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Educational initiatives for medical and pharmacy students about drug promotion:

an international cross-sectional survey

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This survey report is the first outcome of the project. The second outcome will be a practical guide for medical and pharmacy students on understanding and responding to pharmaceutical promotion. The guide will be tested by students in 2006. WHO and HAI intend to publish and distribute the manual to all medical and pharmacy schools worldwide in mid-2007.

Executive summary

Introduction

Increasing attention is being paid to the relationship between health professionals and the pharmaceutical industry. Education of medical and pharmacy students has a crucial role to play in preparing future practitioners to respond appropriately to drug promotion. This is the first international survey to examine the extent to which medical and pharmacy students are being educated about drug promotion.

Methods

A global list of pharmacy and medical schools was developed based on relevant Internet sites as well as information supplied by the World Health Organization (WHO). Deans of these institutions were contacted from July to December 2004 to ask whether or not the institutions were educating students about drug promotion (e.g. critical evaluation and responses to promotion); if so, contact information for educators was requested. Additionally, notices were placed on e-mail listserves with a focus on pharmaceutical policy or drug promotion.

A more detailed questionnaire was sent to educators between January and April 2005. The questionnaire covered the following issues: amount of time spent on this type of education, placement in the curriculum, types of promotional activities, regulatory and ethical issues covered, educational techniques, materials developed, evaluation, judgment of success and identification of barriers to success. English, French and Spanish versions of the questionnaire were produced. Non-respondents received up to two follow-up questionnaires at 10-day intervals. Replies were included if they reported educating medical or pharmacy students about responses to any aspect of drug promotion. Those only reporting education about how to promote products, for example training for sales representatives, were excluded. The analysis of results is descriptive. Responses were classified by health profession (pharmacy or medicine) and by location within a WHO region. Exploratory chi square analysis was carried out to identify potential differences between pharmacy and medical faculty responses, using EpiInfo 2000. These differences should be interpreted as generating hypotheses for further study.

Results

The initial faxed survey reached 1014 medical and pharmacy faculties in 110 countries. We received 710 contact names in 91 countries from the initial faxed query and e-mail listserve postings. Of these, 564 were individuals involved in education on drug promotion. We sent a detailed questionnaire to all of them. Two hundred and sixty two (46%) responded, of whom 34 (13%) were excluded (duplicates or not teaching about drug promotion). Results are based on 228 respondents from 64 countries, 91 from pharmacy schools and 137 from medical schools. Responses were classified by WHO region. There were 92 respondents from Europe,

56 from the Americas, 31 from the Western Pacific, 20 each from Africa and South-East Asia, and 9 from the Eastern Mediterranean.

Nearly three-quarters of respondents, 165 (72%), reported that education about drug promotion is part of the required curriculum at their institution, and over half reported more than one type of course on promotion. However, nearly one-third of medical and one-fifth of pharmacy respondents reported only 1-2 hours of education on promotion within the required curriculum. Total reported educational time, in all types of courses, was significantly greater at pharmacy than medical schools: 50 (55%) reported more than 10 hours of education on promotion in total, as compared with 39 (28%) of medical faculty respondents.

Over half the respondents were educating students on one or more of the following issues: advertisements, sales representatives, sponsored conferences and seminars, promotional 'research', gifts and industry funded journals. More pharmacy than medical respondents covered promotion on the Internet (59% vs. 29%) and patient requests for advertised medicines (50% vs. 33%).

Three-quarters of respondents, 170 (75%) covered the regulation and/or ethics of drug promotion, with the highest proportion of these reporting that they discussed national government regulation of promotion, followed by professional codes, and the ethics of interactions with the industry.

The most commonly reported educational technique was lectures, 192 (84% overall), followed by small group discussions in tutorials and workshops (65%). Those who allocated one-half day or less to education on drug promotion were highly likely to list lectures as the only type of educational technique used. Most of those spending 10 hours or more used small group discussions as well as lectures, and more than half also carried out critical analyses of sample advertisements.

The involvement of sales representatives in education can help students to better understand the types of promotional techniques used and to respond appropriately. Only 15% of respondents involved sales representatives, more often pharmacists than physicians: 20% vs. 12%.

The survey included questions on what educators were aiming to achieve: the most common aims were to teach critical appraisal of promotion, increase students' use of independent information sources, and to improve prescribing or dispensing after graduation. As one medical educator from the Americas stated, "*I am trying to open their eyes so they can see for themselves and will be more sceptical in the future.*"

Inclusion of questions on drug promotion in student examinations provides a signal that the topic is considered important. Overall, half of respondents said that questions on promotion were included in exams, but this was much more frequent among pharmacy than medical faculty respondents: 68% vs. 37%. Only a small minority of educators systematically evaluated the effectiveness of education: 19% overall. This was most often a written or oral course appraisal soliciting students' opinions about a session (15% of respondents). Effects on behaviour and longer-term outcomes were rarely being evaluated.

What was respondents' judgment of the degree of success of education on drug promotion in meeting its intended goals? There was no difference in the likelihood that pharmacy or medical faculty respondents judged the programme to be successful. However, those devoting at least 4 hours to education were more likely to judge their work to be at least somewhat successful than those devoting a half day or less: 70% vs. 41%. The most frequently cited barrier was lack of integration into the curriculum, followed by inadequate time allocation, lack of continuation during clinical training, and lack of interest from other university faculty. Those who spent 4 hours or less on the issue were more likely than others to judge inadequate time allocation as a barrier to success.

Respondents were asked what types of course materials they had developed. The most common type listed was PowerPoint presentations (55%). Course materials were rarely available on the Internet, and usually only in sites with limited access.

Discussion and conclusions

The results of this survey provide a first environmental scan of the aims and extent of education about drug promotion within medical and pharmacy faculties. In most cases, education on promotion was included within the required curriculum, but students devoted one half day or less to this topic during their professional training; in nearly one-third of cases, medical faculties devoted only 1-2 hours, often within a broader course on pharmacology, clinical pharmacology or therapeutics. Those spending less time on the topic were less likely to use interactive educational techniques, to include questions on drug promotion in examinations, or to judge the education to be successful.

The content of coursework was remarkably similar by health profession and region, with a primary focus on critical appraisal skills, followed by sales representatives. Few respondents mentioned education on how to respond to patient requests for advertised drugs, although direct-to-consumer advertising of prescription drugs and other promotional techniques targeting the public, such as video news releases or celebrity endorsements, are becoming increasingly prevalent. There were few differences by WHO region in content or approach to this education; this lack of overall difference may reflect the wide variety of national experiences within as well as between regions.

Although these survey results are exploratory, they provide a snapshot of the type of education that is being provided, subject matter, techniques and aims. The number of responses far outweighed the published literature describing educational initiatives for medical and pharmacy students on drug promotion. On the other hand, the respondents often described a single one or two hour lecture. Lack of integration and inadequate time allocation were frequently mentioned as barriers to success.

In conclusion, we found that many medical and pharmacy educators recognize the need for education about drug promotion and have incorporated this topic into their work, often integrating it into curricula on therapeutics, pharmacology, or professional ethics. Although many barriers to success were identified, there was broad interest in further development and work in this area.

Introduction

Increasing attention is being paid to the relationship between health professionals and the pharmaceutical industry, and the role of drug promotion in prescribing, dispensing and drug use decisions.(Anon, 2001; Wazana, 2000) Education of medical and pharmacy students has a crucial role to play in preparing future practitioners to respond appropriately to drug promotion and to ensure that their own interactions with the pharmaceutical industry meet a high ethical standard and are consistent with regulatory norms. This is the first study to examine the extent to which medical and pharmacy students are being educated about drug promotion.

With the global withdrawal of rofecoxib (Vioxx®) in September 2004, potential negative public health implications of promotion received extensive media attention. Rofecoxib was no more effective than alternative non-steroidal anti-inflammatory drugs in treating the symptoms of arthritis (Garner, Fidan, Frankish and Maxwell 2005). It was largely promoted as safer. However, the first study to establish gastro-intestinal benefits, published in 2000, also found an increased risk of heart disease (Bombardier, 2000). Additional evidence of cardiac toxicity eventually led to the product's global withdrawal. Rofecoxib's success is a testament to the triumph of marketing over science: a drug that was no more effective, riskier and much more expensive than alternatives reached and maintained blockbuster status – with over 80 million prescriptions worldwide – although during four of its five years on the market evidence existed of an unfavourable balance of benefit versus risk. A U.S. congressional investigation describes the 'spin' used by sales representatives to avoid presenting evidence concerning cardiac risks to the health professionals they visited (Waxman, 2005). In an extrapolation based on clinical trial evidence and the rate of rofecoxib use, David Graham, a senior FDA official, estimated a U.S. death toll of 35,000 and 45,000 (Graham, 2005).

In terms of the public health consequences of drug promotion, rofecoxib's success is undoubtedly an extreme case. However, it highlights the need to ensure that health professionals are adequately prepared to evaluate promotional claims, and to assess and understand interactions with the pharmaceutical industry. Health Action International (HAI) and WHO carried out an international survey of medical and pharmacy faculties on initiatives to educate students about drug promotion. The aim was to undertake an 'environmental scan' to find out what students are being taught and any evaluation of the effectiveness of this education. The survey covered all aspects of drug promotion, including the role of advertisements, samples, gifts and the use of opinion leaders on medical and pharmacy practice, research, ethical issues, regulation, and how to evaluate marketing materials in order to make the right decisions for patient care (Garner, 2005).

