

A review of self-medication in physicians and medical students

A. J. Montgomery¹, C. Bradley², A. Rochfort³ and E. Panagopoulou⁴

¹Department of Education and Social Policy, University of Macedonia, Egnatia Street 156, Thessaloniki 54006, Greece,

²Department of General Practice, Western Gateway Building, University College Cork, Ireland, ³The Irish College of General Practitioners, 4/5 Lincoln Place, Dublin, Ireland, ⁴Medical School, Aristotle University Thessaloniki, University campus, Thessaloniki 55131, Greece.

Correspondence to: A. J. Montgomery, Department of Education and Social Policy, University of Macedonia, Egnatia Street 156, Thessaloniki 54006, Greece. Tel: +30 2310891308; e-mail: antmont@uom.gr

Background	There is a culture within medicine that doctors do not expect themselves or their colleagues to be sick. Thus, the associated complexities of self-diagnosis, self-referral and self-treatment among physicians are significant and may have repercussions for both their own health and, by implication, for the quality of care delivered to patients.
Aims	To collate what is known about the self-treatment behaviour of physicians and medical students.
Methods	The following databases were searched: PubMed, PsychInfo, EBSCO, Medline, BioMed central and Science Direct. Inclusion criteria specified research assessing self-treatment and self-medicating of prescription drugs among physicians and/or medical students. Only peer-reviewed English language empirical studies published between 1990 and 2009 were included.
Results	Twenty-seven studies were identified that fitted the inclusion criteria. Self-treatment and self-medicating was found to be a significant issue for both physicians and medical students. In 76% of studies, reported self-treatment was >50% (range: 12–99%). Overall, only one of two respondents was registered with a general practitioner or primary care physician (mean = 56%, range = 21–96). Deeper analysis of studies revealed that physicians believed it was appropriate to self-treat both acute and chronic conditions and that informal care paths were common within the medical profession.
Conclusions	Self-treatment is strongly embedded within the culture of both physicians and medical students as an accepted way to enhance/buffer work performance. The authors believe that these complex self-directed care behaviours could be regarded as an occupational hazard for the medical profession.
Key words	Occupational hazard; fitness for work; occupational; occupational fitness; occupational medicine education; workplace; workplace hazards; well-being.

Introduction

When it comes to their own health, doctors may behave irrationally and paradoxically. The medical profession expect patients to seek appropriate medical help when they encounter significant problems with their health and yet doctors do not behave in this way when it comes to their own health [1]. Self-prescription by physicians and other forms of inappropriate self-treatment by both physicians and medical students represent serious issues for both patients and physicians. For the physician, there is the obvious threat to their health of inappropriate subjective or delayed objective treatment [2]. For the patient, a physician whose health is impaired is at risk of not being able to deliver care of the expected quality [3,4]. Self-treatment

represents a threat to professionalism within medicine and has the potential to erode the public's trust in the profession [5]. If doctors cannot be trusted to acknowledge and seek appropriate care as a patient for their own physical and mental health can they be trusted to care appropriately for their patients? The aim of this systematic review is to collate what is known about the self-treatment behaviour of physicians and medical students.

Methods

The following keywords were used in the electronic databases: physician use of health care; health status; doctors' personal health care choices, doctors as patients,

self-treatment, self-medication, self-prescription, doctors' illness behaviour, doctors' health, health care seeking behaviour, psychology and attitudes to health. Searched databases included the following: PubMed, PsychInfo, EBSCO, Medline, BioMed central and Science Direct.

The systematic review was conducted in distinct phases and adhered to the guidelines of Petticrew and Roberts [6].

The 'Searching phase' involved the systematic identification of potentially relevant studies. In the second 'Screening phase', predetermined inclusion and exclusion criteria were applied to identify the appropriate studies. In the third 'Data-extraction phase', there was an in-depth examination of studies, meeting the inclusion and exclusion criteria, to assess the quality of the study and extract the evidence that is needed. In the fourth 'Synthesis phase', the authors developed a framework for analysing the selected materials.

In the present study, the inclusion and exclusion criteria were derived from (i) an examination of a sample of target papers in the field, (ii) discussion and reviews among the authors as to what samples and issue were relevant to the focus of the study and finally (iii) the development of a specified checklist to describe the criteria in detail.

