Howard L. Rudner, MD, CCFP

Work-Related Stress: A Survey of Family-Practice Residents in Ontario

SUMMARY

A field survey of 273 residents in both years of the five family-practice residency programs in Ontario was undertaken to identify perceived sources of stress and to examine the relationship of stressors to work and career satisfaction, personal distress, and marital life. Differences were examined as between first- and second-year residents, and female and male residents, regardless of their year of training. Results of the survey indicate that first-year residents work more hours per week than do second-year residents, are more stressed by time-management problems and lack of self-confidence, and are more depressed. Women residents also work more hours weekly than do male residents, experience more stress related to time management and lack of self-confidence at work, and are more depressed, but drink less alcohol daily than do male residents. These results support previous work in this area. Future directions and recommendations for residency training programs are suggested. (*Can Fam Physician* 1988; 34:579–584.)

RÉSUMÉ

On a mené une enquête auprès de 273 résidents des deux années inscrits dans les cinq programmes de résidene en médecine familiale de l'Ontario afin d'identifier leurs perception des sources de tensions et d'examiner le lien entre ces tensions et le travail, la satisfaction de la carrière, les problèmes personnels et la vie de couple. L'auteur a étudié les différences entre les résidents de première année et ceux de deuxième année, puis entre les femmes et les hommes, sans égard à l'année de résidence. Les résultats de cette enquête révèlent que les résidents de première année travaillent un plus grand nombre d'heures chaque semaine que les résidents de deuxième année, sont davantage tendus par les problèmes inhérents à l'organisation de leur temps, manquent d'assurance et sont plus déprimés. Les résidentes travaillent aussi un plus grand nombre d'heures chaque semaine que leurs confrères, sont plus tendues par l'organisation de leur emploi du temps, manquent d'assurance au travail et sont davantage déprimées, mais consomment moins d'alcool quotidiennement que leurs confrères. Ces résultats corroborent les travaux déjà effectués dans ce domaine. L'auteur suggère certaines orientations et recommandations à l'intention des programmes de résidence.

Key words: stress, work-related stress, residency training programs, family medicine

Dr. Rudner is a staff member in the Department of Family and Community Medicine, Sunnybrook Medical Centre, University of Toronto. Requests for reprints to: Dr. Howard L. Rudner, Room E-3654, Sunnybrook Medical Centre, 2075 Bayview Ave., Toronto, Ont. M4N 3M5

THE INTERNSHIP and residency-training period is the time when physicians may face, simultaneously, many intense and stressful experiences, including the development of professionalism, maturation as a young adult, and financial changes. These experiences are likely to lay the groundwork for their future medical practice and their self-image as physicians.[1] The residency years are critical to the formation both of effective clinical skills and also of coping patterns that will endure throughout a physician's career. Residency training has been described as a particularly stressful time where "survival" needs often conflict with educational and patient-care needs.[1] Recognized manifestations of a resident's distress, such as alcoholism, drug abuse, severe depression, and even suicide, are not uncommon.[2–4]

Putative sources and etiology of the stress abound in the literature. Residents training in family medicine, in

particular, have reported stresses resulting from time pressures, fatigue, lack of self-confidence, and the problem of trying to combine a personal and professional life.[5-8]

Despite the growth of literature on the stresses of internship and residency, most studies are limited to a particular program or hospital and are based on small, opportunistic samples. Consequently, it is difficult to make an examination or comparison of various programs, to conduct multi-variate analyses, or to draw any general conclusions.

This study draws on a larger study of interns and residents—far larger than any previously described in the literature—to allow systematic comparisons of family-practice residents in both years of a two-year program in each of the five Ontario universities' Departments of Family Medicine. It examines a number of variables, measuring professional stressors and personal stress (depression, marital problems and alcohol use), as well as differences between years of residency, and gender of residents.

Study Design and Sample

The Department of Behavioural Science of the University of Toronto and the Professional Association of Interns and Residents of Ontario (PAIRO) jointly undertook a research study, in 1984, to examine the epidemiological and explanatory aspects of work-related stress, on the basis of data obtained from a field survey of all Ontario interns and residents. The project, entitled "Work and Well-being in Interns and Residents in Ontario", proposed to identify tractable sources of stress.

A 34-page, highly structured questionnaire containing measures of all variables was mailed in the fall of 1984 to all 2621 Ontario interns, residents and fellows in all five Ontario universities with medical programs. Extensive follow-up included second mailings and telephone reminders. A total of 1805 completed questionnaires was received, yielding an overall response rate of 68.9%.

