2.1 Recent psychiatric morbidity

#### a) Adjusted prevalence

The prevalence of psychiatric caseness by GHQ-28 in this survey was 11.2%.

#### b) By state

The highest prevalence for GHQ caseness was for the state of Negeri Sembilan (21.1%) followed by Johor (15.9%), Perak (15.5%) and Pulau Pinang (14.7%). The states with the lowest prevalence were W.P Labuan (3.0%), Kelantan (4.4%) and Terengganu (5.2%). Prevalence in the rural area was lower at 8.5% compared to 12.6% in urban areas [Adjusted OR 0.68% (CI: 0.59 - 0.79)] (Table 5.2).

### c) Adjusted prevalence of psychiatric morbidity by socio demographic factors

The prevalence among females was 12.1% (CI: 11.3 - 12.9) while the prevalence in males was 10.4% (CI: 9.6-11.2) with the adjusted Odds Ratio (OR) of 1.2% (CI: 1.1 - 1.3).

Figure 5.2 showed that the age group with the highest prevalence was the 70-74 years age group, with the prevalence of 19.5% (CI: 13.0 - 28.2), however, this was based on a sample size of 103 out of 917 eligible respondents. This was followed by the 16-19 age group with a prevalence of 14.4% (CI: 12.6 - 16.5) and the 20-24 age group with a prevalence of 12.1% (CI: 10.7 - 13.5). The age groups with the lowest prevalence were the 75-79 years age group, with a prevalence of 8.7% (CI: 3.2 - 21.1) (this was based on the completer sample size of 46 out of 501) and the 25-29 age group with the prevalence of 9.1% (CI: 7.9 - 10.3).

In terms of marital status, the married group had the lowest prevalence [10.5% (CI: 9.8 - 11.3)], adjusted OR relative to the not married group 0.7% (CI: 0.7 - 0.8). The prevalence for the other groups were widow-widower 12.2% (CI: 9.2 - 16.0), not married group 13.1% (CI: 12.1 - 14.3%) and the divorced group 13.6% (CI: 10.0 - 18.3) (Table 5.2).

Those with no education had the highest prevalence at 16.6% (CI: 10.6 - 24.9) but this was based on 135 completers out of 3462 respondents. For those with primary level education the prevalence was 15.0% (CI: 13.7 - 16.4). The prevalence for those secondary level of education was 10.2% (CI: 9.5 - 11.0) while the prevalence for those with tertiary education level was 10.0% (CI: 9.0 - 11.2) (Table 5.2).

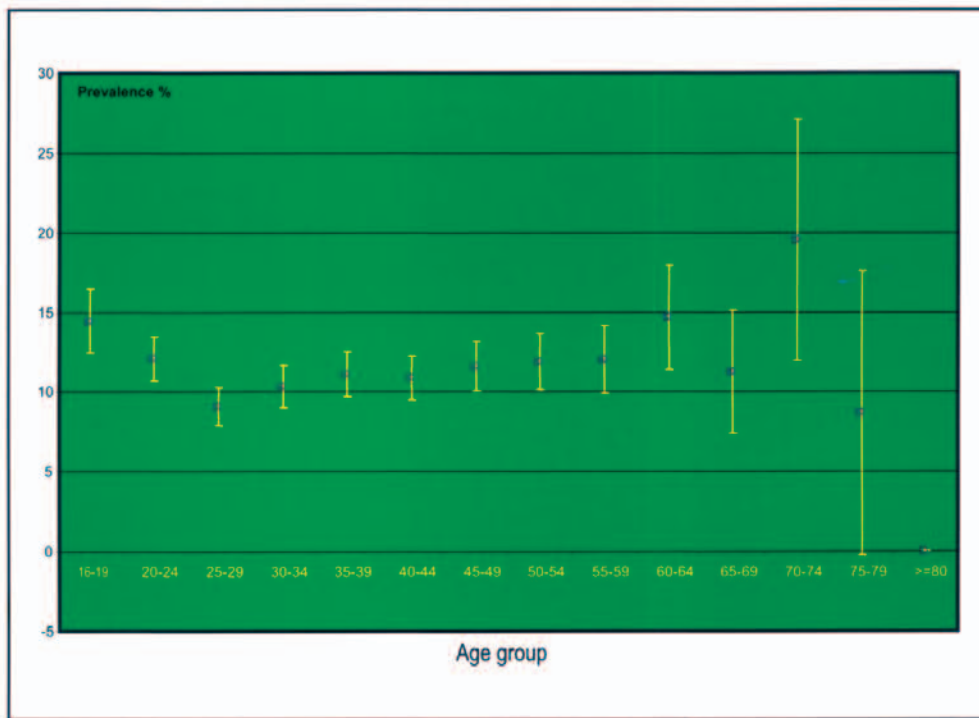


Figure 5.2 : Distribution of prevalence of recent psychiatric morbidity age groups



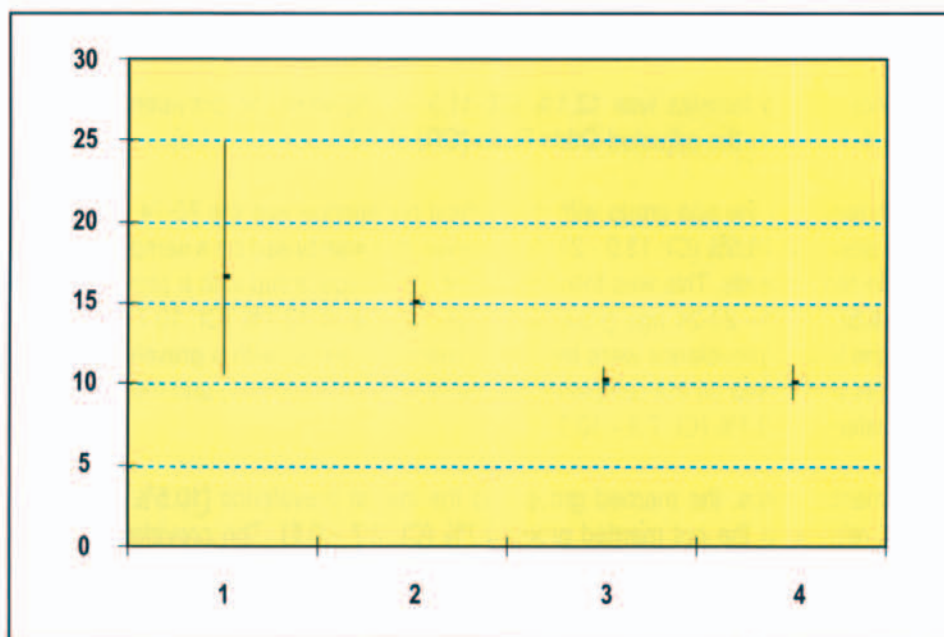


Figure 5.3 : Recent Psychiatric morbidity by educational level

Respondents reporting with household income with less than RM400 had a prevalence of 14.6% (CI: 12.0 - 17.7) followed by those earning RM4000-RM4999, prevalence of 14.1% (CI: 11.5 - 17.1) and those earning RM5000 and above had a prevalence of 12.5% (CI: 10.0 - 14.5) (Table 5.2).

Table 5.2 : Prevalence of psychiatric morbidity by gender, age, marital status, educational and household income

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>State</b>					
Johor	2657	384	15.9	13.5	18.7
Kedah	1611	164	11.4	9.3	13.9
Kelantan	1225	47	4.4	3.1	6.1
Melaka	612	77	14.0	9.1	20.7
N.Sembilan	855	163	21.1	16.5	26.7
Pahang	1168	121	11.4	8.9	14.6
Pulau Pinang	1314	178	14.6	12.0	17.8
Perak	1551	220	15.5	12.6	18.9
Perlis	197	19	10.9	7.0	16.6
Selangor	4621	420	9.6	8.4	10.8
Terengganu	920	43	5.2	3.7	7.4
Sabah	2305	166	7.9	6.8	9.1
Sarawak	1574	129	9.1	7.4	11.1
W.P Kuala Lumpur	1129	124	11.5	9.2	14.4
W.P Labuan	411	12	3.0	1.7	5.4

Table 5.2 : Prevalence of psychiatric morbidity by gender, age, marital status, educational and household income (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Residence</b>					
Urban	14120	1650	12.6	11.7	13.5
Rural	8030	617	8.5	7.6	9.4
<b>Gender</b>					
Male	10221	958	10.4	9.6	11.2
Female	11929	1309	12.1	11.3	12.9
<b>Age</b>					
16-19	2989	198	14.4	12.6	16.5
20-24	3071	359	12.1	10.7	13.5
25-29	2872	254	9.1	7.9	10.3
30-34	2603	263	10.3	9.1	11.7
35-39	2519	269	11.1	9.8	12.6
40-44	2550	267	10.8	9.5	12.3
45-49	2018	229	11.6	10.1	13.2
50-54	1497	171	11.8	10.2	13.7
55-59	1054	124	12.0	10.0	14.3
60-64	518	75	14.7	11.7	18.3
65-69	301	34	11.2	7.9	15.7
70-74	103	20	19.5	13.0	28.2
75-79	46	4	8.7	3.2	21.1
80+	9	-	-	-	-
<b>Education</b>					
None	135	21	16.6	10.6	24.9
Primary	4927	693	15.0	13.7	16.4
Secondary	13919	1238	10.2	9.5	11.0
Tertiary	3001	299	10.0	9.0	11.2
<b>Marital</b>					
Not married	7082	709	13.1	12.1	14.3
Married	14310	1460	10.5	9.8	11.3
Divorcee	290	39	13.6	10.0	18.3
Widow/Widower	389	47	12.2	9.2	16.0
<b>Household Income</b>					
Less than RM 400	999	127	14.6	12.0	17.7
RM 400 - RM 699	2605	204	9.1	7.7	10.6
RM 700 - RM 999	2341	222	10.9	9.3	12.6
RM 1000 - RM 1999	6161	573	10.3	9.3	11.4
RM 2000 - RM 2999	3911	422	11.7	10.4	13.2
RM 3000 - RM 3999	2053	226	11.8	10.0	13.9
RM 4000 - RM 4999	1034	137	14.1	11.5	17.1
RM 5000 & above	2345	278	12.5	10.7	14.5

Psychiatric morbidity may be influenced by multiple factors, thus the effect of confounding has to be considered. Hence, a multiple logistic regression analysis was performed, using GHQ-28 caseness as the dependent variable and a selection of sociodemographic variables and physical morbidities as the independent variables. Significant partial regression coefficients were found for chronic pain, chronic disease, hypercholesterolaemia, hospitalization within the last one month and within the last one year, gender, household income and educational level. The highest adjusted odds ratio were for chronic pain [OR 2.3% (CI: 1.9 - 2.8)] and those earning a household income of less than RM400 compared to that of those earning RM5000 and above [OR 2.1% (CI: 1.6 - 2.9)].

**Table 5.3 : GHQ-28 scoring by other illness**

		Sample size	No of cases	Prevalence	95% CI	
					Lower	Upper
Alcohol	Yes	1286	309	24.4	21.5	27.3
	No	14346	1405	10.1	9.4	10.8
Chronic Pain	Yes	1088	198	18.5	16.1	21.1
	No	19122	2026	10.9	10.3	11.6
Physical Disability	Yes	85	17	21.1	12.4	29.8
	No	21746	2434	11.5	10.8	12.2
Hospitalization 1 month	Yes	326	68	21.7	17.6	26.5
	No	20052	2170	11.1	10.5	11.5

### 5.2.2 Long-term psychiatric morbidity

The CGHQ-28 scoring is an alternative scoring system for the GHQ-28. It assumes the presence of continuous symptoms over a longer duration. The overall prevalence of chronic psychiatric caseness is 48.1% by CGHQ-28 scoring. As with GHQ-28 caseness, the prevalence of CGHQ-28 caseness was higher for urban compared to rural and females compared to males.

The highest prevalence was noted in those with tertiary education, in the unmarried and in those with household income of RM5000 and above [60.4% (CI: 58.4 - 62.3); 55.3% (CI: 53.8 - 56.8); 58.3% (CI: 55.9-60.7)] respectively (Appendix : Table1).

The prevalence of long-term psychiatric for cancer and chronic pain were the highest (67.1% and 63.9%) respectively (Table 5.4).