Studies included were required to be: (i) written in English; (ii) conducted between 1990 and 2009; (iii) drawn from both published and/or unpublished research; (iv) focused on the self-treatment behaviour of physicians and medical students; (v) reported quantitative statistics that provided information on sample sizes, response rates methodology used and statistical data. Studies that were excluded from the search were (i) not written in English; (ii) conducted before 1990; (iii) not based on empirical research; (iv) based on a single person's opinion and (v) concerned with illegal substance abuse among physicians and medical students.

Results

Table 1 [7–33] presents the results of the review. In total, 27 studies (see Figure 1) were located that fitted the inclusion criteria. The majority (21/27) of studies were cross-sectional and relied on self-report. The aggregate sample size of the 27 studies was 28 628 (range = 54–5426); and the average response rate was 66%.

In 76% studies, reported self-treatment was >50% (range: 12–99%). Overall, only one of two respondents was registered with general practitioner (GP) or primary care physician (mean = 56%, range = 21–96). In the 23 studies providing information on self-prescription, the mean number of physicians reporting self-prescription was 61% with an SD of 25% and a range of 9–99%.

The relatively small number of studies identified allowed for a more qualitative analysis of the reviewed

research. Therefore, the first and fourth authors conducted a content analysis of the research literature using the technique of interpretative phenomenological analysis (IPA). The aim of IPA is to explore in detail the topic under investigation (individual level) and to facilitate the identification of shared categories (group level). The steps, as recommended by Smith *et al.* [34], are as follows: (i) the script is read through, with initial thoughts and possible codes/themes noted down; (ii) once clusters of themes have been produced for the first interview/text, the coding process is repeated for each paper in turn; (iii) clusters of themes are gathered together to identify general themes; (iv) once these broader themes have been identified, researchers go back to the text to verify that there was evidence for these themes; (v) these broader themes are then examined to see whether they can be grouped together in a meaningful way; (vi) codes are rechecked and assigned numerical codes for ease of analysis and grouping and (viii) it is then possible to capture emergent themes. This process is continued in an iterative fashion until the researcher reaches a point of saturation.

Four key themes were identified as driving the inappropriate self-treatment behaviours of physicians and medical students: (i) avoiding the role of patient; (ii) acceptance of self-treatment as the norm (for various reasons, the alternative, going to another doctor, is less acceptable and less attractive); (iii) work performance or pressure to remain at work and (iv) protecting or keeping things within the control of the individual professional or a small number of chosen colleagues—there is a strong incentive to retain privacy of health issues.

Doctors and medical students find it challenging to be a patient as a result of their medical training and attitudes and are often regarded as reluctant or even difficult patients by health professionals who treat them. For example, a pilot study of medical students [13] indicated that students had concerns about confidentiality and about experiencing a dual role as both student and patient at their training institution. They believed that their academic standing would be jeopardized if they developed certain health problems. The literature also indicated that the medical students used informal care paths; they requested and received informal care from friends and colleagues. A 9-year follow-up of doctors from internship year onwards in Norway found that being male, having self-prescribed during internship, somatic complaints, mental distress, subjective health complaints and not having sought help from a general practitioner were significant adjusted predictors of self-prescribing in the ninth postgraduate year [15]. There are cultural attitudes within the medical profession that hinder doctors' acknowledgement of symptoms of illness in themselves or colleagues, including symptoms signifying potential serious illness [35]. Even when doctors are registered with a GP, they may have low utilization of GP services [10,11].

