

# JOURNAL OF THE FACULTY OF MEDICINE BAGHDAD

## CONTENTS

### Basic Research

- Glycosylated Haemoglobin in Diabetic Rats. Kawthar M. Ibrahim, Ilham F. Al-Fakhri, Dhafir El-Yassin, Suhair Nadhum and Basil Sabri. .... 229
- The Effect of "Physical Fitness" on the Response of Sweat and Plasma Electrolytes during the Physical Exercise. Ammar Abdul-Rahman Qubia, Thiai Kasim Al-Khiat, Elham Hamid Al-Dabbagh and Nadhim Sultan Allawi. .... 239
- Salivary Versus Serum cortisol Determination in Normal Subjects in Basrah, Using A Simple Modification of Radioimmunoassay Kit Method for Serum Cortisol. Mohammad, H.H. Al-Hakiem and Sadiq J. Abbas. .... 245
- Stereological Demonstration of Lipid Storage in Liver Caused by Experimental Hypervitaminosis "A". Kahtan B. Ibrahim, Basima A.K. Al-Sarraj and Huda Z. Gurgla. .... 253
- Cytological and Cytochemical study of Pleural and Peritoneal fluids. K. Kh. Al-Rawi I.I. Madlum, N. Al-Rubai, Y. Bahosh and D. Naief. .... 261
- Revaluation of the Preventive and Therapeutic Roles of Retinoic acid Applied on Chemically Induced Skin Tumours. Mehdi I. Hilany, Mazin Y. Al-Mukhtar and Amjed F. Ahmed. .... 265

### Clinical Investigation and Case Report

- Anatomical Variations of Recurrent Laryngeal Nerve in Thyroid Surgery. Samie B. Safar. .... 275
- Clinical Limitation of Cutaneous Oxygen Tension Monitoring During Cardiopulmonary Bypass. Al-Kassim Nawal A., Al-Siaidy Wijdan F., and Al-Saiadi Shatha F. .... 283
- Methods of Decontamination and Media for Isolation of Tubercle Bacilli from Cases of Pulmonary Tuberculosis. Rakan Yehya Mohammad-Ali & Ghanem Ahmad Al-Allaf. .... 295
- Total Anomalous Pulmonary Venous Drainage to the Inferior Vena Cava. Hameed Al-Ani & Hassan A. Kieso. .... 303

### Epidemiological Study

- Unregistered Work Injuries in a Textile Factory. N. Qassim, Hikmet Jamil, Abbas Al-Chadirchi & Hani Bunny. .... 309
- The Practice of Breast Feeding Among Mothers Attending M.C.H. Centers. M.R. Al-Obaid, N.F. Al-Bayatti, M.J. Al-Fallogi and Z.R. Al-Rawi. .... 317
- Occupational Stress in an Industrial Company. Imadaddin Abdul Hadi Al-Nakkash, Abdul Monaf Husain Al-Jadiry and Hikmet Jamil. .... 327

J. Fac. Med. Baghdad 1987 Vol. 29 No. 3

## OCCUPATIONAL STRESS IN AN INDUSTRIAL COMPANY

Imadaddin Abdul Hadi Al-Nakkash, Abdul Monaf Husain Al-Jadiry,<sup>(1)</sup> Hikmet Jamil<sup>(2)</sup>

(1) Dept. of Med. (2) Dept. of Community Med. Coll. of Med. Uni. of Baghdad-Iraq.

الاجهاد النفسي لدى العاملين في إحدى الشركات الصناعية

الخلاصة

تهدف هذه الدراسة الى تحديد الحالة النفسية العصبية لمنتسبي إحدى الشركات الصناعية باستخدام معامل اختيار كروان كرسب لقياس التيارات العصبية و ثم استخراج الوسط الحسابي واتخاذ أساس للمقارنة بين مجاميع العاملين وكذلك تهدف الدراسة الى معرفة مصادر الاجهاد النفسي والمتغيرات التي تؤثر على حالتهم النفسية.