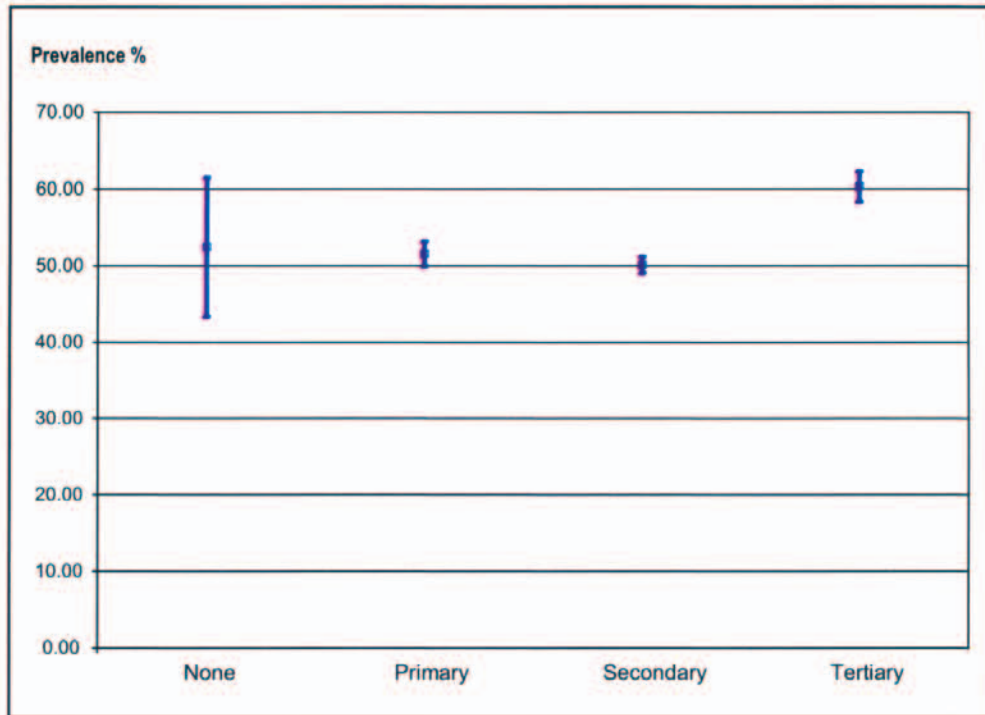


Figure 5.4 : Prevalence of long-term psychiatric morbidity by educational level

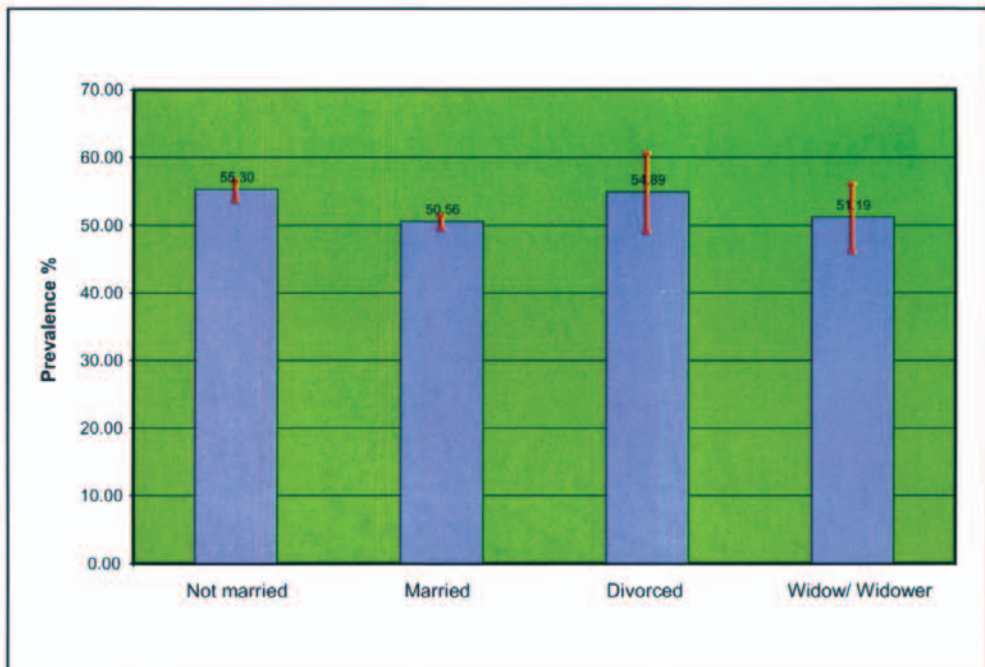


Figure 5.5 : Prevalence of long-term psychiatric morbidity by marital status



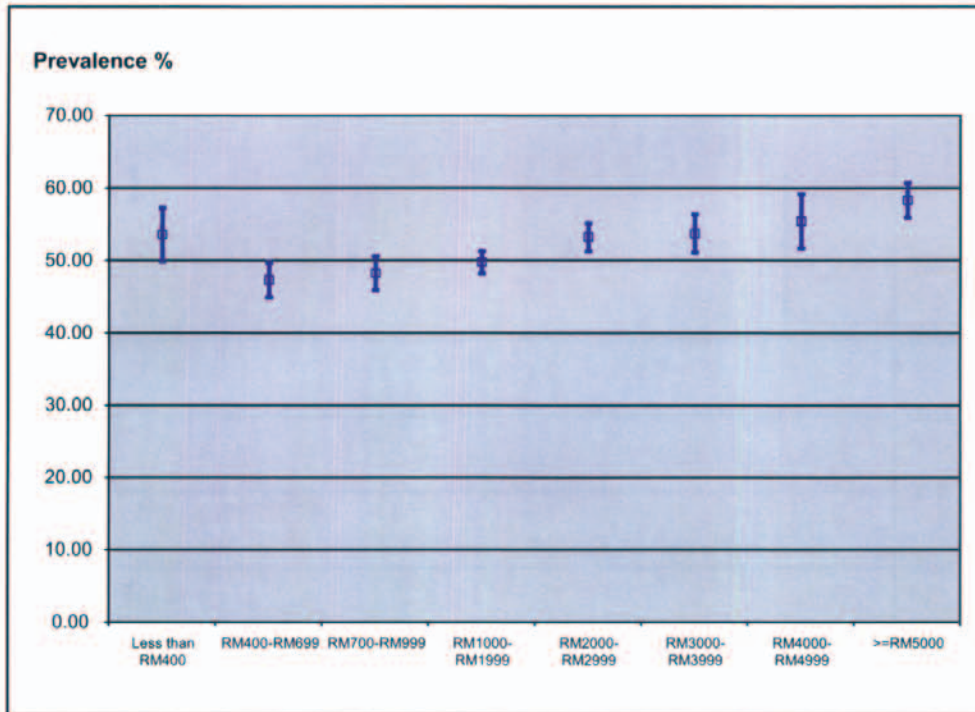


Figure 5.6 : Prevalence of long-term psychiatric morbidity by household income

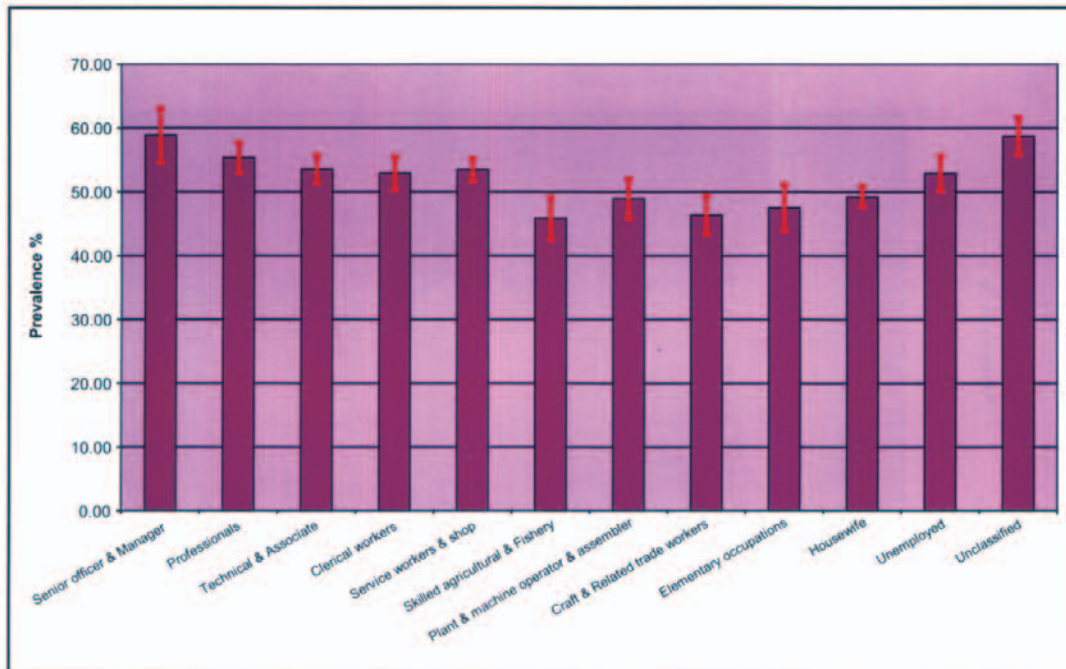


Figure 5.7 : Prevalence of long-term psychiatric morbidity by employment status

Table 5.4 : Prevalence of long-term psychiatric morbidity by other illness

		Sample size	No of cases	Prevalence	95% CI	
					Lower	Upper
Asthma	Yes	619	349	57.1	53.0	61.0
	No	19,981	10,297	51.8	50.9	52.8
Cancer	Yes	99	66	67.1	57.1	75.8
	No	20494	10580	51.9	51.0	52.8
Alcohol	Yes		798	58.0	54.9	61.1
	No		6870	44.8	43.8	45.8
Chronic Disease	Yes	3697	2063	56.1	54.3	57.8
	No	16896	8583	51.1	50.1	52.1
Chronic Pain	Yes	1088	690	63.9	60.9	66.7
	No	19122	9755	51.3	50.4	52.2
Physical Disability	Yes		60	21.0	16.3	25.8
	No		10677	32.4	31.7	33.1
Hospitalization 1 month	Yes	1308	713	54.7	51.9	57.5
	No	19059	9816	51.8	50.9	52.7

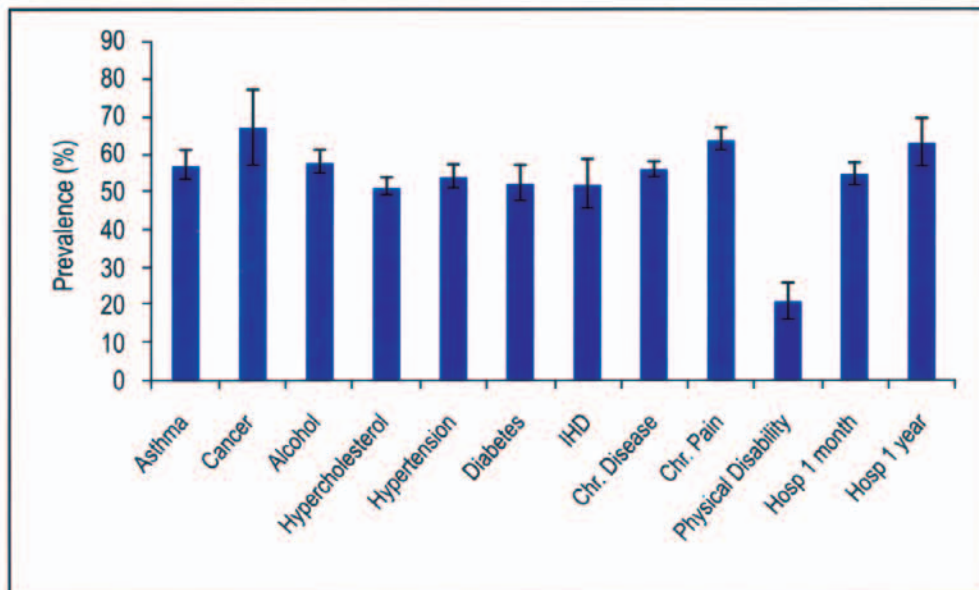


Figure 5.8 : Prevalence of long-term psychiatric morbidity by other illnesses

### 5.2.3 Suicidal Ideation

The GHQ includes 4 items that assess suicidal ideation. These can be scored to determine acute suicidal ideation (Suicidal Ideation A) and chronic suicidal ideation (Suicidal Ideation C). The overall prevalence for Suicidal Ideation A (acute suicidal ideation) was 6.4%.

	No	Yes	Total	Prevalence (%)
GHQ Case	19663	2490	22153	11.2
Insomnia A	18214	2968	21182	14.0
Insomnia C	11063	10119	21182	47.8
Suicidal Ideation A	19928	1368	21296	6.4
Suicidal Ideation C	15750	5546	21296	26.0

The 16-24 years age group had the highest prevalence. Those who were not married had the highest prevalence at 10.0% (CI: 9.2-10.9). Refer Figure 5.9.

Those with a household income of less RM400 had the highest prevalence of 8.5% (CI: 6.7-10.7). Craft and related trade workers had the highest prevalence of 9.4% followed by those unemployed with a prevalence of 8.9% (Appendix : Table 4).

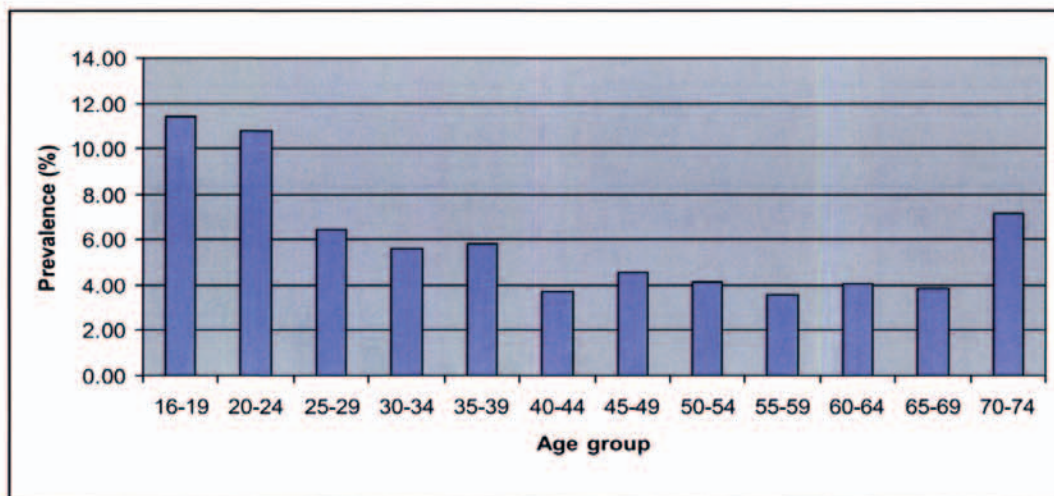


Figure 5.9: Suicidal ideation A by age group

The overall prevalence of Suicidal Ideation C (chronic suicidal ideation) was 26.0%. Those in rural areas had a higher prevalence at 28.1%. The highest prevalence was in the youngest age group 16-19 years at 37.4%. Those with no education had the highest prevalence at 31.7%. The unmarried had the highest prevalence at 32.3%, and those with the lowest income had the highest prevalence at 33.2%. The unemployed had the highest prevalence at 32.1% among the occupational groups (Appendix : Table 5).



#### **5.2.4 Insomnia**

Two items in the GHQ were related to sleep difficulties enabling the determination of acute and longer term or "chronic" insomnia (Insomnia A and Insomnia C). The overall prevalence of Insomnia A (acute insomnia) was 14.0%.

The highest prevalence of insomnia A was seen in the 70-74 age groups with a prevalence of 20.5% (CI: 13.8 - 29.3).

Those with no education had the highest prevalence of insomnia which is 20.3% compared to other education level. Those who are divorced had the highest prevalence compared to other marital group. Those with low income (less than RM400) had highest prevalence of 18.0% (Appendix : Table 2)

Among the occupational group, service workers and those working in shops and the unemployed had the highest prevalence of 16.5% (CI: 15.2 - 17.9) and 15.8% (CI: 13.9 - 18.0) respectively.

The prevalence of Insomnia C (chronic insomnia) is 47.8%. It is higher among urban dwellers, in females, and those aged 75-79 years. It is also higher in those with no education, divorcees and widow or widowers. It is high in those with incomes below RM400 and higher than RM5000. Among the occupational groups, the senior officials and managerial groups have the highest prevalence (Appendix : Table 3).