Table 1. Self-treatment behaviour among physicians and medical students

	Study and Year	Design	Sample	N	RR (%)	Self-prescription and self-treatment
1	Brimstone <i>et al.</i> [7]	CS	Australian medical students	172	NR	Informal routes used for both mental health problems (56%) and physical problems (45%).
2	Chen <i>et al.</i> [8]	CS	Hong Kong Physicians	4198	44	Two-thirds of respondents took care of themselves when they were last ill, with 62% of these self-medicating with prescription medication. Only 30% of all respondents believed that having their own personal physician was necessary.
3	Davidson and Schattner [9]	CS V	Australian physicians	358	40	90% believed it was acceptable to self-treat acute conditions and 25% believed it was acceptable to self-treat chronic conditions. 9% participants believed it was acceptable to self-prescribe psychotropic medication.
4	Chambers and Belcher [10]	CS	UK General Practitioners	275	90	84% reported self-prescribing medication. Of GPs who attended a doctor, 13% reported they had been examined less thoroughly.
5	Forsythe <i>et al.</i> [11]	CS V	UK General Practitioners and Consultants	724 427	64 72	71% GPs and 76% consultants reported self-prescribing.
6	Hooper <i>et al.</i> [12]	CS	UK Medical Students	164	80	13% received a prescription from a friend, 9% engaged in self-treatment, there was high agreement that it was acceptable for doctors to self-investigate (52%) and self-prescribe (39%).
7	Roberts <i>et al.</i> [13]	CS V	US medical residents	112	74	22% reported using informal care with another resident or attending physician, 34% asked a colleague to prescribe medication.
8	Clarke <i>et al.</i> [14]	CS	Irish GPs and consultants	76		Virtually all (99%) of the respondents admitted having self-prescribed antibiotics were the most commonly self-prescribed drugs.
9	Hem <i>et al.</i> [15]	LS	Norwegian medical interns	402	64 (t1) 67 (t2) 63 (t3)	About 54% had self-prescribed in their fourth and ninth postgraduate years.
10	Christie <i>et al.</i> [16]	CS	US resident physicians	316	83	162 residents (52%) reported self-prescribing medications. 42% of self-prescribed medications were obtained from a sample cabinet; and 11% were obtained directly from a pharmaceutical company representative.
11	Evans <i>et al.</i> [17]	CS	US neurologists	90	46	38% self-diagnosed or self-treated medical conditions: 56% started themselves on prescription medications including 21% used triptans and 15% who used migraine preventive medications; 33% ordered blood tests on themselves and 20% ordered imaging studies on themselves.
12	Rosvold and Bjertness [18]	CS	Norwegian physicians	1031	70	75% had performed self-treatment during the last 3 years. Treatment by spouse, friends and colleagues was also frequent.
13	Balon [19]	CS	US psychiatrists	567	68.3	15.7% treated themselves for depression. 43% would self-medicate for mild/moderate depression.
14	Toyry <i>et al.</i> [20]	CS	Finnish physicians	3313	74	Male and female physicians self-treated the following: hypertension (63, 59), diabetes (48, 58), mental disorders (68, 65), asthma (70, 66), chronic bronchitis (83, 88), chronic pyelonephritis (67, 88), chronic eczema (85, 85), diseases of the digestive system (80, 72), back complaints (84, 74) and arthrosis (81, 77).
15	Toyry <i>et al.</i> [21]	LS	Finnish physicians	T1: 2671 T2: 3313	T1: 76 T2: 74	For all physicians (at Time 2), gastrointestinal diseases (74%), asthma (63%) and mental disorders (62%) were the most commonly self-medicated.

Table 1. (*Continued*)

	Study and Year	Design	Sample	N	RR (%)	Self-prescription and self-treatment
16	Westfall and McCabe [22]	CS	US physicians, resident physicians, nursing staff and office staff in a family practice residency.	53	96	Drug samples were commonly taken for personal and family use by the physicians, resident physicians, and office staff. Respondents reported a total of 152 samples were taken for personal use, and 78 samples were taken for family use.
17	Hughes <i>et al.</i> [23]	CS	US physicians	5426	59	One in nine physicians (11.4%) used benzodiazepines in the past year without another physician's supervision and one in six (17.6%) engaged in unsupervised use of minor opiates.
18	Hughes <i>et al.</i> [24]	CS	US residents	1785	60	Residents reported using benzodiazepines (75%) and opiates (51%) primarily for self-treatment. 76% reported using amphetamines for work performance.
19	Rosvold <i>et al.</i> [25]	CS	Norwegian physicians	1024	70	Eight of 10 Norwegian physicians stated that they sometimes had prescribed drugs for their own use. Of the physicians using minor tranquilizers ($n = 171$), 72.6% had self-prescribed.
20	Baldwin <i>et al.</i> [26]	LS	UK physicians	142	NR	66% of the doctors reported prescribing for themselves when ill while one-third of them were not registered with a GP.
21	Schneider <i>et al.</i> [27]	CS	Swiss primary care physicians	1784	65	Among respondents who reported drug use in the past week, self-medication was reported in 90% of the cases. Self-medication was more frequent for analgesics (96%) and tranquillizers (96%) and less frequent for antidepressants (70%) and antihypertensive drugs (65%).
22	Gross <i>et al.</i> [28]	LS	US physicians	915	77	35% of physicians reported that they had no regular source of care.
23	Markwell and Wainer [29]	CS	New Zealand and Australian junior doctors	914	22	38% reported that they have self-prescribed or self-medicated during the previous year. 19% described self-prescription or self-medication of anxiolytics and sleeping tablets and 10% of antidepressants.
24	Narelle and Shadbolt [30]	CS	Australian Junior Medical doctors	158	52	Junior doctors self-prescribed; antibiotics (81%), sleeping tablets (38%), antihypertensives (15%), antidepressants (7%), and narcotic analgesics (7%).
25	Uallachain [31]	CS	Irish GP trainees	100	89	92% of participants had prescribed medication for themselves on at least one occasion.
26	Pullen <i>et al.</i> [32]	CS	Australian doctors	1125	44	75% reported self-prescribed antibiotics, 45% non-narcotic analgesics. 25% reported that they would treat themselves for conditions such as alcohol. abuse, drug abuse or excessive tiredness and 45% for conditions such as insomnia or sexual difficulty.
27	Watchel <i>et al.</i> [33]	CS	American physicians	306	78	61% of the respondents had self-prescribed at least one medication.

