

# NATIONAL UNIVERSITY OF SINGAPORE STUDENTS WHO COME FOR PSYCHOLOGICAL HELP

Y L Ong  
E Aw  
C Chua  
P K Ong  
J Lowe

Department of Psychological Medicine  
Faculty of Medicine  
National University of Singapore

Y L Ong, MBBS, DPM, MRCPsych  
Senior Lecturer

University Health Department  
National University of Singapore

E Aw, MBBS  
Senior Health Physician

C Chua, MBBS  
Health Physician

P K Ong, MBBS  
Assistant Health Physician

Student Counselling Service  
National University of Singapore

J Lowe, Dip Soc Sc  
Student Counsellor

## SYNOPSIS

Seventy students required psychological help during the first term of the academic year 1982/83. They were found to be generally more unstable when compared to a comparison group of students using the test instrument of the Crown Crisp Experiential Inventory. The main aetiological factor elicited was that of study difficulty in terms of work load. The implications of this study are discussed.

## INTRODUCTION

Since the Royal College of Physicians published their subcommittee's report in 1966 (1) it has been accepted that about 5% of students in any university have psychological disorders which cause severe distress and a further 10-20% of students have less severe though handicapping disorders. As a result there has been a tendency as described by Lucas and Crown (2) to categorise students' difficulties under either 'major psychiatric illness' needing management by a psychiatrist and 'minor disturbances' requiring simple treatment by a general practitioner.

However, any psychiatrist or physician who worked in this field soon came to realise that the second category was neither as minor nor as simple as had been supposed and that considerable skills were called for in their understanding and management.

There is a need to define these categories clearly as much of the concern with which university authorities have of their students' mental health is due not only to the widely assumed relationship between psychological illness and poor academic performance, but also to an increasing awareness of the central role played by emotional factors in the adjustment of the young adult to the new, competitive and often demanding world of higher education (3).

It is also recognised that the suicide rate, which is one criteria for mental illness, is many times greater for undergraduates than for the equivalent age groups of the general population, suggesting that students are exposed to suicide risks (4). However, while the suicide rates are high particularly among students at the older English universities (5) the actual numbers are very small and suicide is fortunately only a rare expression of psychological illness among students.

In the National University of Singapore, psychological help is provided for the students at three levels:- supportive help from the student health physicians, counselling from the student counsellor and formal psychiatric help from the psychiatrist attached to the student health service. All three disciplines work in close liaison with each other and students are referred and managed appropriately according to their needs. This study was set up with the aims:-

- (i) to define the major clinical and social characteristics of our local university students requiring psychological help, and
- (ii) to elicit whether underlying personalities determine the degree of psychological help needed by the students.

This paper deals with a comparison of the three different groups ie.:-

- (A) Students receiving supportive help from the student health physicians.
- (B) Students receiving counselling from the student counsellor.
- (C) Students receiving treatment from the psychiatrist, in terms of the above aims.

This paper however only reports the details of the students managed for psychological help in the first term of the academic year 1982/83. The study is still in progress but the first term students form a discreet group in themselves, and from previous clinical experience, differ from the second term students, as the major factor of pre-examination stress is not as intense during the first term. It was therefore thought to be appropriate to report the two terms separately.

**METHOD**

This study was set up at the beginning of the academic year 1982-83 and the overall model was, as stated, in the aims of the study; that of defining the characteristics of students requiring psychological support. As stated also from the previous clinical experience of the student health physicians and counsellor it was felt that the student population over the academic year could be divided into three categories:-

- (i) students receiving psychological help in the first term
- (ii) students receiving help in the October vacation and second term leading up to the finals
- (iii) students receiving help due to failure and the subsequent help leading up to the resits and the supplementary examinations and ultimate results.

This grouping was thought not to be arbitrary but represent very distinct categories. This study in its entirety will be able to confirm this.

At the beginning of the survey year the criteria for students to be included in this study were defined as follows:-

- (A) all students who were being seen by the student health physicians in ongoing psychological support;
- (B) students who were receiving counselling for psychological

reasons;

- (C) those who were treated with psychological methods of treatment.