#### **5.2.5 Subscale scores**

##### **a) Somatic subscale**

Females had a higher somatic subscale score at a mean of 4.1% (CI: 4.1 - 4.2) compared to males, 3.7% (CI: 3.7 - 3.8).

##### **b) Anxiety subscale**

Urban dwellers had a higher subscale score at 3.3% (CI: 3.2 - 3.4) compared to rural dwellers at a score of 2.8% (CI: 2.7 - 2.9). Females had a higher anxiety subscale score at a mean of 3.3% (CI: 3.2 - 3.4) compared to males, 3.0% (CI: 2.9 - 3.1).

##### **c) Social dysfunction subscale**

Urban dwellers had a higher subscale score at 5.8% (CI: 5.8 - 5.9) compared to rural dwellers at a score of 5.6% (CI: 5.5 - 5.7). There was no gender difference for the social dysfunction subscale score.

d) **Depression subscale**

There was no urban-rural difference in this subscale score. Females had a higher depression subscale score at a mean of 1.2% (CI: 1.2 - 1.3) compared to males, 1.1% (CI: 1.0 - 1.1).

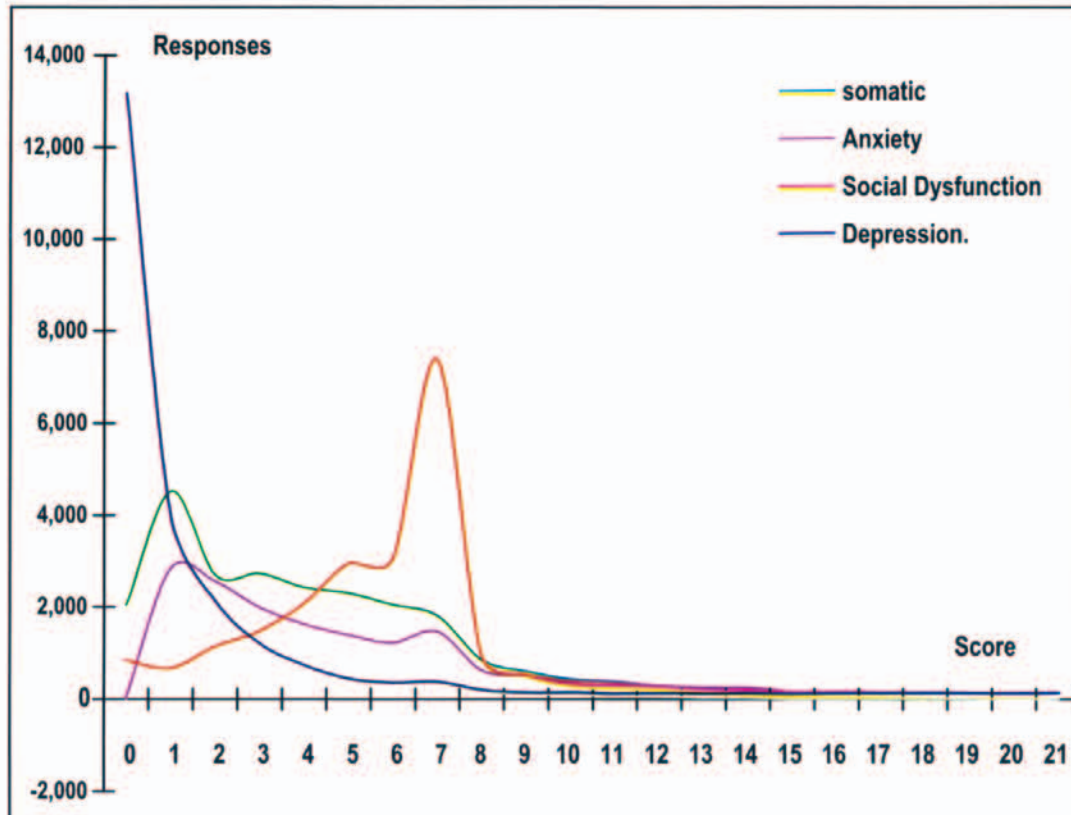


Figure 5.10: Distribution of subscale scores of GHQ

**6. DISCUSSION**

A number of limitations should be considered when interpreting the findings from this study. Firstly this is a screening survey thus it cannot answer many questions. Despite the questionnaire having been validated for the local population, the Malaysian population is very heterogeneous. For this reason, separate validation studies are required to determine the individual cut-off scores for each ethnic group. Furthermore, not all sectors of the community have been covered. Translations, however carefully done cannot cover the diversity of language usage across the country. Furthermore, the response rate of about 60% is rather low compared to the rate of 85% in the previous NHMS. However, this is comparable to the response rate of 66% in an Australian sample (Finlay-Jones & Burvill 1977).

The respondents, nevertheless, still constituted a representative sample of the national population (Table 5.2). Hence some careful, albeit tentative, conclusions may be drawn.

The overall estimated prevalence of recent psychiatric morbidity is 11.2%.

The following interesting findings have emerged from this study and are broadly in line with other findings elsewhere.

- a) The sociodemographic factors that were associated with a higher prevalence of psychiatric morbidity included women, those aged 16-19 and 60-74, the single, widowed, divorced, those earning less than RM400 and those earning above RM4000, and those with lower educational attainment or no formal education.
- b) Those with cancer, IHD, chronic pain and those who had recently been hospitalised had much higher rates of prevalence of psychiatric morbidity.
- c) Urban residents had higher rates than their counterparts in the rural area.

These findings do not indicate causality but merely association. However, we may be able to identify vulnerable groups who may need focussed interventional approaches.

The adjusted prevalence rate of 11.2% is somewhat low. This may be partly accounted for by the low response rate whereby those with morbidity are less likely to complete the questionnaire. Furthermore, individuals with substance abuse and personality disorders would not be picked up by this questionnaire as well as those with overt psychosis and manic disorders. Another reason could be the method of sampling whereby only households were included in the survey, which excluded people living in barracks, hostels, rehabilitation centres, nursing homes and the correctional facilities. Hospitalised patients were also excluded. Some of these would have had much higher rates of psychiatric morbidity.

As with the previous NHMS a decade ago, the age distribution of GHQ caseness followed a J shape pattern. Since those who are ill in their teenage years have a risk of developing recurrent illness as adults, it is of paramount importance to institute interventional strategies for this age group. One may suggest that the school counselling services be strengthened to identify and refer youngsters early. As for the older age groups, the higher prevalence rate underscores the need for the development of psychogeriatric services.

A salient feature of GHQ-28 is the availability of additional information on the prevalence of insomnia and suicidal ideation, as well as four domains of psychiatric symptomatology, namely somatic symptoms, social dysfunction, anxiety and depression.

Among the respondents, 14.0% have had insomnia in recent weeks and this goes up to 48% if insomnia over a longer duration is included. Those suffering from cancer, HPT, IHD, chronic disease, chronic pain and recent hospitalisation showed higher rates of insomnia. These findings imply that a significant proportion of the population experiencing a very distressing symptom that might impact their daily functioning productivity, ability to handle machinery including handling motor vehicles.

Hence, the role of the primary care doctors as the front line health care providers will be crucial in identifying and managing insomnia and its psychological correlates.

Information on suicidal ideation was obtained; 6.4% of the respondents indicated that they had suicidal ideation in recent weeks. This proportion increased to 26.0% when suicidal ideation over a longer duration was elicited. This finding is similar to findings from other studies (Goldney 2000). There was no significant rural-urban difference nor was there a gender difference. However, younger people less than 25 years old have much higher rates of suicidal thoughts compared to their older counterparts. This is an area for concern as it is well known that younger people are more prone to attempt suicide. It is noteworthy that the world literature reports high rates of completed suicide among the young. The cascade of events that leads to eventual suicide begins with suicidal ideation and therefore the detection of such ideation is essential. Interestingly, the single have double the rate of suicidal ideation compared to the others (10% versus 4.9%, Table 5.2).

Suicidal ideation is higher in those with asthma, cancer, IHD, those with chronic pain and those who have been recently hospitalised. The last named group have particularly high rate of [11.2% (CI: 8.2 - 15.2)] (Figure 5.8). This further underlines the contribution of medical illness to psychiatric morbidity.

## **6.1 Limitation of study**

There are obvious methodological flaws in this study to be addressed. Therefore, the above finding should be used cautiously. Sub-analysis according to ethnicity will be conducted after a more detailed validation study among the different ethnic groups.

## **7. CONCLUSION**

The overall prevalence of psychiatric morbidity appears similar to the finding of NHMS 1996 - approximately 11%. As before some sectors of the population are more vulnerable, namely, women, the elderly, older adolescents, the unemployed and the least educated. Insomnia appears to be a significant problem in our society. Suicidal ideation especially in the young is an area for concern. Depressive and anxiety symptoms are not uncommon.

## **8. RECOMMENDATIONS**

### **8.1 Policy**

A coherent and practicable Mental Health Policy should be drawn up and implemented as soon as possible. The authors are aware that a Mental Health Policy has been formulated but unfortunately parts of it are still under review, and hence its full implementation is awaited. In view of the findings presented in this study this needs to be expedited. The policy should cover both curative and preventive services, besides emphasising the decentralization of mental health services and the involvement of primary care personnel leading to the provision of such services in the community.

### **8.2 Mental Health Promotion Targeted to High Risk Groups**

Reaching the high risk groups outlined above requires special efforts and planning as well as coordination with other interested parties, both governmental as well as NGOs (Non Governmental Organization). Women could be assisted if mental health services are provided for them at points of contact, e.g. at maternal and child health centers. Additionally collaboration with the Women and Family Development Ministry would help to reach out to distressed women such as single mothers.

Adolescents could profitably be reached out to through the schools and colleges/universities. It is noteworthy that the student population (16 to 19 year-olds) has the highest rate of suicidal ideation.

There should be a system of case detection targeting high risk groups whenever they come into contact with health services, for example, through the school health services and maternal and child health centers.

### **8.3 Training of Primary Care Personnel and General Practitioners**

The mental health component in the training of personnel in primary care at all levels must be given special attention - family medicine specialists, medical officers manning the outpatient clinics, paramedical staff and general practitioners (GPs).

An area of particular concern in this respect is the relative low involvement of general practitioners in the detection and treatment of psychiatric illnesses - even the minor ones. One of the major reasons for this is the lack of training of GPs before they enter into general practice. Unlike the developed countries, where all GPs must undergo a 3 or 4 year training (including a mental health component) after their housemanship before setting up practice, in Malaysia this is not a requirement. While some GPs take courses to specialize in family medicine/primary care, many set up practice after completing their compulsory service, thus unprepared for the multifaceted challenges of general practice medicine. Furthermore the requirement for continuing medical education is not fully implemented as yet. It is not surprising that so few GPs are able to identify common mental disorders or treat these with any degree of confidence. The Ministry of Health needs



to study this and bring our country on par with developed nations in this regard.

It is of grave concern that many within the medical and health services have highly prejudiced attitudes towards the mentally ill, who are often made the butt of jokes and seen as hopeless cases. This shows ignorance of the fact that most mental illnesses are not psychoses. These stigmatizing attitudes impede progress in the provision of proper care for the ill. Educational efforts must constantly be made to alter such attitudes.

#### **8.4 Inter-sectoral Collaboration**

There must be maximal coordination between the public and private sectors if we are to see a major improvement in providing high standard mental health services for our people. The College of GPs and the Malaysian Psychiatric Association have been active in training GPs but their efforts cannot reach the majority of practitioners. Leadership with regard to this should come from the public sector in collaboration with the NGOs.

#### **8.5 Creating Posts for Specific Categories of Staff**

The Ministry of Health is unable to attract Clinical Psychologists because of an anomaly in the remuneration scheme for these staff. Clinical Psychologists are specialists with postgraduate degrees, but are not placed on a pay scheme commensurate with their training. Hence the public sector (apart from the universities) is seriously lacking in this important category of staff. Apparently there has not been much progress since this same recommendation was made 10 years ago.

Additionally posts for Community Psychiatric Nurses should be created. This is in line the shift from custodial, hospital-based treatment to treatment in the community.

#### **8.6 Insurance Coverage for Treatment of Mental Illness**

There is discrimination against the mentally ill when it comes to providing insurance coverage. Some insurance companies that provide such coverage in their parent countries deny such services to our patients in this country. This patently unfair practice needs to be addressed.

In this regard it is hoped that the Government would set an example to the private sector. The National Health Financing plan should make provision for the adequate provision of a range of essential services for the mentally ill. Mental illness causes great suffering and the mentally ill do not need additional suffering inflicted on them through an executive action that would leave them out of the main stream of health care in this country.