RR, response rate; NR, not reported; CS, cross-sectional; LS, longitudinal study; V, vignette study.

Furthermore, the perceived need to portray a healthy image combined with unease about adopting the role of a patient and worries about confidentiality can lead doctors to take responsibility for their own care [9,25,26]. This problem starts early as significant proportions of medical students feel it is appropriate for doctors to self-investigate, self-refer and self-medicate [12]. Obviously, medical students cannot self-prescribe, but they can bypass formal care pathways, self-direct their

own care and self-administer medication in collusion with other health professionals.

Existing research about self-treatment provides an insight into the attitudes that physicians and medical students have towards self-treatment. For example, an examination of attitudes to self-treatment among US neurologists [17] revealed that, despite their specialized field of practice, they agreed or strongly agreed that the following behaviours were acceptable for physicians:

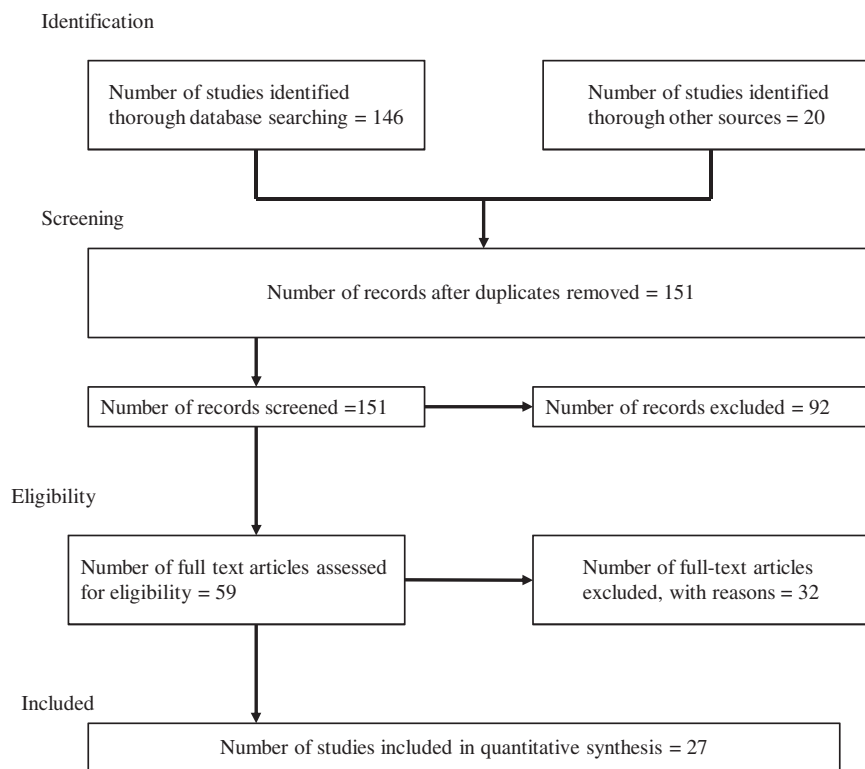


Figure 1. Flow chart of inclusion/exclusion of studies.

