

# Doctors' working hours and time spent on patient care in the period 1994–2014

**BACKGROUND** There is always a keen interest in the qualitative and quantitative aspects of doctors' working hours. In this study developments are described in terms of total weekly working hours and time spent on direct patient care from 1994 to 2014 by doctors working in different job categories and medical disciplines in Norway.

**MATERIAL AND METHOD** All data has been obtained from LEFO's reference panel of doctors, a near representative sample of approximately 1 600 practising doctors who have been followed up with questionnaires every second year since 1994. In the course of this period, doctors have come off the panel as they retired and new young doctors have been included in replacement. Questions relating to how they spend their time have always featured in the questionnaire. This article is based on data from 1994, 2000, 2006, 2010 and 2014.

**RESULTS** Response rates were between 67 and 95 %. From 1994 to 2014, total weekly working hours remained the same for all categories of doctors, except those working in academia. Time spent on direct patient care has fallen, but not significantly, for general practitioners, specialists working in private practice and doctors working in academia and administration. Meanwhile, community medical officers and hospital doctors have seen their time spent on patient care fall significantly over the 20-year period. There is however great variation, particularly between the different medical disciplines in hospitals.

**INTERPRETATION** Differences and changes in the amount of time spent by doctors on direct patient care are caused by both structural and cultural factors relating to the working situation, and not least by a considerable increase in the number of hospital doctors.

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## MAIN MESSAGE

For most doctors in Norway total weekly working hours remained unchanged in the period 1994–2014.

Hospital doctors reported considerably reduced time spent on direct patient care. The reduction was greater in the period 2000–2014 than in the period 1994–2000.

There was a marginal change in the proportion of working hours spent on direct patient care by general practitioners and specialists working in private practice.

A number of articles have described the working hours of doctors and how doctors split their time between their various tasks. A doctor's working hours will affect the quality of treatment provided as well as patient safety and the doctor's own health (1). It has been demonstrated that an increase in the time spent on direct patient care results in more satisfied patients and doctors (2, 3) and that the doctors themselves would like to spend more of their time on this work (4, 5).

Since 1994 the Institute for Studies of the Medical Profession (LEFO) has regularly been surveying a representative sample of practising doctors by asking them to complete a questionnaire. Working-hour records have been a recurring topic throughout. We have documented that the average working week of full-time hospital doctors has been between 45 and 47 hours (6). Meanwhile, time spent on direct patient care has fallen considerably, particularly since 2000 (7). General practitioners have a similar working week, but they have not seen a reduction in the time they spend on direct patient care (8).

The objective of our study is to describe developments with respect to total weekly working hours for doctors in various types of jobs and for hospital doctors practising in different medical disciplines – with particular emphasis on the time spent on direct patient care.

## Material and method

The reference panel polled by the Institute for Studies of the Medical Profession (LEFO) is a sample of approximately 1 600 practising doctors who have been asked to complete a questionnaire on 12 occasions since 1994. The sample represents an imbalanced cohort in that respondents who leave the panel are replaced by younger doctors, while the sample's representative nature is maintained at all times.

The reference panel was expanded by approximately 400 doctors in 2000, 250 doctors in 2008 and 270 doctors in 2012. A total of 590 doctors were removed from the panel due to retirement, voluntary redundancy or death. This article is based on data from 1994, 2000, 2006, 2010 and 2014.

### *Main job categories and medical disciplines*

The main jobs have been split into eight different groups:

