
Visits by pharmaceutical representatives in general practice as observed by fifth-year medical students

ORIGINAL ARTICLE

JØRUND STRAAND

E-mail: jorund.straand@medisin.uio.no

General Practice Research Unit

Department of General Practice

Institute of Health and Society, Helsam

University of Oslo

He formed the idea for the study based on a corresponding previous study, has been responsible for data collection and revision of the manuscript and has approved the submitted manuscript.

Jørund Straand (born 1951), professor in general practice and head of department.

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

JEANETTE COOPER

General Practice Research Unit

Department of General Practice

Institute of Health and Society, Helsam

University of Oslo

She has contributed with a literature search, analysis and interpretation of the data, had primary responsibility for preparing the first draft under the guidance of Jørund Straand, and has approved the submitted version of the manuscript.

Jeanette Cooper (born 1988), doctor.

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

BACKGROUND

Many general practitioners receive visits at their surgery from pharmaceutical representatives. The purpose of this study was to describe these visits, their framework and content (especially discussions of safety information), and to compare the findings with a corresponding study conducted in 2001–02.

MATERIAL AND METHOD

A total of 116 fifth-year medical students (2001–02: 144) at the University of Oslo in practical training at GP surgeries in the South-Eastern Norway Regional Health Authority in the period 2014–16 completed an electronic questionnaire after attending a visit by a pharmaceutical representative at the medical centre.

RESULTS

A total of 116 visits took place during lunch breaks, when the representative paid for the food. In 90 % (2001–02: 81 %) of the visits, both doctors and their colleagues attended. Free samples were given out in 28 % (2001–02: 41 %) of the meetings, and small gifts in 5 % (2001–02: 44 %). Although the representative often refrained from raising the topic of safety information about the medication, this nevertheless happened less often than in 2001–02: adverse effects (42 % vs 55 %; $p=0.04$), interactions (53 % vs 64 %; $p=0.07$), contraindications (37 % vs 61 %; $p=0.0002$) and precautions (30 % vs 56 %; $p<0.0001$). The medical students gave a below average score for their own learning outcome from the presentations (4.8 on a scale from 0–10) (2001–02: 4.2).

INTERPRETATION

Although the study shows improvements since 2001–02, it is still common for information provided at visits by pharmaceutical representatives to be deficient with regard to discussion of adverse effects, interactions, contraindications and precautions. Doctors must base their judgement on independent sources of information in order to stay abreast of the latest safety data on the medications.

Main points

A typical visit by a pharmaceutical representative in general practice consists of a free lunch along with a presentation of medications for doctors and their colleagues (in 90 % of cases) or just for the doctors (10 %).

The distribution of small gifts is far less common nowadays (5 %) than was shown in a corresponding survey from 2001–02 (44 %).

At 30–53 % of the presentations, the representatives did not bring up adverse effects, interactions, contraindications or precautions. However, this differs from the previous survey from 2001–02, when such topics were not raised in 55–65 % of the presentations.

The medical students who participated in the survey gave an average score for their own learning outcomes from the pharmaceutical presentations of 4.8 on a scale of 0 to 10.

Because the discipline of general practice/family medicine includes virtually all types of therapeutics, it is particularly challenging for a general practitioner to stay up to date on all medications they prescribe. In Norway, the Norwegian Pharmaceutical Product Compendium (*Felleskatalogen*), the Norwegian Medicines Manual for Health Personnel (*Norsk legemiddelhåndbok*) and the Norwegian Online Medical Handbook (*Norsk Elektronisk Legehåndbok*) are general practitioners' most frequently used reference works [\(1\)](#). Doctors consider industry-dependent sources of knowledge to be less useful and to have less impact on their prescribing practices than industry-independent sources [\(1\)](#).

However, to a greater degree than they themselves would admit, doctors allow themselves to be informed and influenced by pharmaceutical industry advertising [\(2, 3\)](#). This can be problematic since surveys have shown that around half of the claims in written pharmaceutical advertisements are neither correct nor clinically relevant [\(4, 5\)](#).