Of the total sample, 345 respondents were registered in family-medicine programs (175 in first year, 170 in second year). Of these, 273 completed questionnaires (133 from first-year, 140 from second year), for a response rate of 79.1% (76.0% for first year and 82.4% for second year). Return rates for individual university programs were: McMaster—89%; Toronto—86%; Queen's—77%; Western—76%; and Ottawa—43%. (It is postulated that the low response rate of the Ottawa residents may be related to the fact that a proportion of residents may be francophone, and the study questionnaire was in English only.)

Tables 1–5 show basic demographic characteristics and distributions of the study sample. Because of varying response rates from the universities—only two programs, Toronto and McMaster, had >80% response rates—comparisons between programs could not be undertaken with any statistical certainty or validity, and are presented for information only.

Table 1
Demographic Characteristics of FP Residents in Ontario by Year of Residency (n = 273)

Characteristic	Percentages R 1 (n = 133)	R 2 (n = 140)	Total (n = 273)
Sex			
Male	42.0	50.2	47.3
Female	58.0	49.8	52.7
Age[a]			
23-27	60.9	60.0	60.2
28-32	26.3	30.0	28.8
33-39	11.3	8.6	9.5
(missing	1.5	1.4	1.5)
Marital status			
Single	39.1	34.3	36.6
Married	49.6	57.1	54.2
Other	11.3	8.6	9.2
Children			
0	83.5	82.1	83.2
1	8.3	11.4	10.3
2+	8.2	6.5	6.5

a. Overall mean age was 27.63 years with age ranges of 23–39 for R1 and 24–37 for R2.

Results

Work-related responsibilities

One of the major stress dimensions of the working situation explored was hours devoted to clinical and academic activities. Respondents were asked to consider their work-related time as consisting of clinical responsibility (including on-call duty) and academic activities such as studying, reading journals, or preparing for rounds, and to estimate the amount of time spent in each type of activity in a typical week.

Most family-practice training time is devoted to clinical responsibility, and only limited time is given to academic activities.

The mean number of hours spent per week in clinical responsibility by residents in both years ranged from 68 to 79 hours. First-year residents worked significantly longer hours than did second-year residents (79.89 cf. 68.17 hours, $p < .0000$), and women residents more than men over both years (75.91 cf. 71.67 hours, $p < .05$).

Time spent on academic activities averaged only about seven hours weekly; women residents spent significantly less time in academic activities than men (6.11 cf. 7.67 hours, $p < .001$). There were no differences in time spent in academic activities between first and second years of residency (6.74 cf. 6.95 hours).

Professional stressors

Residents were asked to report their impressions on a variety of work-related stressors. Specifically, they were asked about the frequency of their experiencing 20 work-related "feelings" (e.g., self-doubt, pessimism, hope-

lessness) and 15 work-related "anxieties" (e.g., concerning difficulty in being able to sleep regularly, lack of balance in work and home life). They rated the occurrence of these feelings on a four-point scale from "never" to "often".

In relation to the third category of stressors, residents were asked to rate their perception of 12 "job-related difficulties" (e.g., feeling hurried and rushed all the time, being overly sensitive) from "not a problem at all" to "a very serious problem"; a four-point scale was used to measure this response also. For statistical analyses, a score of "1" was assigned to all responses of "often" and "a very serious problem", and every other response received a score of "0". This means that the closer the mean score approaches "1", the greater the stressor. For all statistical comparisons given here, probability at less than the .01, rather than .05, level was chosen to obtain a greater and more significant statistical difference.

Table 6 shows the significantly different variables between first- and second-year residents. First-year residents scored consistently higher in responses relating to frequent feelings of inferiority, less optimism, and more panic. Furthermore, they reported more frequent anxiety concerning a lack of balance between work and home life, reduced ability to sleep regularly, difficulty in finding enough time to sleep, informal evaluations, and time available to learn all the material assigned. In general, scores on those variables for both years of residency were relatively high as compared with other variables.

Table 7 outlines significant gender differences in a similar fashion. Women residents reported more frequent feelings of self-doubt, a need to be perfect, and inferiority. They also reported more frequent anxiety concerning inability to absorb all material they should be learning, time available to learn all the material assigned, reduced ability to sleep regularly, and difficulty in finding enough sleep time.