Methods

A global list of pharmacy and medical schools was developed based on relevant Internet sites[i] as well as information supplied by the WHO. An initial form was developed in English, French and Spanish asking whether or not the institution was educating students about drug promotion (e.g. critical evaluation and responses to promotion); if so, contact information for educators was requested. These initial requests were sent by fax to the offices of deans of medicine or pharmacy, between July 2004 and December 2004. If there was no initial response, the fax was repeated two additional times. Additionally, notices were placed on e-mail list-serves with a focus on pharmaceutical policy or drug promotion, such as e-drug, e-med, nofreelunch, and haieuropromo, requesting contact information for those involved in education about drug promotion.

Based on a series of review articles developed from the WHO/HAI drug promotion database on interactions between health professionals and the pharmaceutical industry and on educational initiatives to date, a draft questionnaire was prepared (author: BJM). This questionnaire was circulated for comment to an international team of physicians and pharmacists with experience and expertise in education on drug promotion. The questionnaire covered the following issues: amount of education, placement in the curriculum, types of promotional activities, regulatory and ethical issues covered, educational techniques, materials developed, evaluation, judgment of success and identification of barriers to success. See Appendix I for a copy of the questionnaire.

The questionnaire was produced in English and translated into French and Spanish. It was sent out by e-mail whenever possible, or by fax. The survey was carried out from January to the end of April 2005. Non-respondents received up to two follow-up questionnaires at 10-day intervals.

Responses were included if respondents stated that they educated medical or pharmacy students about drug promotion (any aspect) within the required curriculum, elective courses, specialty/residency training, and/or in other ways, such as workshops or seminars. Responses were excluded if they reported on education about how to promote products, for example within a course preparing them to work as a sales representative for a pharmaceutical company. If duplicate entries were received describing the same course provided by the same institution, the information provided was compiled into a single entry (duplicate responses excluded).

A random sample of 20% of questionnaires was checked for data entry errors. The error rate was less than 1% (0.68%) and errors were mainly concentrated on specific questions. These questions were checked and corrected, as needed, on all of the questionnaires.

The analysis of results is descriptive. Responses were classified by health profession (pharmacy or medicine) and by location within a WHO region. Exploratory chi square analysis was carried out to identify potential differences between pharmacy and medical faculty responses, using EpiInfo 2000. These differences should be interpreted as generating hypotheses for further study, rather than necessarily being indicative of broader underlying trends.

Results

The initial faxed survey reached 1014 medical and pharmacy faculties in 110 countries. Another 1047 potential respondents (43 additional countries) could not be reached because of incorrect contact information and fax transmission difficulties.

Table 1: Initial faxed survey to request names of educators: who did we contact?

	Medical faculties	Pharmacy faculties	Total
Contact information available for faculty	**1532** **153 countries**	**548** **82 countries**	**2061** **153 countries**
Number of faculties successfully contacted *	741 (48%)	273 (50%)	1014 (49%)
Number of countries in which one or more faculties were contacted*	107 (70%)	47 (57%)	110 (72%)

*Fax or and/or e-mail transmission went through successfully within three attempts

We received 710 contact names in 91 countries from the initial faxed query and from e-mail list-serve postings in which we asked for names of contacts who were educating medical or pharmacy students about drug promotion. These are described in Table 1a.

Of these 710 responses, 564 were names of individuals who were involved in education on drug promotion; the remaining 146 were responses stating that the medical or pharmacy faculty was not involved in education about drug promotion. Messages on listserves led to 94 responses, 58 of whom responded to an initial query by sending us contact names. These are included in the breakdown by region in Table 1a.

Table 1a: Responses to initial fax survey, by WHO region and whether education about drug promotion was provided

WHO Region	Promotion on curriculum?		Total responses
	Yes	No	
Europe	258/320 (81%)	62/320 (19%)	320
Americas	119/143 (83%)	24/143 (17%)	143
W. Pacific	68/102 (67%)	34/102 (33%)	102
Africa	43/50 (86%)	7/50 (14%)	50
E. Mediterranean	35/50 (70%)	15/50 (30%)	50
S.E. Asia	41/45 (91%)	4/45 (9%)	45
Total	**564**	**146**	**710**

We faxed a detailed questionnaire (see Appendix 1) to these 564 contacts, 199 of whom were educators in schools of pharmacy, 333 in schools of medicine and 28 unsure (for example in colleges of health sciences; further information required for clarification). The remaining four were consumer or public interest group contacts.

There were 262 responses (46%). Thirty-four (13%) of these were excluded, either because they were duplicate responses describing a single course (n=12), they were not involved in

any education on drug promotion (n=18), they were only educating students about how to be sales representatives (n=2), or they were not involved in education of medical or pharmacy students (n=2).

The results below are based on the 228 respondents from 64 countries who stated that they or their institution were involved in educating medical or pharmacy students about drug promotion in one or more ways.

Sample characteristics

Table 1b describes the breakdown of respondents by WHO region and whether they were educators in a pharmacy or medical faculty. For full country listings and a breakdown of countries per WHO region, see pages 41 and 42.

Table 1b: Responses to survey questionnaire by WHO region

	Pharmacy	Medical	Total	Response rate*
Europe	22 (24%)	70 (51%)	92 (40%)	92/258 (36%)
Americas	30 (33%)	26(19%)	56 (25%)	56/119 (47%)
Western Pacific	10 (12%)	21(15%)	31 (14%)	31/68 (46%)
Africa	12 (13%)	9 (6%)	20 (9%)	20/43 (47%)
South-East Asia	9 (10%)	11 (8%)	20 (9%)	20/41 (49%)
Eastern Mediterranean	8 (9%)	1 (1%)	9 (4%)	9/35 (26%
Total	**91 (100%)**	**137 (100%)**	**228 (100%)**	**228/564 (40%)**

* proportion of those who were sent the survey questionnaire ('yes' column, Table 1 above)

How is education on drug promotion included within the curriculum?

Nearly three-quarters of respondents reported that education about drug promotion is part of the required curriculum at their institution, and over half reported more than one type of course on promotion, for example both inclusion within the required curriculum and within an elective or specialty/residency training. (Table 2) As noted in Table 2a, inclusion in most cases within the required curriculum was the norm rather than the exception across different regions. However these findings cannot be confidently generalized to non-respondents because institutions which do not provide education about drug promotion may have tended not to respond to our questionnaire.

Table 2: Educational activities*

	Pharmacy n=91	Medical n=137	Combined n=228
Part of the required curriculum	64 (70%)	101 (74%)	165 (72%)
Included within an elective course	29 (32%)	32 (23%)	61 (27%)
Within specialty/residency training	21 (23%)	38 (28%)	59 (26%)
In other ways	44 (48%)	63 (46%)	107 (47%)
How many types of courses were listed?			
One	37 (41%)	71 (52%)	108 (47%)
Two	42 (46%)	38 (28%)	80 (35%)
Three or four	12 (13%)	28 (20%)	40 (18%)

*Note: for list of names of courses and types of specialties, see page 44

Table 2a: Educational activities by region

	Europe (n=92)	Americas (n=56)	W Pacific (n=31)	Africa (n=20)	SE Asia (n=20)	E Mediterr (n=9)
Part of required curriculum	69 (75%)	36 (64%)	25 (81%)	17 (85%)	13 (65%)	5 (56%)
In elective course	26 (28%)	21 (38%)	5 (16%)	2 (10%)	4 (20%)	3 (33%)
Specialty/residency training	25 (27%)	14 (25%)	4 (13%)	6 (30%)	6 (30%)	4 (44%)
In other ways	37 (40%)	32 (57%)	13 (42%)	10 (50%)	12 (60%)	3 (33%)
How many types of courses were listed?						
One	45 (49%)	22 (39%)	19 (61%)	8 (40%)	10 (50%)	4 (44%)
Two	32 (35%)	22 (39%)	8 (26%)	9 (45%)	5 (25%)	4 (44%)
Three or four	15 (16%)	12 (21%)	4 (13%)	3 (15%)	5 (25%)	1 (11%)

Amount of education

Table 3 describes the amount of time spent in education on drug promotion. Nearly one-third of medical faculty respondents reported only 1 to 2 hours spent on drug promotion within the required curriculum. When promotion was covered within electives, usually a minority of students took the elective. The proportion did not differ between medical and pharmacy faculties.

Table 3: How many hours are spent educating students about drug promotion?

Within the required curriculum	Pharmacy n=91	Medical n=137	Combined n=228
1 to 2 hours	16 (18%)	43 (31%)	59 (26%)
3 to 7 hours	31 (34%)	48 (35%)	79 (35%)
8 or more hours	18 (20%)	11 (8%)	29 (13%)
Promotion not included in required curriculum	*26 (29%)*	*35 (26%)*	*61 (27%)*
Within elective courses	**Pharmacy n=29**	**Medical n=32**	**Combined n=61**
1 to 2 hours	7 (24%)	13 (41%)	20 (33%)
3 to 7 hours	14 (48%)	11 (34%)	25 (41%)
8 or more hours	8 (28%)	8 (25%)	16 (26%)
Elective is the only form of instruction mentioned	*6 (21%)*	*6 (19%)*	*12 (20%)*
How many students take this elective?			
Less than 10%	10 (34%)	11 (34%)	21 (34%)
10-25%	10 (34%)	8 (25%)	18 (30%)
26-50%	5 (17%)	5 (16%)	10 (16%)
More than 50%	3 (10%)	8 (25%)	11 (18%)
In specialty/ residency training	**Pharmacy (n=21)**	**Medical (n=38)**	**Combined (n=59)**
1 to 2 hours	3 (14%)	16 (42%)	19 (32%)
3 to 7 hours	10 (48%)	16 (42%)	26 (44%)
8 or more hours	8 (38%)	6 (16%)	14 (24%)
Specialty/residency training is the only form of instruction mentioned	*2 (10%)*	*4 (10%)*	*6 (10%)*
In other ways	**Pharmacy (n=44)**	**Medical (n=63)**	**Combined (n=107)**
1 to 2 hours	13 (29%)	29 (46%)	42 (39%)
3 to 7 hours	16 (36%)	19 (30%)	35 (33%)
8 or more hours	11 (25%)	8 (13%)	19 (18%)
'Other' is the only form of instruction mentioned	*8 (18%)*	*15 (23%)*	*23 (21%)*

Total reported time spent in education about drug promotion, from all types of courses combined, varied from 1 to 2 hours to over 40 hours. To facilitate analysis, total educational time was categorized into terciles. The lower third consisted of people reporting one half day or less of education about promotion in total; the middle third 4 to 9 hours; and the upper third of those reporting more than 10 hours of education. As shown in Table 3a below, nearly twice as many medical as pharmacy respondents reported educational time in total of one half day or less. There was little difference by region in the breakdown of time allocation.