In 2008, a survey on visits by pharmaceutical representatives in general practice was published in the Journal of the Norwegian Medical Association [\(6\)](#). The starting point was a survey conducted in 2001–02 among fifth-year medical students who had been present during visits by pharmaceutical representatives in connection with their six-week practical training with a general practitioner [\(6\)](#).

One important finding was that the representatives in 55–64 % of the cases did not provide information on the medication's adverse effects, interactions, contraindications or precautions. In an accompanying editorial article, the question arose as to whether general practitioners may be particularly easy to influence through advertising, since most medical centres have few doctors and most general practitioners lack research skills [\(7\)](#).

In a comment on the survey, LMI – the trade association for the pharmaceutical industry – emphasised that information supplied by pharmaceutical representatives needs to be 'accurate, balanced, truthful and objective, and sufficiently complete to enable the recipient to form a personal opinion about the therapeutic value of the medication in question' [\(8\)](#). In light of this, LMI believed that the findings of the survey [\(6\)](#) raised concerns, and therefore wanted to highlight the issue in the education of pharmaceutical representatives [\(8\)](#).

Because it is uncertain whether the marketing has changed since the aforementioned survey [\(6\)](#), up-to-date knowledge is desirable on the current situation regarding visits by pharmaceutical representatives in general practice.

By repeating the same survey as in 2001–02 [\(6\)](#), the purpose of this study was to describe visits by pharmaceutical representatives in Norwegian general practice, with particular emphasis on the dissemination of safety information, with a view to establishing whether changes have taken place since the survey 15 years ago.

Material and method

The survey was conducted among fifth-year medical students at the University of Oslo in connection with their six-week practical training at a GP surgery in the South-Eastern Norway Regional Health Authority. The data collection took place in the period 2014–16. Four consecutive student cohorts with a total of 380 students were invited to contribute to the data collection.

Participation entailed completing a short electronic questionnaire about a visit by a pharmaceutical representative that the student had attended. The students were able to access the electronic questionnaire (Box 1) via a link that was e-mailed to them in advance. A reminder about the study was e-mailed to them during their practical training. SurveyMonkey was used as a tool for recording and submitting data.

Box 1 Questionnaire completed by medical students after a visit by a pharmaceutical representative in general practice. The answers to questions 1, 8 and 10 will not be analysed as part of this study.

1. Date of visit by pharmaceutical representative
2. Name of the medication
3. Name of the firm marketing the medication
4. Who was present at the meeting? (the doctors at the medical centre; both the doctors and their colleagues)
5. Did the representative offer to pay for any food? Yes (what type?); No
6. Did the presentation cover (select all that are applicable):
 - a. A new medication that is not yet on the market in Norway?
 - b. A recently registered medication that does not (yet) qualify for reimbursement under the blue prescription arrangement?
 - c. A medication registered in Norway in 2014 or later
 - d. New information about a known medication?
 - e. Other (specify)
7. Did the representative provide the text about the medication from the Norwegian Pharmaceutical Product Compendium unsolicited? (yes/no)
8. Were the adverse effects mentioned by the representative the same as those in the Norwegian Pharmaceutical Product Compendium? (yes/no/don't know)
9. Did the representative provide information about the following unsolicited?
 - a. Contraindications (yes/incomplete/no)
 - b. Precautions (yes/incomplete/no)
 - c. Interactions (yes/incomplete/no)
 - d. Adverse effects (yes/incomplete/no)
10. What was the representative's main message? (free text)
11. Did the representative strongly urge prescription of the medication? (yes/no; if yes: in what way? free text)
12. Did the representative explicitly ask how many patients in the practice could be relevant users of this medication? (yes/ no; free text for a more detailed description if yes)
13. What did the representative offer? (Select all that are applicable.)
 - a. Documents/brochures
 - b. Free samples
 - c. Gifts
 - d. Invitation to participate in a study
 - e. Invitation to an evening meeting
 - f. Invitation to an event elsewhere in the country
 - g. Other (free text)

14. Overall assessment of the student's own learning outcome on a scale from 0 (very poor) to 10 (excellent)

We have compared the results of this study with figures from the corresponding survey in the same setting in 2001–02 (6). The only difference between the current study and the previous survey was that we used an electronic questionnaire this time instead of a paper version.

