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Primary care physicians and their information-seeking behaviour

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Objective **– To investigate primary care physicians' continuing medical education (CME) and their information-seeking behaviour and to compare it with that of hospital doctors.**
Design **– Postal survey of Norwegian physicians.**
Subjects **– 1276 physicians (response rate 78%), 283 primary care physicians, 741 hospital doctors.**
Main outcome measures **– Self-perceived ability to cope with medical knowledge and self-reported CME activities.**
Results **– Two out of three doctors thought they could cope with the increasing flow of medical information. Courses, meetings and congresses were considered the most important CME activities. Primary care physicians spent less than 3 hours per week on medical reading, compared with more than 4.5 hours among hospital doctors; 59% of primary care physicians had access to the Internet compared with 76% among hospital doctors. Time spent on medical reading and formalized courses decreased from 1993 to 1999 for all groups of physicians.**
Conclusion **– Primary care physicians rely on several information sources in their professional updating. They pay less attention to informal ways of learning than their hospital colleagues do.**

Key words: **primary care physicians, continuing medical education (CME), information, knowledge, learning.**

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As the rate of change in medical knowledge increases, coping with the information overload is a major challenge in all branches of medicine. A majority of physicians find the current volume of scientific information unmanageable, and our knowledge about doctors' information needs and how these are met is limited (1). In a survey among Norwegian physicians in 1993 we found that one-third reported they were unable to stay updated in their daily work (2).

The specialization of clinical medicine and medical research leads to a rapidly expanding, but fragmented knowledge base limited to specific and narrow fields of medicine. The generalists face particular challenges in keeping updated. On the one hand, primary care physicians meet patients with undifferentiated problems and need to be regularly and systematically updated in all fields of medicine at a satisfactory level (3). On the other hand, most primary care physicians work in small units or single-handed outside teaching environments and without an organized peer review setting. The generalists thus often lack a professional teaching network common to many hospital colleagues. Furthermore, primary care physicians are increasingly expected to have updated knowledge on political, sociological, anthropological and communicational aspects of their daily practice (4).

Does this lead to specific strategies for primary care physicians in keeping up with the growing body of medical knowledge which is different from their colleagues in hospital? How do primary care physicians handle the enormous amount of information they are exposed to and how do they organize their continuing medical education (CME)? The aims of the present study were

- to investigate the primary care physician's ability to cope with the increasing body of medical knowledge
- to analyse differences in CME activities between primary care physicians and their hospital colleagues
- to analyse possible changes in the primary care physician's information-seeking behaviour from 1993 to 1999.

MATERIAL AND METHODS

The study was based on a postal survey of a random sample of 1646 active physicians, i.e. approximately 10% of the total number of Norwegian physicians. An eight-page questionnaire including 136 questions on reading and learning habits was mailed in December 1998 with two written reminders in January and February of 1999.

The *primary care physician* was defined as a clinician working in the first line of patient care as a general practitioner (family physicians) and/or a community health officer (combining general practice and public health responsibilities). The *hospital doctor* was defined as a clinician working in hospital.

Data from 1993 were available for a similar group of Norwegian doctors (n = 1041) of whom 293 were primary care physicians. However, they were not the same individuals as in the 1993 survey. For the present purpose, part of that material was reanalysed and has not been published previously.

Differences between categories are reported with 95% confidence intervals (CIs). Simultaneous effects were analysed with multiple regression models.

RESULTS

A total of 1276 physicians (78%) completed the questionnaire by the end of March 1999, of whom 283 (22%) were primary care physicians (212 general practitioners, 71 community health officers) and 741 (58%) were hospital doctors (414 consultants, 327 residents or junior doctors).

The primary care physicians were on average 46.3 years (CI 45.1–47.4) compared with 43.7 years (42.9–44.4) for hospital doctors. There was a lower percentage of females among the primary care physicians (25%, CI 20–31) than among hospital doctors (34%, CI 31–38). Total working hours were on average virtually the same for primary care physicians and hospital doctors (45.8 and 46.0 hours, respectively). However, primary care physicians spent more time on direct patient oriented work than did hospital doctors.

The respondents scored the perceived importance of different CME activities and information sources on a 5-point Likert scale, from very small, 1, to very great, 5. Medical meetings, congresses and courses were regarded the most important sources of information among primary care physicians as well as among hospital doctors. There were, however, significant differences among primary care physicians and hospital doctors in how they assessed most other educational activities (Table I).

READING

Primary care physicians spent less time reading than their colleagues in hospital. Primary care physicians reported an average of 111 minutes (100–122) per week reading medical journals and articles as compared with 163 minutes (152–174) for hospital doctors. Likewise, they devoted only 56 minutes (50–62) per week to textbooks and other written material as opposed to 111 minutes (98–124) for hospital doctors.

