INDIVIDUAL STUDY

*Factors affecting Cornell Medical Index scores of married couples**

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The Cornell Medical Index (CMI) is a health questionnaire consisting of 195 simply-worded questions developed in the United States (Brodman, 1949) as an aid to clinicians. Numerous studies have supported its validity as an indicator of the presence of emotional ill-health or disorder. It is best regarded as a measure of the subject's own perception of his health state (Abramson, 1965, 1966). The best indicator of neurosis or emotional disturbances appears to be the total score, and when 30 is the decision point, the test has a specificity ranging from 74 per cent to 100 per cent in various studies (Abramson, 1966). Recent modifications of this and similar health-orientated questionnaires have improved the ease of administration, and its use as an epidemiological tool.

The use of this index in comparative studies is difficult, as the questionnaire is of little value when comparing widely divergent cultures. Validity is also doubtful when the CMI is used to compare groups within a single culture. The validity of the CMI questionnaire when tested in a Jerusalem housing project (Abramson, 1965), was found to be influenced by age and possibly by social class; but sex, educational level and ethnic groups had little or no influence on its validity.

This survey investigated the prevalence of high CMI scores among married couples in a middle-class urban family practice within the framework of the Kupat Holim Sick Fund (a system of pre-paid medical care) in Israel. Among its objectives was the study of the effect of some demographic, familial and social variables on the CMI scores of the study population so as to enable its use as an epidemiological tool in this population (Polliack, 1971).

Method

The central urban clinic in Herzlia is responsible for the care of about 10,000 patients living within a radius of two kilometres. I am one of five general practitioners and provide diagnostic and curative health care to over 1,700 patients. There are full consultative and hospital services available in the area. Most of the patients have been under my care for at least four years. The population comprised 454 married couples registered at the time, and excluded all who were unmarried, divorced, or widowed. During the six months' survey, a pair of Hebrew CMI questionnaire forms were distributed to each patient, usually at the time of consultation or home visit, with a request to complete the form, to ensure that the spouse did so as well, and to return both completed copies to the doctor at the next consultation, or by post. The family nurse read out the questions and marked the answers on behalf of patients with language problems.

During this period, 17 families transferred to other areas, and six families remained untraceable. After constant and repeated reminders and occasional home visits, completed questionnaires were obtained from 862 patients, representing a response rate of 98·6 per cent. After independent checking of the scores, a total of 30 or more positive responses was classified as a 'high' CMI score, while less than 30 was regarded as a 'low' CMI score.

In an attempt to classify the study population according to the stage of development of the nuclear families, the following definitions were devised:

New family: A childless couple married less than five years.
Young family: A couple all of whose children were under school age (six years).
Developing family: A couple with at least one child at school, and another child below school age (or who did not consider their families completed).
Mature family: A couple with at least one child at school, with no child below school age and who considered their family complete.

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Elderly family: A couple whose children had all left school.
Sterile family: A childless couple married more than five years.

Results

TABLE I

DISTRIBUTION OF C.M.I. SCORES AMONG THE STUDY POPULATION

C.M.I. Scores	Husbands		Wives	
	Number	Percentage	Number	Percentage
0–9	85	20	41	9
10–19	127	27	92	21
20–29	70	17	79	18
30–39	70	17	71	17
40–49	37	9	42	10
50+	42	10	108	25
0–29	282	65	210	49
over 30	149	35	221	51
Total	431	100	431	100

The prevalence of high CMI scores (table I) was 35 per cent among men and 51 per cent among women. Differences between the sexes were however only apparent at extreme scores—20 per cent of men and nine per cent of women scoring between 0–9; whereas ten per cent of men and 25 per cent of women scored 50 or more. Among men (table II), the percentage of high scores tended to increase with advancing age until 60 years, and then decreased; whereas among

TABLE II

PERCENTAGE DISTRIBUTION OF HIGH AND LOW C.M.I. SCORES AMONG HUSBANDS AND WIVES, IN RELATION TO AGE, SOCIAL CLASS, AND STAGE OF DEVELOPMENT OF THE FAMILY