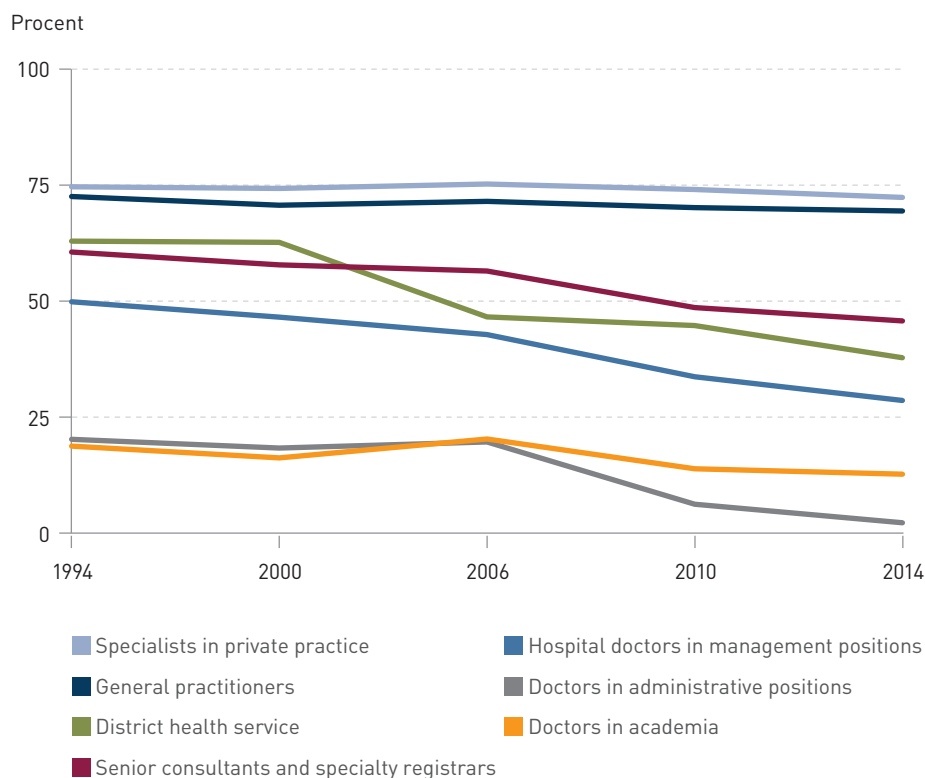
Group 1: doctors in hospital management positions (medical superintendent, head of department, chief senior consultant, head of unit, senior consultant, head of section)

Group 2: senior hospital consultants and specialty registrars

Group 3: general practitioners

Group 4: specialists working in private practice

Group 5: community medical officers (dis-



**Figure 1** Proportion of time spent on direct patient care by doctors in different job categories. Data obtained from LEFO's reference panel

trict medical officer, senior district medical officer, nursing home medical officer, visiting medical officer, doctor at infant welfare clinic, community general practitioner)

Group 6: doctors in academia (professor, associate professor, research fellow, researcher)

Group 7: doctors in administrative positions (county medical officer, medical advisor, chief medical officer)

Group 8: other key job categories (occupational health practitioner, senior registrar consultant)

There are 45 approved medical disciplines in Norway. Doctors specify which of these they are currently working in. The disciplines are divided into five groups:

Group 1: general (internal) medicine disciplines (general practice, paediatrics, haematology, endocrinology, gastroenterology, physical medicine and rehabilitation, geriatrics, cardiology, dermatology, internal medicine, communicable diseases, respiratory medicine, neurology, oncology, nephrology, rheumatology)

Group 2: surgical disciplines (anaesthesiology, paediatric surgery, cardiothoracic and endocrine surgery, obstetrics and gynaecology, gastroenterological surgery, general surgery, vascular surgery, maxillofacial surgery, neurosurgery, orthopaedic surgery, plastic surgery, thoracic surgery, urology, otorhinolaryngology, ophthalmology)

Group 3: laboratory disciplines (immunology and transfusion medicine, clinical pharmacology, clinical neurophysiology, medical biochemistry, medical genetics, medical microbiology, nuclear medicine, pathology, radiology)

Group 4: psychiatry (psychiatry, child and adolescent psychiatry, substance abuse and addiction medicine, community medicine)

Group 5: other

#### Time spent

Similar questions about time spent have been included in all questionnaires issued throughout the period. The doctors were asked to specify the number of hours spent on various activities in a working week; they were then asked to add up the hours to arrive at a total number of working hours per week. Some adjustments were made in the period, but the question about the number of hours spent on direct patient care, and total working hours per week, remained the same throughout.

In 2014 the question was worded as follows: «In an average working week, including shift work and any part-time job(s), approximately how many hours do you spend: on patient care (all direct contact with individual patients or their relatives, including phone calls, etc.); in meetings (interdisciplinary team meetings, patient case meetings, guidance meetings, etc.); on paper

work, phone calls, emailing, data-recording (patient records, certificates, discharge summaries, other documentation); professional updating; other; and in total.