The self-reported total medical reading time for primary care physicians was 167 minutes (153–183) in 1999 and 194 minutes (177–211) in 1993. The total medical reading time for Norwegian physicians as a whole was on average 249 minutes (236–263) per week in 1999 as compared with 264 minutes (249–278) in 1993. Reading medical journals and articles among all physicians was down to an average of 152 minutes (144–160) per week in 1999 from 171 minutes (160–181) in 1993.

Primary care physicians reported in 1999 that 82% (79–85) of their medical reading took place during their spare time as compared with 65% (63–67) among the hospital doctors. On average, primary care physicians read 2.9 medical journals (2.7–3.1) regularly, as opposed to 4.5 (4.3–4.8) among their hospital colleagues.

CONGRESSES AND COURSES

Primary care physicians spent on average slightly more time on congresses, meetings and courses than hospital doctors did. The yearly number of days devoted to such activities has decreased during the 1990s for all doctors. The proportion of primary care doctors spending 10 days or less at congresses and

Table I. Importance of selected educational activities for professional updating and maintenance among Norwegian physicians (per cent indicating the activity to be of great or very great importance, with 95% confidence intervals in parentheses). The activities are ranked according to importance among primary care physicians.

	Primary care physicians (n = 272–281)	Hospital doctors (n = 709–732)
Formalized supervision	(n = 272–281)	(n = 272–281)
Congresses, CME courses	76 (71–81)	79 (75–81)
Referral information, feedback from colleagues	60 (54–66)	26 (23–29)
Reading medical journals	57 (51–63)	68 (65–72)
Informal contact with colleagues	38 (32–44)	46 (42–49)
Reading textbooks, etc.	34 (29–40)	65 (61–68)
Formalized meetings at workplace	30 (24–35)	71 (68–75)
Ads and information from the pharmaceutical industry	30 (24–35)	14 (11–16)
Feedback from patients	28 (23–34)	23 (20–27)
Information from health authorities	27 (22–32)	12 (9–14)
Formalized supervision	24 (19–30)	28 (25–32)
Systematic self-evaluation	13 (9–17)	23 (20–26)
Lay media	5 (3–9)	3 (2–5)

courses during the last 12 months increased from 36% (31–42) in 1993 to 48% (42–54) in 1999. Among all Norwegian doctors this proportion was 43% (38–46) in 1993 and 53% (50–55) in 1999.

In 1999, 53% of the primary care physicians indicated that they could not attend as many professional meetings as they would like. The most important reasons for this were difficulties in taking time off and family responsibilities. Financial reasons and lack of relevant events were significantly less important to primary care physicians than to hospital doctors; 61% (55–66) of the primary care physicians were generally satisfied with the CME activities they were offered, as opposed to 52% (48–55) of the hospital doctors.

THE INTERNET

A lower proportion of primary care physicians (59%, CI 53–65) than hospital doctors (76%, CI 73–79) had access to the Internet (Table II). For Internet users, however, there was no difference in average time spent on medical activities between the two groups. Both categories devoted 50 minutes per week to this. Among primary care physicians 12% (8–17) found the Internet of great or very great importance in keeping professionally updated, compared with 17% (14–20) of the hospital doctors.

COPING WITH THE MEDICAL INFORMATION

The primary care physicians reported their attitudes towards the increasing body of medical information by responding to six statements (Table III). Most answers compared well with those from other physicians except for the agreement to the statement on research, which was lower among primary care physicians than among hospital doctors.

When asked whether they manage to obtain sufficient information for keeping updated in their daily work, 67% (61–72) of the primary care physicians and 71% (67–74) of the hospital doctors answered yes. These are named information-copers. The corresponding figures in 1993 were 71% (65–76) for primary care physicians and 66% (62–79) for hospital doctors.

In 1999, 70% (63–76) of the male primary care doctors were information-copers compared with 58% (46–69) of the females. Information-copers were on average slightly older, 47.1 years (45.2–47.4) vs 44.5 years (42.5–46.6), and had more experience as a physician, 19.2 years (17.9–20.6) vs 16.0 (14.0–18.0), than those who said they could not obtain sufficient information (non-copers).

The self-reported ability to obtain sufficient information for keeping updated was not related to number of days spent on courses last year, but copers reported an average of 120 minutes (105–134) per week spent on medical articles and journals, compared with 95 minutes per week (81–110) among non-copers.

The simultaneous effects of these variables were also explored in a logistic regression model, and the pattern remained the same.