	Husbands			Wives		
	Number in group	C.M.I. 0–29	C.M.I. over 30	Number in group	C.M.I. 0–29	C.M.I. over 30
Age (years)						
20–29	54	84	16*	121	59	41*
30–39	139	69	31	109	57	43
40–49	89	58	42*	93	40	60*
50–59	90	58	42	76	36	64
60+	59	63	37	33	36	64
Social class						
I	45	80	20*	45	73	27*
II	289	70	30	289	48	52
III	97	45	55*	97	38	62*
Stage of family development						
New	23	83	17	23	87	13
Young	110	75	25	110	58	42
Developing	65	52	48	65	52	48
Mature	123	68	32	123	40	60
Elderly	91	58	42	91	40	60
Sterile	19	53	47	19	37	63
Totals	431	65	35	431	49	51

* differences significant at $p<0{\cdot}001$.

women, the percentage rose from 43 per cent to 60 per cent after the age of 40 years, and then remained constant. In both men and women, differences were only significant when comparing those under and over the age of 40.

A significant relationship was demonstrated between the scores and social class as classified by the occupation of the husband. Among men, the prevalence of high scores increased from 20 per cent in the upper social class to 30 per cent in the middle class, and 55 per cent in the lower social class. A similar increase was shown among women (27, 52, 62 per cent). Among men, the percentage of high scores rose progressively from 17 per cent in new families to 42 per cent in elderly families, while those in developing families showed the highest percentage. Among women the prevalence of high scores increased steeply from 13 per cent to 42 per cent after the birth of the first child, and continued to rise steadily. Men and women of sterile families both showed the highest prevalences (47 per cent, 63 per cent).

TABLE III

PERCENTAGE DISTRIBUTION OF HIGH AND LOW C.M.I. SCORES AMONG HUSBANDS AND WIVES, IN RELATION TO COUNTRY OF ORIGIN, DURATION OF RESIDENCE, GAINFUL EMPLOYMENT OF WIFE, AND 10 YEAR AGE-GAP BETWEEN HUSBAND AND WIFE

	Husbands			*Wives*		
	Number in group	*C.M.I.* 0–29	*C.M.I.* over 30	*Number in group*	*C.M.I.* 0–29	*C.M.I. over* 30
Country of origin						
Asia	93	55	64*	95	44	56*
Africa	32	69	31	29	55	45
Europe	237	66	34	215	41	59
Israel	69	75	25*	92	70	30*
Duration of residence						
–1947	147	76	24*	124	45	55
1948–1954	178	56	44*	173	40	60
1955–1964	37	49	51*	41	49	51
Working wife						
Yes	120	78	22*	120	63	35*
No	311	60	40*	311	42	58*
Husband 10 years older†						
Yes	50	66	34	50	46	54
No	381	65	35	381	49	51
Totals	431	56	35	431	49	51

*Differences significant at $p<0{\cdot}001$

†There were no couples where the wife was ten years older than the husband

Israeli-born men and women (table III) showed the lowest prevalence of high scores (25, 30 per cent) compared with immigrants. Among immigrants, high prevalences were found in European-born women (59 per cent), and in Asian-born men (64 per cent) and women (56 per cent). In the Asian-born, a small group of 18 Persian-born men and women showed the highest prevalence of all—68 per cent (not shown in the table). Among all immigrant men, the percentage of high scores rose significantly from 24 per cent in the pre-1947 veterans, to 44 per cent in the 1948–1954 group, and to 51 per cent in the more recent immigrants. No differences were shown among the immigrant women.

Among both husbands and wives, the prevalence of high scores was significantly lower when wives went out to work (22, 35 per cent), than when they stayed at home (40, 58 per cent). Among the couples in whom the husbands were at least ten years older than their wives, no differences were shown in the scores of either husbands or wives, when compared with those in whom the age difference was smaller. The prevalence of high scores among women was invariably higher than among men, with the noticeable exception of newly-married wives

without children, in whom the prevalence (13 per cent) was lower than among the husbands of this group (17 per cent).