اختيرت لهذا الغرض عينة أولية تتألف من (٤٩٠) فردا من منتسبي (عمالا وموظفين) من الجنسين ومن مختلف الاعمار، استجاب (٣٨٨) منهم بالصورة الدقيقة ثم اخذت نسبة ٣٠٪ منهم (١١٩) كعينة عشوائية لدراسة النتائج واجراء الحسابات الاحصائية ومناقشتها. وقد تم فرز المجاميع التالي والتي تعاني من الاجهاد النفسي ومن زيادة في قيم اوساطها الحسابية مقارنة مع الوسط الحسابي لعموم مجتمع الشركة في اكثر من حالة نفسية حسب المقياس المذكور وهي مجاميع العمر (١٩ - ٢٣) سنة، (٤٩ - ٥٤) ويتميز احصائي (٠٠١ و) الصباح يتميز احصائي (٠٠١ و) والذين مضى على خدمتهم في الشركة خمسة سنوات فأقل يتميز احصائي (٠٠١ و) وقورنت هذه النتائج بمثيلاتها من الدراسات التي اجريت داخل وخارج القطر.

### SUMMARY:

This study was aimed at examination of the psychoneurotic profile of an industrial company population by using "The Selfrating, Crown-Crisp Experimental Index (CCEI)" as a measuring instrument and to deduce the arithmetic mean and employ it in comparing the different groups of that population. Also the purpose was to detect sources of stress that affect their psychological state in relation to different variables.

Out of four hundred and ninety employees (Labourers and official staff) of both sexes and different age groups, selected as an original sample, 388 responded to the questionnaire. A 30% stratified random sample, viz (119) respondents, was taken to study the results and infer the statistical data and discuss them.

*the highest mean scores on different scales of the CCEI were identified among age groups 19-23 and 49-54 years ( $P < 0.001$  and  $P < 0.01$  respectively), female official staff and those working one (morning) workshift ( $P < 0.001$ ) and those with length of service of five years and less ( $P < 0.001$ ).*

#### **INTRODUCTION:**

The psycho-social adjustment of the employee in any industrial field is vital, as his physical fitness and skill, to ensure better industrial productivity; the individual is in continuous interaction with his environment which exposes him to various forms of stress and requires reasonable psychological tolerance and personal adaptability.

Examination of the individual personality variables and exploration of major sources of stress in the work field, would facilitate identification of stress prone groups and define aspects to be examined for the selection of a new employee. With this aim in mind, the Crown-Crisp Experimental Index (CCEI), formerly known as the Middlesex Hospital Questionnaire<sup>(1)</sup>, was applied in this study to examine the psychoneurotic status in an Iraqi Industrial company population. The CCEI is a valid, reliable, brief, self-rating inventory instrument<sup>(2)</sup>. It consists of forty eight questions on six scales namely: anxiety, phobic behaviour, obsessional symptoms, psychosomatic complaints, depression and hysterical phenomena. It is a self-diagnostic, feasible psychometric instrument for measuring the clinical psychoneurotic profiles of the population<sup>(3,4)</sup>. To our knowledge, this study is the first one being carried out in an Iraqi industrial population using the CCEI measuring instrument. However, two similar studies were carried out on nonindustrial Iraqi population using the same instrument<sup>(5,6)</sup>.

#### **MATERIALS AND METHODS:**

the Arabic version of the CCEI<sup>(5)</sup> was applied to assess the psychoneurotic status of an Iraqi industrial company employees in relation to different variables, namely: age, sex, occupation, marital status, length of service, workshift. Out of 2367 employees in the company four hundred and ninety (labourers and official staff) were selected randomly; among which one hundred and nineteen personnel constituted a stratified random sample according to sex and occupation. The personnel were engaged with different

types of modern work processes out most of them doing monotonous type of Job.