#### The concept of «patient care»

In an effort to look more closely at the question about patient care, we asked the following question in 2002: «What have you included when referring to patient care?» The following response options were listed: «only face-to-face contact with patients; all direct contact with individual patients, including phone calls, emails etc.; all work directly related to individual patients, including patient records, phone calls and meetings; and 'other'.»

#### Analyses

The working hour variables were approximately normally distributed. The distribution of gender and age was different in the various job categories and medical disciplines. In this article we make use of general linear modelling, with age and gender as covariates and principal position as the fixed factor, in order to estimate total weekly working hours and time spent on direct patient care for doctors working full time. Separate analyses were also undertaken for full-time hospital doctors working in different fields of medicine, using medical discipline as the fixed factor and gender and age as covariates.

The statistical significance of interval variables and proportions was tested by assessing whether the 95% confidence intervals overlap. Full-time work was defined as 37 working hours or more per week (9). The data was analysed using the SPSS statistics software, version 23.

## Results

### The respondents

E-table 1 presents the sample, number of respondents, response rates and the range of job categories for doctors in part and full-time positions. Response rates vary from 67 to 95. The number of hospital doctors and the extent of full-time work in the various medical disciplines are described in e-table 2.

In terms of age, gender and job category, the distribution of our sample is similar to the distribution found in the Masterfile of the Norwegian Medical Association (6). In 2014 the distribution of our sample was also similar to that of the Masterfile with respect to age and gender, but doctors in academia were on average five years older, while the sample's general practitioners and community medical officers consisted of 9% fewer women and were on average four years older (data not shown).

### The different job categories

E-table 3 shows the average number of weekly working hours as well as the number

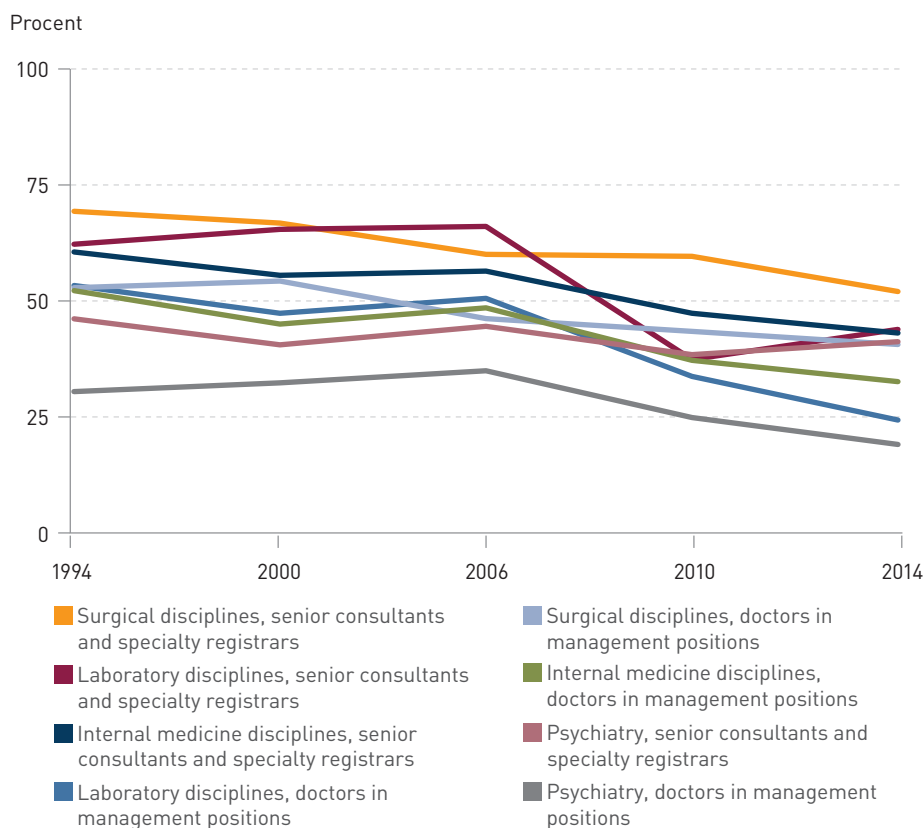
of hours spent on direct patient care from 1994 to 2014 for doctors in different job categories, adjusted for age and gender, and unadjusted numbers of hours for 2014. Total weekly working hours remained unchanged for most, except that doctors in academia saw a significant reduction from 1994 to 2014: approximately five hours. Doctors in hospital management positions, general practitioners and doctors in academia reported longer working weeks than doctors in other job categories in almost all the surveys. The differences between unadjusted and adjusted data were minimal in all surveys (data shown for 2014). Total working hours for female senior consultants and specialty registrars were slightly lower, but this was not the case for time spent on patient care.