These students were asked to complete the Crown Crisp Experiential Index (6) which would define the major groups of psychotic symptoms and personality traits. A comparison group, of an equal number of students matched only for sex and selected on a random basis, from the population of students attending the student health service for medical reasons, was also asked to complete the Crown Crisp Experiential Index. To further case identification, a socio demographic and clinical questionnaire was filled up on each student by the student health physicians, student counsellor and psychiatrist. The categories of diagnosis was based on Section V of the ICD 9 (7) definitions of the various diagnoses, and the student health physicians and counsellor were instructed in this. In addition this was supplemented by the classification as described by Kessell in 1980(8) which allows scope for recognition of both formal psychiatric illness and the diagnostic category of 'conspicuous psychiatric morbidity'. With this addition the therapist can also, besides making a specific psychiatric diagnosis, make allowances for conditions in which psychological factors are known to play a part or just to appreciate the presence of psychological symptoms and signs. As in the study by Kidd & Caldbeck-Meenan (3), the same modification was made for this student survey in excluding mental subnormality and various dementias, since these would not be found among members of the population. Inter-rater reliability was established by checking on the degree of correlation of the diagnosis etc obtained on 5 students who were all rated by the student health physicians, student counsellor and psychiatrist. There was a high correlation.

**RESULTS**

¶The results are presented in two parts:-

Part I:- The clinical and social features, in which the three categories of students are presented in three distinct cohorts. Group A represents the students managed by the student health physicians; group B represents the students managed by the student counsellor and group C the students managed by the psychiatrist.

Part II:- The personalities of these students as compared to the comparison group

**Part I**

As the results for Part I are best illustrated by tables, the results are presented by:-

**TABLE 1  
DISTRIBUTION BY SEX**

Sex	Group A	Group B	Group C	Total
Male	12	8	14	34
Female	21	6	9	36

**TABLE 2  
DISTRIBUTION BY AGE**

Sex	Group A Mean Age ± ISD	Group B Mean Age ± ISD	Group C Mean Age ± ISD
Male	23.50 ± 2.50	22.13 ± 1.96	22.47 ± 2.42
Female	20.60 ± 1.67	20.20 ± 1.10	22.11 ± 3.41

TABLE 3  
DISTRIBUTION BY SECONDARY EDUCATION STREAM

Education Stream	Group A		Group B		Group C		Total No. of Students
	Male	Female	Male	Female	Male	Female	
English	9	18	6	6	12	9	60
Chinese	3	2	2	—	2	—	9
Malay	—	1	—	—	—	—	1
Tamil	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	—
TOTAL	12	21	8	6	14	9	70

TABLE 4  
DISTRIBUTION BY FACULTY AND YEAR OF COURSE

Faculty	Group A Year				Group B Year				Group C Year				Total No. of students from each Faculty	Percentage of Total Enrolment in Faculty	
	I	II	III	IV	I	II	III	IV	I	II	III	IV			
For Male Students															
Accountancy & Business Admin.	2*				2				1	1				6	0.7%
Engineering		1	5			1	1		2				2	12	0.6%
Arts	1	1	1		1					1			1	6	0.9%
Architecture & Building				1			1				1	3		6	1.3%
Science					2					1	1			4	0.5%
Pharmacy														—	—
Law, Dentistry														—	—
Medicine														—	—
TOTAL	12				8				14				34	—	
For Female Students															
Accountancy & Business Admin.	3*	2	1		2	2			1*		1			12	1.0%
Engineering														—	—
Arts	2	3	4	1		1			2	1*	1			15	1.1%
Architecture & Building						1								1	0.5%
Science		2	3*						1	1				7	0.6%
Pharmacy														—	—
Law													1	1	0.5%
Dentistry & Medicine														—	—
TOTAL	21				6				9				36	—	