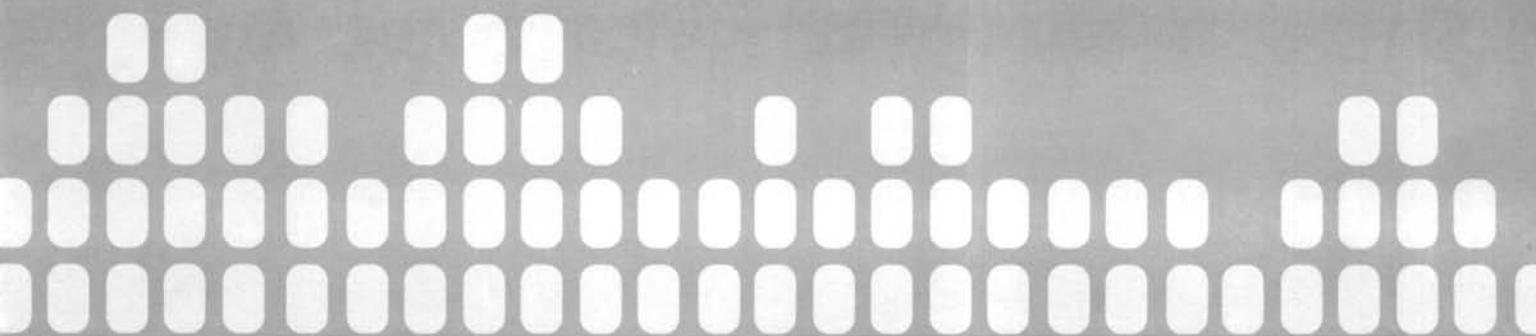
## REFERENCES

- American Psychiatric Association 1980, *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition, Washington, DC.
- American Psychiatric Association 1987, *Diagnostic and Statistical Manual of Mental Disorders*, Revised Third Edition Washington, DC.
- Bourdon, KH, Rae, DA, Locke, BZ, Narrow, WE & Regier, DA 1992, 'Estimating the prevalence of mental disorders in U.S adults from the Epidemiologic Catchment Area Study', *Public Health Reports*, vol.107, pp. 663-668.
- Carr, VJ & Donovan, P 1992, 'Psychiatry in General Practice: a pilot scheme using the liaison-attachment model', *Medical Journal Australia*, vol.156, pp.379-82.
- Dohrenwend & Dohrenwend 1969, *Social status and psychological disorder*, New York: John Wiley & Sons.
- Donrenwend, BP & Dohrenwned, BS 1982, 'Perspectives on the past and future of psychiatric epidemiology': the 1981 Rema Lapouse lecture, *American Journal Public Health* 1982, vol.72, pp. 1271-1279.
- Faris, REL & Dunham, HW 1939, *Mental disorders in urban areas: an ecological study of schizophrenia and other psychoses*, University of Chicago Press, Chicago.
- Finlay-Jones, RA & Burvill, PW 1977, 'The prevalence of minor psychiatric morbidity in the community', *Psychological Medicine*, vol. 7,pp. 475-489.
- Folstein, MP, Romanowski, AJ & Nestadt, G et al. 1985, Brief report on the clinical reappraisal of the DIS carried at the John Hopkins site of the ECA programme of the NIMH, *Psychological Medicine*, vol.15, pp. 809-814.
- Goldberg, D & Huxley, P 1992, 'Common Mental Disorder', *A bio-social model*, Tavistock/Routledge, London.
- Goldberg, DP & Williams, P 1988, *A user's guide to the General Health Questionnaire*, Nfer-Nelson, Windsor.
- Goldney, RD, Wilson, D, Grande, ED, Fisher, LJ & McFarlane, AC 2000, 'Suicidal ideation in a random community sample: attributable risk due to depression and psychosocial and traumatic events', *Australia and New Zealand Journal Psychiatry*, vol. 34, pp.98-106.
- Harding, TW, Arango, MV & Baltaza, J et al. 1980, 'Mental Disorders in Primary Health Care: A study of their frequency and diagnosis in four developing countries', *Psychological Medicine* , vol. 10, pp. 231-241.

- Hollingshead, A & Redlich, FS 1958, *Social class and mental illness*, John Wiley & Sons, New York.
- Huppert, FA, Walters, DE, Day, NE & Eliot B 1987, 'The factor structure of the General Health Questionnaire (GHQ-30): a reliability study on 6317 community residents', *British Journal Psychiatry*, vol.155, pp. 178-185.
- Kessler, RC 1994, 'Building on the ECA: The National Comorbidity Survey and the Children's ECA', *International Journal of Methods in Psychiatric Research*, vol.4, pp. 141-143.
- Leighton, DC, Harding, JS & Macklin, DB et al 1963, 'Psychiatric findings of the Stirling County Study', *American Journal Psychiatry*, vol.119, pp. 1021-1026.
- Ministry of Health Malaysia, 1996, 'Psychiatric morbidity in adults', *National Health and Morbidity Survey*, vol.6.
- Ramli, H, Kasmini, K, Hassan, S & Krishnaswamy, S 1991, 'A Prevalence Survey of Psychiatric Morbidity in a Rural Malaysian Village', *ASEAN Journal Psychiatry*, vol.1, pp. 18-28.
- Regier, DA, Narrow, WE, Rae, DS, Mander-Scheid, R. W., Locke, BZ & Goodwin, FK 1993, 'The de facto U. S. Mental and Addictive Disorders Service System: Epidemiologic Catchment Area prospective 1-year prevalence rates of disorders and services', *Archives of General Psychiatry*, vol.50, pp. 85-94.
- Robins, LN, Locke, BZ, & Regier, DA 1991, *An overview of psychiatric disorders in America*. In Robins LN, Regier DA (eds): *Psychiatric disorders in America: the Epidemiologic Catchment Area Study*, Free Press, New York, pp. 328-366.
- Robins, LN, Helzer, JE, Croughnan, JL & Ratcliff, KS 1981, 'National Institute of mental health Diagnostic Interview Schedule: Its history, characteristics and validity', *Archives of General Psychiatry*, vol.38, pp. 381-389.
- Strole, L, Langner, TS, Michael, ST, Opler, MK & Rennie, TAC 1962, 'Mental health in the metropolis', *The Midtown Manhattan Study*, McGraw-Hill, New York.
- Spitzer, RL, Williams, JBW, Gibbon, M & First, MB 1992, 'The Structured Clinical Interview for DSM-III-R (SCID), I. History, rationale, and description', *Archives of General Psychiatry*, vol.49, pp. 624-629.
- Williams, JBW, Gibbon, M, First, MB, Spitzer, RL, Davies, M, Borus, J, Howes, MJ, Kane, J, Harrison, GP, Jr, Rounsaville, B & Wittchen, HU 1992, 'The Structured Clinical Interview for DSM-III-R (SCID), II. Multisite test-retest reliability', *Archives of General Psychiatry*, vol.49, pp. 630-636.
- World Health Organization 1990, *Composite International Diagnostic Interview (CIDI)*, Version 1.0, Geneva World Health Organization.

# **APPENDIX**

---





## APPENDIX

Table 1 : Prevalence of CGHQ by socio demographic

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>State</b>					
Johor	2657	1269	51.6	48.6	54.5
Kedah	1611	748	50.9	48.0	53.7
Kelantan	1225	536	50.1	46.4	53.8
Melaka	612	283	50.3	44.5	56.0
N.Sembilan	855	468	58.8	54.0	63.6
Pahang	1168	532	49.0	45.2	52.8
Pulau Pinang	1314	656	52.9	49.6	56.3
Perak	1551	731	51.8	48.0	55.5
Perlis	197	92	52.8	44.3	61.2
Selangor	4621	2241	51.2	49.3	53.0
Terengganu	920	400	48.1	44.1	52.2
Sabah	2305	1095	52.0	48.9	55.0
Sarawak	1574	783	54.7	51.4	58.0
W.P Kuala Lumpur	1129	632	58.9	55.4	62.2
W.P Labuan	411	180	45.6	40.3	51.0
<b>Residence</b>					
Urban	14120	7127	53.7	52.6	54.9
Rural	8030	3519	48.0	46.6	49.4
<b>Gender</b>					
Male	10221	4686	49.9	48.8	51.0
Female	11929	5960	53.8	52.7	54.9
<b>Race</b>					
Malays	13161	5807	47.8	46.8	48.9
Chinese	4136	2538	65.7	63.7	67.7
Indian	1717	859	52.9	50.1	55.8
Other bumis	2316	1083	50.7	48.2	53.3
Others	820	359	45.2	41.3	49.2

Table 1 : Prevalence of CGHQ by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Age</b>					
16-19	2989	814	57.2	54.5	59.8
20-24	3071	1637	53.6	51.6	55.6
25-29	2872	1459	51.0	49.0	53.0
30-34	2603	1319	50.9	48.9	52.9
35-39	2519	1288	51.7	49.6	53.7
40-44	2550	1343	53.0	50.9	55.1
45-49	2018	1047	52.4	50.1	54.7
50-54	1497	735	49.6	47.0	52.2
55-59	1054	507	48.0	44.8	51.2
60-64	518	273	52.7	48.3	57.1
65-69	301	143	48.0	42.1	53.9
70-74	103	50	49.2	39.2	59.4
75-79	46	28	60.5	45.8	73.5
80+	9	3	31.9	10.3	65.5
<b>Religion</b>					
Islam	15073	6634	47.7	46.6	48.7
Christian	1980	1054	57.6	54.8	60.4
Buddha	3447	2126	65.8	63.5	67.9
Hindu	1403	703	53.0	49.7	56.3
Others	215	110	53.7	46.5	60.8
<b>Citizenship</b>					
Malaysian	21250	10272	52.5	51.5	53.4
Non-Malaysian	880	364	41.6	37.9	45.3
<b>Education</b>					
None	135	68	52.7	43.5	61.7
Primary	4927	2470	51.7	50.1	53.3
Secondary	13919	6233	50.2	49.1	51.2
Tertiary	3001	1810	60.4	58.4	62.3
<b>Marital</b>					
Not married	7082	3051	55.3	53.8	56.8
Married	14310	7181	50.6	49.6	51.6
Divorcee	290	160	54.9	49.0	60.7
Widow/Widower	389	198	51.2	46.2	56.2

Table 1 : Prevalence of CGHQ by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Household Income</b>					
Less than RM 400	999	477	53.7	50.0	57.4
RM 400 - RM 699	2605	1111	47.4	45.1	49.8
RM 700 - RM 999	2341	1033	48.3	46.0	50.6
RM 1000 - RM 1999	6161	2825	49.9	48.3	51.4
RM 2000 - RM 2999	3911	1960	53.3	51.4	55.2
RM 3000 - RM 3999	2053	1044	53.8	51.1	56.4
RM 4000 - RM 4999	1034	545	55.5	51.7	59.2
RM 5000 & above	2345	1302	58.3	55.9	60.7
<b>Occupation</b>					
Senior Official & Manager	520	302	58.9	54.6	63.1
Professionals	1912	1056	55.4	53.0	57.8
Technical & Associate	2228	1183	53.6	51.4	55.7
Clerical Workers	1556	818	52.9	50.3	55.5
Service Workers & Shop	3498	1831	53.4	51.7	55.2
Skilled Agricultural & Fishery	967	437	45.8	42.5	49.2
Craft & Related Trade Workers	1315	626	48.9	45.8	52.1
Plant & Machine Operator &Assembler	1164	534	46.3	43.4	49.4
Elementary Occupations	788	362	47.5	43.8	51.2
Housewife	4145	2015	49.2	47.6	50.8
Unemployed	1553	705	52.8	50.1	55.6
Unclassified	2504	777	58.7	55.7	61.6



Table 2 : Prevalence of insomnia A by socio demographic

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>State</b>					
Johor	2473	370	15.3	13.4	17.4
Kedah	1486	205	14.1	12.0	16.4
Kelantan	1075	91	8.5	6.7	10.6
Melaka	567	87	15.9	11.2	22.1
N.Sembilan	801	175	22.5	18.4	27.2
Pahang	1091	138	13.0	10.5	15.8
Pulau Pinang	1240	216	17.7	15.1	20.6
Perak	1416	253	17.9	15.2	20.8
Perlis	175	23	12.9	8.9	18.3
Selangor	4408	587	13.3	12.1	14.6
Terengganu	829	61	7.4	5.4	10.1
Sabah	2108	278	13.2	11.7	14.9
Sarawak	1444	199	14.0	12.1	16.2
W.P Kuala Lumpur	1073	160	14.9	12.5	17.7
W.P Labuan	396	25	6.3	4.2	9.4
<b>Residence</b>					
Urban	13251	2029	15.4	14.6	16.2
Rural	7331	839	11.5	10.6	12.4
<b>Gender</b>					
Male	9443	1217	13.1	12.4	13.9
Female	11139	1651	15.1	14.3	15.9
<b>Race</b>					
Malays	12198	1136	9.4	8.8	10.0
Chinese	3863	1096	28.4	26.5	30.4
Indian	1608	275	16.8	14.8	19.0
Other bumis	2129	257	12.1	10.7	13.6
Others	784	104	13.3	10.9	16.1

Table 2 : Prevalence of insomnia A by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Age</b>					
16-19	1431	228	16.5	14.6	18.6
20-24	3070	475	15.8	14.4	17.3
25-29	2872	386	13.6	12.3	15.0
30-34	2602	325	12.7	11.3	14.1
35-39	2518	327	13.3	11.9	14.8
40-44	2547	319	12.7	11.4	14.2
45-49	2017	295	15.0	13.4	16.7
50-54	1496	198	13.6	11.9	15.5
55-59	1053	159	15.1	13.0	17.6
60-64	518	89	17.4	14.1	21.1
65-69	301	38	13.0	9.3	17.9
70-74	102	21	20.5	13.8	29.3
75-79	46	7	15.1	7.3	28.8
80+	9	1	12.6	1.8	53.7
<b>Religion</b>					
Islam	13977	1357	9.8	9.2	10.4
Christian	1825	286	15.8	14.0	17.8
Buddha	3235	958	29.6	27.5	31.8
Hindu	1312	230	17.2	15.0	19.7
Others	204	29	14.7	10.6	20.0
<b>Citizenship</b>					
Malaysian	19699	2751	14.2	13.6	14.9
Non-Malaysian	865	117	13.5	11.2	16.3
<b>Education</b>					
None	130	26	20.3	14.3	27.9
Primary	4825	795	17.0	15.8	18.2
Secondary	12465	1656	13.6	12.8	14.3
Tertiary	3000	378	12.7	11.4	14.0
<b>Marital</b>					
Not married	5553	893	16.5	15.4	17.6
Married	14274	1852	13.2	12.5	13.9
Divorcee	290	54	18.7	14.5	23.7
Widow/Widower	389	59	15.2	11.9	19.2

Table 2 : Prevalence of insomnia A by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Household Income</b>					
Less than RM 400	897	159	18.0	15.4	20.9
RM 400 - RM 699	2359	305	13.4	11.9	15.1
RM 700 - RM 999	2153	262	12.7	11.3	14.3
RM 1000 - RM 1999	5695	752	13.4	12.4	14.5
RM 2000 - RM 2999	3674	532	14.8	13.4	16.2
RM 3000 - RM 3999	1947	252	13.0	11.4	14.9
RM 4000 - RM 4999	978	145	14.8	12.4	17.6
RM 5000 & above	2233	349	15.6	13.8	17.7
<b>Occupation</b>					
Senior Official & Manager	519	71	13.8	11.0	17.0
Professionals	1910	217	11.5	10.0	13.1
Technical & Associate	2225	239	10.9	9.6	12.5
Clerical Workers	1545	205	13.4	11.7	15.3
Service Workers & Shop	3429	553	16.5	15.2	17.9
Skilled Agricultural & Fishery	957	137	14.6	12.3	17.3
Craft & Related Trade Workers	1282	184	14.7	12.6	17.1
Plant & Machine Operator &Assembler	1151	161	14.1	12.2	16.4
Elementary Occupations	768	103	13.7	11.3	16.5
Housewife	4126	596	14.8	13.6	16.0
Unemployed	1344	205	15.8	13.9	18.0
Unclassified	1326	197	15.2	13.2	17.4