Personal stress

Measures of personal stress included a depression scale, reports on marital difficulties, and reported use of alcohol. A score for depression was obtained using the Centre for Epidemiological Studies Depression Scale (CES-D),[9] incorporated into the main study questionnaire. This is a well-developed self-report instrument of 20 items tapping a variety of behavioural, somatic, affective, and cognitive symptoms associated with depression. For each item the respondent indicates the frequency with which a depressive feature has occurred during the preceding week. (Scores range from 0 = rarely or none of the time to 3 = most of the time.) Total scores can range from 0 to 60; higher scores indicate greater distress.

Scores of 16 or higher are considered to indicate mild depression; 21 or higher indicate moderate depression; and 31 or higher indicate severe depression. The proportion of respondents falling into these categories was 11.1%, 8.9%, and 5.6% respectively. Overall, 25.6% of residents scored 16 or higher, indicating some degree of depression and emotional distress. The mean CES-D score for the total family practice sample was 11.03 (SD = 9.44). First-year residents scored significantly higher than second-year residents (13.05, SD = 10.08 cf. 9.11, SD = 8.37; p = .0005), and women residents scored significantly higher than males (12.68, SD = 10.14 cf. 9.20, SD = 8.24; p = .0023). Scores ranged from 0 to 52.

Residents were asked how much they were bothered by three different work/relationship-conflict situations, on a four-point scale from "not at all" to "a great deal". Specifically, they were asked about concern relating to not having enough time to spend with their spouse/cohabitant; feeling torn between obligations to their spouse/cohabitant and to their professional work; and not having enough time or energy to "work on" the marital/cohabitation relationship.

First-year residents reported significantly more difficulty with not having enough time to work on the marriage/cohabitation relationship (p= .0044), and a trend toward being more bothered (a great deal) than second-year residents on the other two measures (p= .0194 and .0400 respectively). No gender differences were found.

All respondents were asked about their intake of alcohol. They were asked to report the frequency of their drinking beer, wine or liquor, in categories of use daily, three to four times weekly, once or twice weekly, or less often. As a group, residents of both program years and of either sex re-

Table 2
Sex Distribution of FP Residents in Ontario by Year of Residency and University Affiliation (n = 273)

	Percentages	
University	R 1 (n = 133)	R 2 (n = 140)
McMaster:		
Male	58.1	42.4
Female	41.9	57.6
Toronto:		
Male	44.1	50.8
Female	55.9	49.2
Ottawa:		
Male	25.0	70.0
Female	75.0	30.0
Queen's:		
Male	42.9	25.0
Female	57.1	75.0
Western:		
Male	40.0	61.9
Female	60.0	38.1

Table 3
Mean Age of FP Residents in Ontario by Year of Residency and University Affiliation (n = 273)

University	R 1 (n = 133)	R 2 (n = 140)
McMaster	29.36	29.21
Toronto	27.36	27.31
Ottawa	27.00	28.10
Queen's	26.57	27.75
Western	25.84	26.40

ported an average intake on approximately three to four occasions weekly, but no significant group differences were found. The respondents were also asked to estimate their maximum alcohol consumption in any 24-hour period in the previous six months. Male residents reported a significantly greater mean maximum number of drinks per 24-hour period than did female residents (6.21 cf. 3.94, $p<.0000$), while no differences were found between program years (R1 = 5.27 vs R2 = 4.75 drinks).

Discussion

The present study of work-related stress in a group of family-practice residents represents the largest sample studied to date. Based on a response rate of 79%, most of the conclusions drawn may be seen as valid. Overall, there are slightly more female residents than males. All programs except McMaster have more females than males in the first year, but this proportion reverses dramatically in the Ottawa and Western programs in the second year. This reversal may be a factor of the selection process of these programs, but since this study is cross-sectional, it is difficult to draw conclusions about trends without prior data.

The majority of the residents sampled are between the ages of 23 and 27 years, with an overall mean age of 27.63 years. McMaster residents as a group are the oldest (mean age 29.28 years), and less than 40% are between the ages of 23 and 27 years. On the other hand, Western residents are the youngest (mean age 26.13 years), and more than 80% of the residents sampled were between the ages of 23 and 27 years. No significant age difference was noted relating to program year or gender.

The average family-practice resident in Ontario spends about 73 hours per week attending to clinical responsibility. Second-year residents report significantly fewer weekly hours of clinical responsibility than do first-year residents. This finding may indicate a decrease in work hours as training progresses. Similarly, self-reports on lack of self-confidence (feelings of inferiority, pessimism, and panic experienced often) and on time pressures and fatigue experienced often (anxiety about a lack of balance in life, time available to learn all the material a resident is expected to know, difficulty in finding enough time to sleep or in being able to sleep regularly) always indicate a decline as training progresses.