\*one repeating student

**TABLE 5  
DISTRIBUTION BY DIAGNOSIS AMONG THE COHORTS**

Diagnosis	Group A		Group B		Group C		Total
	Male	Female	Male	Female	Male	Female	
<b>Neurosis</b>							
Anxiety state	5	7	3	2	6	1	24
Hysteria	—	—	—	—	—	—	—
Phobic state	—	—	—	—	—	—	—
Obsessive compulsive disorders	2	1	—	—	1	—	4
Neurotic depression	1	3	—	—	4	3	11
Hypochondriasis	—	—	—	—	—	—	—
<b>Psychosis</b>							
Schizophrenia	—	—	—	—	—	—	—
Paranoid psychosis	—	—	—	—	—	—	—
Manic depressive psychosis	—	—	—	—	—	—	—
<b>Personality Disorders</b>							
Paranoid	—	—	—	—	—	—	—
Affective/Cyclothymic	—	—	—	—	—	—	—
Schizoid	—	—	—	—	—	—	—
Explosive	—	1	—	—	—	1	2
Anankastic	—	1	—	—	1	—	2
Hysterical	—	—	—	—	—	1	1
Asthenic/Inadequate	1	1	1	1	2	1	7
Psychopathic	—	—	—	—	—	—	—
<b>Conspicuous psychiatric morbidity</b>							
Eating disorders	3	7	4	3	—	—	17
Borderline psychosis	—	—	—	—	—	1	1
	—	—	—	—	—	1	1
<b>TOTAL</b>	<b>12</b>	<b>21</b>	<b>8</b>	<b>6</b>	<b>14</b>	<b>9</b>	<b>70</b>

**TABLE 6  
TREATMENT**

Types of Drug	Group A		Group B		Group C	
	Male	Female	Male	Female	Male	Female
Neuroleptic	1	—	—	—	—	1
Anxiolytics	10	9	—	—	7	2
Antidepressants	—	—	—	—	—	1
Anxiolytics and Antidepressants	—	—	—	—	4	1
Others:						
Analgesics	—	3	—	—	—	—
Antihistamines	—	1	—	—	—	—
Hematinics/Primolot N	—	1	—	—	—	—
<b>Total No. of students given medication</b>	<b>11</b>	<b>14</b>	<b>—</b>	<b>—</b>	<b>11</b>	<b>5</b>

**TABLE 7  
LENGTH OF ILLNESS ACCORDING TO DIAGNOSIS FOR ALL GROUPS**

Diagnosis	Number of students	Mean Length of Illness ± 1 SEM (in months)
Anxiety State	24	3.32 ± 0.54
Obsessive Compulsive Disorders	4	72 ± 11.0
Neurotic Depression	11	3.93 ± 1.03
Conspicuous Psychiatric Morbidity	17	2.11 ± 0.47
Eating Disorder	1	8
Borderline Psychosis	1	60

**TABLE 8**  
**SYMPTOM PRESENTATION (Expressed In %)**

Symptom	Group A	Group B	Group C
Physical	72.7%	28.6%	21.7%
Psychological	27.3%	71.4%	78.3%

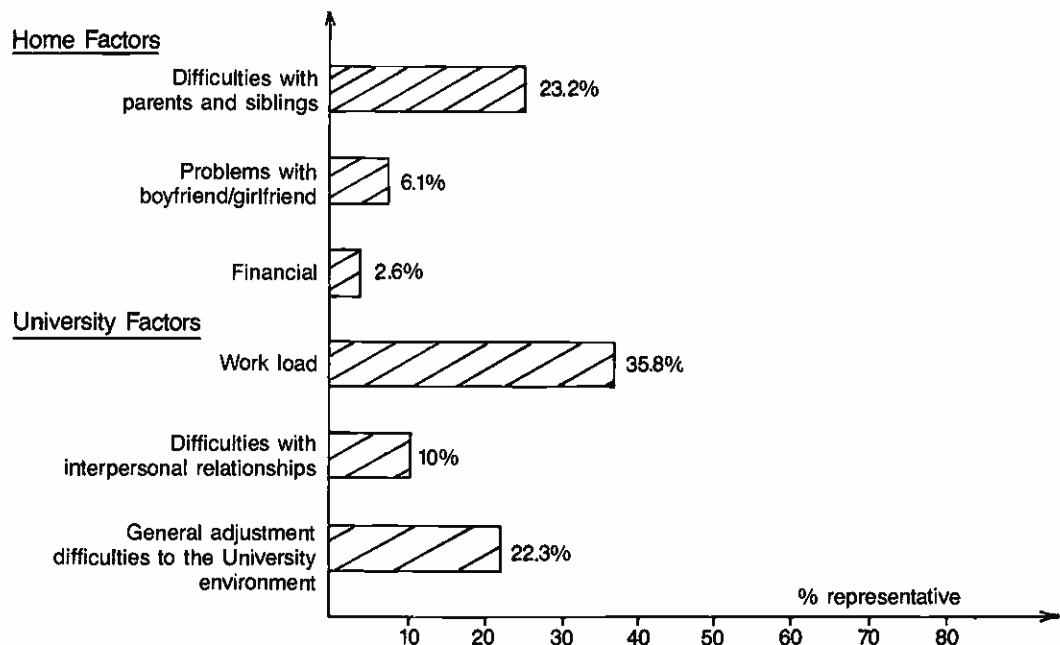
Using the chi-square test there is a statistical significant difference in the presentation of students in group A as compared to group B and group C respectively ( $P < 0.001$  in both cases) but no statistical significance was obtained in comparing group B with group C.