Table 3a: Total time in education about drug promotion– all types of courses

Educational time by health profession	Pharmacy n=91	Medical n=137*	Combined n=228
One half day or less	18 (20%)	51 (37%)	69 (30%)
> 4 and < 9 hours	23 (25%)	43 (31%)	66 (29%)
10 or more hours	50 (55%)**	39 (28%)	89 (39%)

* 3 responses missing on this question

**pharmacy vs. medical responses differed significantly, p<.05, chi square analysis

Table 3b: Total educational time – by region

Educational time by region	Europe n=92*	Americas n=56*	W Pacific n=31*	Africa n=20	SE Asia n=20	E Mediterr n=9
One half day or less	28 (30%)	18 (32%)	12 (39%)	5 (25%)	4 (20%)	3 (33%)
> 4 and < 9 hours	26 (28%)	18 (32%)	8 (26%)	5 (25%)	7 (35%)	2 (22%)
10 or more hours	37 (40%)	19 (34%)	10 (32%)	10 (50%)	9 (45%)	4 (44%)

* One missing response per region

Types of promotion covered

Table 4 describes the type of promotion covered in educational initiatives, in order of frequency within the combined sample. Table 4a provides a breakdown by region. The large majority of coursework included advertisements, followed by sales representatives. In most cases pharmacy and medical faculty respondents reported that they covered similar types of content. The two exceptions were patient requests for medicines and the use of the Internet by patients: pharmacy faculties had more of an emphasis than medical faculties on these topics. This may in part reflect a much greater influence on pharmacy practice of patient-directed advertising for over-the-counter drugs.

Table 4: What types of promotion are covered in education about drug promotion?

	Pharmacy n=91	Medical n=137	Combined n=228
Advertisements	79 (87%)	111 (81%)	190 (83%)
Sales representatives	66 (72%)	100 (73%)	166 (73%)
Sponsored conferences and seminars	50 (55%)	88 (64%)	138 (61%)
Promotional 'research'	54 (59%)	81 (59%)	135 (59%)
Gifts	47 (52%)	76 (56%)	123 (54%)
Industry-funded medical or scientific journals	47 (52%)	68 (50%)	115 (50%)
Use of 'opinion leaders'	41 (45%)	69 (50%)	110 (48%)
Industry-funded research published in peer-reviewed journals	46 (51%)	62 (45%)	108 (47%)
Free samples	48 (53%)	59 (43%)	107 (47%)
Use of the Internet for promotion*	54 (59%)	39 (29%)	93 (41%)
Patient requests for advertised drugs*	45 (50%)	45 (33%)	90 (40%)
Other	10 (11%)	16 (12%)	26 (11%)

* pharmacy and medical school responses differed significantly, p<.05, chi square analysis

Table 4a: Types of promotion covered – by region

	Europe (n=92)	Americas (n=56)	W Pacific (n=31)	Africa (n=20)	SE Asia (n=20)	E.Mediterr (n=9)
Advertisements	75 (82%)	49 (88%)	26 (84%)	17 (85%)	17 (85%)	6 (67%)
Sales representatives	66 (72%)	44 (79%)	23 (74%)	16 (80%)	13 (65%)	4 (44%)
Free samples	32 (35%)	34 (61%)	16 (52%)	14 (70%)	8 (40%)	3 (33%)
Use of 'opinion leaders'	45 (49%)	31 (55%)	19 (61%)	8 (40%)	6 (30%)	1 (11%)
Sponsored conferences and seminars	53 (58%)	34 (61%)	23 (74%)	13 (65%)	11 (55%)	4 (44%)
Promotional 'research'	52 (57%)	40 (71%)	19 (61%)	13 (65%)	10 (50%)	1 (11%)
Gifts	44 (48%)	35 (63%)	21 (68%)	11 (55%)	10 (50%)	2 (22%)
Patient requests for advertised drugs	25 (27%)	35 (63%)	11 (36%)	9 (45%)	6 (30%)	4 (44%)
Use of the Internet for promotion	34 (37%)	24 (43%)	12 (39%)	12 (60%)	6 (30%)	5 (56%)
Industry-funded medical or scientific journals	50 (54%)	32 (57%)	13 (42%)	8 (40%)	9 (45%)	3 (33%)
Industry-funded research in peer-reviewed journals	40 (44%)	32 (57%)	17 (55%)	10 (50%)	6 (30%)	3 (33%)

Table 4b: Explanation for 'other'

Africa	
Medical	Animation of continuing education (CE) lectures by experts from drug companies or importers
Americas	
Pharmacy	Marketing techniques used to promote products Publications of the public university Trips/vacations abroad including other entertainment activities
Medical	Use of patient advocacy groups Politics and the pharmaceutical industry Where to find unbiased (or at least less biased) information on drugs Ghostwriting, scandals, lobbying We do NOT have a comprehensive approach to this subject
Europe	
Pharmacy	Criteria for rational use Communication in marketing
Medical	Direct-to-consumer advertising (DTCA) We are teaching to chose the prescribing drugs according to evidence-based studies in literature and to compare the prices of drugs in different and same groups Research promotion: use of case studies such as rofecoxib (VIOXX) from *arzneimitel telegramm*, *Washington Post*, to learn about manipulation of data Poll on actual practice/market survey "ABC of marketing techniques" Mass media spin, contacts with political organizations, Lobbying activities Choice of analysis method, intention-to-treat vs. per protocol, choice of endpoint, generalizability
South-East Asia	
Pharmacy	how to evaluate advertisements in patient information
Medical	We just make general statements touching all the above subjects
Western Pacific	
Pharmacy	Trade shows, direct marketing Communication in marketing
Medical	Encouragement of disease awareness Expansion of disease definitions & scope to increase indications for drugs (disease 'creation') Company sponsorship of attendance in local and international conferences DTCA
E. Mediterranean	
Pharmacy	Evaluate promotion literature, ethics of promotion, dealing with sales representatives

Regulation and ethics of drug promotion

Three-quarters of respondents reported that they covered the regulation and/or ethics of drug promotion, with the highest proportion of these reporting that national government regulation of promotion was covered (see Table 5). There was little coverage of international standards such as the *WHO Ethical Criteria for Medicinal Drug Promotion* or the *International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) Code of Marketing Practices*. Many countries do not have a functioning drug regulatory agency or other national private or public sector organizations responsible for overseeing drug promotion. However, companies that are members of the IFPMA, the international pharmaceutical industry association, are subject to the IFPMA Code.

Table 5a describes responses by region. Differences would be expected by region, given the differences in national approaches to regulation and/or resources available for drug regulation. It is unsurprising, for example, that fewer European respondents mentioned the IFPMA Code than respondents from Africa, as in Europe national regulations are more likely to be in place.

Table 5: Regulation and ethics of drug promotion

	Pharmacy n=91	**Medical n=137**	**Combined n=228**
Are regulation and ethics covered?	70 (77%)	100 (73%)	170 (75%)
No response	*4 (5%)*	*5 (4%)*	*9 (4%)*
By region			
Africa	11 (92%)	7 (88%)	18 (90%)
Western Pacific	7 (70%)	20 (95%)	27 (87%)
Americas	23 (77%)	21 (81%)	44 (79%)
South-East Asia	7 (78%)	8 (73%)	15 (75%)
Europe	17 (77%)	45 (64%)	62 (67%)
Eastern Mediterranean	5 (63%)	0	5 (56%)
Types of regulation covered	**Pharmacy n=91**	**Medical n=137**	**Combined n=228**
National government regulation of promotion*	62 (68%)	66 (48%)	128 (56%)
Professional codes on interactions w/ industry	52 (58%)	62 (45%)	114 (50%)
Ethical issues – interactions with industry	40 (44%)	59 (43%)	99 (43%)
National industry self-regulatory codes	32 (35%)	32 (23%)	64 (28%)
WHO Ethical Criteria	20 (22%)	27 (20%)	47 (21%)
IFPMA Code of Marketing Practices	11 (12%)	7 (5%)	18 (8%)
Other	2 (2%)	10 (7%)	12 (5%)

Most responses to 'other' specified categories above, such as the American Medical Association code, Swedish Regulatory Committee, etc. ; one on gifts (ethical)

* pharmacy and medical school responses differed significantly, p<.05

Table 5a: Types of regulation covered – by region

	Europe (n=92)	Americas (n=56)	W. Pacific (n=31)	Africa (n=20)	SE Asia (n=20)	E. Mediterr (n=9)
National government regulation of promotion	51 (55%)	31 (55%)	19 (61%)	13 (65%)	10 (50%)	4 (44%)
Professional codes on interactions w/ industry	41 (45%)	37 (66%)	15 (48%)	12 (60%)	7 (35%)	2 (22%)
Ethical issues – interactions with industry	31 (34%)	30 (54%)	22 (71%)	11 (55%)	3 (15%)	2 (22%)
Industry self-regulatory codes	23 (25%)	20 (36%)	11 (36%)	6 (30%)	3 (15%)	1 (11%)
WHO Ethical Criteria	12 (13%)	7 (13%)	7 (23%)	9 (45%)	10 (50%)	2 (22%)
IFPMA Code of Marketing Practices	5 (5%)	3 (5%)	3 (10%)	3 (15%)	4 (20%)	0

Educational techniques

Table 6 describes the types of educational techniques used, in order of frequency of reports. Lectures and small group discussions in tutorials or workshops were the most frequently reported educational techniques. Similar proportions of pharmacy and medical school respondents reported using each of the listed techniques.

