Fatigue and concerns about quality of care among Ontario interns and residents

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In postgraduate medical training the heavy and irregular workloads are thought to result in fatigue and a potential decrease in the quality of care provided by interns and residents. We investigated these concerns among Ontario interns and residents. Information from 1805 house staff in all specialties and different years of postgraduate education suggested a relation between hours of work, fatigue and concerns about the quality of care.

La formation post-doctorale du médecin comporte des tâches si lourdes et des heures de travail si longues et si irrégulières qu'on doit craindre la survenue de fatigue pouvant affecter la qualité des soins que donnent internes et résidents. Les inquiétudes de ceux de l'Ontario font l'objet du présent travail. Les renseignements colligés auprès de 1805 internes et résidents dans toutes les disciplines et à tous les niveaux de formation font croire qu'il existe bien un rapport entre le nombre d'heures de travail, la fatigue et l'incertitude quant à la qualité des soins.

Postgraduate medical education is commonly recognized as being highly stressful. Among the most stressful aspects are time pressures and sleep deprivation and their impact on performance and quality of medical care.[1-4] In response to the Libby Zion case in New York in 1984 (in which a grand jury found that the long working hours of residents had contributed to the death of a young woman) State Health Commission officials recommended limiting the length of residents' work shifts (*New York Times*, May 31, 1987: 1).[5] Information on fatigue, working conditions and quality of care is, however, limited,[5] stemming mostly from small samples of interns or residents in one specialty.[6-9] We report the results of a survey of Ontario interns and residents in all specialties and different years of postgraduate education. Time demands, levels of fatigue and concerns about patient care are described.

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Subjects and method

The mailing list of the Professional Association of Internes and Residents of Ontario yielded a total of 2620 interns and residents in this province. Of these, 477 could not be located; 1805 of the remaining 2143 responded to a 34-page questionnaire we mailed in the fall of 1984, for a response rate of 84%. Although we did not know the age, gender and university affiliations of the non-respondents the high response rate suggested that our sample was representative of the total population of interns and residents in Ontario.

The respondents were asked, "If you think of your work-related time as consisting of *clinical* responsibilities (including being on call), *academic* activities such as studying, reading journals or preparing for rounds, and *research* . . ." how many hours do you work in a typical week? Since some of the respondents may have included the number of hours spent on academic activities or research as part of their time devoted to clinical responsibilities (e.g., while on call) we used the number of hours spent on clinical responsibilities as a more conservative measure of workload. They were also asked several questions about fatigue, pressures of heavy workloads and possible effects on quality of care.

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Results

The average age of the respondents was 29.3 years (extremes 22 and 55, standard deviation 4.21), 34% were women, and 55% were married. One-fourth of the respondents (including first-year family practice residents) were interns, 10% were research fellows, and the remainder were residents.

The average work week comprised 68.9 hours of clinical responsibility, but the number of hours varied from a high of 81.3 for interns to 62.6 for fifth-year residents; the fellows reported an average of 43.3 hours of clinical responsibility. The correlation between year of training and number of hours of clinical responsibility was $r = 0.427$ ($p < 0.2001$). The number of hours also varied by specialty. Residents in surgery reported the most hours (median 90), followed by those in obstetrics and gynecology (85), pediatrics (80), internal medicine (78), family medicine (75), emergency medicine and anesthesiology (70), radiology (55), psychiatry (50) and pathology (45).

Over 45% of the respondents said that they often felt tired, and another 45% said that they had often or nearly always felt tired in the previous few months.

Table I shows the great variability by year of postgraduate training in the responses to the questions about workload pressures. The second question was based on a four-point scale ranging from "never" to "often"; the other two questions used five-point scales ranging from "never" to "nearly all the time".

In the study by Wilkinson, Tyler and Varey[2] one-third of the house staff indicated that heavy workloads impaired their ability to function efficiently. In our study 27% of the respondents "often" or "nearly all the time" were bothered by the feeling that their workload was too heavy and could not be finished in a usual work day; 70% said that they "often" or "nearly all the time" were bothered by thinking that the amount of work they had to do might interfere with how well it was done. None the less, only 6% said that the quality of care they provided was "often" adversely affected by fatigue. The interns were the most likely and the fellows the least likely to report such concerns.

These concerns also varied with the number of hours of clinical responsibility. For example, only 21% of the respondents who worked 50 hours or less per week, compared with 68% of those who worked 90 hours or more per week, often felt fatigued (Table II). Those who worked 90 hours or more per week were two to three times more likely than those who worked 50 hours or less or even 67 hours or less a week to register a concern about heavy workloads.