**TABLE 9**  
**AETIOLOGICAL FACTORS**  
(Main Aetiological Factors — given a score of 2 points  
Secondary Aetiological Factors — given a score of 1 point)

Aetiological Factors	Scores for each group							Total No. of Points
	Group A		Group B		Group C			
	Male	Female	Male	Female	Male	Female		
<b>I Home Factors</b>								
Difficulties with parents and siblings	17	7	7	8	5	9	53	
Problems with boyfriend/girlfriend	6	4	—	2	—	2	14	
Financial	1	2	2	1	—	—	6	
<b>II University Factors</b>								
Work load	30	12	8	4	19	9	82	
Difficulties with interpersonal relationship — peer group, lecturers	3	2	7	3	4	4	23	
General adjustment difficulties to the university environment	8	7	8	2	14	12	51	
<b>TOTAL</b>	<b>65</b>	<b>34</b>	<b>32</b>	<b>20</b>	<b>42</b>	<b>26</b>	<b>229</b>	

The scores obtained and presented in Table 9 can be illustrated as a bar diagram as seen in Figure 1.

**FIGURE 1**  
**PERCENTAGE DISTRIBUTION OF AETIOLOGICAL FACTORS**



PART II

This section presents the results of the test scores of the Crown Crisp Experiential Index as obtained by the students and the comparison group.

Table 10 shows the scores obtained by the males in the research population and the comparison group, and the results of the T-test and their significant levels.

**TABLE 10  
CCEI SCORES FOR MALE STUDENTS**

Male: N = 34	FFA	PHO	OBS	SOM	DEP	HYS
Student patient group mean ± ISD	9.12 ± 4.4	5.68 ± 3.2	8.38 ± 3.7	7.68 ± 3.6	8.80 ± 3.3	7.76 ± 2.6
Comparison group mean ± ISD	3.62 ± 2.4	4.15 ± 2.1	5.91 ± 2.6	3.76 ± 2.2	3.62 ± 1.7	6.74 ± 3.7
t Value	8.33	2.35	3.17	5.54	12.04	1.32
Significant level	0.001	0.05	0.01	0.001	0.001	0.5

Likewise Table II shows the scores obtained by the females in the research population and the comparison group as well as the results of the T-test and their significant levels.

**TABLE 11  
CCEI SCORES FOR FEMALE STUDENTS**

Females: N = 36	FFA	PHO	OBS	SOM	DEP	HYS
Student patient group mean ± ISD	9.42 ± 3.4	6.36 ± 3.1	7.81 ± 3.3	7.69 ± 3.5	7.25 ± 3.1	6.58 ± 3.1
Comparison group mean ± ISD	4.94 ± 2.15	3.42 ± 2.4	5.61 ± 2.5	4.36 ± 2.8	3.64 ± 2.2	6.53 ± 3.0
t Value	5.218	4.475	3.234	3.806	5.680	0.069
Significant level	0.001	0.001	0.01	0.001	0.001	n.s

## DISCUSSION

As with the results the discussion of this paper is dealt with in their two respective parts.