Table 6: Types of educational techniques

	Pharmacy n=91	Medical n=137	Combined n=228
Lectures	82 (90%)	110 (80%)	192 (84%)
Small group discussions in tutorial/workshop	58 (64%)	89 (65%)	147 (65%)
Critical analysis of sample advertisements	42 (46%)	57 (42%)	99 (43%)
Response to case scenarios	25 (28%)	35 (26%)	60 (26%)
Role playing	13 (14%)	14 (10%)	27 (12%)
Other	11 (12%)	16 (12%)	27 (12%)

Table 6a describes the types of techniques used by total reported educational time. There were no significant differences in the proportion who reported using lectures, role playing or response to case scenarios by the amount of time allocated to educational initiatives. The proportion reporting use of small group discussions in tutorials or workshops and critical analysis of sample advertisements did differ, with less use of these techniques among those educating for one half day or less.

Table 6a: Educational techniques used – by time allocated to education about promotion

	One half day or less (n=69)	Four to nine hours (n=66)	10 or more hours (n=89)
Lectures	55 (80%)	55 (83%)	78 (88%)
Small group discussions in tutorial/workshop	26 (38%)	43 (65%)	75 (84%)
Critical analysis of sample advertisements	15 (22%)	33 (50%)	49 (55%)
Response to case scenarios	12 (17%)	17 (26%)	30 (34%)
Role playing	4 (6%)	12 (18%)	10 (11%)
Other	7 (10%)	8 (12%)	11 (12%)

Table 6b lists the educational techniques described other than those listed in the questionnaires.

Table 6b: If they marked "other", what did they say?

Africa	
Pharmacy	Attachment to a Drug Information Service in order to respond to various types of queries involving drug literature evaluation
Medical	Critical analysis of materials given to health professionals by sales representatives
Americas	
Pharmacy	Clerkship rotation for 2-3 students a year Field or video observation Small group discussions on experiential rotation Written assignment necessitating research of DTCA. Students report back on pros and cons and then indicate and defend their position on the practice (referenced)
Medical	Debates with pharmaceutical representatives/executives on the topics of drug promotion, and clinical research ethics/publication bias Formal evaluation of an interaction with a sales representative in a large group format One activity involves a panel discussion with faculty and pro- and anti-industry representation. Another activity drug company representatives detail a faculty member in front of students, which leads to discussion
Europe	
Pharmacy	Evaluations of research articles from peer-reviewed journals Individual advice
Medical	Case studies, e.g. rofecoxib, videos about pharm representatives from UK, India, Australia Problem-based group discussions; discussions following lectures WHO video plus exercises
South-East Asia	
Pharmacy	Practice to explore some information by computer (internet)
Medical	By auditing prescriptions the students can get an idea about how many drugs are prescribed as innovator brands, rather than generics Course is problem-based Learning course. Begins with small group discussion in response to case scenario, followed by mini lecture and Q and A from student's learning objectives set during small group discussion session Fixed learning material. Students are given ads, WHO and national ethical criteria, and the British National Formulary and asked to compare and contrast
Western Pacific	
Pharmacy	Small group assignments and projects Develop a set of guidelines for Australian pharmacists and their interactions with the industry during a practical session
Medical	Analysing impact of funding agency or sponsoring agency or affiliation of authors especially if it involves pharmaceutical industry during critical appraisal or published literature involving drug trials Clinical attachments Opportunistic discussions on ward rounds and in clinics Provision of current references from literature

Involvement of pharmaceutical sales representatives

Given the importance of pharmaceutical sales representatives in terms of promotional spending, involvement of representatives in the course can help students to better understand the types of promotional techniques that are used and to respond appropriately. Interestingly, fewer physicians than pharmacists reported use of sales representatives. The rate at which sales representatives were included in course work increased with increasing teaching time. Table 7a describes how sales representatives were involved.

Table 7: Involvement of sales representatives

Group	Sales reps involved n (%)
Entire sample (n=228)	33 (15%)
Pharmacy (n=91)	17 (20%)
Medical (n=137)	16 (12%)
Time allocated to education	
Half day or less (n=69)	6 (9%)
4-9 hours (n=66)	10 (15%)
More than 10 hours (n=89)	17 (19%)
Region	
Europe (n=92)	11 (12%)
Americas (n=56)	14 (25%)
Western Pacific (n=31)	3 (10%)
South-East Asia (n=20)	3 (15%)
Africa (n=20)	1 (5%)
E. Mediterranean (n=9)	1 (11%)

Table 7a: How are representatives involved?

Africa	
Pharmacy	They are brought onto campus and talk about their products and then these are evaluated by staff afterwards
Americas	
Pharmacy	A promotional presentation by a rep is given and then we discuss what and how they presented Clinical education consultants discuss outcomes research Involved when conferences and seminars are organized Not involved directly but an industry drug information pharmacist lectured about some aspects to pharmacy students One or more guest lectures a year Reps discuss day-to-day activities as well as non-proprietary techniques used in their interactions with healthcare professionals Reps invited to discuss role of manufacturer in providing drug information to pharmacists and physicians. Promotion is not directly addressed but some of the issues are discussed - Pharmaceutical Advertising Advisory Board , Code of Manufacturing Practice.
Medical	Debate format, or round-table discussion format Drug company reps detail a faculty member in front of students, which leads to discussion Drug Fair - organized meeting with sales reps We have pharmacists play the role of sales reps Panel discussion They participate in a process in which we formally evaluate them

South-East Asia	
Pharmacy	In our pharmaceutical courses, our institution provides courses involving roles of pharmacist as pharmaceutical representatives. Multinational pharmaceutical company reps are invited as guest lecturers.
Medical	Invite guest speakers
Europe	
Pharmacy	A pharmacy marketing course given by a industry specialist Former students One and a half hour intervention by people working in the pharmaceutical industry Invitations of sales reps to explain their promotional strategies
Medical	A rep from Aventis addresses the group MPs Pharmaceutical Marketing No, but Pharma industry otherwise heavily involved in this course Brief seminars (seminaires de courtes durees) Sometimes a teacher is present in promotional situations to medical students They explain their point of view They are invited to attend a round-table debate on specific issues Simulated sales rep visits [visitador simulado]
Western Pacific	
Pharmacy	The elective students take an eight week practical training course at a pharmaceutical company in their third year summer vacation
Medical	Role play of detailing. Answering student questions about drug industry Role plays with supervision
Eastern Mediterranean	
Pharmacy	Invitation of sales representatives from pharmaceutical industry

Main objectives for education about drug promotion

Table 8 describes what the educators were aiming to achieve in educating pharmacy and medical students about drug promotion. The most common goals were critical appraisal of promotion, increased use of independent information sources, and improvements in prescribing or dispensing. There were some differences by health profession, with for example more pharmacy than medical respondents aiming to educate students about how to obtain beneficial information from drug promotion. Table 8a provides a breakdown by region.

Table 8: Main objectives

	Pharmacy n=91	Medical n=137	Combined n=228
Teach critical appraisal of drug promotion	71 (78%)	105 (77%)	176 (77%)
Increase students' use of independent information sources	71 (78%)	103 (75%)	174 (76%)
Improve prescribing or dispensing behaviour after graduation*	42 (46%)	104 (76%)	146 (64%)
Expose students to different perspectives*	60 (66%)	59 (43%)	119 (52%)
Increase students' ability to extract beneficial information from drug promotion*	48 (53%)	50 (37%)	98 (43%)
Change students' attitudes towards drug promotion*	26 (29%)	69 (50%)	95 (42%)
Improve behaviour related to gifts and sponsorship	27 (30%)	61 (45%)	88 (39%)
Decrease students' use of drug promotion*	10 (11%)	33 (24%)	43 (19%)
Increase students' use of drug promotion*	10 (12%)	5 (4%)	15 (7%)
Other	9 (10%)	11 (8%)	20 (9%)

* responses differed pharmacy vs. medicine, $p<.05$ chi-square (uncorrected)

Table 8a: Main objectives – by region

	Europe n=92	Americas n=56	W. Pacific n=31	Africa n=20	SE Asia n=20	E Medit. n=9
Teach critical appraisal of drug promotion	76 (83%)	44 (79%)	22 (71%)	15 (75%)	14 (70%)	5 (56%)
Increase students' use of independent information sources	70 (76%)	42 (75%)	24 (77%)	16 (80%)	14 (70%)	8 (89%)
Improve prescribing or dispensing after graduation	62 (67%)	29 (52%)	21 (68%)	15 (75%)	12 (60%)	7 (78%)
Change students' attitudes towards drug promotion	44 (48%)	18 (32%)	14 (45%)	8 (40%)	8 (40%)	3 (33%)
Expose students to different perspectives	43 (47%)	29 (52%)	14 (45%)	12 (60%)	15 (75%)	6 (67%)
Improve behaviour related to gifts and sponsorship	36 (39%)	23 (41%)	13 (42%)	6 (30%)	8 (40%)	2 (22%)
Increase students' ability to extract beneficial information from promotion	35 (38%)	26 (46%)	8 (26%)	11 (55%)	12 (60%)	6 (67%)
Decrease students' use of drug promotion	18 (20%)	8 (14%)	8 (26%)	4 (20%)	3 (15%)	2 (22%)
Increase students' use of promotion	2 (2%)	2 (4%)	4 (13%)	1 (5%)	3 (15%)	3 (33%)
Other	4 (4%)	8 (14%)	4 (13%)	1 (5%)	1 (5%)	2 (22%)

As shown in the Table 8b below, goals were similar among those devoting less or more time to education. Those spending 10 or more hours were more likely to state that they wished to expose students to different perspectives.