94% agreed that they could self-treat acute minor illnesses; 37% agreed that they could self-treat chronic conditions; 42% agreed that they could order their own blood test for diagnostic purposes; 40% agreed that they could order imaging studies of themselves for diagnostic purposes; 87% agreed that one could treat family members for acute minor conditions and 36%, that one could treat family members for chronic conditions. Equally, a study among Australian physicians [9] reported that 90% believed that it was acceptable to treat acute conditions and 25% believed that it was acceptable to treat their own chronic conditions. A Finnish study [21] revealed that doctors' self-medicated conditions were largely the chronic diseases. Yet, chronic disease management is complex and high quality care requires physical examination, lifestyle counselling, health surveillance and prevention in addition to optimum medication.

Doctors frequently associated their self-treatment behaviours with pressure to continue to work. For example, 76% US residents reported using amphetamines to enhance work performance [23]. This confirms the practice of self-treatment as an accepted strategy by the medical profession to avoid the need to stop working. Additionally, a survey concerning the attitudes of trainee GPs to self-care found that 30% had not been to a GP within the previous 5 years, 65% felt unable to take time off when ill, 92% self-prescribed medication on at least one occasion and almost half of the participants felt they

neglected their own health (49%) [31]. Portraying good health (and by default, portraying competence) by work attendance is deeply embedded in the medical culture and prevents both doctors and medical students taking on the patient role and behaving as sick people do.

In terms of work and occupational health, the health behaviours of the physicians in the review revealed that 66% of UK junior doctors reported prescribing for themselves when ill [26] and the same percentage (two-thirds) of Hong Kong physicians reported taking care of themselves when ill [8]. Additionally, significant numbers of physicians were not registered with a primary care physician or GP [8–10,16,26–28,32]. In terms of the number of consultations they had made when ill, the informal ones to friends and colleagues exceeded those with GPs or hospital consultants. It is notable that for mental/neurological disorders, young doctors chose to see a friend or colleague more often than they opted for a formal consultation [26].

Doctors perceive that patients and colleagues link good health with medical competence and thus doctors feel compelled to portray a healthy exterior while being aware of their vulnerability [36]. A study among US medical residents [13] indicated that when asked about scenarios in which peers exhibited suicidal depression or severe drug abuse, they overwhelmingly preferred not to notify the medical school administration. Some doctors over identify with colleagues in difficulty and display inertia

when faced with potential problems. Others may fear jeopardizing a colleague's livelihood by drawing attention to illness that could be construed as questioning their competence to practice. Others may fear being regarded as a whistleblower on a professional colleague.

The majority of physicians admit to prescribing for themselves and their families [11]. In four studies in the review, physicians reported that they would treat family members [11,17,19,22]. It would be reasonable to expect that the spouse and/family of a doctor would be in a favoured position given their proximity to medical care. However, there is some evidence that the children of physicians receive poorer quality of care in comparison with comparable children from non-physician families [37]. Anecdotal evidence suggests that the spouses and families of GPs play a significant role in helping doctors access the appropriate care. Thus, a physicians' family have a double burden in that they receive poorer quality health care and yet may play an important role in supporting a doctor with illness to access appropriate care.

Discussion

The results of the quantitative analysis showed that the concept of treating one's own illnesses without going through the usual channels patients normally follow (doctor self-treatment) is deeply ingrained in medical culture and is acquired as early as when aspiring physicians are medical students. The identified studies reported on an aggregate of over 28 000 physicians and indicated high levels of reported self-treatment. The results concerning self-prescription indicated high levels among physicians. The qualitative analysis of the literature indicated that inappropriate self-treatment is rooted in avoiding the patient role, occupational norms about self-treatment, the pressure to perform at work and the need to keep things within the profession. The identified themes provided insight into how the organizational culture and professional norms contribute to maintaining inappropriate self-treatment behaviours.

Although the literature search was systematic, there is still the risk of the 'file-drawer' problem, i.e. data have not been published yet. Given that the present review identified only 27 studies, the possibility of this bias is a significant issue. All the studies relied on self-reporting which raises questions about the reliability of the data collected but the sensitive nature of the data collected means that self-report is currently the only feasible way to collect such data. However, the reported data may represent an underestimation of the problem as individuals may choose not to reveal such data.