### PART I

This is the first time that a study of this kind has been carried out in the National University of Singapore. The central finding is that the main aetiological factor causing psychological distress is that of study difficulty (Figure 1) in terms of work load. This is probably to be expected as the main task of the university student is that of academic achievement. This finding also correlates with other works in that Crown et al (9) have reported in their paper that complaints of work difficulty often form part of the symptomatology of psychiatric disturbances in student population and in fact go on to state that not infrequently this may be the presenting symptom. Ryle (10) has noted that no psychiatric classification adequately accounts for those who do and those who do not experience academic difficulty. He emphasizes the importance of this by distinguishing "disorganized" and "dynamic" categories for his group of psychiatric disturbances amongst university students with study difficulty. Other studies like that of Malleson's (11) distinguished, primary and secondary study difficulties in which the latter was defined as study disrupted as a side effect of a personal problem. All these studies, including this present study, underline the importance of work difficulties amongst university students.

What is perhaps more surprising is that "problems with the family" rate second in this study as an aetiological factor. This may be reflective of our culture, as the establishing of autonomy and independence from the family tends to be of later onset and a more difficult task due to the filial piety stressed in all Asian families. This observation of later independence is to some extent supported by the fact that relationship problems with boyfriends and girlfriends rate very low as an important aetiological factor in this series.

The third factor of general adjustment difficulties to the university environment is again to be expected, in terms of the growing awareness as mentioned in the introduction; of the effect on the students of having to adjust to the new, competitive and demanding world of higher education.

From the other tables in the results of Part I the following observations can be made:-

The students in this series fell into four main diagnostic categories (Table 6): (i) anxiety state, (ii) conspicuous psychiatric morbidity, (iii) neurotic depression and (iv) inadequate personality disorder. All four diagnostic categories emphasizes the neurotic presentation amongst these students and also confirms the observations of previous studies that "conspicuous psychiatric morbidity" is a necessary additional category when dealing with students. There was no overt case of psychosis in this group though one student was diagnosed as having a borderline psychosis. This student expressed "soft" signs of psychosis and a definite family history of schizophrenia. From previous clinical experience there is usually only one or two students a year who become psychotic. As to be expected the commonest personality disorder would be that of the inadequate personality as these students would be unable to cope with the various stresses.

From Table 7 the mean length of illness in three of the four main diagnostic categories ie. anxiety state, conspicuous

psychiatric morbidity and neurotic depression was 3.22 SD 0.54; 2.11 SD 0.47 and 3.93 SD 1.00 months respectively. These students therefore came for help in the relatively early stages of their distress. The help given can be viewed as a form of "crisis intervention".

The mode of presentation of the three respective groups A, B, C also shows another striking fact in that the students assessed and managed by the student health physicians presented with physical rather than psychological complaints in comparison to groups B and C. When this was expressed in terms of percentage (Table 8) the difference between symptom presentation in group A and groups B and C respectively was statistically significant. This confirms our personal impression that students view the three disciplines differently, and therefore present with the physical or psychological aspects accordingly. As to be expected there was therefore no significant difference between group B and group C as both have the "psychological" emphasis.

The sociological characteristics of this population of students are also illustrated in the tables. In this particular study the number of female students seen were more than the male students but only by two students. The total University population consists of 4,738 females and 5,747 males according to the Second Annual Report (12), and therefore no clear conclusion can be made from the sex ratio seen in this series. The mean age was similar for all three subgroups as expected as the average age range of students studying at the National University of Singapore is that of 19 to 23 years, correlating with the year of the course. The average age of the male students would be higher as many of them would have first completed their National Service commitment before entering the University.

In this series the number of students with a secondary Chinese education formed 12% of the student patient population. Unfortunately there are no figures available as to what proportion of the total University student population are students who have received a secondary Chinese education. Previous clinical experience has been that these students usually have more difficulties in adjusting to the University environment. It has also been thought that repeating students tend to have more difficulties and in this series 5 out of 70 ie. 7% of the student patient population were repeating students. The percentage of repeating students at the start of the academic year 1982/83 was that of 0.6% (unpublished) and our results therefore substantiate the original belief.