Table 8b: Main objectives – by total educational time*

	1/2 day or less (n=69)	Four to nine hours (n=66)	10 or more hours (n=89)
To increase students' use of independent information sources	49 (71%)	45 (68%)	76 (84%)
To teach critical appraisal of drug promotion	48 (70%)	54 (81%)	71 (80%)
To expose students to different perspectives*	28 (41%)	32 (49%)	59 (66%)
To improve prescribing or dispensing behaviour after graduation	43 (62%)	43 (65%)	57 (64%)
To increase students' ability to extract beneficial information from drug promotion	26 (38%)	27 (41%)	45 (51%)
To change students' attitudes towards drug promotion	28 (41%)	28 (42%)	37 (42%)
To improve behaviour related to gifts and sponsorship	26 (38%)	27 (41%)	34 (38%)
To decrease students' use of drug promotion	15 (22%)	12 (18%)	14 (16%)
To increase students' use of drug promotion	3 (4%)	3 (5%)	9 (10%)
Other	8 (11%)	5 (8%)	7 (8%)

*values missing in 4 cases

Table 8c: If they marked 'other', what was it?

Africa	
Medical	Issues relating to dispensing and regulations with regards promotions
Americas	
Pharmacy	To understand the relationship between increases in spending on promotion associated with the increase in total pharmaceutical expenditures To raise awareness of first year students of the impact of DTCA on the public and healthcare systems Provide a thorough description of pharmaceutical marketing efforts in the US and how that may impact them on a professional level. Enterarle del mal uso que se hace de las técnicas de mercadeo para inducir al uso irracional de medicamentos y con ello a la profesión farmacéutica.
Medical	To have students understand and manage potential conflicts of interest Teach about ethical and professional behaviours I am trying to open their eyes so they can see for themselves and will be more sceptical in future. I think a more comprehensive set of goals would be desirable but curriculum might not allow time for it. Hacerle ver a educandos la posible relacion entre uso irracional medicamentoa y promocion irracional de estos. Enfocar que industria en muchas ocasiones persigue medicalizacion de sociedad y medicamento como bien de consumo y no como derecho primordial Encourage habits based on critical thinking
South-East Asia	
Pharmacy	Related to departments, pharmacy students are taught on both, pro and con
Medical	Rational prescribing and rational therapy
Europe	
Pharmacy	To inform students of drug promotion Apprendre a concevoir et mettre en oeuvre un marketing "ethique"
Medical	To make them understand the market dynamics in the field To inform students about conflicts of interest: pharmaceutical company plus shareholders versus public health, society, stakeholders
Western Pacific	
Pharmacy	Basic level knowledge on drug promotion
Medical	To make students aware of the influence of promotion on prescribing behaviour, and to provide an alternative framework for developing the personal formularies Costs of new and old drugs versus benefits Reduce overconfidence
Eastern Mediterranean	
Pharmacy	To draw attention towards possible counterfeit & substandard pharmaceutical products that are entering into the market and the promotion for their distribution, prescribing, dispensing and use by both the professionals and the public. Improve the communications skills of students

Testing and evaluation

Including questions on a topic in examinations provides a signal to students that this topic is considered important. As shown in Table 9, pharmacy students were much more likely to have questions concerning drug promotion included in examinations than medical students. In both cases, a relationship also existed between the amount of time devoted to the subject and the likelihood of testing.

Table 9: Testing

	Pharmacy n=91	Medical n=137	Combined n=228
Are questions on drug promotion included in student examinations?*	**62 (68%)**	**51 (37%)**	**113 (50%)**
- less than ½ day of education	5/18 (28%)	12/51(24%)	17/69 (25%)
- 4 to 9 hours	19/23 (83%)	16/43 (37%)	35/66 (53%)
- more than 10 hours	38/50 (76%)	22/39 (56%)	60/89 (67%)

* pharmacy and medical respondents differed significantly, p<.05

Only a minority of educators systematically evaluated the effectiveness of educational programming; as might be expected, the rate was higher among those who also devoted more time to education. Tables 9a and 9b describe the type of evaluation carried out when an evaluation was mentioned.

Table 9c describes the types of outcomes that were being evaluated. This was most likely to be students' opinion of the educational session, for example as stated on an evaluation form, followed by effects on knowledge. Longer-term effects on behaviour are rarely evaluated.

Table 9a: Evaluation

	Pharmacy n=91	Medical n=137	Combined n=228
Is the effectiveness of education on drug promotion being evaluated? (in terms of meeting its goals)	**20 (22%)**	**24 (18%)**	**44 (19%)**
- less than ½ day of education	2/18 (11%)	4/51 (8%)	6/69 (9%)
- 4 to 9 hours	6/23 (26%)	7/43 (16%)	13/66 (20%)
- more than 10 hours	12/50 (24%)	11/39 (28%)	23/89 (26%)

Table 9b: Types of evaluation

What type of evaluation was done?	Pharmacy n=91	Medical n=137	Combined n=228
Written or oral course appraisals (e.g. participant evaluation forms)	14 (15%)	19 (14%)	33 (15%)
Before and after comparisons of students attending sessions	7 (8%)	10 (7%)	17 (8%)
Measurement of # students attending sessions on promotion	5 (6%)	2 (2%)	7 (3%)
Measurement of effects on students after graduation	5 (6%)	2 (2%)	7 (3%)
Comparisons of students at your institution who did and did not attend sessions	3 (3%)	2 (2%)	5 (2%)
Comparisons of students at your institution with students at another institution	1 (1%)	2 (1%)	3 (1%)
Times series measurements at several future time points	0	1 (1%)	1 (0.4%)
Other (generally additional detail on responses above)	*3 (3%)*	*3 (2%)*	*6 (3%)*

Table 9c: What outcome or outcomes are being evaluated?

	Pharmacy n=91	Medical n=137	Combined n=228
Students' opinions of the educational session(s)	14 (15%)	15 (11%)	29 (13%)
Knowledge	11 (12%)	11 (8%)	22 (10%)
Skills in critical appraisal of promotional materials	9 (10%)	11 (8%)	20 (9%)
Attitudes	7 (8%)	12 (9%)	19 (8%)
Prescribing or dispensing behaviours	7 (8%)	8 (6%)	15 (7%)
Skills for interacting with sales representatives	3 (3%)	3 (2%)	6 (3%)
Acceptance of gifts	2 (2%)	4 (3%)	6 (3%)
Frequency of use of drug company information sources	4 (4%)	2 (2%)	6 (3%)
Financial relationships with the pharmaceutical industry	3 (3%)	2 (1%)	5 (2%)
Other*	0	2 (1%)	2 (1%)

*"plans for interaction with pharmaceutical industry", and "ethical side of this more generally" (both were W. Pacific, medical faculty respondents)

Opinions on success of educational programme

Table 10 describes respondents' assessment of the degree of success of their educational programme in meeting its intended goals. There was no difference in the likelihood that a pharmacy or medical faculty respondent judged the programme to be successful. However, those devoting at least four hours to education about drug promotion were more likely to judge their work to be at least 'somewhat' successful than those devoting half a day or less. As shown In Table 10a, the breakdown of responses differed little by region.

Table 10: How successful do you believe the educational programme on drug promotion at your institution is in meeting its goals?

	Pharmacy n=91	Medical n=137	Combined n=228
Very successful	7 (8%)	9 (7%)	16 (7%)
Somewhat successful	51 (56%)	70 (51%)	121 (53%)
Somewhat unsuccessful	9 (10%)	25 (18%)	34 (15%)
Not at all successful	0	5 (4%)	5 (2%)
Unknown/no comment	*15 (17%)*	*23 (17%)*	*38 (17%)*
	Half a day or less n=69	**Four to nine hours n=66**	**10 or more hours n=89**
Very successful	2 (3%)	2 (3%)	12 (14%)
Somewhat successful	26 (38%)	41 (62%)	53 (60%)
Somewhat unsuccessful	16 (23%)	8 (12%)	10 (11%)
Not at all successful	4 (6%)	0	1 (1%)
Unknown/no comment	*17 (25%)*	*12 (18%)*	*8 (9%)*

Table 10a: Opinions on success – by region

	Europe n=92	Americas n=56	W Pacific n=31	Africa n=20	SE Asia n=20	E Medit n=9
Very successful	8 (9%)	5 (9%)	1 (3%)	1 (5%)	1 (5%)	0
Somewhat successful	49 (53%)	26 (46%)	17 (57%)	14 (70%)	10 (50%)	5 (56%)
Somewhat unsuccessful	13 (14%)	12 (21%)	3 (10%)	1 (5%)	3 (15%)	2 (22%)
Not at all successful	4 (4%)	0	1 (3%)	0	0	0
Unknown/no comment	11 (12%)	8 (14%)	7 (23%)	4 (20%)	6 (30%)	2 (22%)