A total of 143 medical students returned the form. Of these, 26 had not been present at a visit by a pharmaceutical representative in the medical centre, while one had attended an evening hotel seminar. The remaining 116 response forms from students who had attended a visit by a pharmaceutical representative at their medical centre constitute the material for the analyses. Because not all of the students had given complete answers to all questions, the denominator varies in some of them. Unless otherwise stated, the denominator is 116.

Data from submitted questionnaires was presented in simple frequency tables by SurveyMonkey. The names of medications that were promoted were grouped into anatomic or therapeutic categories.

The chi-squared test was used to compare differences between observations. For this, an online calculator was used (9). The significance level was set at 0.05. A confidence interval (CI) of 95 % was calculated for the average score for the students' learning outcome using the statistical program NSDstat Pro 1.1 (Norwegian Centre for Research Data (NSD), formerly Norwegian Social Science Data Services, Bergen).

Because the registered information was completely anonymous (neither the name of the medical student, medical centre nor pharmaceutical representative was registered), it was not necessary to obtain approval from the Regional Committees for Medical and Health Research Ethics or the Norwegian Data Protection Authority.

Results

The survey encompasses 116 visits by pharmaceutical representatives from a total of 23 different pharmaceutical companies (2001–02: 144 visits by pharmaceutical representatives from 26 different companies). The most commonly discussed groups of medications were those for obstructive pulmonary disease (37 %), cardiovascular disease (19 %), and antidiabetics (18 %) (Table 1).

Table 1

116 visits by pharmaceutical representatives in general practice in the period 2014–16, by area of application for the medications compared with 144 visits by pharmaceutical representatives in the period 2001–02 (6)

Area of application for medications	2001–02 (6) (144 visits) Percentage (%)	2014–16 (116 visits) Percentage (%)
Cardiovascular	21	19
Pulmonary ¹	18	37

Area of application for medications	2001–02 (6) (144 visits) Percentage (%)	2014–16 (116 visits) Percentage (%)
Musculoskeletal	10	0
Nervous system	9	6
Psychopharmaceuticals	7	2
Gynaecology	7	1
Endocrine diseases ²	6	18
Gastrointestinal	4	1
Urinary tract	4	6
Allergy medications	2	3
Other ³	12	7

¹Medications to treat obstructive pulmonary disease²Antidiabetics³Antibiotics, eye medications, dermatological medications etc.

In 90 % of the cases, both doctors and their colleagues at the medical centre were present during the presentation, while the remainder of the meetings were reserved for the doctors. During all visits, the pharmaceutical representative paid for the participants' lunch.

Fifty of the visits were concerned with new information about known medications, 45 were about a medication that had recently been approved under the blue prescription arrangement, 19 were about a new medication that was not yet eligible for reimbursement under the blue prescription arrangement, while two of the meetings were about a medication that has still not been approved for the Norwegian market.

The representative handed out written material in 96 % of the visits, and in 33 cases (28 %) this included the Norwegian Pharmaceutical Product Compendium text. Free samples were distributed at 28 % of the visits (2001–02: 41 %) and small gifts were given out at 5 % of the visits (2001–02: 44 %) (Table 2). At 20 % of the visits (2001–02: 12 %), the doctors were invited to a local evening meeting or to a company event elsewhere in the country (Table 2).

Table 2

Visits by pharmaceutical representatives in general practice in the period 2001–02 (n=144 visits) (6) and 2014–16 (n=116 visits): Material and invitations distributed to doctors. Based on a questionnaire survey of students in general practice

Distributed material and invitations	2001–02 (6) Percentage (%)	2014–16 Percentage (%)	P-value
Medical literature, written material	86.8	94.0	< 0.05
Free samples	41.0	27.6	< 0.05
Gifts	43.7	5.2	< 0.0001

Distributed material and invitations	2001–02 (6) Percentage (%)	2014–16 Percentage (%)	P-value
Invitations to evening meetings	9.0	12.1	< 0.05
Invitations to events elsewhere in the country	2.8	7.8	0.08
Invitations to participate in a pharmaceutical study	2.0	0.8	0.40

At 72/115 visits by representatives (63 %), the medical students felt that the doctors were being strongly urged to prescribe the medication in question. The representative explicitly asked how many relevant users of the medication the practice may have in 58/114 visits (51 %).