The large number of male engineering students represented in this population may reflect the fact that there is a large male intake in this faculty ie. in the Second Annual Report (12) the total number of male engineering students was 1,959. However our patients only represented 0.6% of the total enrolment in that faculty. In this series the highest percentage representation in terms of total faculty population was that from the Faculty of Architecture & Building. Likewise the over-representation of the Faculties of Arts & Accountancy and Business Administration may also be only a reflection of the large number of girls in both these faculties ie. 1982 report - 1,413 and 1,195 girls respectively as compared to the number of males 636 and 820 respectively. There were no students from Dentistry & Medicine and Pharmacy but this may be due to the fact that this paper only covers the first term referrals as again previous clinical experience has shown that there are usually one or two students from each of these faculties.

**PART II**

From Tables 10 and 11 the most striking findings are that from the differences in the CCEI the test scores obtained between the student patient group and the comparison group. The students who come for psychological help are generally more unstable. In the comparison between the female comparison group and the female student patient population, the latter group scored statistically significant higher scores in all categories tested ie. FFA; PHO; OBS; SOM; DEP; except on the subscale of Hysteria. In other words the female student patient group were on the whole more anxious, tended to show more anxiety phobic states; were more obsessional; complained of more somatic symptoms and were more depressed. Similarly the male student patient group also scored statistically significantly higher scores on all the subscales except for the Hysteria subscale.

Another striking finding is that our local students in the comparison group show test scores which are apparently similar to the reference test scores obtained by Howell et al for their population of university undergraduates. This is however only an apparent comparison as the total number of students studied differ greatly in both studies and that definite statistical test cannot be applied as individual scores of the students in the Howell et al study are not available.

Crown and Crisp (6) in their validation studies of their scale show that the scores of the university students are similar to their other control groups ie. industrial workers and controls from general practice studies, despite the selectiveness for age and intelligence in the university student group. But they also note that the university student group scored one major observation difference in their scores on the Hysteria subscale in contrast to their other control groups. This high score is also seen in both our student patient group and our comparison

group. Crown and Crisp offer the explanation that the Hysteria subscale also measures the sociability component of extroversion and therefore the high scores amongst university students may be related to this. As we have no other local control group to compare with, we cannot definitely draw the same conclusions as to the apparent high scores obtained by our students. Crown in 1974 (14) also determined the scores in a group of psychoneurotic outpatients and interestingly and perhaps unfortunately in comparing our student patient group with Crown's set of scores there seems to be also an apparent similarity.

Again because of the large difference in population numbers and the lack of research information, this comparison is only superficial but hints at the fact that the students in our student patient group perhaps fall into the psychoneurotic category.

**CONCLUSIONS**

While caution is necessary with the interpretations of the results of this project, nevertheless the one clear finding is that the group of students who came for psychological help during the first term of the academic year 1982/83, were definitely found to be more unstable as rated on the CCEI when compared with the comparison group of students. The student patient group showed scores which were apparently more similar to the established psychoneurotic reference norms of the test. In close correlation to this is the fact that these students presented with neurotic rather than psychotic clinical diagnoses. The other clear finding is that the main precipitating or aetiological factor was found to be that of study difficulty in terms of work load. Both of these findings are of importance as they have far reaching implications in our research of student health and problems and student performances.

It may be possible to detect all potential cases who require

**TABLE 12  
CCEI SCORES COMPARING 2 GROUPS OF UNIVERSITY STUDENTS**

	No.	FFA	PHO	OBS	SOM	DEP	HYS
Males (Howell et al)	118	4.2 2.8	2.5 2.0	5.5 2.9	3.1 2.1	3.0 2.4	6.5 2.8
Males (Ong et al)	34	3.6 2.4	4.2 2.1	5.9 2.6	3.8 2.2	3.6 1.7	6.7 3.7
Females (Howell et al)	189	6.5 3.8	4.3 2.9	6.1 4.0	3.8 2.8	3.9 2.7	6.7 3.5
Females (Ong et al)	36	4.9 2.2	3.4 2.4	5.6 2.5	4.4 2.7	3.6 2.2	6.5 3.0