Table 10b: Comments on success of programme

Africa	
Pharmacy	We do admit that the course needs to be strengthened
Medical	We only introduced this topic 2 years ago - haven't had time to evaluate In public hospitals, medical representatives have limited access to doctors and pharmacists This training programme is coupled with other interventions and is not university-based we address some issues as indicated; we would like to stress that it was never part of our planning to specifically address drug promotion as separate topic Drug promoters take advantage of drug shortages in our country to sell their products
Americas	
Pharmacy	Successful in the sense that teaching about drug promotion occurs alongside other topics - outcomes are evaluated accordingly Solo lo realizamos con los internos de medicina y farmacia cuando estan rotando por los servicios de medicina interna, y esto dura solo tres meses. En el caso del curso optativo de marketin farmaceutico este dura solo 4 meses Se requiere de un programa con visión holística sobre la relación "Laboratorio farmacéutico-medicamento-farmacéutico-médico-paciente", que no está considerado en el pensum. Un programa así requiere inversión que no cuenta con auspiciante independiente
Medical	Lectures have directly caused several institutional changes: drug reps are not allowed to feed internal med. students; drug reps are banned from hospital formulary committee; free samples and meals are banned from student health services
South-East Asia	
Pharmacy	Not much positive attitude achieved Even among lecturers they have a different standing point on this issue
Medical	Students are in general very enthusiastic to evaluate real drug advertisements Our educational programme on drug promotion covers only superficial knowledge Need more time in pharmacology courses to provide more learning experience to students and achieve more objectives
Europe	
Pharmacy	The students find the course interesting and important for their future work. They especially find the critical review of research articles important For success, all doctors must be consenting
Medical	We've performed earlier evaluations of our education and generally scored high We have just evaluated the degree of interest of the students on this seminar Very limited teaching on this subject This is just one lecture about this reality, just a starting point, year five in medical school Some students comment on our teaching of the matter Me gustaria mejorar la formacion que se da a los alumnos de medicina sobre promocion de medicamentos I would like to synchronize education on this subject between the different student categories we teach but this has proven difficult. Effectiveness minimized as students too young Case studies encourage participants to reflect conflict of interests and the role of scientists in the promotion of drugs. It demonstrated the risks of public-private partnerships in publicly underfunded research institutions

(Table 10b cont.)

Western Pacific	
Pharmacy	We do a joint project with medical students - difficulty in getting groups to 'gel' Need evaluation on the effectiveness of the course Lack of practical component to be able to evaluate the outcome
Medical	Very wide range of responses from students; some are very aware of the issue, while others are uninterested and just can't wait to get to the freebies There is too much influence from the pharmaceutical industry in terms of monetary benefits to graduate students. Because of local economic conditions, it is difficult for most to say no. Staff who facilitate 3rd year tutorials are not always knowledgeable and/or motivated enough to make the tutorials effective Need to do much more More an individual than an institutional initiative It will be more effective if the guidebook or textbook for it were given by the companies Effectiveness has not been rigorously evaluated
Eastern Mediterranean	
Pharmacy	Drug promotion is neglected in the curriculum and it is less endorsed by the regulatory authorities in the country

Main barriers to success

The most frequent barriers to success mentioned across the sample were lack of integration into the curriculum, inadequate time allocation and lack of continuity during practical or clinical training. There were some differences in responses between pharmacy and medical faculty respondents, as shown on Table 11, with medical respondents more likely to report lack of continuity, perceived irrelevance, students' desire for gifts, students' overconfidence, pharmaceutical industry financing, or previous student exposure to promotion as barriers.

Table 11a shows little relationship between barriers to success and allotted time for instruction. Those educating for less than half a day were more likely to mention inadequate time allocation as a barrier to success, as compared to the rest of the study sample. Interestingly, there was no difference in the proportion citing inadequate time allocation among those educating for 4-9 hours and those educating for 10 hours or more.

Table 11b provides a breakdown of reported barriers to success by region and Table 11c provides respondents' comments.

Table 11: Main barriers to success

	Pharmacy n=91	Medical n=137	Combined n=228
Lack of integration into the curriculum	36 (40%)	63 (46%)	99 (43%)
Inadequate time allocation	36 (40%)	58 (42%)	94 (41%)
Lack of continuation during clinical training*	25 (28%)	65 (47%)	90 (40%)
Lack of interest from other university faculty	26 (29%)	51 (37%)	77 (34%)
Students' desire to receive gifts from drug companies*	9 (10%)	41 (30%)	50 (22%)
Perceived irrelevance to students' work after graduation*	12 (13%)	35 (26%)	47 (21%)
Pharmaceutical industry financing of student activities at their institution*	6 (7%)	32 (23%)	38 (17%)
Students' overconfidence in their abilities*	7 (8%)	30 (22%)	37 (16%)
Previous student exposure to promotion*	8 (9%)	26 (19%)	34 (15%)
Other	*12 (13%)*	*18 (13%)*	*30 (13%)*

*pharmacy and medical differed, p<.05 chi-square analysis

Table 11a: Barriers to success versus total educational time

	Half day or less n=69	4 - 9 hours n=66	10 hours or more n=89
Lack of integration into the curriculum	36 (52%)	29 (44%)	32 (36%)
Inadequate time allocation	36 (52%)*	23 (35%)	34 (38%)
Lack of continuation during clinical training	32 (46%)	24 (36%)	33 (37%)
Lack of interest from other university faculty	30 (44%)	23 (35%)	22 (25%)
Perceived irrelevance to students' work after graduation	16 (23%)	12 (18%)	19 (21%)
Students' desire to receive gifts from drug companies	16 (23%)	16 (27%)	17 (19%)
Students' overconfidence in their abilities	13 (19%)	10 (15%)	13 (15%)
Pharmaceutical industry financing of student activities at their institution	13 (19%)	10 (15%)	14 (16%)
Previous student exposure to promotion	7 (10%)	10 (15%)	16 (18%)
Other	*10 (15%)*	*8 (12%)*	*11 (12%)*

*p<.05 vs. more than half a day (4-9 hours and 10 or more hours combined)

Table 11b: Reported barriers to success by region

	Europe n=92	Americas n=56	W. Pacific n=31	Africa n=20	S.E. Asia n=20	E Medit. n=9
Lack of integration into the curriculum	33 (36%)	25 (45%)	15 (48%)	8 (40%)	10(50%)	8 (89%)
Inadequate time allocation	30 (33%)	24 (43%)	17 (55%)	10(50%)	10(50%)	3 (33%)
Lack of continuation during clinical training	40 (44%)	20 (36%)	11 (36%)	6 (30%)	10(50%)	3 (33%)
Lack of interest from other university faculty	32 (35%)	22 (39%)	9 (29%)	3 (15%)	7 (35%)	4 (44%)
Perceived irrelevance to students' work after graduation	20 (22%)	7 (13%)	6 (19%)	5 (25%)	6 (30%)	3 (33%)
Students' desire to receive gifts from drug companies	16 (17%)	16 (29%)	8 (26%)	3 (15%)	7 (35%)	0
Students' overconfidence in their abilities	18 (20%)	12 (21%)	4 (13%)	1 (5%)	2 (10%)	0
Pharmaceutical industry financing of student activities at their institution	13 (14%)	11 (20%)	7 (23%)	4 (20%)	2 (10%)	1 (11%)
Previous student exposure to promotion	12 (13%)	9 (16%)	3 (10%)	7 (35%)	3 (15%)	0
Other	*13 (14%)*	*3 (5%)*	*6 (19%)*	*4 (20%)*	*2 (10%)*	*2 (22%)*

Table 11c: Comments on barriers to success

	Africa
Pharmacy	Lack of placed value on importance of this subject I do not perceive any barriers in my situation. From this survey I now have a few ideas that I can start implementing from this year and keep track of the progress we make
Medical	Threats from big pharma, big pharma funding other hospital charities, thus making it difficult to "restrict" their activities Drug shortages leave practitioners with little choice from one given by promoters
	Americas
Pharmacy	We are a new school of pharmacy and just implementing a curriculum
Medical	The medical school especially post-graduate, actively undermines objective education by promoting opportunities for drug companies to subsidize morning Grand Rounds (coffee and donuts), noon rounds('sponsored' lunches with drug rep in attendance) etc. Lack of positive role modelling by other residents and attendants

(Table 11c cont.)

South-East Asia	
Medical	We have not seriously thought about it Lack of outcome measurement
Europe	
Pharmacy	The lack of pharmaceutical sales representatives involvement in teaching about promotion Real world pressure after leaving the university No barriers Los alumnos piensan que todo esto es importante, pero les preocupa no trabajar o perder el trabajo. Por ello, es frecuente que alumnos com premisas claras en estos temas acaben inmersos en el sistema de promocion de la industria farmaceutica Lack of student interest
Medical	The Administration has now started courses that are given by epidemiologists Resignation of participants, society gives priority to company interests over public interests Only one clinical pharmacologist at medical school!!! Lack of interest with opinion leaders for practicing physicians For the biopharmaceutical programme mentioned above, a barrier might be that most students imagine themselves as later employees of Pharma and therefore positively inclined towards industry. This doesn't seem to be a major problem though. Drug companies financing the activities of student and giving gifts after they graduate Deficit of goodwill from authorities Attitude of opinion leaders in the faculty
Western Pacific	
Pharmacy	Lack of critical appraisal skills, many students do not perceive what is a conflict of interest Drug company contract research money
Medical	Students and residents see the effect of drug promotion by pharmaceutical companies on the prescribing practices and lifestyles of consultants, most especially the so-called "opinion leaders" in various specialty societies Lack of guidebook or references for teaching Inappropriate attitudes to drug promotion demonstrated by academics!
Eastern Mediterranean	
Pharmacy	There is no recognized effort at all levels to deal with this There are other priorities to be studied by the stakeholders more important than the issue of promotion, e.g. quality assurance...