Although the representative often refrained from mentioning safety information about the medication, this nevertheless happened less often than in 2001–02 – adverse reactions (42 % vs 55 %; $p=0.04$); interactions (53 % vs 64 %; $p=0.07$), contraindications (37 % vs 61 %; $p=0.0002$) and precautions (30 % vs 56 %; $p<0.0001$) (Table 3).

Table 3

Visits by pharmaceutical representatives 2001–02 ($n=144$ visits) (6) compared with figures from a corresponding survey in general practice in the period 2014–16 ($n=116$ visits). Percentage of pharmaceutical presentations where the attending students reported that the representative did not mention, partially mentioned or mentioned in full the drug's adverse effects, interactions, contraindications or precautions respectively.¹ The figures show the percentage (%) and p-value for differences.

Topic	Did not mention			Partially mentioned			Mentioned in full		
	2001–02	2014–16	P-value	2001–02	2014–16	P-value	2001–02	2014–16	P-value
Adverse effects	54.9	41.7	< 0.05	28.9	29.6	0.9	16.2	28.7	< 0.05
Interactions	64.0	52.7	0.07	20.1	29.5	0.08	15.8	17.9	0.66
Contraindications	60.7	37.4	< 0.001	20.0	27.8	0.14	19.3	34.8	< 0.01
Precautions	56.5	30.4	< 0.0001	23.9	32.1	0.15	19.6	37.5	< 0.01

¹The number of answers given varied between the variables. In 2014–16, there were 115, 112, 115 and 112 completed forms for adverse effects, interactions, contraindications and precautions respectively. The corresponding figures for 2001–02 were 142, 139, 140 and 138 (6).

On a visual analogue scale from 0 to 10 for learning outcomes, where 0 is very poor and 10 is excellent, the medical students gave an average score of 4.8 (median 5), with 95 % CI 3.5–6.5. The corresponding average scores in 2001–02

were 4.2 (median 4) and 95 % CI 3.9–4.5 – i.e. no significant change in the students' evaluation of the learning outcome from the pharmaceutical representatives' presentations.

Discussion

The study shows that visits by pharmaceutical representatives in general practice took place in much the same way in 2014–16 as in 2001–02, i.e. in the form of a free lunch for the doctors and their colleagues (6). Medical literature and written (advertising) material are still frequently handed out during visits, but we found a significant reduction in the distribution of gifts compared with the findings from the 2001–02 study (from 44 % to 5 %) (6).

Compared with the survey in 2001–02, medications for obstructive pulmonary disease and type 2 diabetes were promoted more frequently in 2014–16. Interestingly, we did not register any product presentations within the group of musculoskeletal diseases. In 2001–02, much of the marketing within this group was related to the COX-2 inhibitors rofecoxib and celecoxib, which were introduced to the Norwegian market in 2000. Due to the withholding of safety information, rofecoxib was, as we know, withdrawn from the market some years later (10).

Comparisons of responses concerning adverse effects, interactions, contraindications and precautions with the study conducted 15 years ago (6) show that these are still being under-communicated in the pharmaceutical representatives' product presentations. The aforementioned aspects of the medication were *not* mentioned in 30–53 % of the representatives' visits. Compared with the survey 15 years ago (when such information was not conveyed in 55–65 % of the presentations), there is still a great deal of room for improvement here.

Our findings of a continued lack of emphasis on the safety of the medication in question concur well with the results of a similar study in Canada, France and the USA, which was published in 2013 (11). The benefits of the medication were discussed here twice as often as the possible harmful effects (80 % vs 41 %). In spite of this, the doctors were positive about the quality of the information they received from the pharmaceutical representatives, and almost two out of three were convinced that they should prescribe the medication in question more often (11).

Others (12) have also shown that pharmaceutical representatives usually present selected and positive information about their products. In Norway, it is not permitted to market prescription medications to the population. The marketing aimed at those who prescribe the medication is therefore all the more important for the pharmaceutical industry.