The form of questionnaire, dispensed to each member of the sample, included sixty eight questions; forty eight of which were proper CCEI questions, the rest (twenty questions) provided demographic information such as name, age, sex, occupation, marital status, degree of education, type of workshift and type of problems or stresses they face. The results of the study were scored accordingly. The computer has been used to calculate the statistical figures obtained from the study including different groups, statistical tests of namely: chi-square test,  $X^2$ , (Table 4,5 & 6), to test significant differences between groups of the population and t-test (Table 2 & 3), to explore significant individual differences within the same group.

#### RESULTS:

Four hundred and ninety employees constituted the original random sample 388 personnel responded to the questionnaire (Table 1).

A 30% stratified random sample was taken out of the respondents viz (119) respondents because data were very much and the time was limited. The respondents included 100 males and 19 females. Age group 19-23 years showed highest mean scores on anxiety, obsession, depression and hysterical scales; while age group 49-54 years scored highest on the phobic behaviour scale (Table 2). The scores were statistically significant ( $P < 0.05$ )

As far as marital status is concerned, single persons showed highest mean scores on anxiety and obsessional scales; while divorced personnel showed highest mean scores on scales of phobia, psychosomatic complaints, depression and hysterical phenomenon ( $P < 0.001$  and  $P < 0.01$  respectively) (Table 3).

**Table 1. Original Sample personnel (respondents) demographic distribution according to sex and occupation with their percentage.**

| Occupation     | Male | %    | Female | %   | Total |
|----------------|------|------|--------|-----|-------|
| Labourers      | 170  | 43.8 | 29     | 7.5 | 199   |
| Official staff | 162  | 41.8 | 27     | 7.0 | 189   |
| Total          | 332  |      | 56     |     | 388   |

**Table 2. Mean scores of company population sample according to age classes<sup>+</sup> on the CCEI.**

| Age (year) |     | Anxiety | Phobia | Obsession | Psychosomatic | Depressive | Hysterica |
|------------|-----|---------|--------|-----------|---------------|------------|-----------|
| (19-23)    | M   | 9.1     | 6.7    | 9.5       | 7.7           | 9.3        | 7.3       |
| No=26      | SD. | 4.0     | 3.6    | 2.8       | 3.6           | 2.4        | 3.2       |
| (24-28)    | M   | 6.5     | 5.6    | 8.1       | 6.2           | 7.1        | 5.9       |
| No=30      | SD. | 4.2     | 3.1    | 2.8       | 3.7           | 2.8        | 2.4       |
| (29-33)    | M   | 4.4     | 3.5    | 8.1       | 4.3           | 5.9        | 4.7       |
| No=47      | SD. | 3.2     | 2.2    | 2.1       | 3.9           | 2.3        | 2.3       |
| (34-38)    | M   | 7.7     | 5.9    | 8.0       | 5.5           | 7.0        | 5.4       |
| No=11      | SD. | 4.4     | 3.5    | 3.5       | 4.2           | 2.6        | 2.9       |
| (39-43)    | M   | 7.3     | 7.7    | 7.3       | 10.7          | 5.7        | 5.3       |
| No=3       | SD. | 4.5     | 5.1    | 2.9       | 2.1           | 2.1        | 2.3       |
| (44-48)    | M   | 8.5     | 9.0    | 8.0       | 6.5           | 5.5        | 6.0       |
| No=2       | SD. | 7.8     | 7.1    | 0.0       | 7.8           | 2.1        | 2.8       |

M: Mean; S.D.: Standard deviation; No=Number.

<sup>+</sup>: Age group (44-48) years was cancelled from the table because the stratified random sample did not include respondents from the class.