Table 3 : Prevalence of insomnia C by socio demographic

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>State</b>					
Johor	2473	1127	45.9	43.4	48.5
Kedah	1486	674	45.8	43.0	48.7
Kelantan	1075	461	43.0	39.6	46.5
Melaka	567	265	47.7	42.1	53.3
N.Sembilan	801	434	54.7	50.3	59.1
Pahang	1091	484	44.7	41.1	48.3
Pulau Pinang	1240	626	50.5	47.0	54.0
Perak	1416	701	49.6	46.2	53.0
Perlis	175	85	49.0	39.5	58.5
Selangor	4408	2107	48.1	46.4	49.8
Terengganu	829	347	41.9	38.3	45.6
Sabah	2108	1065	50.5	47.8	53.2
Sarawak	1444	704	49.4	46.1	52.6
W.P Kuala Lumpur	1073	566	52.7	49.0	56.5
W.P Labuan	396	169	42.7	37.4	48.1
<b>Residence</b>					
Urban	13251	6582	49.7	48.6	50.7
Rural	7331	3233	44.0	42.7	45.4
<b>Gender</b>					
Male	9443	4272	45.5	44.4	46.6
Female	11139	5543	50.1	49.0	51.1
<b>Race</b>					
Malays	12198	5222	43.0	42.0	44.0
Chinese	3863	2356	61.1	59.1	63.0
Indian	1608	841	52.1	49.4	54.7
Other bumis	2129	1023	47.9	45.6	50.2
Others	784	373	47.0	43.1	51.0

Table 3 : Prevalence of insomnia C by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Age</b>					
16-19	1431	706	49.8	47.1	52.6
20-24	3070	1521	49.9	47.9	51.8
25-29	2872	1350	47.1	45.1	49.1
30-34	2602	1202	46.5	44.5	48.5
35-39	2518	1173	47.1	45.1	49.1
40-44	2547	1215	47.8	45.8	49.9
45-49	2017	955	47.7	45.4	50.0
50-54	1496	696	46.8	44.2	49.5
55-59	1053	497	47.3	44.2	50.5
60-64	518	261	50.4	46.0	54.8
65-69	301	148	50.4	44.5	56.3
70-74	102	57	55.9	46.0	65.5
75-79	46	29	62.7	47.5	75.7
80+	9	5	53.1	23.1	81.1
<b>Religion</b>					
Islam	13977	6049	43.4	42.5	44.3
Christian	1825	988	54.0	51.4	56.6
Buddha	3235	1971	61.1	59.0	63.1
Hindu	1312	690	52.4	49.5	55.3
Others	204	98	48.5	41.1	55.9
<b>Citizenship</b>					
Malaysian	19699	9415	48.1	47.3	49.0
Non-Malaysian	865	389	44.5	40.9	48.2
<b>Education</b>					
None	130	72	56.3	47.0	65.2
Primary	4825	2311	48.3	46.8	49.9
Secondary	12465	5877	47.4	46.4	48.4
Tertiary	3000	1485	49.7	47.8	51.6
<b>Marital</b>					
Not married	5553	2776	50.4	48.9	52.0
Married	14274	6628	46.7	45.7	47.6
Divorcee	290	158	54.0	48.0	59.8
Widow/Widower	389	208	54.0	48.9	59.0

Table 3 : Prevalence of insomnia C by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Household Income</b>					
Less than RM 400	897	455	51.4	47.8	55.0
RM 400 - RM 699	2359	1095	46.9	44.7	49.3
RM 700 - RM 999	2153	948	44.5	42.3	46.8
RM 1000 - RM 1999	5695	2642	46.6	45.2	48.1
RM 2000 - RM 2999	3674	1746	47.5	45.7	49.4
RM 3000 - RM 3999	1947	945	48.6	46.2	51.1
RM 4000 - RM 4999	978	489	49.9	46.4	53.4
RM 5000 & above	2233	1174	52.6	50.3	54.9
<b>Occupation</b>					
Senior Official & Manager	519	285	55.1	50.7	59.3
Professionals	1910	925	48.6	46.2	51.0
Technical & Associate	2225	1009	45.5	43.3	47.7
Clerical Workers	1545	742	48.2	45.6	50.8
Service Workers & Shop	3429	1687	49.5	47.7	51.2
Skilled Agricultural & Fishery	957	434	45.6	42.2	49.0
Craft & Related Trade Workers	1282	573	44.8	41.7	47.9
Plant & Machine Operator &Assembler	1151	508	44.2	41.2	47.3
Elementary Occupations	768	354	46.2	42.6	49.8
Housewife	4126	1965	48.0	46.4	49.6
Unemployed	1344	647	48.8	46.1	51.6
Unclassified	1326	686	51.9	49.0	54.9

Table 4 : Prevalence of suicidal ideation A by socio demographic

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>State</b>					
Johor	2466	156	6.3	5.4	7.5
Kedah	1479	94	6.4	5.1	8.1
Kelantan	1075	38	3.5	2.5	4.9
Melaka	567	44	7.4	5.1	10.6
N.Sembilan	798	58	7.3	5.4	9.8
Pahang	1090	67	6.2	4.8	7.9
Pulau Pinang	1239	91	7.5	5.8	9.5
Perak	1414	97	6.7	5.3	8.4
Perlis	175	9	5.2	2.6	10.0
Selangor	4406	255	5.8	5.1	6.6
Terengganu	828	31	3.8	2.5	5.7
Sabah	2107	147	7.0	5.9	8.2
Sarawak	1442	104	7.2	5.9	8.8
W.P Kuala Lumpur	1070	73	6.8	5.2	9.0
W.P Labuan	396	24	6.1	3.5	10.5
<b>Residence</b>					
Urban	13227	852	6.4	6.0	6.9
Rural	7325	436	6.0	5.4	6.6
<b>Gender</b>					
Male	9432	557	5.9	5.4	6.4
Female	11120	731	6.7	6.2	7.2
<b>Race</b>					
Malays	12192	539	4.4	4.0	4.8
Chinese	3842	377	9.8	8.8	10.9
Indian	1607	175	10.8	9.1	12.8
Other bumis	2128	143	6.6	5.5	7.9
Others	783	54	6.9	5.2	9.2



Table 4 : Prevalence of suicidal ideation A by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Age</b>					
16-19	1428	161	11.4	9.8	13.3
20-24	3068	330	10.8	9.7	12.0
25-29	2871	184	6.5	5.6	7.5
30-34	2601	147	5.6	4.8	6.6
35-39	2516	141	5.8	4.9	6.8
40-44	2546	95	3.7	3.0	4.6
45-49	2012	92	4.6	3.7	5.6
50-54	1490	62	4.1	3.2	5.3
55-59	1051	37	3.6	2.6	4.9
60-64	513	21	4.0	2.7	6.1
65-69	300	11	3.9	2.2	6.8
70-74	102	7	7.1	3.5	14.1
<b>Religion</b>					
Islam	13968	650	4.6	4.2	5.0
Christian	1821	143	7.6	6.4	9.1
Buddha	3218	313	9.7	8.6	11.0
Hindu	1312	159	12.0	10.0	14.4
Others	204	19	9.3	5.5	15.1
<b>Citizenship</b>					
Malaysian	19671	1217	6.2	5.8	6.6
Non-Malaysian	863	68	7.8	6.0	10.0
<b>Education</b>					
None	130	8	6.1	3.0	11.8
Primary	4809	273	5.7	5.0	6.4
Secondary	12452	840	6.8	6.3	7.3
Tertiary	2999	155	5.2	4.4	6.0
<b>Marital</b>					
Not married	5548	550	10.0	9.1	10.9
Married	14249	694	4.9	4.5	5.3
Divorcee	290	14	4.9	2.9	8.1
Widow/Widower	389	19	4.9	3.1	7.5

**Table 4 : Prevalence of suicidal ideation A by socio demographic (continue)**

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Household Income</b>					
Less than RM 400	896	76	8.5	6.7	10.7
RM 400 - RM 699	2356	154	6.6	5.6	7.8
RM 700 - RM 999	2150	146	6.9	5.8	8.2
RM 1000 - RM 1999	5683	330	5.8	5.2	6.6
RM 2000 - RM 2999	3668	207	5.7	4.9	6.6
RM 3000 - RM 3999	1945	117	5.9	4.9	7.1
RM 4000 - RM 4999	977	62	6.3	4.8	8.2
RM 5000 & above	2232	136	6.1	5.1	7.3
<b>Occupation</b>					
Senior Official & Manager	519	24	4.6	3.1	6.7
Profesionals	1910	81	4.3	3.5	5.3
Technical & Associate	2221	98	4.4	3.6	5.4
Clerical Workers	1543	91	6.0	4.9	7.3
Service Workers & Shop	3423	215	6.2	5.4	7.1
Skilled Agricultural & Fishery	954	61	6.4	4.9	8.3
Craft & Related Trade Workers	1282	119	9.4	7.8	11.3
Plant & Machine Operator &Assembler	1150	74	6.4	5.1	7.9
Elementary Occupations	767	54	6.9	5.3	8.9
Housewife	4116	219	5.4	4.7	6.2
Unemployed	1342	117	8.9	7.4	10.7
Unclassified	1325	135	10.3	8.6	12.2

Table 5 : Prevalence of suicidal ideation C by socio demographic

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>State</b>					
Johor	2466	549	22.1	20.4	23.9
Kedah	1479	391	26.4	23.9	29.0
Kelantan	1075	247	22.8	20.2	25.7
Melaka	567	141	24.2	20.8	28.0
N.Sembilan	798	217	27.1	23.5	30.9
Pahang	1090	273	24.6	21.5	27.9
Pulau Pinang	1239	326	26.5	23.6	29.5
Perak	1414	347	24.0	21.4	26.8
Perlis	175	47	26.3	18.8	35.3
Selangor	4406	1017	23.2	21.8	24.7
Terengganu	828	191	22.9	19.7	26.5
Sabah	2107	733	34.6	32.2	37.1
Sarawak	1442	443	30.8	27.9	33.9
W.P Kuala Lumpur	1070	267	25.0	21.8	28.4
W.P Labuan	396	112	28.4	22.4	35.3
<b>Residence</b>					
Urban	13227	3243	24.3	23.5	25.3
Rural	7325	2058	28.1	26.9	29.3
<b>Gender</b>					
Male	9432	2405	25.0	24.1	26.0
Female	11120	2896	25.8	24.9	26.8
<b>Race</b>					
Malays	12192	2704	21.8	21.0	22.7
Chinese	3842	1182	30.7	28.9	32.4
Indian	1607	495	30.5	27.9	33.2
Other bumis	2128	666	30.7	28.5	32.9
Others	783	254	31.4	27.8	35.2

Table 5 : Prevalence of suicidal ideation C by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Age</b>					
16-19	1428	539	37.3	34.8	40.0
20-24	3068	990	32.0	30.3	33.8
25-29	2871	774	26.6	24.8	28.4
30-34	2601	689	26.0	24.3	27.8
35-39	2516	603	23.8	22.1	25.6
40-44	2546	542	21.1	19.5	22.9
45-49	2012	452	22.2	20.4	24.1
50-54	1490	299	19.8	17.8	22.0
55-59	1051	197	18.6	16.2	21.3
60-64	513	114	22.1	18.7	25.9
65-69	300	68	22.2	17.8	27.3
70-74	102	25	24.7	17.1	34.4
75-79	45	8	18.3	9.5	32.4
80+	9	1	9.9	1.4	46.9
<b>Religion</b>					
Islam	13968	3245	22.8	22.0	23.6
Christian	1821	575	30.8	28.3	33.4
Buddha	3218	962	29.9	28.0	31.7
Hindu	1312	436	32.9	29.9	36.0
Others	204	70	33.7	26.5	41.7
<b>Citizenship</b>					
Malaysian	19671	5005	25.2	24.4	25.9
Non-Malaysian	863	288	32.4	28.9	36.0
<b>Education</b>					
None	130	43	31.7	23.8	40.7
Primary	4809	1247	25.5	24.2	26.8
Secondary	12452	3380	26.9	26.0	27.8
Tertiary	2999	584	19.5	18.0	21.1
<b>Marital</b>					
Not married	5548	1805	32.3	31.0	33.6
Married	14249	3297	22.8	22.0	23.6
Divorcee	290	84	28.3	23.4	33.8
Widow/Widower	389	87	22.5	18.5	27.0

Table 5 : Prevalence of suicidal ideation C by socio demographic (continue)

	Sample size	No. of cases	Prevalence	95% CI	
				Lower	Upper
<b>Household Income</b>					
Less than RM 400	896	299	33.2	29.8	36.8
RM 400 - RM 699	2356	714	30.0	28.0	32.2
RM 700 - RM 999	2150	613	28.1	26.1	30.2
RM 1000 - RM 1999	5683	1413	24.6	23.4	25.9
RM 2000 - RM 2999	3668	888	23.8	22.3	25.4
RM 3000 - RM 3999	1945	473	24.3	22.3	26.5
RM 4000 - RM 4999	977	212	21.5	18.7	24.7
RM 5000 & above	2232	490	21.9	20.0	23.9
<b>Occupation</b>					
Senior Official & Manager	519	95	17.9	14.7	21.5
Profesionals	1910	362	18.9	17.2	20.7
Technical & Associate	2221	471	21.2	19.5	23.0
Clerical Workers	1543	374	23.9	21.7	26.2
Service Workers & Shop	3423	891	25.7	24.1	27.3
Skilled Agricultural & Fishery	954	296	30.7	27.8	33.8
Craft & Related Trade Workers	1282	402	31.3	28.5	34.2
Plant & Machine Operator &Assembler	1150	314	27.0	24.5	29.7
Elementary Occupations	767	242	31.1	27.8	34.5
Housewife	4116	1023	24.5	23.2	26.0
Unemployed	1342	434	32.1	29.6	34.8
Unclassified	1325	397	29.8	27.1	32.6



The background features a complex, abstract design. On the left, a wireframe representation of a human face is visible, composed of numerous thin, light-colored lines. The right side of the image is dominated by several overlapping, semi-transparent rectangular blocks in various shades of gray and black. At the bottom, there is a horizontal row of white, rounded rectangular shapes, resembling a barcode or a series of data points.