Figure 1 shows the proportion of time spent on direct patient care by doctors in various job categories from 1994 to 2014. There was a marginal change for general practitioners (73% versus 69%), doctors in private practice (75% versus 72%) and doctors working in academia (19% versus 13%). However, community medical officers (63% versus 38%), hospital doctors in management positions (50% versus 28%), senior consultants and specialty registrars (61% versus 46%) and doctors in administrative positions (20% versus 2%) reported a considerable reduction in the course of the 20-year period. The reductions were greater in the period 2000–14 than in the period 1994–2000.

#### Hospital doctors working in different medical disciplines

E-table 4 shows the average number of weekly working hours and hours spent on direct patient care for hospital doctors working in different medical disciplines in the period 1994–2014, adjusted for gender and age, and unadjusted for working hours in 2014. Weekly working hours remained stable throughout the period. On average, hospital doctors in management position had a longer working week than senior consultants and specialty registrars. Senior consultants and specialty registrars in surgical disciplines had a significantly longer working week than their colleagues in psychiatry in 1994, 2000, 2006 and 2014. The unadjusted figures show that female senior consultants in particular, as well as female specialty registrars working in internal medicine, had a slightly shorter working week (43.7 hours compared to 47.1 hours for men), while there was no significant difference in terms of time spent on patient care.

Figure 2 shows the proportion of total working hours spent on direct patient care by hospital doctors working in different fields of medicine. There are significant dif-



**Figure 2** Proportion of time spent on direct patient care by doctors in management positions, senior hospital consultants and specialty registrars in various fields of practice. Data obtained from LEFO's reference panel

ferences between the various fields of medicine. There was a drop in the proportion of time spent on patient care within the laboratory disciplines: doctors working in management positions reported a reduction from 53% to 24%, while senior consultants and specialty registrars reported a reduction from 62% to 44%. The corresponding figures for the internal medicine disciplines were: a drop from 52% to 32% for doctors in management positions and from 61% to 43% for senior consultants and specialty registrars. In the surgical disciplines there was a drop from 53% to 40% for doctors in management positions and from 69% to 52% for senior consultants and specialty registrars. In psychiatry, the drop was from 30% to 19% for doctors in management positions and from 46% to 41% for senior consultants and specialty registrars. Most of the surveys showed that the proportion of time spent on direct patient care was highest among doctors working in the surgical disciplines and lowest among doctors working in psychiatry.

#### The concept of «direct patient care»

E-table 5 shows what tasks were covered by the concept of «patient care» in the terminology of the surveyed doctors, distributed by

gender, main job category, medical discipline and working hours in 2002.

There was clearly a wide variety of interpretations among the doctors polled, even if the majority responded either «only face-to-face contact with patients» (47%) or «all direct contact with individual patients, including phone calls, emailing etc.» (24%), which reflects our own questionnaire definition of direct patient care.

The response distribution showed no significant differences with respect to gender or working hours, but there were variations between the different job categories and medical disciplines. To a greater degree than others, general practitioners and specialists working in private practice referred to «only face-to-face contact with patients» when talking of patient care, while more doctors working in administration or management included «all work directly related to individual patients, including work on patient records, telephone calls and meetings» and «other». In 2014, doctors working in the laboratory disciplines put the following in the «comment» field associated with «other»: imaging diagnostics, diagnostics and pathological examinations, post mortems, blood donor questions, laboratory work, radiology work and microscopic diagnostics.

## Discussion

### *Main findings*

In the period 1994–2014, total weekly working hours remained stable for most doctors, except that there was a significant reduction among doctors in academia. Hospital doctors working in management, general practitioners and doctors in academia had the longest working week.

Time spent on direct patient care fell in all job categories, but the drop was marginal among general practitioners, specialists working in private practice and doctors working in academia. Among hospital doctors there were large differences with respect to the reduction in time spent on direct patient care – it was greater in the period 2000–14 than in the period 1994–2000.