The fact that we did not explicitly ask the students to report back if they did *not* want to participate in the study or if they had *not* been present at a pharmaceutical representative visit during their practical training means that we lack data to analyse the response rate. Because we have also not mapped how many visits by representatives actually took place at the relevant medical centres

during the relevant practical training periods, we also do not know what percentage of the visits are encompassed in this survey. These are important limitations that need to be taken into account when interpreting the findings.

In a study from 2008, it emerged that in the last two-month period Norwegian GPs had an average of around one visit every two weeks by a representative (1). However, there has been a significant decrease in the number of pharmaceutical representatives in Norway over the last 15 years; 792 were registered in 2002, but only 433 in 2016, which is a decrease of 45 % (personal communication, Lisa Bergstad, LMI, 13 September 2016).

The drop in the number of pharmaceutical representatives is likely to mean fewer visits by representatives at GP surgeries. This probably partly explains why we were unable to register as many visits in this survey as in the 2001–02 study (6).

Another possible explanation may be that students' trainers may have become somewhat more restrictive with regard to meeting pharmaceutical representatives at the surgery. Doctors who sign up to be a trainer normally do so due to their dedication to their field. This may mean that they are also more concerned than average with taking independent responsibility for staying professionally up to date. We are aware that several of them no longer meet with pharmaceutical representatives.

Whether or not the transition from a paper version of the questionnaire (2001–02) to our corresponding electronic questionnaire may have contributed to a higher non-response rate is open to question, but we do not consider this to be particularly likely.

In this study, many of the results are based on the student's *perception* of the meeting with a pharmaceutical representative at the GP surgery. It may be that some students are so sceptical in general about the pharmaceutical industry that this influenced their perception of the visit and thus also the results of the survey.

By the end of the study, most of the medical students have some kind of contact with the pharmaceutical industry. A study conducted among Norwegian fifth-year and sixth-year medical students in Norway and in Hungary/Poland in 2008–09 showed that 74 % of them had had varying degrees of contact (meeting or conversation with a representative) with the pharmaceutical industry (13). The students in Poland and Hungary had actually had the least contact with the pharmaceutical industry.

Such contact is, however, associated with *more* positive attitudes to the industry's marketing and a corresponding lack of belief that interactions with the pharmaceutical industry may have negative implications (14). Six out of ten Norwegian medical students reported having a positive or neutral relationship with the pharmaceutical industry (13). The remainder stated that they were critical to having connections with the industry, and the authors have discussed whether this could be related to the national decision in 2005 for 'the teaching in the medical degree programme to be organised without the financial or practical involvement of private companies or industry' (15). The pharmaceutical industry also no longer has the opportunity to arrange meetings with medical students at Norwegian universities (13).

Although some of the answers to the questions in our study are based on the students' discretion, we have no grounds to assume that our students had particularly biased perceptions of the pharmaceutical industry that may have

influenced their discretionary assessments.

It is also conceivable that another limitation of the survey was that the student and not the general practitioner assessed the visit by a representative. Medical students are inexperienced in clinical general practice and probably have less knowledge about the medications presented than an experienced general practitioner. It would therefore be reasonable to assume that they would have a strong interest in the representatives' presentation. However, they actually judged the learning outcome of attending a visit by a pharmaceutical representative to be below average, as in the study from 2001–02 (6). There is little reason to believe that the medical students' way of assessing the medical content should be different today than 15 years ago. A critical attitude to presented information remains something that is strongly emphasised in the medical degree programme in Oslo.

Both this and other corresponding studies indicate that doctors cannot rely on information from the pharmaceutical industry alone in order to stay abreast of advancements in medications. Although LMI stipulates that representatives should give doctors enough information about a medication to enable them to make an accurate assessment of its therapeutic value in a prescribing situation (8), it is important to emphasise that the industry is *not* part of the health service.

The pharmaceutical representatives' main task is to sell their products and to increase the market share of the medications they promote. The information presented by the representatives must be interpreted in light of this. Doctors therefore need manufacturer-independent information about pharmaceuticals.