# CHAPTER II

## PSYCHIATRIC MORBIDITY IN CHILDREN AND ADOLESCENTS





## **ABSTRACT**

This survey represents the screening of children and adolescents in Malaysia for psychiatric morbidity using the Reporting Questionnaire for Children (RQC) developed by the World Health Organization (WHO) with two additional items included for assessment of inattention and hyperactivity. In the analysis, the observed prevalence of psychiatric morbidity was calculated based on one or more positive answers to the RQC and to the added items. A two-stage stratified random sampling design was used based on the sampling frame maintained by the Department of Statistics, Malaysia. The general objective of this study was to determine the prevalence of psychiatric morbidity in children and adolescents aged from five years to less than sixteen years. The specific objectives were to determine the correlations between psychiatric morbidity and socio-demographic characteristics, to describe the common emotional and behavioral symptoms among children and adolescents and to make recommendations for the development of mental health services for children and adolescents.

Of the 14,156 eligible respondents, i.e. those aged from five to less than sixteen years, 11,949 completed the questionnaire, giving a response rate of 84.4%. The overall prevalence rate of psychiatric morbidity in the children and adolescents population was 20.3%. Males had significantly higher prevalence at 21.6% compared to females at 19.0%. There was no statistical difference in prevalence in the three age groups of 5 to 9 years, 10 to 14 years and 15 to 16 years. The item with the highest response was "Does the child appear backward or slow to learn?" at 8.6% followed by "Does the child suffer from frequent headaches?" at 6.1% and "Does the child nearly never play with other children?" at 4.7%.

As for the two questions relating to inattention and hyperactivity, the item "Is the child unable to concentrate?" yielded a positive response of 8.25% while the item "Is the child extremely active?" had a positive response of 25.0%. However it should be noted that the items do not represent diagnoses and are merely indicators of problem areas in the affected children and adolescents. Nevertheless the information obtained in this survey is useful especially in identifying areas of concern as well as groups at risk. Due to logistic constraints, further work to elicit specific diagnoses for those affected was unable to be carried out. Being a descriptive study, results from this study cannot be used to derive causation, for which separate studies are required. It is hoped that such studies be given priority in funding so as to provide more detailed information upon which effective intervention strategies and plans may be implemented.

## **1. INTRODUCTION**

Mental health problems are included among the top 5 burden of diseases in Malaysia. This emphasizes the importance of having information pertaining to mental health as well as psychiatric morbidity in the population.

In any society it is the children and adolescents who are the most vulnerable to morbidity and mortality. They have the least direct control over what happens to them, and at the same time have least direct access to available resources. It is then no wonder that they are exposed to many psychosocial stressors which cause them significant psychiatric morbidity, which they often do not have the resources to manage. Children and adolescents require adults to support them and to provide them with the means to overcome the effects of stressors and mental health problems.

The success of a country is to a large extent, reflected in the way it manages its most vulnerable segment of its population. For us to be truly successful, we need to focus on the psychiatric and mental health needs of our children and adolescents. For the proper planning and provision of mental health services, data is crucial and this has to be provided through research that accurately reflects the needs of the population.

The 2nd National Health and Morbidity Survey 1996 was the first time in Malaysia that psychiatric morbidity was screened for in children, adolescents and adults. The data obtained then was used in formulating policies and planning and implementing projects and programmes. Ten years down the line (in 2006), data has again been collected in a community survey on psychiatric morbidity in NHMS III.

It is crucial that data obtained from this NHMS III be actively utilized to provide the basis for appropriate services to the affected population. In addition, mental health promotion and prevention of mental health problems should be emphasized as the numbers of at-risk children and adolescents are large.

One area in which the findings of the previous survey (NHMS II) was used was in increasing the expertise and skills of a larger number of health care professionals who can then effectively identify and provide treatment in primary care, general pediatric, general psychiatric and family medicine settings. Allied health professionals and nurses were also targeted for training, which has been continuing.

Since the previous survey in 1996, the number of child psychiatrists and clinical psychologists have increased. However, this increase is small compared to the needs of the affected population, though it is the right step towards improving services. It is hoped that the findings from the current survey will further aid in the country's efforts to provide promotive, preventive and curative care in mental health to children and adolescents.

## **2. LITERATURE REVIEWS**

Knowledge of the prevalence of childhood psychiatric disorders is an important part of providing sound child and adolescent mental health services. Childhood psychopathology can cause much distress to the young person as well as to the family and impairment in social functioning such as school and peer relationships, preventing the individual child from reaching his or her full potential by disrupting normal development. Consequently the detection, treatment and prevention of these problems are essential in relieving distress as well as improving the child's overall functioning and ultimately this will also impact on future adult functioning. Determining accurate estimates of the prevalence of disorder in the population is a vital component in effective child mental health service planning.

Epidemiological studies in child psychiatry have been used to attempt to estimate the prevalence of disorder and to understand factors contributing to the etiology, natural history, prevention and recurrences of disorder in the population. Historically, community surveys of child mental health problems had been conducted from the early twentieth century onwards with the earliest identified by Wickman (1928) New York study of "Childrens' Behaviour and Teachers' Attitudes". Descriptive epidemiologic research on childrens' mental health issues has a relatively long history, with among these being Rutter's landmark Isle of Wight (UK) studies (Rutter & Graham 1968; Rutter, Tizard & Graham 1976). In this study it was found that the prevalence rate for psychiatric disorders among ten and eleven year olds was estimated to be 6.8% though a second follow-up study several years later concluded that the rate was 12%. The difference in prevalence was attributed to differences in methodology utilized in the two studies.

In a review of fifty-two epidemiological studies that spanned four decades and that were designed to estimate the overall prevalence of psychiatric disorders among children and adolescents, the overall mean prevalence was found to be 15.8%. Depending on the study design, mean prevalence in single-stage studies were somewhat lower (15.0%) than those in two-stage studies (17.5%) (Robert, Atkinson & Rosenblatt 1998).

Since the ages of the subjects varied substantially across the studies, the authors grouped samples into four broad categories: preschoolers (ages 1 to 5 or 6 years), preadolescents (ages 6 to 12 or 13 years), adolescents (ages 12 or 13 years and older), and samples including multiple age groups. The preschool samples had a mean prevalence of 10.2%, the preadolescent samples had a mean prevalence of 13.2%, the adolescent samples had a mean prevalence of 16.5% and samples that included multiple age groups had a mean prevalence of 21.9% (Robert, Atkinson & Rosenblatt 1998).

However, it was noted that these rates were generated by diverse methods of data collection as well as differing diagnostic methods and the use of these different methods was found to contribute to considerable variation in prevalence rates which limited the comparability between studies. For instance studies using Rutter's instruments yielded prevalence rates clustering around 12% whereas those studies that used the Schedule For Affective Disorders and Schizophrenia for School-aged Children (K-SADS) yielded rates in the 14% range, while the Diagnostic Interview Schedule for Children yielded prevalence rates in the 20 - 25 % range.

In terms of diagnostic methodology, the use of DSM-III and DSM-III-R criteria generated similar prevalence rates of 19%-23% and 20%-22% respectively. Most of the studies reviewed were reportedly most frequently carried out in the United States (US) and United Kingdom (UK).

Apart from determining current prevalence rates of disorder, epidemiological surveys ought to be able to also generate important information on changes in prevalence over the lifespan of childhood, especially critical is information regarding any developmental thresholds for risk of disorder that might be indicated by age-related changes in prevalence rates. At the moment there appears to be little data available in this area. Furthermore the diverse methodology in childhood epidemiologic research has resulted in a lack of comparability of prevalence rates.

Nevertheless, more recent studies seem to indicate that childhood psychopathology is often persistent and not as transient as what parents and doctors commonly think. In a national survey of the prevalence of psychiatric disorder in children and adolescents in Great Britain, it was found that the overall prevalence of DSM-IV disorders was 9.5% (CI: 8.8 - 10.1%), a situation where roughly one in ten children has a condition which will warrant treatment due to distress or social impairment (Ford, Goodman & Meltzer 2003).

A one-phase design using the Development and Well-Being Assessment (DAWBA), which was specially developed for the survey, was used to assess 10,438 children between the ages of 5 to 15 years. DAWBA was a structured interview administered by lay interviewers with verbatim reports and reviewed by clinicians so that information from parents, teachers and children were combined in a manner that emulated the clinical process. Children were assigned a diagnosis only if their symptoms were causing significant distress or social impairment. For each problem area, informants were asked if the difficulties caused the child distress or interfered with family life, peer relationships, leisure activities or learning.

This method of data collection also enabled the researchers to compare rates of disorders in children with or without teacher reports. The study suggested the prevalence of conduct disorders and ADHD would be underestimated in the absence of teacher information.

An 18-month follow-up study of all children with a psychiatric disorder from the original national survey (Ford, Goodman & Meltzer 2002), found that persistence at 18 months was greater for those with an initial diagnosis of conduct and hyperkinetic disorders (73%), compared with children with an initial diagnosis of emotional disorders (36%). However the authors note that although emotional disorders appear to have a better prognosis than conduct or hyperkinetic disorders, they are not always benign: their resolution over 18 months is far from complete, and recent work suggests an increased risk of similar disorders recurring in adulthood.

Reports of community surveys of prevalence rates among children from countries outside of US and UK are somewhat limited. In 1981 a WHO Collaborative Study on Strategies for Extending Mental Health attempted to describe the prevalence of psychiatric disorders in children and adolescent populations of four countries, namely Sudan, Philippines, India and Columbia (Giel et al. 1981).

Using the 10 item Reporting Questionnaire for Children (RQC) developed by a team of WHO experts specifically designed to provide a first stage screening instrument that could be administered quickly

by non clinicians, it was found that children between the ages of 5 to 15 years with one or more positive response to the items on the RQC ranged from 11% in Sudan, 26% in India, 29% in the Philippines to 41% in Colombia (Giel et al. 1981).

After a second stage assessment which included a clinical interview by psychiatrists specially trained in child psychiatry, the prevalence rates decreased to 10% in Sudan, 22% in India, 15% in the Philippines and 29% in Columbia (Giel et al. 1981).

Elsewhere, a study of the prevalence and risk factors of psychopathology of Ethiopian children using the RQC yielded a prevalence rate of 27% (Mesfin 1995). Separate analyses found a prevalence rate of 21.5% for boys and 25.2% for girls. Furthermore it was found that children whose mothers reported more psychiatric symptoms for themselves tended to score higher on at least one of the pathology subscales (Mesfin 1995).

A large scale epidemiological study conducted in the United Arab Emirates of 3, 278 schoolchildren aged 6 to 15 years using a two-stage design found that 23.9% of children were reported to have a mental health problem by either the parent or the school health physician [9]. Boys were more often reported to be having problems than girls (1.8:1) (Eapen et al. 1998). Using the Rutter A2 scale for parents, the prevalence estimate for behaviour disorders was 16.5%. The weighted prevalence for DSM-IV disorders was 10.4% for the entire population.

The study also identified the presence of certain culture specific risk factors such as male gender, number of children in the household, polygamy, and low socio-economic status for psychiatric disorders. In addition, it was found that a positive family history and consanguinity were the most significant risk factors associated with learning disorders (Eapen et al. 1998).

In Malaysia, the first prevalence survey of mental disorders among children was carried out in 1987 in a rural village community using the Reporting Questionnaire for Children (RQC) and it was found that the prevalence rate was 15% (Kasmini 1987; Giel et al. 1988).

Subsequently a nationwide community survey, i.e. The Second National Health and Morbidity Survey (NHMS II) was conducted in 1996, similarly using the RQC as a screening instrument. 14,550 children between the ages of 5 to 15 years were screened and the prevalence rate yielded by this community survey was 13%. (CI: 11.5% - 14.6%) (Toh et al. 1996).

Prevalence rates appeared to be highest in the 10 - 12 years group at 15.5% followed by those in the adolescent group (13 -15 years) at 13.4 % and 12.3% in the 7 to 9 years group.

It was also found that psychiatric morbidity was significantly higher in those with associated physical illnesses such as asthma, physical disability, visual disability, hearing disability, speech disability and those reported to have abnormal behaviours and this was attributed to the possibility of greater coping required of such children to manage their daily lives as well as their illness or impairment.

Rates were also found to be significantly higher in rural locations (15.5%) than urban location (10.5%). Though not reaching statistical significance, rates were found to be somewhat higher in the lower income group.



On individual items of the RQC, the highest positive responses were for possible learning difficulties while the lowest positive scores were for conduct symptoms. It was however, noted that the survey was limited by the fact that the RQC was only a screening instrument and as such was not capable of supplying a diagnosis to each child surveyed. A second stage confirmatory assessment was not done due to constraints of time, resources and funding. However it was found that in the validation exercise of the RQC in the Malaysian population it had a sensitivity of 91% and a specificity of 82% and there was a likelihood of a positive score on the RQC leading to a consideration of a case being diagnosed by a psychiatrist, consistent with the findings of the WHO Collaborative Study Group (Giel et al. 1988).

Epidemiological studies in child psychiatry continue to be plagued by ongoing challenges such as sampling, data collection and study design and of particular concern, case definition (Robert, Atkinson & Rosenblatt 1998). The definition of a case involves more than just application of diagnostic criteria for example, DSM-IV, to ascertain the presence of a psychiatric disorder. It also involves the severity of the disorder, in terms of either functional impairment or perceived need for mental health services. The concern about severity emanates in part from concern about whether community or epidemiologic "cases" are cases in the same sense as the cases of children brought to clinical settings. Part of this concern stems from the fact that only a small minority of children and adolescents diagnosed in community surveys have had any contact with mental health professionals. It is suggested that caseness is best determined by the presence of both symptoms and impairment. It appears that prevalence rates are greatly reduced when severity criteria and need for treatment are introduced into case definition (Robert, Atkinson & Rosenblatt 1998).

### **3. OBJECTIVES**

#### **3.1 General Objective**

To determine the prevalence of psychiatric morbidity in children and adolescents (aged from 5 to less than 16 years)

#### **3.2 Specific Objectives**

- 3.2.1 To determine the correlations between psychiatric morbidity and socio-demographic characteristics
- 3.2.2 To describe the common emotional and behavioral symptoms among children and adolescents
- 3.2.3 To make recommendations for the development of mental health services for children and adolescents



## **4. METHODOLOGY**

### **4.1 Scope of the Study**

Research problems, scopes and main issues to be included in NHMS III were obtained from discussions and feedbacks from Ministry of Health state health managers, as well as experts from the local universities and individuals. The main research team members of the NHMS III reviewed and studied closely the feasibility and practicality of the suggested research topics for this community-based household survey. Extensive literature review was initiated. Technical and research experts in relation to the identified research areas were consulted for further advice and comments. The main research group used the following criteria in considering the suggested scopes for this survey:

- a) The issue/problem is current or has potential high prevalence.
- b) The issue/problem is focused on disease/disorders associated with affluence, lifestyle, environment and demographic changes.
- c) The issue/problem is causing physical, mental or social disability.
- d) The issue/problem has important economic implications.
- e) It is feasible to implement interventions to reduce the problem.
- f) The information related to the issue/problem is not available through the routine monitoring system or other sources.
- g) The information is more appropriately obtained through a nation-wide community survey, and
- h) It is feasible to obtain through a nation-wide community-based survey.