Course materials

Table 12 provides an overview of the educational materials developed for this coursework. The most commonly reported course materials were presentations (PowerPoint or equivalent). When a session on drug promotion was included within a broader course on pharmacology or therapeutics, this was likely to be the only material developed. Pharmacy faculty respondents mentioned a course syllabus more often, suggesting more frequent development of a separate course or unit within a course devoted to drug promotion. Table 12a describes the other materials respondents had developed, beyond those listed on the questionnaire.

Twelve respondents (10 medical, 2 pharmacy) also stated that course materials were available on a website. In most cases, these were closed sites only open to students in the course or were not continually available. Nearly all respondents (224/228 or 98%) requested a copy of a manual on education about drug promotion that will be developed within this project.

Table 12: What course materials have been developed?

	Pharmacy n=91	Medical n=137	Combined n=228
Electronic slide presentations (i.e. power point or equivalent)	53 (58%)	72 (53%)	125 (55%)
Course readings and article reprints	45 (50%)	50 (37%)	95 (42%)
Course notes	38 (42%)	41 (30%)	79 (35%)
Course syllabus*	40 (44%)	34 (25%)	74 (33%)
Individual or small group assignments	36 (40%)	38 (28%)	74 (33%)
Case scenarios	25 (28%)	43 (31%)	68 (30%)
Printed overheads or presentation slides	17 (19%)	27 (20%)	44 (19%)
Evaluation materials	14 (15%)	18 (13%)	32 (14%)
Audiovisual materials	9 (10%)	17 (12%)	26 (11%)
Other	4 (4%)	18 (13%)	22 (10%)

*pharmacy and medical school respondents differed, p<.05, chi-square analysis

Table 12a: If respondents marked 'other', what was it?

Africa	
Pharmacy	Articles from WHO's *Essential Drugs Monitor*
Medical	Presentations of prescribing indicators with relation to which sales reps visited the institution at a particular time Information as part of lecture but no specific material Collection of sample advertisements from medical and pharmacy journals
Americas	
Medical	Workshop instructions My greatest success has been allowing students freedom to present advertising critique in any format, including brief humorous videos, rap numbers, songs, as well as serious posters or papers memory-aids developed by No Free Lunch which will serve useful during clerkship and internship, and which will carry a link to their website, and some useful information about pharmaceutical promotions Guias de conferencias
Europe	
Pharmacy	Un manual especifico para ellos Scientific articles
Medical	The WHO video, Good Morning, Mrs Dealer (obviously not developed by us) Selection of examples of real publicity Printed versions of relevant regulations Material recopilado de revistas sobre procion de medicamentos E-learning course Book: "*Pharmaceuticals Marketing*" edited by Mariana Voitcu and Elena Mihaela Carausu.UMF Gr.T Popa U.M.F. IASI, 2004. Actual advertisements
Western Pacific	
Medical	National web-based curriculum in appropriate prescribing supplemented by small group problem based tutorials and large group seminar sessions. Use of EBM teaching materials throughout programme. Independent on-line resources (e.g. Public Citizen etc.)
Eastern Mediterranean	
Pharmacy	Recommendations fact-sheets

Discussion

The results of this survey provide a first 'environmental scan' of the aims and extent of education about drug promotion within medical and pharmacy faculties. The survey results cannot be assumed to be representative of global education but do provide a range of experience across many countries and regions.

For most faculties that responded, education on promotion was included within the required curriculum but usually students had less than a day's worth of education about this topic during their professional training. In nearly one-third of cases, medical faculties devoted only 1-2 hours, often within a broader course on pharmacology, clinical pharmacology or therapeutics. Electives followed a similar pattern. Those with total educational time in all courses combined of one-half day or less, were less likely to judge this education to be at least somewhat successful (41% vs. 68% of those with at least four hours of teaching). Those with educational sessions lasting one-half day or less were also less likely than others to use interactive educational techniques, such as small group discussions or exercises involving critical analysis of sample advertisements. Similarly, more than half of those reporting at least 4 hours of education also included questions on drug promotion in student examinations, as compared to just one-quarter of those who spent less than half a day on education about drug promotion. Inclusion of a topic in examinations provides a message to students about educators' perception of the importance of the topic, as well as influencing retention of knowledge.

On the one hand, the outcome of this survey was extremely positive. There are few published studies describing initiatives to educate medical or pharmacy students about drug promotion. Zipkin and colleagues identified 11 article published between 1960 and 2004 that involve educational interventions targeting doctors in training, and addressing interactions with pharmaceutical sales representatives (Zipkin, 2005). One additional article describes use of an educational video to stimulate discussion among medical students and faculty members (Shashindran, 1995). Suryawati and Santoso (1997) evaluated an educational session on critical evaluation of drug advertisements, and Harvey and Black describe the use of an educational video, brochures and therapeutic guidelines as educational tools (Harvey, 1994).

In comparison to these 14 published descriptions of educational initiatives, all targeting medical students or residents, the volume of responses to this survey was both encouraging and unexpected. We received descriptions of over 200 educational initiatives in 64 countries, most of which are part of the required curriculum in pharmacy and medical schools. The responses also included many innovative and interesting examples of curricula, assignments and educational materials. Educators in many countries are clearly aware of the influence of pharmaceutical promotion on the health professions and wish to prepare students for this aspect of their professional lives. As a physician educator from India said, "*…Whatever rational things we want to inculcate in them, that should be done in the student period itself. Once they taste big money then habits develop and later die hard.*"

Medical school respondents generally tended to spend less time in education about drug promotion than pharmacy respondents. Medical students already face a heavy workload and educators may be loathe to add additional content. On the other hand, most spending on pharmaceutical promotion is in categories targeting physicians (IMS Health 2002), and empirical studies evaluating the effects of promotion on physicians' behaviours and knowledge have found that influence to be largely negative (Avorn, 1992; Wazana, 2000; Steinman, 2001; Boltri, 2002; Caamano, 2002). Thus many students may be graduating with little preparation to deal with commercial influences on an important aspect of their professional practice after graduation.

A national survey of U.S. 3rd year medical students at 8 medical schools highlights the extent of exposure to promotion during students' training: 97% of the 826 respondents had eaten lunches provided by drug companies; 94% had received small gifts such as pens or coffee mugs, and 87% had attended Grand Rounds sponsored by a drug company (Sierles, 2005). The authors call promotion 'the hidden curriculum' during medical school. Two of the 8 medical schools provided education on drug promotion, but this was only a single 2-hour session. Students who had attended these sessions were no more sceptical than others who had not. This is consistent with the opinions of educators in this survey, in that they were less positive about the success of education that was limited to 4 hours or less.

We found that the content of coursework on drug promotion was remarkably similar by health profession and region, with most educators focussing primarily on critical appraisal skills, followed by sales representatives. Pharmacy faculty respondents were more likely than medical respondents to include education related to patient-directed promotion: patient requests for advertised drugs and the use of the Internet to promote drugs. This difference may reflect the larger role of pharmacists in counselling patients about drug treatment decisions.

Direct-to-consumer advertising of prescription drugs is legal in the USA and New Zealand. Even in these countries, few medical faculty respondents reported educating students about how to respond to patient requests for advertised drugs. A recent randomized controlled trial using model patients found that patient requests for advertised drugs were a stronger determinant of prescribing decisions than whether or not the patient had the condition the drug aimed to treat (Kravitz, 2005). A previous study of prescribing decisions in response to patient requests found that if a patient asked for an advertised brand, they usually received it, although the physician was more likely to be ambivalent about these prescribing decisions (Mintzes, 2003). These studies suggest a need for physicians and pharmacists to receive adequate training on how to respond to patient requests.

In jurisdictions where prescription drug advertising is illegal, the public is exposed to over-the-counter drug promotion. Additionally, effects of Internet promotion remain a concern, and in many countries, prescription-only status is poorly enforced. One pharmacist educator from Iraq characterized the situation as involving, "*Uninformed patient use and their demands for the latest medicines,*" adding that, "*…the current pharmaceutical situation is lamentable; since the national drug policy is (if present) fragile, the drug market is open and not controlled, coupled with the lack of quality assurance measures; all result in the propagation of the possible counterfeit and substandard pharmaceutical products…In fact a case of pharmaceutical chaos is presented here*."

Most educators were aiming to enable students to critically appraise drug promotion and to increase students' use of independent information sources. Most medical school respondents also aimed to improve prescribing behaviours after graduation, whereas pharmacy school respondents were more likely to aim more generally to expose students to a different perspective or to increase students' ability to extract beneficial information from drug promotion.

One US pharmacist educator commented that: "*We are unique in that while we recognize the problems that may arise out of promotional efforts in the pharmaceutical industry, we also recognize the tremendous benefits of these activities. The trick is in the balance…"* On the other hand, a German medical faculty respondent stated that their main aim was, "*to inform students about conflicts of interest: pharmaceutical company plus shareholders versus public health, society, stakeholders."*

Many observational studies have found correlations between lower quality of prescribing and more exposure to drug promotion and/or positive beliefs about drug promotion (Haayer, 1982; Berings, 1994; Caudill, 1996; Caamano, 2002; Watkins, 2003). It is therefore noteworthy that fewer respondents aimed to change students' attitudes towards promotion than to improve dispensing or prescribing behaviour, and that only 10% of pharmacy and 24% of medical schools aimed to decrease students' use of drug promotion. It is possible that many pharmacy and medical schools hoped to improve the quality of prescribing via education about critical appraisal of drug promotion and/or increasing the use of independent information. We are not aware of any studies that investigate whether skills in critical appraisal of drug promotion are associated with better prescribing. There is controlled trial and observational evidence that use of independent information sometimes improves the quality of prescribing but often makes little or no difference. (Jamtvedt, 2003; Thomson O'Brien, 1997; Thomson O'Brien 2001; Freemantle, 1997)

The most frequent barriers to success mentioned were lack of integration into the curriculum and inadequate time allocation. In several cases, the influence of the pharmaceutical industry on educational facilities was mentioned. Educators in a variety of regions and economies mentioned barriers related to the influence of the pharmaceutical industry on student activities at their institution. One Zimbabwean pharmacy respondent attributed, "*lack of placed [sic] value on the importance of this subject."* A Belgian medical faculty respondent similarly identified the, *"attitude of opinion leaders in the faculty,"* as a barrier. A Kenyan medical educator described, *"Threats from big pharma, big pharma funding… thus making it difficult to 'restrict' their activities."* A Canadian medical respondent said that, "*the medical school, especially post-graduate, actively undermines objective education by promoting opportunities for drug companies to subsidize morning Grand Rounds (coffee and donuts) noon rounds ('sponsored' lunches with drug reps in attendance) etc."* At a Turkish medical school, a respondent mentions as a barrier, "*Drug companies financing the activities of students and giving gifts after they graduate."* Although there are no doubt differences between experiences in these different regions, all mention some degree of pharmaceutical industry influence on their institution or students as a barrier to effective education about drug promotion.