The responses to these and other questions about workload varied considerably by specialty. The residents most concerned about the quality of patient care were not necessarily the same ones who reported being the most tired. For example, although the residents in surgery, who spent an average of 90 hours a week on clinical responsibilities, frequently reported fatigue, they appeared to be no more worried about the quality of patient care than the residents in the other specialties, who spent fewer hours on clinical responsibilities. Emergency medicine residents, who averaged 70 hours a week on clinical responsibilities, did not report higher levels of fatigue than residents in other specialties; however, they, followed by residents in family medicine, interns, residents in obstetrics and gynecology, and residents in pediatrics, most ofen expressed concerns about not having enough time to spend with patients when overtired. Part of this variability may be attributed to the nature of the various specialties; for exam-

Table I — Responses to questions about workload, fatigue and quality of patient care among 1805 interns, residents and fellows, according to year of postgraduate education

	% (and no.) of respondents								
		Residents							
Response	Interns	First-year	Second-year	Third-year	Fourth-year	Fifth-year	Research fellows	Total	F*
"Often" or "nearly always" bothered by the feeling that the workload is too heavy and cannot be finished in a usual working day	34.9 (164)	33.5 (54)	27.7 (107)	25.7 (69)	19.1 (47)	23.5 (16)	12.1 (21)	27.0 (478)	19.64
"Often" the quality of care provided is adversely affected by fatigue	10.0 (47)	5.4 (8)	5.1 (19)	5.1 (13)	3.1 (7)	5.1 (3)	2.0 (3)	5.9 (100)	35.72
"Often" or "nearly all the time" bothered by thinking that the amount of work that has to be done may interfere with how well it gets done	84.8 (400)	68.3 (110)	74.7 (289)	66.5 (179)	57.3 (141)	72.0 (49)	41.4 (72)	69.8 (1240)	30.37

*Dependent variables were not grouped; $p < 0.0001$.

ple, patient encounters in an emergency department are typically brief and hurried.

Conclusion

Our study confirms the findings of several earlier studies: that interns and residents work many hours, that they often feel overtired and that they are concerned about the quality of care they provide. These concerns are most troublesome in the early years of training, when more hours are spent on clinical responsibilities. They also vary according to specialty.

Although the actual quality of care delivered cannot be measured with the results of our study, which relied entirely on self-reporting, the expressed worries or concerns about quality of care are important in their own right; at the least, they indicate stress or anxiety among Ontario house staff. In addition, to the extent that the interns and residents can be viewed as privileged informants about their own lives, the information may suggest relations between year of training, hours of work, fatigue and concerns about quality of care.

A recurring anxiety expressed by our respondents was that the amount of work that must be done threatens to compromise its quality. Other researchers have pointed out that since the link between excessive work demands, fatigue and quality of care is recognized by interns and residents the continuing obligation to provide care while they are suffering from fatigue may lead them to tolerate lower standards of patient care than they would if they were not fatigued.[1,4,11] Small[12] has suggested that one response to prolonged fatigue among interns and residents is resentment and chronic low-grade anger, and other investigators have suggested a relation between heavy workloads, fatigue and depression.[13,14]

The ultimate effects of the pressures we have described are not well documented. It is felt that working habits are established during postgraduate medical training, when boundaries are set between one's personal life and work.[4,15,16] Medical school has traditionally advanced a "rugged individualist" approach to problem-solving with patients,[16] and immersing oneself in the study of medicine has been rewarded by faculty and peers.[1] It is later difficult to change the belief that one's personal life must be subordinate to medical work.[17]

Patterns of specialty selection may well be influenced by the differential distribution, by specialty, of the workload pressures and fatigue that we have described. Hence, the choice of specialty may reflect a choice of quality of life.[18]

The belief that placing inordinate demands on interns and residents produces better doctors persists in spite of a complete absence of supporting evidence. Nor can any claims be sustained that doctors suffering from fatigue deliver a higher quality of care than well-rested doctors or that heroism in surviving the postgraduate experience leads to optimal personal growth. On the contrary, the concerns house staff have for patient care may contribute to the high levels of distress that are increasingly noted among physicians.