The short-listed research topics then presented to the Advisory Group Members for further deliberation and decisions. These topics were later refined by the research team members based on the decisions made at the Advisory Committee meeting. It was tabled to the Steering Committee and 18 research topics were approved to be included in the NHMS III.

### **4.2 Sampling Design and Sample Size**

In calculating the sample size, stratification and sampling design, advice was sought from the Methodology Division Department of Statistics Malaysia as well as from several other biostatistics consultants.

#### **4.2.1 Sampling frame**

The sampling frame for this survey is an updated until 2004; an effort undertaken prior to the implementation of Labour Force Survey (LFS) 2004. In general, each selected Enumeration Blocks (EB) comprised of 8 sampled Living Quarters (LQ). The EBs was geographically contiguous areas of land with identifiable boundaries. Each contains about 80-120 LQs with about 600 persons. Generally, all EBs are formed within gazetted boundaries.

The EBs in the sampling frame was also classified by urban and rural areas. The classification into these categories was in terms of population of gazetted and built-up areas as follows:

<b>Stratum</b>	<b>Population of gazetted areas and built-up</b>
Metropolitan	75,000 and above
Urban large	10,000 to 74,999
Urban small	1,000 to 9,999
Rural	rest of the country

For sampling purposes, the above broad classification was found to be adequate for all states in Peninsular Malaysia and the Federal Territories of Kuala Lumpur and Labuan. However, for Sabah and Sarawak, due to problems of accessibility, the rural stratum had to be further sub-stratified based on the time taken to reach the area from the nearest urban centre.

For the purpose of urban and rural analysis, Metropolitan and Urban Large strata are combined together thus referred to as 'urban' stratum, while for Urban Small and the various sub-divisions of the rural areas they are combined together to form to a 'rural' stratum.

#### **4.2.2 Sampling design**

A two stage stratified sampling design with proportionate allocation was adopted in this survey. The first stage sampling unit was the EB and within each sampled EB, the LQs were selected as second stage unit. One LQ was estimated to comprise of 4.4 individuals. All households (HH) and persons within a selected LQ were studied.

#### **4.2.3 Sample size**

The sample size was determined based on 95% Confidence Interval (CI) and the following factors were taken into consideration:

- a) Expected prevalence rate

The prevalence rate of the health problems for Malaysia obtained from the National Health and Morbidity Survey II (NHMS II) were used to estimate the overall sample size. Using the previous finding of 10% prevalence rate, the initial sample size at the state level was calculated in order to come up with overall sample size. The size was further apportioned for each state using the probability proportionate to size (PPS) method.

- b) Response rate of the NHMS II

The response rates, which ranged from 83 to 97% for the NHMS II of each state, were taken into consideration in the course of the determination of sample size.

c) **Margin of error and design effect**

As the factors of precision and efficient of the survey are paramount, the decision reached for the targeted margin of error is 1.2 and the design effect valued at 2. These values were used at the initial stage of the calculation of the sample size of each state.

The survey findings addressing the specific objectives of this survey are expected to be used for state level programmed planning. Thus, the calculation for the sample size has taken into consideration that the data is to be analyzed at the state level.

In addition to the major factors mentioned earlier, the availability of resources, namely, financial and human resources, and the time taken to conduct this survey also becomes part of the process of the determination of sample size.

### **4.3 Preparation of Field Areas and Logistic Support**

A number of state liaison officers were recruited in preparation for the survey proper. Strong networking with state liaison officers and District Health Officers (MOH and local authorities) from the areas sampled for the survey was established. Field scouts were mobilized from these areas to identify and tag the LQ's selected for the survey, as well as to inform the community and related government agencies of the importance and schedule of the planned survey. State liaison officers were also assisting Field Supervisors in the arrangement of transportation, accommodation and other logistics for the survey teams.

### **4.4 Method of Data Collection**

#### **4.4.1 The questionnaire**

The study instrument was a self-administered (SA) questionnaire, the General Health Questionnaire GHQ-28 which was designed to be used as a screening test for detecting psychiatric disorders (Goldberg 1978). Permission for its use was obtained from the publishers. The questionnaire has been validated for use in the Malaysian population. A cut-off score of 6 and above was used to indicate caseness. The GHQ-28 is able to provide additional information regarding symptoms of anxiety, depression, somatic symptomatology and social dysfunction. Additionally, the GHQ-28 identifies the presence of suicidal ideation and insomnia.

Two ways of scoring the GHQ-28 have been reported (Goldberg and Williams 1988). The conventional method is to score the last 2 columns as indicating a positive response. This would indicate the presence of symptoms in recent weeks. However, an alternative method of scoring the GHQ-28 is to include the second, third and fourth columns which would identify persons with long standing symptoms. The former method of scoring is called "GHQ scoring" indicating acute symptoms and the later method is called "CGHQ scoring" indicating the presence of chronic symptoms. Both these methods of scoring were employed in this study.

The questionnaire was translated into the following local languages: Malay, Chinese and Tamil. All versions were back-translated into English by independent translators to ensure the accuracy of the translations.

The self-administered questionnaires were left with the selected household members and were collected by the research team at a later time. Respondents were required to fill in the questionnaires themselves and submit the completed questionnaires to the data enumerators in a sealed envelope as their responses were deemed confidential.

## **4.5 Field Preparations**

Two main survey implementation groups had been formed: the Central Coordinating Team (CCT) and the field team. The CCT's main role was to monitor and coordinate the progress of implementation and provide administrative support in terms of financial and logistic arrangement for the field survey. The Field Teams were responsible to oversee and manage the field data collection process as well as undertake quality control.

The field data collection was conducted throughout Malaysia simultaneously, spanning within a continuous period of 4 months starting from April 2006. Teams were organized to move into 5 regions in Peninsular Malaysia, 2 regions in Sabah and 4 regions in Sarawak for data collections.

### **4.5.1 Pilot study**

A pilot study was conducted on a sample of EB's (not included in the NHMS III) about 2 months prior to the actual nationwide survey. It was conducted in three different areas in and around the Klang Valley, namely Sepang, Klang and Bangsar. The population in these locations comprised of three distinct socio-demographic strata that are rural, semi-urban and urban respectively. The pilot study focused on the following aspects of the survey such as testing of the questionnaire, testing of the field logistic preparation, testing of the scouting activities and testing of the central monitoring and logistic support.

### **4.5.2 Training of data collection teams**

A two weeks training course was held for field supervisors, team leaders, nurses and interviewers to familiarize them with the questionnaire, develop their interpersonal communication skills and appreciate the need for good teamwork. Briefing on the questionnaire, mock interview in the classroom and individual practice under supervision was conducted during the training.

## **4.6 Quality Control**

Quality control procedures for the data collection were done at two stages, field and central. Detail description of quality control process has been described in NHMS III protocol.

## **4.7 Data Management**

### **4.7.1 Data screening**

The following data screening exercises had been conducted at field and central levels prior to data entry:

- a) Field data screen by each interviewers at the end of his/her interview.
- b) Field data screen of each question by peer interviewers through exchanging questionnaire booklets.
- c) Field data screen by team leaders and field supervisors.
- d) Central data screening of the questionnaire by the quality control team.

### **4.7.2 Data entry**

The data entry system was developed to record the information collected during the data collection phase. It is a web based system that allows multiple simultaneous accesses to the database. The NHMS III used a double manual data entry method and any discrepancy between both entries was verified by the supervisors. The data entry started simultaneously with data collection (first week of April 2006) and was completed at the end of January 2007. The data entered was stored in the database according to the module.

The databases were designed using Structured Query Language (SQL) which is a standard language for relational database management system.

### **4.7.3 Data analysis**

Data analysis was done by exporting the data into other analysis tools such as Microsoft Excel, SPSS and STATA. The data in database (text form) was exported to the Microsoft Excel form then to the SPSS and STATA. The raw data was cleaned and analysed according to the terms, working definition and dummy table prepared by the research groups. All the analysis process were monitored and advised by the NHMS III Statistics Consultant.

## **4.8 Definition of Terms**

A household interview survey was conducted in 14,156 living quarters selected through a stage stratified random sampling design proportionate to population size throughout all states in Malaysia. The survey was conducted in the period of April to August 2006.

The instrument used for data collection in this survey is the Reporting Questionnaire for Children (RQC) developed by the WHO as part of the 1981 WHO Collaborative Study on Strategies for Extending Mental Health Care (Giel et al. 1981). It was used as the first stage screening instrument for children in the age range of 5 to 15 years attending primary health care facilities in four countries; namely Colombia, India, Sudan, and Philippines. The RQC has 10 items, outlined as follow:

<b>Item</b>	<b>Item Descriptive</b>	
1	Is the child 's speech in any way abnormal?	Y/N
2	Does the child sleep badly?	Y/N
3	Does the child ever has a fit of fall for no reason?	Y/N
4	Does the child suffer from frequent headaches?	Y/N
5	Does the child run away from home frequently?	Y/N
6	Does the child steal things from home?	Y/N
7	Does the child get scared or nervous for no good reason?	Y/N
8	Does the child appear backward or slow to learn?	Y/N
9	Does the child nearly never play with other children?	Y/N
10	Does the child wet or soil?	Y/N

Two additional items were added to the questionnaire relating to inattention and hyperactivity, as follows:

<b>Item</b>	<b>Item Descriptive</b>	
11	Is the child unable to concentrate?	Y/N
12	Is the child extremely active?	Y/N

In the analysis, the observed prevalence of psychiatric morbidity was calculated on one or more positive response to the RQC as well as to the two additional questions. The same questionnaire was also previously used as the instrument for data collection in the 2<sup>nd</sup> National Health and Morbidity Survey in 1996 and a validation study had been done earlier giving it a sensitivity of 91% and a specificity of 82% at a cut-off point of  $> 1$  (Giel et al. 1988).

Parents and guardians of children and adolescents in the selected households were provided with a questionnaire booklet containing the RQC together with the two additional questions. The first part of the questionnaire contains a brief introductory explanation to the parent or guardian, stressing that the questions apply to the child and adolescent in the past four weeks. Instructions were also included on how to shade the relevant responses. This questionnaire, which has both Bahasa Malaysia and English questions together, was called Module S2 in the NHMS III questionnaire booklet.

This questionnaire was given to the parents and guardians of all respondents who were between 5 to less than 16 years of age. The name of the child/ adolescent was written onto the questionnaire and parents or guardians were requested to answer regarding the particular child. This questionnaire was given to the parents or guardians on the first trip to the house or living quarters, and it was later collected sealed in an envelope provided by the data collection team to ensure confidentiality. The questionnaires were then collected either on the same day or on subsequent visits to the house for further analysis.

## 5. FINDINGS

### 5.1 General Findings

A total of 14,156 persons were eligible for this section of the survey questionnaire, i.e. those aged from 5 to just below 16 years. Among those eligible, 11,949 (84.4%) completed all responses and were considered for further analysis. 2207 persons (15.6%) were considered non-responders. The reasons for non-response included "Do not read or write" (69%), "Other reasons" (16%), "No specific reasons" (4%) and "No time" (3%).

Thus the response rate for this module was 84.4% (Table 5.1).

**Table 5.1: Distribution of response and non response**

Response	Frequency	%
Non response	2207	15.6
Response	11949	84.4
Total	14156	100.0

### 5.2 Specific Findings

#### 5.2.1 Overall adjusted prevalence

The overall adjusted prevalence of psychiatric morbidity in children and adolescents (5 years to less than 16 years of age) in this survey is 20.3% (CI: 19.4 - 21.3). Please refer to Table 5.2.

#### 5.2.2 By state

The adjusted prevalence of psychiatric morbidity by state was not significantly different. However, the highest prevalence were in Melaka (31.8%), followed by Negeri Sembilan (28.8%) and Terengganu (26.6%). Please refer to Table 5.2.



Table 5.2: Prevalence of child psychiatric morbidity by state

	Estimate		95% CI		Estimated Population	
	n	%	Lower	Upper	Count	with Morbidity
<b>State</b>						
Johor	1386	24.6	21.8	27.6	575,664	141,506
Kedah	930	21.0	17.8	24.6	391,458	82,144
Kelantan	943	20.5	17.7	23.6	396,543	81,115
Melaka	283	31.8	24.3	40.5	125,808	40,059
N.Sembilan	438	28.8	23.7	34.5	172,357	49,597
Pahang	585	21.1	17.3	25.4	281,531	59,300
Pulau Pinang	487	12.6	9.3	16.7	200,746	25,201
Perak	914	16.4	13.4	20.0	438,088	71,857
Perlis	104	17.3	11.7	24.8	48,686	8,423
Selangor	2006	19.6	17.5	21.9	894,903	175,192
Terengganu	656	26.6	22.8	30.9	256,663	68,362
Sabah	1518	20.0	17.3	23.0	618,173	123,823
Sarawak	965	15.6	13.2	18.4	492,507	76,971
W.P Kuala Lumpur	533	15.7	12.2	19.8	253,866	39,753
W.P Labuan	201	24.1	18.1	31.4	65,729	15,859
<b>Overall (National)</b>	11949	20.3	19.4	21.3	5,212,722	1,059,164

### 5.2.3 Effect of sociodemographic factors

Please refer to Table 5.3 below:

**Table 5.3 : Estimated prevalence of psychiatric morbidity by socio-demographic characteristics**

	Estimate	95% Confidence Interval	
		Lower	Upper
<b>Ethnic group</b>			
Malays	20.4	19.3	21.6
Chinese	16.8	14.7	19.1
Indian	26.7	22.8	30.9
Other Bumis	20.5	18.0	23.2
Others	20.0	15.8	25.0
<b>Religion</b>			
Islam	20.4	19.3	21.5
Christian	20.2	17.6	23.1
Buddha	17.5	15.1	20.1
Hindu	27.1	22.9	31.8
Others	14.7	8.0	25.5
<b>Citizenship</b>			
Malaysian	20.4	19.5	21.4
Non-Malaysian	16.6	12.3	22.0
<b>Gender</b>			
Male	21.6	20.4	22.8
Female	19.0	17.9	20.2
<b>Age group</b>			
5-9 years	19.9	18.7	21.1
10-14 years	20.8	19.6	22.0
15-16 years	20.7	18.3	23.3
<b>Household Income</b>			
Less than RM 400	19.4	16.2	23.0
RM 400 - RM 699	20.6	18.4	23.1
RM 700 - RM 999	23.0	20.5	25.7
RM 1000 - RM 1999	22.6	20.8	24.4
RM 2000 - RM 2999	19.8	17.7	22.1
RM 3000 - RM 3999	17.7	15.0	20.7
RM 4000 - RM 4999	18.2	14.3	23.0
RM 5000 & above	16.0	13.6	18.7

**a) By ethnic group**

The Indian ethnic group had the highest prevalence at 26.7% followed by Other Bumiputra group at 20.3%. These two groups were significantly higher in prevalence compared to the 3rd highest group, i.e. Malays at 20.4%. The Chinese had the lowest prevalence at 16.8%, statistically significantly lower than the Indians, Malays and Other Bumiputras. Please refer to Table 5.3.