First-year residents tended to score significantly higher than second-year residents on a scale measuring depression. The majority of respondents, however, did not register as depressed on the scale. Eleven per cent of the respondents were classified as mildly distressed, almost 9% as moderately distressed, and 5.6% as severely distressed. (The CES-D cannot be used diagnostically and may more accurately be taken to reflect distress rather than depression).

Female residents were 1.39 times as likely to experience any form of depression as were male residents and scored significantly higher than male residents on the CES-D. Twenty per cent of males as compared with 27.9% of

Table 4
Marital Status of FP Residents in Ontario by Year of Residency and University Affiliation (n = 273)

University	Percentages R 1 (n = 133)	R 2 (n = 140)
McMaster:		
Single	25.8	30.3
Married/cohabitating	74.2	69.7
Toronto:		
Single	39.0	35.6
Married/cohabitating	61.0	64.4
Ottawa:		
Single	75.0	20.0
Married/cohabitating	25.0	80.0
Queen's:		
Single	35.7	25.0
Married/cohabitating	64.3	75.0
Western:		
Single	50.0	52.4
Married/cohabitating	50.0	47.6

Table 5
School of Graduation of FP Residents in Ontario by Year of Residency and University Affiliation (n = 273)

University and Year of Residency	n	School of Graduation Percentages McMaster	Queen's	Ottawa	Toronto	Western	Other CDN school
McMaster:							
R 1	31	45.2	6.5	3.2	19.4	6.5	12.9
R 2	33	66.7	3.0	6.1	9.1	0	9.1
Toronto:							
R 1	59	10.3	1.7	1.7	77.6	3.4	5.2
R 2	59	8.5	1.7	3.4	64.4	15.3	6.8
Ottawa:							
R 1	8	0	25.0	25.0	12.5	12.5	25.0
R 2	10	10.0	30.0	20.0	20.0	10.0	10.0
Queen's:							
R 1	14	0	50.0	7.1	14.3	7.1	21.4
R 2	16	0	56.3	0	6.3	12.5	18.8
Western:							
R 1	21	0	10.0	5.0	10.0	45.0	25.0
R 2	22	5.0	10.0	0	10.0	45.0	25.0

females scored 16 or higher on the CES-D, indicating mild or more serious depression. The fact that almost three of 10 female residents fall into this category is cause for considerable concern. In fact, of the total sample of all interns and residents in Ontario, almost four of 10 female interns fall into the 16 or higher category.[10]

Almost two-thirds of the residents sampled are married or cohabiting (especially by second year). This finding is noteworthy since social support has been well documented as affording some protection from stress.[11] In one study, several of the residents and fellows in internal medicine who were happily married listed their spouses as their major emotional support.[12]

First-year residents, however, report being bothered a great deal more than second-year residents by not having enough time to spend with their spouse/cohabitant, not having enough time or energy to "work on" their marital/cohabitation relationship, and with feeling torn between obligations to their professional work and obligations to their spouse/cohabitant. These results suggest the possibly damaging effect of the residency experience on marital/social relationships. (In the study involving internal medicine residents' relationships, of the 40% reporting major problems with their spouse or partner, 72% believed that those problems were related to the residency experience.)[12]

The present study is consistent with previous studies indicating that the long hours required of physicians and the sleep deprivation and fatigue they experience are particularly stressful to the residents' family lives.[12-14] Many of the correlates of relationship stress involve time pressures, such as too many hours at the hospital, too few hours at home, and sleep deprivation.

Female residents, in particular, may experience serious time pressures from the combination of career and family demands. They spend significantly more weekly hours attending to clinical responsibility and significantly fewer weekly hours on academic activities. They more frequently report feelings of self-doubt, inferiority, and a need to be perfect. Furthermore, they more often report anxiety relating to being able to learn, or having enough time to learn, all the material required, having difficulty finding enough time to sleep, or in being able to sleep regularly.

Given all the time pressures, lack of self-confidence, and problems of fatigue reported, it is notable that the study sample under review did not report a major problem of alcohol abuse. Male residents did report a larger maximum daily alcohol intake than did females, but not a significantly different pattern of frequency of alcohol consumption. As with other population studies that have attempted to measure alcohol abuse, there may be difficulty with the accuracy of self-reporting and, consequently, with the validity of these results.