For each age group t-test was done, the P value was less than 0.05 for all

**Table 3. Mean scores of company population according to marital status on the six (CCEI) scales.**

| Marital status |     | Anxiety | Phobia | Obsession | Psychosomatic | Depressive | Hysterical |
|----------------|-----|---------|--------|-----------|---------------|------------|------------|
| Married        | M   | 5.7     | 4.8    | 8.1       | 5.4           | 6.7        | 5.1        |
| No=84          | SD. | 4.1     | 3.2    | 2.5       | 4.0           | 2.7        | 2.3        |
| Single         | M   | 8.1     | 5.9    | 9.9       | 6.8           | 7.8        | 6.9        |
| No=31          | SD. | 4.1     | 3.6    | 2.9       | 4.2           | 2.9        | 3.3        |
| Divorced       | M   | 7.8     | 7.3    | 8.5       | 7.5           | 9.5        | 9.5        |
| No=4           | SD. | 4.5     | 2.2    | 2.1       | 2.4           | 2.1        | 2.8        |

M: Mean; S.D.: Standard Deviation; No. = Number

t-test was done for each status, the P value ranged between <0.001 and 0.01

- 363 -

regarding sex in relating to occupation, female official staff were noticed to score highest on anxiety, phobic, psychosomatic and hysterical scales ( $P < 0.001$ ) (Table 4).

Concerning length of service, official who spent five years or less in service had the highest scores on the six CCEI scales ( $P < 0.001$ ) (Table 5).

Official staff working one permanent morning working were found to score highest on anxiety, phobic, psychosomatic, depression and hysterical scales. Compared with the whole population, this finding was statistically significant for all six scales ( $P < 0.001$ ) (Table 6). However, the scores were statistically significant in respect to anxiety and phobic scales of male official staff only ( $P < 0.05$ ).

**Table 4. Mean scores of company population according to sex and occupation on the (CCEI) six scales.**

| Sex and Occupation classes |      | Anxiety | Phobia | Obsession | Psychosomatic | Depre | Hysterical |
|----------------------------|------|---------|--------|-----------|---------------|-------|------------|
| Male labourors             | M    | 4.9     | 4.1    | 8.1       | 4.5           | 5.1   | 5.0        |
| No=51                      | S.D. | 3.9     | 3.3    | 2.4       | 4.0           | 2.1   | 4.5        |
| male official              | M    | 7.3     | 5.3    | 8.9       | 6.6           | 7.1   | 6.2        |
| staff No=49                | S.D. | 3.9     | 3.0    | 2.9       | 3.8           | 2.1   | 3.0        |
| Female labourors           | M    | 6.8     | 6.8    | 6.4       | 6.7           | 9.1   | 5.5        |
| No=10                      | S.D. | 4.2     | 3.4    | 2.3       | 3.5           | 2.1   | 2.3        |
| Female official            | M    | 10.1    | 8.3    | 8.9       | 8.2           | 8.1   | 6.8        |
| staff No=9                 | S.D. | 4.6     | 2.7    | 1.8       | 4.2           | 4.1   | 2.4        |

M: mean; S.D.: Standard deviation. No. Number  
Chi-square test was done for each sex of different occupation, ( $P < 0.001$ )

**Table 5. Mean scores of company population according to length of service in relation to occupation on the six (CCEI) scales.**

| Length of Service *(L.S)<br>in relation to<br>occupation |     | Anxiety | Phobia | Obsession | Psychosomatic | Depressive | Hysterical |
|----------------------------------------------------------|-----|---------|--------|-----------|---------------|------------|------------|
| Labourors,<br>L.S<5<br>No.=23                            | M   | 6.1     | 5.6    | 7.1       | 5.1           | 7.5        | 5.7        |
|                                                          | SD. | 4.4     | 4.1    | 2.7       | 4.4           | 3.1        | 2.4        |
| Labourors,<br>L.S>5<br>No.=38                            | M   | 4.6     | 4.0    | 8.2       | 4.7           | 5.9        | 4.7        |
|                                                          | SD. | 3.7     | 2.8    | 2.2       | 3.8           | 2.5        | 2.4        |
| Official staff,<br>L.S<5<br>No.=43                       | M   | 8.3     | 6.3    | 9.1       | 7.1           | 8.2        | 6.8        |
|                                                          | SD. | 4.1     | 3.2    | 2.6       | 3.7           | 2.7        | 2.9        |
| Official staff,<br>L.S>5<br>No.=15                       | M   | 5.9     | 4.4    | 8.4       | 6.0           | 6.3        | 4.9        |
|                                                          | SD. | 3.7     | 2.4    | 2.9       | 4.5           | 2.2        | 2.5        |

M: Mean; S.D.: Standard deviation; L.S= Length of Service years No.= Number.