**b) By citizenship**

The prevalence of psychiatric morbidity was higher in Malaysian citizens (20.4%) compared to the non-citizens (16.6%) though this was not statistically significant. Please refer to Table 5.3.

**c) By gender**

Males had significantly higher prevalence at 21.6% compared to females at 19.0%. Please refer to Table 5.3.

**d) By age group**

There was no statistical difference in the prevalence of psychiatric morbidity in the three age groups of 5 to 9 years, 10 to 14 years and 15 to 16 years. Please refer to Table 5.3.

**e) By household income**

The prevalence of psychiatric morbidity for children and adolescents in households earning less than RM 1,000 per month is higher than in households earning more than RM 1,000 per month; however this observation did not achieve statistical significance. Please refer to Table 5.3.

**f) By urban / rural residence**

The prevalence by urban / rural location of residence was found to be not statistically significant, though the rate for rural location at 21.2% was higher than the rate of 19.7% for urban location. Please refer to Table 5.4.

**Table 5.4: Estimated prevalence of psychiatric morbidity in children and adolescents by residence**

Location	Total respondents	Prevalence	Lower	Upper
Urban	6750	19.7	18.5	21.0
Rural	5199	21.2	19.9	22.7

### 5.2.4 Effect of physical illness

Children and adolescents with asthma had a higher adjusted prevalence at 28.5% compared to those without asthma at 19.8%.

Those who were not currently schooling had higher adjusted prevalences (36.9%) than those schooling (23.1%).

Those not communicating verbally had significantly higher prevalences (46.7%) compared to those communicating verbally (20.1%). Please refer to Table 5.5.

**Table 5.5: Estimated prevalence of psychiatric morbidity in children and adolescents by associated factors**

Factor	Total respondents	Estimated population	Adjusted prevalence
Asthmatic	227	83957	28.5
Non Asthmatic	2666	974846	19.8
Currently schooling	173	63636	23.1
Not schooling	3	1113	36.9
Communicating verbally	2718	993374	20.1
Not communicating verbally	37	13864	46.7

### 5.2.5 Common psychological symptoms

The frequency and proportions of positive responses for each item of the RQC is shown in Table 5.6 below;

**Table 5.6: Distribution of positive responses on each item of RQC**

Item	Item Descriptive	n	Freq	%
S1.	Does the child appear backward or slow to learn?	11814	1015	8.6
S2.	Does the child suffer from frequent headaches?	11880	720	6.1
S3.	Does the child nearly never play with other children?	11836	557	4.7
S4.	Does the child get scared or nervous for no good reason?	11815	457	3.9
S5.	Is the child's speech in any way abnormal?	11885	422	3.6
S6.	Does the child sleep badly?	11888	388	3.3
S7.	Does the child wet or soil?	11833	309	2.6
S8.	Does the child ever has a fit or fall for no reason?	11883	236	2.0
S9.	Does the child steal things from home?	11843	138	1.2
S10.	Does the child run away from home frequently?	11889	130	1.1

The item with the highest response was "Does the child appear backward or slow to learn?" at 8.6% followed by "Does the child suffer from frequent headaches?" at 6.1% and "Does the child nearly never play with other children?" at 4.7%.

Anxiety - related questions, i.e. "Does the child get scared or nervous for no good reason?" (ranked 4<sup>th</sup> at 3.9%) and "Does the child sleep badly?" (ranked 6<sup>th</sup> at 3.3%) indicated the importance of addressing issues of childhood worries and fears.

Speech abnormality was ranked 5<sup>th</sup> at 3.6% ("Is the child's speech in any way abnormal?").

"Does the child wet or soil?" was ranked 7<sup>th</sup> at 2.6% and "Does the child ever have a fit or fall for no reason?" was ranked 8<sup>th</sup> at 2.0%.

Conduct - related questions were answered positively at the lowest response rate ( at the 9<sup>th</sup> and 10<sup>th</sup> position), i.e. "Does the child steal things from home?" at 1.2% and "Does the child run away from home frequently?" at 1.1%.

The responses to the two questions relating to inattention and hyperactivity are as in Table 5.7 below.

**Table 5.7 : Distribution of positive responses for concentration / hyperactivity items**

Item	Item Descriptive	n	Freq	%
S11.	Is the child unable to concentrate?	11812	975	8.3
S12.	Is the child extremely active?	11801	2945	25.0

"Is the child unable to concentrate?" was 8.25% positive and "Is the child extremely active?" was 24.96% positive. For both the statements being positive, the rate was 3.9% (CI: 3.45 - 4.38)

The above items do not represent diagnoses and are merely indicators of problem areas in the affected children and adolescents.

## 6. DISCUSSIONS AND CONCLUSION

The adjusted prevalence of psychiatric morbidity in children and adolescents was 20.3%. (Refer to Table 5.2). This represented an increase of 7.32% compared to the prevalence rate of 13% found in the NHMS II in (MOH 1996).

The urban rate of psychiatric morbidity is now not significantly different from that of rural location (Table 6.1).

**Table 6.1 : Prevalence of psychiatric morbidity in children and adolescents by residence - NHMS II & III**

Location	NHMS II	NHMS III
Urban	10.5%	19.7%
Rural	15.5%	21.2%

Males continue to have significantly higher prevalence of psychiatric morbidity, as does the Indian and Other Bumiputra ethnic groups. However, the Malays and the Chinese ethnic groups appear to have increased rates compared to ten years earlier, (Table 6.2), though the Chinese continue to have the lowest rates in both NHMS II and NHMSIII.

Citizens had a higher rate than non -citizens (though not achieving statistical significance) and this is a reversal of the results obtained from ten years ago in the NHMS II (Table 6.2).

Households with a lower monthly income continue to have higher prevalence of psychiatric morbidity despite the results not achieving statistical significance (Table 6.2).

**Table 6.2 : Prevalence of psychiatric morbidity by socio-demographic characteristics : NHMS II & NHMS III**

	NHMS II %	NHMS III %
<b>Ethnic group</b>		
Malays	11.9	20.4
Chinese	3.6	16.8
Indian	24.6	26.7
Other Bumis	23.6	20.5
Others	27.1	20.0
<b>Religion</b>		
Islam	14.0	20.4
Christian	15.3	20.2
Buddha	3.5	17.5
Hindu	26.8	27.1
Others	10.8	14.7
<b>Citizenship</b>		
Malaysian	12.9	20.4
Non-Malaysian	30.6	16.6
<b>Gender</b>		
Male	14.1	21.6
Female	12.1	19.0
<b>Household Income</b>		
Less than RM 400	19.4	19.4
RM 400 - RM 699	16.1	20.6
RM 700 - RM 999	15.8	23.0
RM 1000 - RM 1999	9.8	22.6
RM 2000 - RM 2999	8.5	19.8
RM 3000 - RM 3999	10.6	17.7
RM 4000 - RM 4999	9.2	18.2
RM 5000 & above	0.0	16.0

Significantly, children with asthma, those not communicating verbally and those not currently attending school had higher prevalence of psychiatric morbidity.

Appearing backward and slow to learn continue to be the category with the highest response rates on the individual items of the RQC. The anxiety - related items continue to score highly (ranked 2<sup>nd</sup>, 4<sup>th</sup>, and 6<sup>th</sup>). Conduct - related questions continue to be rated lowest in the survey (Tables 6.2 and 6.3).



**Table 6.3 : Distribution of positive responses on each item of RQC - NHMS II**

Item	Item Descriptive	Freq	%
S8.	Does the child appear backward or slow to learn?	1818	12.5
S4.	Does the child suffer from frequent headaches?	1261	8.7
S9.	Does the child nearly never play with other children?	861	5.9
S7.	Does the child get scared or nervous for no good reason?	667	4.6
S1.	Is the child's speech in any way abnormal?	572	3.9
S2.	Does the child sleep badly?	672	4.6
S10.	Does the child wet or soil?	467	3.2
S3.	Does the child ever has a fit or fall for no reason?	350	2.4
S6.	Does the child steal things from home?	154	1.1
S5.	Does the child run away from home frequently?	177	1.2

**Table 6.4 : Distribution of positive responses on each item of RQC - NHMS III**

Item	Item Descriptive	Freq	%
S8.	Does the child appear backward or slow to learn?	1015	8.6
S4.	Does the child suffer from frequent headaches?	720	6.1
S9.	Does the child nearly never play with other children?	557	4.7
S7.	Does the child get scared or nervous for no good reason?	457	3.9
S1.	Is the child's speech in any way abnormal?	422	3.6
S2.	Does the child sleep badly?	388	3.3
S10.	Does the child wet or soil?	309	2.6
S3.	Does the child ever has a fit or fall for no reason?	236	2.0
S6.	Does the child steal things from home?	138	1.2
S5.	Does the child run away from home frequently?	130	1.1

The inattention and hyperactivity items were rated high on their own but when combined together (i.e. when both items together were rated positive), gave a rate of 3.9% compared to 4.3% during the previous survey.

It must be noted that we are unable to make more specific conclusions about diagnoses due to the limitations of the study design and methodology. However, it appears to be of concern that the exact same instrument used ten years ago has now given us results indicating a higher degree of psychiatric morbidity as reflected in the increase in prevalence rates in the NHMS III (20.32%) when compared to the NHMS II (13%). Though specific diagnoses were not able to be elicited for those affected due to logistic constraints, nevertheless, the information obtained in this survey is useful in identifying areas of concern as well as at - risk groups.

## **7. RECOMMENDATIONS**

Detailed research should be carried out as a follow - up to establish specific diagnoses and causalities for children and adolescents in view of the high prevalence of psychiatric morbidity. Funding of such research should be accorded high priority by the relevant agencies.

- 7.1 At - risk groups as identified by this survey should be targeted for appropriate interventions. To enable mental health and psychiatric services to reach such groups, a community - based approach would be of greater effectiveness when combined with outreach form hospitals.
- 7.2 Greater emphasis and focus should be placed on mental health promotion and prevention (primary and secondary levels) of mental illness.
- 7.3 More health care personnel should be trained in managing the mental health needs of children and adolescents. This should range from the primary care level (e.g. nurses, primary care doctors) right up to tertiary care (child psychiatrists). Currently available training e.g. for specialists and also for paramedical staff, should be strengthened and expanded. Appropriate resources should be made available for the regular training and updating of knowledge and skills for the relevant personnel.
- 7.4 Provision of comprehensive care via multidisciplinary teams that should include occupational therapists, counselors, clinical psychologists, nurses, family medicine specialists, pediatricians, psychiatrists and child psychiatrists.
- 7.5 Inclusion of mental health management of children and adolescents in the curricula of the local training programs of pediatricians and family medicine specialists. Presently, this is a much neglected area.

## REFERENCES

- Eapen, V, Al- Gazali, L, Bin Othman, S & Abou Saleh, M 1998, Mental Health Problems Among Schoolchildren In United Arab Emirates, *Journal Of the American Academy Of Child And Adolescent Psychiatry*, vol.37, no.8, pp. 880 - 886.
- Ford, T, Goodman, R & Meltzer, H 2003, 'The British Child And Adolescent Mental Health Survey 1999: The Prevalence Of DSM-IV Disorders', *Journal Of The American Academy Of Child And Adolescent Psychiatry*, vol.42, no.10, pp.1203 - 1211.
- Giel, R, De Arango, MV, Climent, CE et al. 1981, 'Childhood mental disorders in primary health care: results of observation in four developing countries', *Paediatrics*, vol.68, pp. 677- 683.
- Giel, R, Harding, TW et al. 1988, 'The detection of childhood mental disorders in primary care in some developing countries', *Handbook of Social Psychiatry*, Elsevier Science Publishers, pp 233 - 243.
- Goodman, R, Ford, T & Meltzer, H 2002, 'Mental Health Problems Of Children In The Community : 18 Month Follow-up', *British Medical Journal*, vol.324, no.7352, pp. 1496 -1497
- Kasmini, K, Kyaw, O, Hassan Almashoor, S, Ramli, H, Saroja, K 1987, Prevalence study of child psychiatric disorders in a Malaysian village - a preliminary report, *Journal Perubatan UKM*, vol.9, pp. 11 -20.
- Kasmini,K, Kyaw, O, Krishnaswamy, S et al. 1993, *A prevalence survey of mental disorders among children in a rural Malaysian village Acta Psychiatrica Scandinavia*, vol.87, pp. 253.
- Mesfin, S 1995, 'Prevalence And Risk Factors Of Psychopatology in Ethiopian Children', *American Academy Of Child And Adolescent Psychiatry* , vol.34, no.1, pp.100 - 109
- Roberts, RE, Atkinson, C & Rosenblatt, A 1998, Prevalence Of Psychopathology Among Children And Adolescents, *American Journal Of Psychiatry*, vol.155, no.6, June 1998, pp 715 -725.
- Rutter, M, Graham, P 1968, 'The reliability and validity of the psychiatric assessment in the child', *British Journal of Psychiatry*, vol. 114, pp. 563.
- Rutter, M, Tizard, J, Graham, P et al. 1976, 'Isle of Wight Studies', 1964 -19 *Psychological Medicine*, vol. 6, pp. 313.
- Toh, CL, Ding, LM, Peng, R et al. 1997, *National Health and Morbidity Survey 1996*, Institute for Public Health, Ministry of Health Malaysia.
- Wickman, EK 1928, *Children's Behaviour and Teachers' Attitudes*, Commonwealth Fund, New York.