A significant correlation was demonstrated between the total scores of wives, and their husbands (figure 1). When expressed as a function of the line of regression of Y (wife) on X (husband), the resulting equation was Y=17·55+0·71X (s.d. Y=23·7; s.d. X=19·1). When expressed as the co-efficient of correlation, r=0·57.

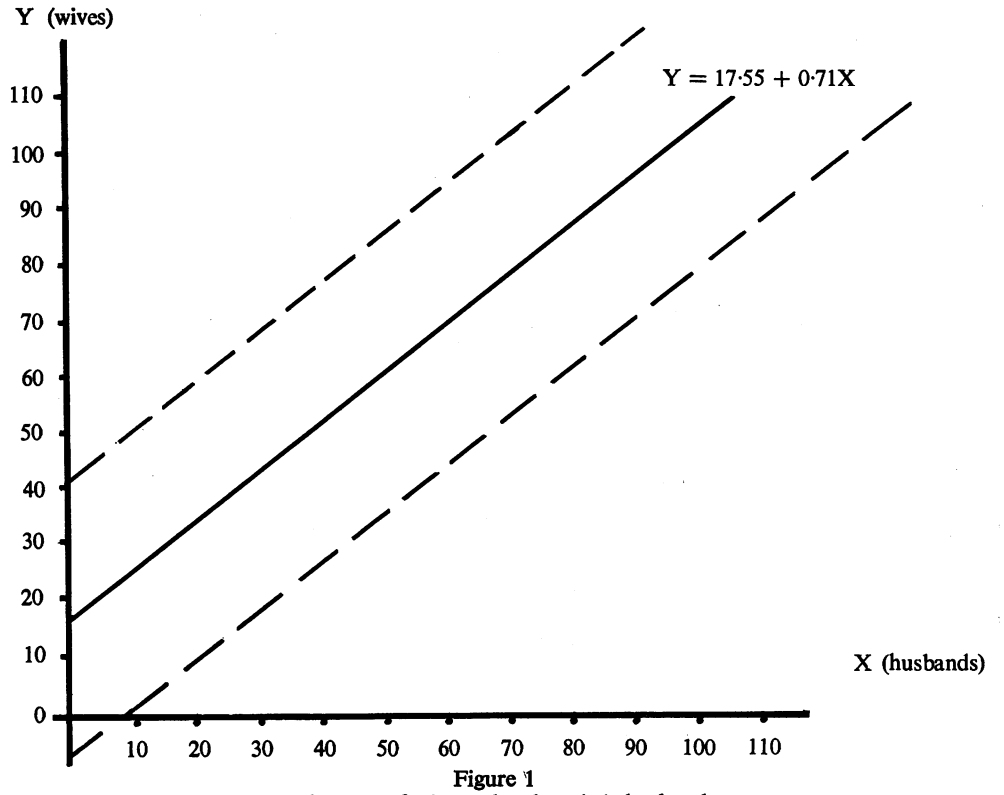

Figure 1
Total scores of wives related to their husbands

Discussion

The CMI scores of men and women are known to be related to many, often indefineable factors. The validity of the CMI in different culture groups has also been questioned (Abramson, 1966a, Brodman, 1954), but in Israel it has been found valid as an indicator of emotional disorder (Abramson, 1966b). Apparent divergencies have not been attributed to differences in physical or mental health, but have been considered to be culturally determined (Steinhardt, Culpan, Brodman, 1953), or perhaps due to question bias (Abramson, 1966a). Within these reservations, the findings of this survey generally confirm those of other local and overseas surveys, and extend them.

Comparison with other reports

The prevalence rates of high scores among the population corresponded to the findings of Abramson in the West-Jerusalem study (1966b) but were lower than the rates found in another survey in the same city (Abramson, 1965). The rates were generally higher than those found among non-psychiatric patients outside Israel (Brodman, 1952; Brown, 1962; Pond, *et al.*, 1963; Lawton, 1959), and this may reflect culturally orientated differences in the perception of symptoms rather than differences in emotional health. Alternatively, it may be due to the composition of the study population, 50 per cent of whom were post-1948 immigrants, mainly European-born, whose past histories bear the heavy imprint of emotional and psychological burdens.