Both the quantitative and qualitative analysis indicated that self-treatment is a significant issue internationally. Recent research on job burnout and medical error [38] among health care professionals suggests that widespread

use of self-treatment behaviours can negatively exacerbate the relationship between stress and performance. Medical mistakes/errors are increasingly in the spotlight, and thus medicine needs to deal with this risk factor proactively. Although numbers are likely to be small, the implication of potentially impaired doctors treating patients is serious.

Obviously, self-management of some medical emergencies is feasible along with self-treatment of minor illnesses and injuries. Conversely, inappropriate self-treatment may include self-administration of psychoactive medications, hypnotics, sedatives, antidepressants and complex analgesics. Doctors may also self-medicate with alcohol and illegal drugs as the general population does. Thus, the reported evidence may underestimate the risk to both themselves and their patients.

An appropriate care path for physicians includes appropriate consultation with a personal physician who will coordinate their health care and objective decision making on matters of potential impairment such as from illness, medication side effects, cognitive impairment and fatigue. Acceptance of inappropriate self-treatment practices within medicine also means that a self-treating doctor is less likely to sign him/herself off work in way that would normally happen in other professions [18] and they may in fact be working when they should be on sick leave [39].

The problem can be viewed through both an organizational and educational lens. At the organizational level, the data strongly suggest that (i) self-treatment and self-prescription is traditionally acceptable within the profession—despite ethical guidelines to the contrary and (ii) its impact on both professional occupational health and quality of care is severely underestimated. At the educational level, self-treatment is considered by some to be an efficient way to maintain work performance and avoid sick leave. The practice of self-medication may be a risk factor for later substance misuse, which is especially common in anaesthesiology, emergency medicine and psychiatry [40]. Furthermore, doctors accept different treatments for themselves compared with their patients, mostly for medical problems with adverse social meaning such as mental illness [41]. Understanding self-treatment is important as physicians' own health habits and attitudes can influence the counselling and care they provide to patients [42]. Research indicates that physicians with poor health practices regarding smoking, alcohol intake, exercise or seatbelt use are less likely to counsel patients about such habits [43–45].

Interventions to raise awareness of and to deal with the issue of self-treatment need to be developed. The evidence suggests that medical education within the hidden curriculum 'teaches' young students such behaviours very effectively. Personal and professional development programmes have a role in challenging and changing such behaviours. However, the long-term solution involves

a more radical rethink of how we can redesign the medical educational/organizational culture into one in which medical students and doctors do not feel the need to self-medicate or self-direct their own complex medical care. Neither the profession nor the public can realistically expect the doctor to be 100% healthy throughout the entire duration of their medical career. In any country's doctor population of several thousand registered practitioners, one can predict on the basis of general population epidemiology that there will be a certain level of cardiovascular, respiratory, neurological, psychological, psychiatric orthopaedic, rheumatological and other illnesses.

There are many programme models for the promotion of physician wellness. However, no published studies exist (to the knowledge of the authors) that deal specifically with the prevention of inappropriate self-treatment behaviours in health care professionals. Prevention strategies have the potential to address a number of the cultural issues that surround self-treatment proactively, as opposed to a reactive approach which links self-treatment to fitness to practice.

In 2005, the Royal College of Physicians produced a report on the future of medical professionalism [5]. The report placed emphasis on the values and behaviours needed to maintain peoples' trust in doctors. The way in which a doctor behaves when they become a patient is an integral part of their medical professionalism, yet this is ignored within medical education and is absent from medical curricula. The need to initiate change at the earliest stages of education is highlighted by the literature which indicates that legislation against self-harm is not a solution to the problem [46,47].

Further studies should seek to directly assess the link between inappropriate self-treatment, physician well being and quality of care. There is currently a reliability and validity problem with regard to knowing that inappropriate self-treatment reliably exists and the degree to which we can validly claim that it impacts on quality of care. Some forms of self-treatment are beneficial and do not have negative consequences and this needs to be set in the context that doctors encourage patients to self-manage their own health in an appropriate fashion.

This review represents the first attempt to collate what is known on the subject. Examining the problem from a positive perspective, one could speculate that physicians believe that informal treatment represents an extension of 'professional courtesy' and that it is inexpensive and may lower barriers to accessing care. However, taking a medical history in an informal context is unlikely to be thorough, and clinical examination may be omitted partially or fully, meaning an accurate diagnosis may be difficult. Treatment may therefore be inappropriate, and proper consent processes, record keeping and follow-up protocols will likely not have been followed.