### *Other studies*

Hospital doctors in Norway have a shorter working week (45–50 hrs) than their colleagues in other European countries (50–90 hrs) (6). A study based on data from 2010 shows that the proportion of general practitioners and specialists working in private practice who worked a 50-hour week or longer, was 55 % in Germany compared to 25 % in Norway (10). In an OECD study based on data from 2013, 2.8 % of full-time employees in Norway had a working week of 50 hours or more (11). Compared to our data from 2014, the proportion who reported to work  $\geq$  50 hours per week was 42 % for hospital doctors working in management, 36 % for general practitioners, 27 % for doctors working in the district health service and academia, 24 % for specialists working in private practice, 21 % for senior hospital consultants and specialty registrars and 13 % for doctors in administrative positions (data not shown here).

A questionnaire survey of Danish senior consultants from 2008 showed that the proportion of working hours spent on direct patient care was 31 % for chief senior consultants, 69 % for senior consultants working shifts and 59 % for senior consultants who were not working shifts (12). The corresponding 2014 figures in our study were 28 % for hospital doctors in management and 46 % for senior hospital consultants and specialty registrars. A study from 1999 conducted in the Medical Ward and the Maternity Ward at Trondheim Regional Hospital showed that doctors spent 25 % of their working day in direct contact with patients (patient rounds, technical examinations and outpatient consultations) (4). In our study, the corresponding figures from 2000 were 54 % for hospital doctors in management and 67 % for senior hospital consultants and specialty registrars working in surgical disciplines, and 45 % for hospital doctors in management and 55 % for senior hospital consul-

tants and specialty registrars working in the internal medicine disciplines.

A survey of general practitioners in 11 countries from 2009 included the question: «Roughly how many working hours do you normally spend in face-to-face contact with patients in the course of a week?» In response, Norwegian general practitioners reported an average of 67 %, compared to e.g. 66 % in Sweden, 71 % in Germany and 82 % in France (13).

A Norwegian study based on observation of nurses on a surgical ward in 2006 showed that they spent 36 % of their total working hours in direct contact with patients, defined as eye contact with patients (including periods spent in the patient's room) (14).

### *Possible reasons for the reduction in time spent on direct patient care*

Some of the reduction in time spent by hospital doctors on direct patient care may be ascribed to purely demographic changes. From 1995 to 2014 the number of hospital doctors has increased by ca. 100 % (15), while the number of potential patients (the population) has increased by only 17 % (16). By comparison, the increase in the number of general practitioners was 26 % in the period 2001–14 (17). In other words, provided the public health situation has remained stable, the number of doctors per patient has increased, which in itself must lead to a certain redistribution of tasks, perhaps particularly when it comes to direct patient care. This is in keeping with other studies that show an increasing need to spend time on tasks like documenting, reporting and encoding, in the health service (18–20) as well as in other professions, such as teachers (21) and police officers (22).

The organisation of the health service, and what other studies refer to as «physician productivity», may also explain some of the changes in how doctors spend their time.

OECD data from 2013 show that the doctor density per 1 000 residents was 4.3 in Norway, which is higher than in most other European countries (2.8 in the UK, 3.0 in Belgium, 3.0 in Finland) (23). The statistics indicate that the number of practising doctors has almost doubled between 1994 and 2014 (15). According to Statistics Norway, the number of doctors increased faster in Norway between 1990 and 2009 than in any other European country, particularly within the hospital sector (24). At the same time, it appears that the Norwegian medical profession's productivity fell – measured as activity on in-patient wards as well as total activity per doctor's man-year. An analysis of data from 1992 to 1999 shows a clear decline in doctors' productivity (25). A report from 2008 on staff levels and productivity in the general health service concluded

that Norway, compared to Denmark, Finland, Germany and Scotland, has the highest number of doctors per capita and the lowest level of productivity, measured by the number of patients discharged from hospital, out-patient consultations and day-time sessions provided per doctor (26).

Four major health reforms have been implemented over the last 15 years – the regular GP scheme in 2001, the free choice of hospital in 2001, the hospital reform in 2002 and the coordination reform in 2012. These reforms have influenced the organisation of doctors' day-to-day practice. There has been no political intention to create less favourable working conditions for doctors, but the doctors report that they feel their professional freedom of speech has been restricted and that they have less autonomy (27, 28).