**TABLE 13  
COMPARISON OF CCEI SCORES BETWEEN PSYCHONEUROTICS  
AND OUR STUDENT PATIENT GROUP**

	No.	FFA	PHO	OBS	SOM	DEP	HYS
Males (Crown)	133	9.7 3.9	5.3 3.5	8.7 3.5	8.0 3.8	7.7 3.8	5.2 3.4
Males (Ong et al)	34	9.1 4.4	5.7 3.2	8.4 3.7	7.7 3.6	8.8 3.3	7.8 2.6
Females (Crown)	173	11.0 3.5	6.8 3.9	8.2 3.8	8.9 3.2	7.6 3.9	5.2 3.5
Females (Ong et al)	36	9.4 3.4	6.4 3.1	7.8 3.3	7.7 3.5	7.3 3.1	6.6 3.1



some form of ongoing help by incorporating a screening test as part of the health services offered. Such students can then be placed in some form of appropriate therapeutic support which in time may prevent further complications. The second part to this study will give an indication if these students are in the high risk group for pre-examination stress and examination problems. Early support may also reduce the drop out rate. It will definitely be useful and possible to define the different types of study difficulties other than the category of work load, by using the methods as described by Crown et al in their 1973 (9) and 1976 (15) studies. These studies have managed to delineate study difficulties by the use of the University College London Study Questionnaire (UCLSQ) and have also defined a new category of difficulties ie. syllabus boundness. This information will be useful for exploring our existing teaching practices. Above all these findings and suggestions (and further research) will assist in improving the productivity of the student during his university life.

#### ACKNOWLEDGEMENTS

We would like to thank Prof W. F. Tsoi for his guidance and encouragement for the project. We would also like to thank Dr J. L. Tan and Dr Letty Sng of the University Health Service Department and the nursing staff for their help, without which the project would be incomplete. Finally we would like to thank Dr K. C. Lun for his advice regarding the statistical tests.

#### REFERENCES

- Royal College of Physicians. Report of subcommittee on the Student Health Service, 1976.
- Lucas CS and Crown S: Concepts and methods on student mental health. *Brit J Psychiat* 1974; 125: 595-603.
- Kidd CB, Caldbeck-Meenan J: A comparative study of psychiatric morbidity among students at two different universities. *Brit J Psychiat* 1966; 112: 57-64.
- Carpenter RG: Statistical analysis of suicide and other mortality risks of students. *Brit J Prev Soc Med* 1959; 13: 163-74.
- Parnall RW: Mortality and prolonged illness among Oxford undergraduates. *Lancet* 1951; i: 731-3.
- Crown & Crisp. A manual of the Crown Crisp Experiential Index. Hodder & Stroughton, 1979.
- World Health Organization. Mental Disorders: Glossary and guide to their classification in accordance with the 9th Revision of the International Classification of Diseases, 1978.
- Kessel WIN: "Psychiatric morbidity in a London general practice". *Brit J Prev Soc Med* 1960; 14: 16-22.
- Crown S, Lucas CJ, Supramaniam S: The delineation and measurement of study difficulty in university students. *Brit J Psychiat* 1973; 122: 381-93.
- Ryle A: Student casualties. London. Allen Lane, 1969.
- Malieson NB: A Handbook on British Student Health Services. London: Pitman, 1965.
- National University of Singapore. Second Annual Report 1981-82. Mentor Printers Pte Ltd.
- Howell R, Crown S, Howell RW: Personality and psychosocial interaction in an undergraduate sample. *Brit J Psychiat* 1973; 122: 699-701.
- Crown S: The Middlesex Questionnaire (MHQ) in clinical research. A review. In Pichot, P. (Ed) *Psychological Measurement in Psychopharmacology*. Basel: Karger S, 1974; 111-24.
- Lucas CJ, Crown S, Stringer P, Supramaniam S: Further observation on study difficulty in university students including "Syllabus - Boundness". *Brit J Psychiat* 1976; 129: 598-608.