My known interest in the psychological aspects of medical care has also probably encouraged a bias in the composition of the patient-panel by self-selection over the years, resulting in a relatively high proportion of multi-problem families. The increasing prevalence of high scores with advancing age, significant when comparing below and above 40 years of age, also supported the findings of both Jerusalem studies (Abramson, 1965, 1966b). The lower scores in men over 60 years possibly marks the end of competitive employment; but the marked rise in scores among women over the age of 40 probably reflected the physical and emotional changes characterizing this age-group.

The clear relationship between CMI scores and social class has been previously demonstrated in Israel (Abramson, 1965) and may reflect social and psychological factors (Abramson, 1966b, Pond, *et al.*, 1963; Lawton, 1959; Hamilton, *et al.*. 1962) among the lower social classes, or differences in educational levels (Abramson, 1965) or possibly an inconsistency between social and educational status levels (Abramson, 1966b). Among foreign-born men, the high scores in more recent immigrants supported the findings of the Midtown Manhattan Study (Srole, *et al.*, 1962). By contrast, scores were uniformly high among immigrant women, especially among those of the immediate post-1948 war period, possibly due to their experiences, and the conditions prevailing in Israel during those years. The high scores among Persian-born immigrants confirmed the impressions of many local doctors, but the small numbers precluded valid conclusions.

Housewives

The low prevalence of high scores among both husbands and wives in couples where the wives were also gainfully employed outside the house, was an unexpected finding requiring cautious interpretation, as many 'unemployed' wives were probably unofficially employed in part-time or domestic jobs. It is possible that housewives were exposed to more emotional tension, or conversely, that the wives' contributions to the family income reduced financial and emotional strain within the family. Alternatively, these housewives may represent a specific social class, age-group, or health state. The percentage of wives married to husbands at least ten years older (11 per cent) was higher than anticipated, and the absence of any differences in scores between these and more conventional couples, was also unexpected. This may have implications for the emotional needs of the married; and on factors which influence selective mating in our culture; and in the conditions and culture where these marriages took place.

As in other studies (Abramson, 1966a), the women scored consistently higher than men, probably reflecting differences of role performance and socio-cultural factors between the two sexes. The only exceptions were the newly married wives whose prevalence of high scores compared favourably with their husbands. This interesting finding probably reflects a favourable emotional climate, especially in wives during the early years of marriage, maintained until the birth of the first child. Its significance should also be viewed in association with the contrasting high prevalence rates among husbands and wives who had been married for more than five years without children (sterile families).

In their CMI study of neurosis in 50 married couples, Ryle and Hamilton (1962) demonstrated a relationship between neurosis in husbands and in their wives. Abramson described a relationship between the CMI responses of mothers and their daughters, and the Jerusalem CMI study (Abramson, 1965) showed a correlation between the total CMI score and the M-R scores which relate to the emotions, moods and feelings. It was therefore no surprise to find the significant correlation between the total scores of husbands and that of their wives. Explanations for this relationship should be sought among the behavioural factors known to affect the mental health and the interpersonal relationships of people in prolonged, intimate and meaningful contact, sharing together the mutual problems of a common economic, social and cultural environment. These factors must also necessarily include habits of selective mating (who marries whom?), marital adjustments, mutual perceptions of illness and illness-roles, and attitudes towards personal health care. This relationship also emphasises the mutual interdependence expressed in the relationships between husband and wife, beginning at marriage, and extending through the period of child rearing to the sunset stage of family development. This finding also implies that CMI studies should also include the CMI score of the marriage partner in order to assist interpretation.

Conclusion

This survey demonstrated the use of the CMI questionnaire as an epidemiological tool to enable the family physician to achieve a better understanding of these families under his care. It indicated the need for further research, and emphasised the need for a family approach to family health needs.

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