Data obtained from LEFO's reference panel in 2010 shows that 50–70 % of respondents experience stress in association with frequent reorganisations of the health service, and this is particularly the case among hospital doctors. Furthermore, they feel that the care provided for their patients suffers as a consequence of time pressure and because large parts of their working day are spent on administration and documentation (19). A study on the reforms in the specialist health service revealed that doctors as well as nurses considered the reforms to have been introduced primarily to pressurise them into increasing their productivity, i.e. a demand that they treat more patients in a shorter period of time. Nurses think that the doctors' core medical tasks leave little room for «interpersonal aspects» (18). This is in keeping with our data which show a decline in the proportion of working hours spent on direct patient care by hospital doctors, particularly in the period 2000–14. The GP reform does not appear to have had the same effect – time spent on direct patient care remains unchanged, at around 70 %.

How tasks are distributed among the different categories of health personnel will also influence how doctors spend their time. Nurses have been given a more active role in the diagnosis, treatment and follow-up of patients in hospitals and outpatient clinics – for example, they are now involved with endoscopic and other procedures within the fields of surgery, and in cardiology they deal with cardiovascular ultrasound examinations, in oncology they deal with the follow-up of cancer patients, and in rheumatology they deal with the follow-up of rheumatoid arthritis. Other groups of health personnel, like biological engineers in the field of pathology, or radiographers, are more involved with tasks associated with diagnostics, and physiotherapists help with patient follow-up in outpatient clinics (29, 30).

On the other hand, doctors took over tasks that were previously conducted by secretarial staff, like medical secretaries, when speech recognition was introduced as a documentation tool (31), which means that more time and resources are expended on documentation. The reporting and documentation requirements are ever-increasing, intended as a safeguard to ensure a high standard of treatment. Electronic patient record systems (EPR) in the health and care sector may also be time-consuming for doctors. The 2014 report of the Office of Auditor General pointed to weaknesses in the technical solutions used for transferring messages between health enterprises, local authorities and doctors' surgeries (32). In a study from 2014 about electronic patient record systems in hospitals, commissioned by the Norwegian Medical Association, nearly seven of ten hospital doctors reported that time spent on this is at the expense of their treatment of patients (20).

#### Strengths and weaknesses

The strengths of the study are its repeated measurements and the fact that the respondents are near representative of practising doctors in Norway. This gives us a good basis on which to generalise the results to all practising doctors. Furthermore, the response rate is between 67% and 95%, which is higher than for other surveys of the medical profession (6).

The doctors' self-reporting of hours spent on their various work-day components may of course be inaccurate. We do not know whether there is a tendency among our sample to overestimate or underestimate the various working hour components, or whether there are job-category or medical-discipline-specific differences in the self-reporting. The working hour components of the response alternatives were made specific over time, partly in keeping with developments since 1994. The level of working hour accuracy can probably be improved, but there has been in-built quality control throughout, in that each individual doctor has been asked to add up their own working hour components to arrive at a total number of hours worked per week.

It is interesting that the doctors report relatively wide variation when asked what they consider to be covered by the «patient care» concept, and provides challenges in terms of methodology. However, since largely the same doctors were polled on each occasion, the reliability of the data increases significantly, as each doctor thus becomes his or her own control person.

Unfortunately, data on other variables that may have an effect on time spent, such as staffing levels, distribution of tasks and work-day organisation (4), are not included.

#### Conclusion

Total working hours in the medical profession remained virtually unchanged from 1994 to 2014, but the time spent in direct contact with patients fell. This was particularly the case for hospital doctors. Growing documentation requirements, structural changes within the health service, reduced productivity among doctors, weaknesses in electronic systems, increasingly diverse allocations of functions and tasks to different categories of health personnel, and – not least – an increasing doctor density, may explain some of this reduction, in combination with a significant increase in the number of hospital doctors. It is impossible to tell what would constitute the optimal proportion of time spent on direct patient care.

Good patient care depends on individual as well as organisational factors, including quality improvement and evaluation. Based on the results of our study we can expect that stable weekly working hours and a high proportion of time spent on direct patient care will continue to be typical for general practitioners and other doctors working in private practice. Hospital doctors will probably continue to experience conflicting pressures with respect to the time they spend on patient care and other tasks, hopefully without the patients losing out.

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The author has completed the ICMJE form and declares no conflicts of interest.

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The author has completed the ICMJE form and declares no conflicts of interest.

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