Table II. Access to the Internet among Norwegian physicians as of March 1999. Per cent with 95% confidence intervals.

	Primary care physicians (n = 282)	Hospital doctors (n = 738)
No access to the Internet	41 (35–47)	24 (21–27)
Access at work only	8 (5–12)	31 (27–34)
Access at home only	39 (33–45)	19 (16–22)
Internet access both at work and at home	12 (9–17)	27 (24–30)

Table III. Primary care physicians' attitudes to statements on the effects of the increasing body of medical information. Per cent who agree (partly or completely) (n = 283).

The increasing body of medical information …	% who agree
… makes me a better doctor in my daily work	53
… does steal time from non-professional activities	47
… gives me a feeling of powerlessness towards colleagues	37
… gives me a feeling of professional impotence	36
… gives me a feeling of better professional control	36
… gives me a feeling of powerlessness towards patients	31
… makes me a better researcher	5

DISCUSSION

Based on a sample of 10% of all Norwegian physicians and with a response rate of 78%, the results should be deemed representative for Norwegian physicians as a whole. It is important to emphasize that the study reports the physician's own judgement of his/her ability to obtain sufficient information as well as his/her self-assessed activities. Neither factual knowledge nor performance was tested.

Two out of three primary care physicians thought they could obtain sufficient information for keeping updated in their daily work. This is in accordance with findings from 1993 and does not differ from hospital doctors. The remaining third of primary care physicians who felt that they could not cope with the information flow did not differ significantly from the others except for a tendency to read less. In a previous study we found that "non-copers" had a higher probability of emotional distress (burnout) and less job satisfaction than others (2), and that this group should be monitored further.

Primary care physicians were ambivalent towards the increasing body of medical information. More than half thought it made them better doctors and more than one-third reported a feeling of better professional control from this development (Table III). On the other hand, one-third got a feeling of professional impotence and powerlessness towards colleagues and patients. Half of the primary care physicians said that the increasing body of medical information steals time from their non-professional activities.

Primary care physicians' rating of different ways of keeping updated differed from that of their hospital peers (Table I). Both groups held congresses and courses as the most important way of keeping updated. Such activities have been shown not only to increase knowledge, but also to provide refreshing and relaxing breaks from practice (5). Major changes in practice style are, however, seldom results of formal CME events, and new information is seldom disseminated among practice colleagues (5).

Somewhat surprisingly, primary care physicians paid less attention to informal ways of learning, like medical reading, than their hospital colleagues. This is reflected in self-reported reading time, which was more than 4.5 hours per week for hospital doctors and less than 3 hours for primary care physicians. However, availability of medical journals and textbooks, as well as motivation to read, may differ between the two groups. Significantly less time is allowed for reading during regular working hours in primary care than in hospital. Our findings on reading activities among Norwegian doctors are in accordance with a Canadian study where 390 family physicians were compared with 371 other specialists (6). The others rated all barriers to learning lower than did the family physicians, whereas the family physicians spent less time than the others on informal learning.

In 1991, Norwegians in general spent 39 minutes daily on average on reading newspapers, 14 minutes on books and 6 minutes on journals and magazines. In 1998 these numbers were reduced to 34, 10 and 4 minutes, respectively (7). Similarly, a reduction in doctors' medical reading from 1993 to 1999 was found in the present study. This seems to be part of a general trend, probably due to too many competing activities for everyone. Even for courses and congresses there was a tendency towards less time spent on such activities throughout the 1990s.

The lower rate of Internet access among primary care physicians than hospital doctors can partly be explained by formal restrictions. Legal regulations in Norway do not allow access to the Internet and patient data from the same computer, unless special "fire wall" programs are used. This basically requires a separate computer for Internet use. Doctors with Internet access both at work and at home use the web significantly more often and find it more professionally valuable (8). These doctors also have longer working hours, read more medical literature and participate more often in CME activities than do non-users of the net. Presently, the Internet seems to be widening rather than closing the gap between the doctors who actively seek new professional knowledge and those who do not (8).

The general trend towards less time devoted to medical reading as well as to formalized courses is worrying and does not comply with the increasing body of medical knowledge. On the other hand, the proportion of physicians coping with the information is strikingly constant. This possibly reflects that the subjective feeling of keeping updated may also be related to variables other than learning habits and factual knowledge. The physician's personality is a strong candidate in that sense. Presently, we have no data to show whether the experience of coping or not coping with the increasing flow of information is associated with other areas of coping, like clinical performance or patient communication.

Primary care physicians rely on several information resources to stay abreast of developments in clinical medicine. A strategy for surviving the flood of information should therefore be developed (9–11), and primary care physicians' information-seeking behaviour should be followed carefully in the future.

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