Conclusions

The present study has the advantages of a high return rate (79%), the participation of both male and female respondents, solid representation from both years of the residency training program, and a significant number of single and married/cohabitating residents. Its limitations are the use of the self-report questionnaire and the fact that only the respondents' perceptions were measured. Future research will draw upon the larger study sample to compare family-practice residents with residents in all other specialty-training programs for specific differences relating to the study variables. Further studies will also examine the relationships between distress and marital status (e.g.: Are single family-practice residents more likely than married residents to be depressed, as noted of residents in general by Hsu and Marshall?[10]); working conditions (e.g.: Does working long hours with too little time to sleep lead to depression and/or family and marital distress, whether the respondent is single or married?); perceived quality of care; and coping skills. Such research could further delineate potential causes of stress and illustrate mechanisms whereby these causes can be reduced, modified, or eliminated.

Table 6
Significant[a] Work-Related Stressors by Year of Residency

	Score		
Stressor	**R1**	**R2**	**D**
Feelings experienced			
1. Inferiority	.2803	.1429	.0053
2. Optimism	.2045	.3453	.0095
3. Panic	.1061	.0214	.0038
Anxiety experienced			
1. Lack of balance in life	.5317	.3696	.0080
2. Difficulty in sleeping	.4094	.2029	.0002
3. Finding sleep time	.3937	.2174	.0017
4. Informal evaluations	.1575	.0435	.0017
Job difficulties			
1. Learning all material	.1846	.0719	.0053

Note: The closer the score approaches 1.0, the greater the stressor.
a. $p < .01$.

Table 7
Significant[a] Work-Related Stressors by Sex of Residents

	Score		
Stressor	**Female**	**Male**	**p**
Feelings Experienced			
1. Self-doubt	.4895	.2578	.0001
2. Need to be perfect	.2937	.1628	.0100
3. Inferiority	.2797	.1318	.0027
Anxiety Experienced			
1. Learning material	.5571	.3920	.0071
2. Little time	.5500	.3360	.0004
3. Difficulty in sleeping	.3857	.2080	.0016
4. Finding sleep time	.3714	.2240	.0089

Note: The closer the score approaches 1.0, the greater the stressor.
a. $p < .01$

Preliminary evidence from the present study draws attention to the scarcity of available time and the significant distress that factor provokes in many residents, especially first-year and female residents. Implied is a need for providing training in time-management techniques or, where appropriate, reducing work loads to more manageable levels. In addition, residency directors should promote stress management as a significant component of their training programs. Such efforts would ease the educational experience for these and other residents, and promote their well-being. ◉

References

1. Tokarz JP, Bremer W, Peters K. *Beyond survival: a book prepared by and for resident physicians to meet the challenge of the impaired.* Chicago: American Medical Association, 1979:5–14.

2. McCue JD. The distress of internship. *New Engl J Med* 1985; 312:449–52.

3. Russell AT, Pasnau PO, Taintor ZC. The emotionally disturbed psychiatric resident. *Am J Psychiatry* 1977; 134:59–62.

4. Valko RJ, Clayton PJ. Depression in the internship. *Dis Nerv Syst* 1975; 36:26–9.

5. Nelson EG, Henry WP. Psychosocial factors seen as problems by family practice residents and their spouses. *J Fam Pract* 1978; 6:581–9.

6. Hawk JE. Sources and levels of stress in family practice residents: a descriptive study. Fresno, CA: California School of Professional Psychology. Unpublished doctoral dissertation, 1982.

7. Rudner HL. Stress and coping mechanisms in a group of family practice residents. *J Med Educ* 1985; 60:564–6.

8. Rudner HL. Stress in Family practice residents. *Can Fam Physician* 1986; 32:319–23.

9. Radloff L. The CES-D scale: a self-report depression scale for research in the general population. *Applied Psycho Measurement* 1977; 1:385–401.

10. Hsu K, Marshall VW. Prevalence of depression and distress in a large sample of Canadians, residents, interns, and fellows. *Am J Psych* 1987; 144(12):1561–6.

11. Cobb S. Social support as a moderator of life stress. *Psychosom Med* 1976; 38:30–14.

12. Landau C, Hall S, Wartman SA, et al. Stress in social and family relationships during the medical residency. *J Med Educ* 1986; 654–60.

13. Bates EM, Carroll JR. Stress in hospitals: the married intern vintage. *Med J Aust* 1975; 2: 763–5.

14. Bergman AS. Marital stress and medical training: an experience with a support group for medical house staff wives. *Pediatrics* 1980; 65:944–7.