Chi-square test was done for each occupation, to those who have Less than five years service and those who have more than five years service ( $P < 0.001$ )

**Table 6. Mean scores of company population according to workshift in relation to occupation on the six (CCEI) scales.**

| Workshift in relation<br>to occupation classes     |     | Anxiety | Phobia | Obsession | Psychosomatic | Depressive | Hysterical |
|----------------------------------------------------|-----|---------|--------|-----------|---------------|------------|------------|
| Labourors working<br>one workshift<br>No=49        | M   | 4.9     | 4.5    | 7.3       | 4.8           | 6.4        | 5.1        |
|                                                    | SD. | 3.9     | 3.5    | 2.3       | 4.0           | 3.0        | 2.5        |
| Labourors working<br>alterating workshift<br>No=12 | M   | 6.1     | 4.9    | 9.5       | 5.0           | 6.9        | 5.0        |
|                                                    | SD. | 4.2     | 3.2    | 2.2       | 4.3           | 2.3        | 2.0        |
| Official staff working<br>one workshift<br>No=48   | M   | 8.1     | 6.3    | 9.1       | 7.2           | 8.0        | 6.5        |
|                                                    | SD. | 4.2     | 2.9    | 2.8       | 3.9           | 2.5        | 3.0        |
| Official staff working<br>alterating workshift     | M   | 5.8     | 3.1    | 8.1       | 5.1           | 8.3        | 5.1        |
|                                                    | SD. | 2.9     | 3.0    | 2.1       | 3.6           | 2.9        | 2.3        |

M: Mean; S.D.: Standard deviation; No.= Number

Chi-square test was done for each occupation, to those who work one workshift and those who work alterating workshift, the P value ranged between  $< 0.001$  and  $< 0.05$

### DISCUSSION:

The age group 19-23 years of the company population scored highest on scales of anxiety, obsession, depression and hysterical phenomenon and this may be attributed to the effect of transition from school life to work with all its requirements in addition to other factors as becoming independent and need to cope with a new work life<sup>(7)</sup>.

The other extreme of age (age group 49-54 years) showed highest scores on phobic scale probably due to fears of becoming old, dependency, loneliness, and worries about retirement

Single, non married, individuals were found to have highest scores on anxiety and obsessional scales because of the psychological instability and lack of social settlement, while divorced individuals had highest score on the rest four scales as a result of the psychological distress and social impact. The female official staff presented the highest score on anxiety, phobic, psychosomatic and hysterical scales as they had to work long hours together with distant residency, increasing financial requirements and the double responsibilities and commitmentst at work and home.

The highest mean scores on all scales of the CCEI were in the official staff who had ben in service for five years or less, and this may be attributable to difficulties in coping and adaption to work circumstances in the early years of employment in addition to training difficulties<sup>(7)</sup>. Official staff working on permanent morning workshift scored the highest on all six scales. Direct personal questioning of individuals revealed that most of them preferred alternating workshifts to provide them a more spare, of time, so that they can have an additional job to increase their income; and also responsibilities of night work are less stressful than morning workshift and supervision is less strict at night shift.

The results of the study showed higher scores among the female sex group as they are exposed to more physiological distress, specific to female sex group in general, such as menses and pregnancy<sup>(8)</sup>.