Key points

- Inappropriate self-treatment is widespread in medical culture, with physicians learning such practices while training as medical students.
- Inappropriate self-treatment has the potential to negatively impact on physician health and thereby contribute to poorer quality of care of patients.
- Inappropriate self-treatment represents a serious threat to professionalism within medicine and has the potential to erode the public's trust in the profession.

Funding

Irish College of General Practitioners.

Conflicts of interest

None declared.

References

1. Leape LL. When good doctors go bad: a systems problem. *Ann Surg* 2006;**244**:649–742.
2. Leape LL, Fromson JA. Problem doctors: is there a system-level solution? *Ann Intern Med* 2006;**144**:107–115.
3. Rivers PA, Bae S. Substance abuse and dependence in physicians: detection and treatment. *Health Manpow Manage* 1998;**24**:183–187.
4. Bohigian GM, Crougha JL, Sanders K. Substance abuse and dependence in physicians: an overview of the effect of alcohol and drug abuse. *Mo Med* 1994;**91**: 233–239.
5. Royal College of Physicians. Doctors in Society: Medical Professionalism in a Changing World. Working party report <http://www.rcplondon.ac.uk/pubs/books/docinsoc/docinsoc.pdf> (30 November 2010, date last accessed).
6. Petticrew M, Roberts H. *Systematic Review in the Social Science: A Practical Guide*. Malden, MA: Blackwell, 2006.
7. Brimstone R, Thistlethwaite JE, Quirk F. Behaviour of medical students in seeking mental and physical health care: exploration and comparison with psychology students. *Med Educ* 2007;**41**:74–83.
8. Chen JY, Tse EYY, Lam TP, Li DK, Chao DV, Kwan CW. Doctors' personal health care choices: a cross-sectional survey in a mixed public/private setting. *BMC Public Health* 2008;**8**:183.
9. Davidson SK, Schattner PL. Doctors' health-seeking behaviour: a questionnaire survey. *MJA* 2003;**179**:302–305.
10. Chambers R, Belcher J. Self-reported health care over the past 10 years: a survey of general practitioners. *Br J Gen Pract* 1992;**42**:153–156.
11. Forsythe M, Calnan M, Wall B. Doctors as patients: postal survey examining consultants and general practitioners adherence to guidelines. *Br Med J* 1999;**319**:605–608.