One example of such information is the *Nytt om legemidler* feature in the Journal of the Norwegian Medical Association, where the Norwegian Medicines Agency gives information about both old and new medications. Norwegian general practitioners also frequently use other independent sources of information about medications, such as the Norwegian Medicines Manual for Health Personnel, the Norwegian Electronic Medical Handbook, the Knowledge Centre for the Health Services and RELIS, a national network of regional drug information centres.

However, if the pharmaceutical representatives are to adhere to the marketing standard set by their own trade organisation (8), major improvements still need to be made.

The article is a revised version of the former medical student Jeanette Cooper's dissertation from the autumn of 2016 at the University of Oslo. We would like to thank all of the students who completed the questionnaire.

LITERATURE

1. Høye S, Straand J, Brekke M. Hvordan holder allmennleger seg oppdatert om legemidler? Tidsskr Nor Laegeforen 2008; 128: 2692 - 5 [PubMed].. [PubMed]
2. Aasland OG, Førde R. Legers holdninger og praksis i forhold til legemiddelindustrien. Tidsskr Nor Laegeforen 2004; 124: 2603 - 6 [PubMed].. [PubMed]
3. Lieb K, Scheurich A. Contact between doctors and the pharmaceutical industry, their perceptions, and the effects on prescribing habits. PLoS One 2014; 9: e110130. [PubMed][CrossRef]

4. Solhaug HR, Indermo H, Slørdal L et al. Skriftlig legemiddelreklame–til å stole på? Tidsskr Nor Laegeforen 2006; 126: 1314 - 7 [PubMed].. [PubMed]
 5. Gladsø KH, Garberg HR, Spigset O et al. Skriftlig legemiddelreklame–fremdeles ikke til å stole på? Tidsskr Nor Legeforen 2014; 134: 1563 - 8. [PubMed][CrossRef]
 6. Straand J, Christensen IJ. Kvaliteten på legemiddelkonsulentbesøk i allmennpraksis. Tidsskr Nor Laegeforen 2008; 128: 555 - 7 [PubMed].. [PubMed]
 7. Rørtveit G. Legene og legemiddelindustrien–nok en gang. Tidsskr Nor Laegeforen 2008; 128: 553 [PubMed].. [PubMed]
 8. Kormeset PO. Om legemiddelkonsulenter og legemiddelinformasjon. Tidsskr Nor Laegeforen 2008; 128: 1684 - 5 [PubMed].. [PubMed]
 9. MedCalc® statistical software.
https://www.medcalc.org/calc/comparison_of_proportions.php(1.11.2017).
 10. Horton R. Vioxx, the implosion of Merck, and aftershocks at the FDA. Lancet 2004; 364: 1995 - 6. [PubMed][CrossRef]
 11. Mintzes B, Lexchin J, Sutherland JM et al. Pharmaceutical sales representatives and patient safety: a comparative prospective study of information quality in Canada, France and the United States. J Gen Intern Med 2013; 28: 1368 - 75. [PubMed][CrossRef]
 12. Lexchin J. What information do physicians receive from pharmaceutical representatives? Can Fam Physician 1997; 43: 941 - 5 [PubMed].. [PubMed]
 13. Lea D, Spigset O, Slørdal L. Norwegian medical students' attitudes towards the pharmaceutical industry. Eur J Clin Pharmacol 2010; 66: 727 - 33. [PubMed][CrossRef]
 14. Austad KE, Avorn J, Kesselheim AS. Medical students' exposure to and attitudes about the pharmaceutical industry: a systematic review. PLoS Med 2011; 8: e1001037. [PubMed][CrossRef]
 15. Referat fra nasjonalt utdanningsmøte 20.10.2005. Trondheim: Norges teknisk-naturvitenskapelige universitet. <http://docplayer.me/13556056-Torsdag-20-oktober-2005-kl-10-00-16-00-i-laboratoriesenteret-moterom-lm-22.html> (1.11.2017).
-

Publisert: 8 January 2018, Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.17.0078

Received 23.1.2017, first revision submitted 12.6.2017, accepted 17.11.2017.

© Tidsskrift for Den norske legeforening 2026. Downloaded from tidsskriftet.no 9 February 2026.