The results of the study showed higher mean scores on the six scales of CCEI as compared to the Iraqi medical students population<sup>(5)</sup> (Table 7). This is well attributed to differences in age, sense of responsibility both at work and at home, together with the additional stresses related to work such as residency,

**Table 7. Mean scores of company population as compared to IRAQI War disabled population, IRAQI Medical Students population mean scores, English general adult population on the six (CCEI) scales.**

| Population         |     | Anxiety | Phobia | Obsession | Psychosomatic | Depressive | Hysteric |
|--------------------|-----|---------|--------|-----------|---------------|------------|----------|
| IRAQI              | M   | 6.4     | 5.2    | 8.4       | 5.8           | 7.1        | 5.7      |
| Industrial company | SD. | 4.2     | 3.4    | 2.6       | 4.1           | 2.8        | 2.7      |
| population         |     |         |        |           |               |            |          |
| IRAQ War           | M   | 7.2     | 6.8    | 7.9       | 8.0           | 6.8        | 6.3      |
| disabled           | SD. | 3.0     | 2.7    | 0.7       | 4.8           | 2.3        | 2.6      |
| population.        |     |         |        |           |               |            |          |
| IRAQI Medical      | M   | 4.8     | 3.4    | 5.4       | 3.9           | 4.6        | 5.3      |
| students           | SD. | 3.2     | 2.6    | 2.8       | 3.0           | 2.6        | 2.4      |
| population         |     |         |        |           |               |            |          |
| English general    | M   | 4.2     | 3.9    | 4.8       | 4.4           | 3.4        | 3.4      |
| adult populaion    |     |         |        |           |               |            |          |

M: Mean; S.D. Standard deviation.

inadequate income, level of education which are more influential in the company population.

On the other hand the war disabled population<sup>(6)</sup> showed higher scores on anxiety, phobic, psychosomatic and hysterical scales than the industrial population (Table 7) due to the psychological impact of handicap. However, the company population were found to score higher on obsessional and depressive scales as compared with the war disabled population.

The Iraqi company population showed higher mean scores on all scales of the CCEI as compared with the English general adult population<sup>(4)</sup>, which may be attributable to cultural differences (Table 7).

In conclusion, the general results of this study delineates the groups of the company population who are at higher risk than others and it is hoped that this would help in planning for better selection criteria for individual employment, and paying more psychosocial attention to them.

#### REFERENCES:

- 1- Crown, S. & Crisp, A.H. A Short Clinical Diagnostic Selfrating Scale for Psychoneurotic Patients. British Journal of Psychiatry, (1966) 112, 917-923.
  - 2- Crisp, A.H., Gaynor Jones, M. and Slater, P. The Middle-sex Hospital Questionnaire: A Validity Study, British J. of M. Psychology. (1978 a).
  - 3- Dasberg, H. and Shalif, I. The Validity of the Middles sex. Hospital Questionnaire, Brit. J. of M. Psychology (1978).
  - 4- Crisp, A.H., Ralph, P.C., McGuinness, B. and Harris, G. Psycho neurotic Profiles in the Adult Population, B.J., of M. Psychology (1978 b).
  - 5- Maghazaji, H.I., Alwash, R., Murtadha, M.M. and Hamoud, M.A. Psychoneurotic Profiles in Iraqi Medical Students, British J. of M. Psychology (1982).
  - 6- Al-Kubaisy, T.F., Nohmeed, A.Kh. Psychoneurotic Profiles of War Disabled Individuals, (Unpublished data).
  - 7- Brook, Alexis R.S.F. Schilling, Occupational Health Practice, Mental Health of People at Work, Chapter 18, (1973), 379-381.
- ٨- علي كمال، ١٩٨٣، (النفس)، القسم الرابع - الانفعالات النفسية الجسمية، صفحة ٣٩١-٣٩٢، الطبعة الثانية، دار واسط للدراسات والنشر - بغداد.

#### ACKNOWLEDGEMENT:

Authors are very grateful, and highly appreciate the assistance and cooperation of all Company staff, especially the Director General, Dr. Widad Al-Nakkash, Dr. Muhammed Jawad Al-Falooji, Dr. Tarik F. Al-Kubaisy, Dr. Haider I. Al-Maghazaji, Dr. Nazar Al-Talabani and the Computer Staff of the College of Engineering.