12. Hooper C, Meakin R, Jones M. Where students go when they are ill: how medical students access health care. *Med Educ* 2005;**39**:588–593.
13. Roberts LW, Hardee JT, Franchini G, Stidely CA, Siegler M. Medical students as patients: a pilot study of their healthcare needs, practices and concerns. *Acad Med* 1996;**71**:1225–1232.
14. Clarke J, O'Sullivan Y, Maguire N. A study of self-care among Irish doctors. *Ir Med J* 1998;**91**:175–176.
15. Hem E, Stokke G, Tyssen R, Grønvold NT, Vaglum P, Ekberg Ø. Self-prescribing among young Norwegian doctors: a 9-year follow-up study of a nationwide sample. *BMC Med* 2005;**3**:16.
16. Christie JD, Rosen IM, Bellini LM *et al.* Prescription drug use and self-prescription among resident physicians. *JAMA* 1998;**280**:1253–55.
17. Evans RW, Lipton RB, Ritz KA. Survey of neurologists on self-treatment and treatment of their families. *Headache* 2007;**47**:58–64.
18. Rosvold EO, Bjertness E. Illness behaviour among Norwegian physicians. *Scand J Public Health* 2002;**30**: 125–132.
19. Balon R. Psychiatrist attitudes toward self-treatment of their own depression. *Psychother Psychosom* 2007;**76**:306–310.
20. Toyry S, Rasanen K, Kujala S *et al.* Self-reported health, illness and self-care among Finnish physicians: a national survey. *Arch Fam Med* 2000;**9**:1079–1085.
21. Toyry S, Rasanen K, Seuri M *et al.* Increased personal medication use among Finnish physicians from 1986–1997. *Br J Gen Practice* 2004;**54**:44–46.
22. Westfall JM, McCabe J. Personal use of drug samples by physicians and office staff. *JAMA* 1997;**278**:141–143.
23. Hughes PH, Brandenburg N, Baldwin DC *et al.* Prevalence of substance use among US physicians. *JAMA* 1992;**267**: 2333–2339.
24. Hughes PH, Conard SC, Baldwin DC, Storr CL, Sheenhan DV. Resident physician substance use in the United States. *JAMA* 1991;**265**:2069–2073.
25. Rosvold EO, Vaglum P, Moum T. Use of minor tranquilizers among Norwegian physicians. A nation-wide comparative study. *Soc Sci Med* 1998;**46**:581–590.
26. Baldwin PJ, Dodd M, Wrate RM. Young doctors health—II. Health and health behaviour. *Soc Sci Med* 1997;**45**:41–44.
27. Schneider M, Bouvier Gallacchi M, Goehring C, Kunzi B, Bovier PA. Personal use of medical care and drugs among Swiss primary care physicians. *Swiss Med Wkly* 2007;**137**: 121–126.
28. Gross CP, Mead LA, Ford DE, Klag MJ. Physician heal thyself? Regular source of care and use of preventive health services among physicians. *Arch Intern Med* 2000;**160**: 3209–3214.
29. Markwell AL, Wainer Z. The health and wellbeing of junior doctors: insights from a national survey. *MJA* 2009;**191**: 441–444.
30. Narelle E, Shadbolt NE. Attitudes to healthcare and self-care among junior medical officers: a preliminary report. *MJA* 2002;**177**(1 Suppl):S19–S20.
31. Uallachain GN. Attitudes towards self-health care: a survey of GP trainees. *Ir Med J* 2007;**100**:489–491.
32. Pullen D, Lonie CE, Lyle DM, Carn DE, Doughty MV. Medical care of doctors. *Med J Aust* 1995;**162**:481–484.
33. Wachtel TJ, Wilcox VL, Moulton AW, Tammaro D, Stein MD. Physicians' utilization of health care. *J Gen Intern Med* 1995;**10**:261–265.
34. Smith JA, Jarman M, Osborn M. Doing interpretative phenomenological analysis. In: Murray M and Chamberlin K, eds. *Qualitative Health Psychology*. London: Sage, 1999; 218–241.
35. Zigmond D. Physician heal thyself: the paradox of the wounded healer. *Br J Holistic Med* 1984;**1**:63–71.
36. Thompson WT, Cupples ME, Sibbett CH, Skan DI, Bradley T. Challenge of culture, conscience, and contract to general practitioners' care of their own health: qualitative study. *Br Med J* 2001;**323**:728–731.
37. Wasserman R, Hassek BM, Young PC, Land ML. Health care of physicians' children. *Pediatrics* 1989;**83**:319–322.
38. Rosvold EO, Tyssen R. Should physicians' self-prescribing be restricted by law? *Lancet* 2005;**365**:1372–1373.
39. Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Manage Rev* 2007;**32**:203–212.
40. Bennett J, O'Donovan D. Substance misuse by doctors, nurses and other healthcare workers. *Curr Opin Psychiatry* 2001;**14**:195–199.
41. Gardner M, Ogden J. Do GPs practice what they preach? A questionnaire study of GPs' treatments for themselves and their patients. *Patient Educ Couns* 2005;**56**: 112–115.
42. Frank E, Kunovich-Frieze T. Physicians' prevention counseling behavior: current status and future directions. *Prev Med* 1995;**24**:543–545.
43. Wells K, Lewis C, Leake B, Ware JE, Jr. Do physicians preach what they practice? A study of physicians' health habits and counseling practices. *JAMA* 1984;**252**: 2846–2848.
44. Lewis C, Wells K, Ware J. A model for predicting the counseling practices of physicians. *J Gen Intern Med* 1986;**1**: 14–19.
45. Lewis C, Clancy C, Leake B, Schwartz JS. The counseling practice of internists. *Ann Intern Med* 1991;**114**:54–58.
46. Kay M, Del Mar CB, Mitchell G. Does legislation reduce harm to doctors who prescribe for themselves? *Aust Fam Physician* 2005;**34**:94–96.
47. Rosvold EO, Bjertness E. Physicians who do not take sick leave: hazardous heroes? *Scand J Public Health* 2001;**29**: 71–75.