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Table II — Responses to questions about workload, fatigue and quality of patient care, according to number of hours per week of clinical responsibility

Response	No. of hours of clinical responsibility; % (and no.) of respondents						
	1–50	51–67	68–79	80–89	90+	Total	Somers' D*[10]
"Often" or "nearly always" bothered by the feeling that the workload is too heavy and cannot be finished in a usual working day	15.0 (49)	16.9 (55)	22.1 (66)	38.6 (131)	39.5 (164)	27.3 (465)	0.25
"Often" the quality of care provided is adversely affected by fatigue	3.1 (9)	2.2 (7)	3.7 (11)	8.8 (30)	10.3 (43)	6.0 (100)	0.21
"Often" or "nearly all the time" bothered by thinking that the amount of work that has to be done may interfere with how well it gets done	11.0 (36)	16.3 (53)	22.8 (68)	35.4 (120)	36.2 (151)	25.1 (428)	0.24

* $p < 0.0001$.

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Meetings

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Mar. 10-12, 1989: Comprehensive Audio-Visual Symposium and Workshop on the Basic Principles and Technique of Intensive Short-Term Dynamic Psychotherapy in the Treatment of Highly Resistant Patients
Sheraton Centre, Montreal
Dr. T. Said, director of external services, Department of Psychiatry, Montreal General Hospital, 1650 Cedar Ave., Montreal, PQ H3G 1A4; (514) 934-8013

Mar. 11-18, 1989: 1st Annual Queen's University Winter Symposium
Whistler Village, BC
Patricia McHenry, education coordinator, Continuing Medical Education, Queen's University, Kingston, Ont. K7L 3N6; (613) 545-2540

Mar. 14-16, 1989: Jewish Rehabilitation Hospital Conference
Bonaventure Hilton International, Montreal
Conference Secretariat, GEMS Conference and Consulting Services, 100-4260 Girouard Ave., Montreal, PQ H4A 3C9; (514) 485-0855, FAX (514) 487-6725

Mar. 17-18, 1989: Minor Surgery and Office Procedure
Hotel Chateau Champlain, Montreal
Postgraduate Board, Royal Victoria Hospital, 687 Pine Ave. W, Montreal, PQ H3A 1A1; (514) 842-1231, ext. 5300

Mar. 17-19, 1989: Hypnosis Workshop on Therapeutic Trances: Advances in Ericksonian Hypnosis and Psychotherapy
University of British Columbia, Vancouver
Dr. Donald F. Louie, Canadian Society of Clinical Hypnosis (BC Division), 405-2150 W Broadway, Vancouver, BC V6K 4L9; (604) 732-8013

Mar. 20-22, 1989: Workshop/Symposium on Radiation Protection: Past and Future
Chalk River Nuclear Laboratories, Chalk River, Ont.
Mrs. D.J. TerMarsch, Atomic Energy of Canada Limited, Chalk River Nuclear Laboratories, Chalk River, Ont. K0J 1J0; (613) 584-3311, ext. 4729

Mar. 30-Apr. 1, 1989: First National Conference: Multicultural Health — Realities and Needs
Ontario Institute for Studies and Education, Toronto
Conference Committee, Canadian Council on Multicultural Health, 407-1017 Wilson Ave., Downsview, Ont. M3K 1Z1; (416) 630-8835

Apr. 13-14, 1989: Les urgences
Hôtel Le Reine Élizabeth, Montréal
Annie Alberro, Service de formation continue, Fédération des médecins omnipraticiens du Québec, 1100-1440, rue Ste-Catherine ouest, Montréal, PQ H3G 1R8; (514) 878-1911, ou 1-800-361-8499 pour les indicatifs 514, 819, 418 et 613

May 1-2, 1989: Perspectives on the Frontal Lobes — Research, Remediation and Reintegration
Holiday Inn Downtown, Toronto
Barb Smith, Educational Services, Hugh MacMillan Medical Centre, 350 Rumsey Rd., Toronto, Ont. M4G 1R8; (416) 424-3851

May 2-6, 1989: Annual Review Course in Obstetrics and Gynaecology
King Edward Hotel, Toronto
Continuing Medical Education, Faculty of Medicine, Medical Sciences Building, University of Toronto, Toronto, Ont. M5S 1A8; (416) 978-2718

May 11-12, 1989: Mise à jour en thérapeutique
Hôtel Loews Le Concorde, Québec
Annie Alberro, Service de formation continue, Fédération des médecins omnipraticiens du Québec, 1100-1440, rue Ste-Catherine ouest, Montréal, PQ H3G 1R8; (514) 878-1911, ou 1-800-361-8499 pour les indicatifs 514, 819, 418 et 613

May 12-13, 1989: 2nd Annual Conference: Update in Emergency Medicine
Harbour Castle Westin Hotel, Toronto
Gayle Willoughby, Department of Emergency Medicine, North York General Hospital, 4001 Leslie St., Willowdale, Ont. M2K 1E1; (416) 756-6165

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