One of the aims of this survey was to collect information on educational initiatives that had been systematically evaluated. Few respondents overall (19%) were carrying out any programmatic evaluation of education on drug promotion. The proportion increased with increasing time spent educating students about drug promotion, with 30% of those who reported more than 10 hours of education reporting some form of evaluation.

Most often, the evaluation was in the form of written or oral course appraisals (e.g. student evaluation forms). This provides useful feedback on students' opinions of coursework for future planning. However, it cannot evaluate effects on knowledge, skills, beliefs or behaviour. Nearly half of those who reported some form of evaluation of educational initiatives relied only on student course appraisals (19/41 or 46%). In total, 20 (9%) of respondents were carrying out some form of evaluation other than student evaluations or counts of numbers of students attending courses; this was most often before and after comparisons of students attending sessions. Seven respondents (3%) included some form of control group of students who had not participated in sessions on drug promotion in their evaluation. These educational initiatives are being followed up for further details on curriculum, methods and results of evaluations.

Conclusions

This is the first survey of educational initiatives for pharmacy and medical students about drug promotion. Although the results are exploratory they do provide a snapshot of the types of education that are going on, the subject matter, techniques and aims.

Many medical and pharmacy educators recognize the need for education about drug promotion and have incorporated this topic into their work, often integrating it into curricula on therapeutics, pharmacology or professional ethics. However, often this is only a one to two hour lecture. In some cases this occurs with little support from colleagues or the educational institution. Opposition from other faculty members and the low priority allocated to this topic were frequently mentioned as barriers to success. Thus, many students are receiving minimal preparation for ethical and patient care choices they will face after graduation.

The lack of importance of drug promotion in medical and pharmacy education stands in stark contrast to the large volume of drug promotion targeting health professionals, and the body of empirical evidence indicating that promotion affects behaviours, health care quality and costs. Many of the survey respondents expressed frustration at the lack of importance allocated to drug promotion in health professional education, and expressed a desire to do more.

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Appendix 1: Sample questionnaire

Education about drug promotion

Please take a few minutes to fill in this questionnaire on education about drug promotion for medical and pharmacy students. We are interested in finding out what is being taught about all aspects of drug promotion, including the role of advertisements, samples, gifts and the use of opinion leaders on medical and pharmacy practice, research, ethical issues, regulation, and how to evaluate marketing materials in order to make the right decisions for patient care.

The information from this survey will be included in a manual we intend to publish for medical and pharmacy schools. Survey participants will receive a free copy of the manual.

When you have completed this questionnaire, **please return it as an e-mail attachment to *sonja@haiweb.org*, with the subject line 'Drug Promotion questionnaire'.** You can also send it by fax to Health Action International at: **+ 31 20 685 5002.**

1A Is education about drug promotion part of the required curriculum for all medical students at your institution?

☐ YES

☐ NO **–** ***If NO, go to question 1B***

1AA How many hours are spent discussing drug promotion within the required curriculum?

☐ 1 to 2 ☐ 3 to 4 ☐ 5 to 7 ☐ 8 to 9 ☐ 10 or more

1AN Name of course or courses :

_____

1B Is education about drug promotion included within an elective course for medical students that is not part of the required curriculum taken by all students?

☐ YES
☐ NO – ***if NO, go to question 1C***

1BA What proportion of students take an elective that includes education on drug promotion?

☐ Under 10% ☐ 10-25% ☐ 25-50% ☐ more than 50%

1BB How many hours are spent on education about drug promotion in elective courses?

☐ 1 to 2 ☐ 3 to 4 ☐ 5 to 7 ☐ 8 to 9 ☐ 10 or more

1BN Name of course or courses :

_____

1C Is education about drug promotion included within residency or specialty training?

☐ YES

☐ NO or NOT KNOWN– ***if NO or NOT KNOWN, go to question 1D***

1CA Which specialty/specialties :

_____

1CB How many hours are spent on drug promotion within this residency or specialty training?

☐ 1 to 2 ☐ 3 to 4 ☐ 5 to 7 ☐ 8 to 9 ☐ 10 or more

1CN Name of course or courses :

_____

1D Do you or your institution teach students about drug promotion in any other ways than those mentioned above?

☐ NO - ***if NO, go to question 1E***

☐ YES, please explain

_____

1DA How many hours are spent teaching about drug promotion in these other ways?

☐ 1 to 2 ☐ 3 to 4 ☐ 5 to 7 ☐ 8 to 9 ☐ 10 or more

1E If you answered NO to questions 1A, 1B, 1C, and 1D (ALL of the questions above), *please go directly to question 13 on page 5. Otherwise, please continue with question 2.*

2 What types of promotion do you or your institution cover in education about drug promotion? (Please check all that apply)

- ☐ Advertisements for medicines (a)
- ☐ Sales representatives/drug detailers (b)
- ☐ Free samples (c)
- ☐ Use of 'opinion leaders' (d)
- ☐ Sponsored conferences and seminars (e)
- ☐ Promotional 'research' funded by companies to stimulate sales (f)
- ☐ Gifts (g)
- ☐ Response to patient requests for advertised medicines (h)
- ☐ Use of the Internet to promote medicines (i)
- ☐ Industry-funded medical or scientific journals (j)
- ☐ Industry-funded research published in peer-reviewed journals (k)
- ☐ Other, please explain (l)

3 Are the regulation and/or ethics of drug promotion covered?

- ☐ YES
- ☐ NO – ***if NO, go to question 4***

3A Which of the following issues are covered? (Please check all that apply)

- ☐ National government regulation of drug promotion (aa)
- ☐ Professional codes governing interactions with the pharmaceutical industry (ab)
- ☐ Industry self-regulatory codes (ac)
- ☐ WHO (World Health Organization) Ethical Criteria for Medicinal Drug Promotion (ad)
- ☐ IFPMA (International Federation of Pharmaceutical Manufacturers Associations) Code of Marketing Practices (ae)
- ☐ Ethical issues associated with interactions with the pharmaceutical industry (af)
- ☐ Other, please explain (ag)

4 What teaching techniques do you or your institution use in education about drug promotion? (Please check all that apply)

- ☐ Lectures (a)
- ☐ Small group discussions in tutorials or workshops (b)
- ☐ Role playing (c)
- ☐ Critical analysis of sample advertisements (d)
- ☐ Response to case scenarios (e)
- ☐ Other, please explain (f)

5 Do you or your institution involve pharmaceutical sales representatives in teaching about promotion?

- ☐ NO
- ☐ YES ***– if YES, how?***

6 What are your or your institution's main objectives for education about drug promotion? (Please check all that apply)

- ☐ To teach skills in critical appraisal of drug promotion (a)
- ☐ To expose students to different perspectives (b)
- ☐ To change students' attitudes towards drug promotion (c)
- ☐ To improve prescribing behaviours after graduation (d)
- ☐ To improve behaviour related to gifts and sponsorship (e)
- ☐ To increase students' ability to extract beneficial information from drug promotion (f)
- ☐ To increase students' use of independent information sources (g)
- ☐ To increase students' use of drug promotion (h)
- ☐ To decrease students' use of drug promotion (i)
- ☐ Other, please explain (j)

7 Are questions about drug promotion included in student examinations (either written or oral tests)?

- ☐ YES
- ☐ NO

8 Are you or is your institution carrying out any <u>evaluations</u> of the effectiveness of education on drug promotion? (by evaluation, we mean assessment of whether the educational programme on promotion is meeting its goals.)

- ☐ YES
- ☐ NO – ***if NO, go to question 9***

8A Does this evaluation involve any of the following? (Please check all that apply)

- ☐ Written or oral appraisals of the course (for example participant evaluation forms) (aa)
- ☐ Comparisons of students before and after they attend educational sessions on drug promotion (ab)
- ☐ Comparisons of students at your institution who did and did not attend education on promotion (ac)
- ☐ Comparisons of students at your institution with students at another institution (ad)
- ☐ Measurements of numbers of students attending education about drug promotion (ae)
- ☐ Measurement of effects on students after graduation (af)
- ☐ Time series measurements at several future time points (ag)

☐ Other, please explain (ah)

8B What outcome or outcomes are being evaluated? (Please check all that apply)

☐ Students' opinions of the educational session or sessions on drug promotion (ba)
☐ Effects on knowledge (bb)
☐ Effects on attitudes (bc)
☐ Effects on skills in critical evaluation of promotional materials (bd)
☐ Effects on skills for interacting with drug representatives (be)
☐ Effects on prescribing behaviour (bf)
☐ Effects on financial relationships with the pharmaceutical industry (bg)
☐ Effects on acceptance of gifts (bh)
☐ Effects on frequency of use of drug company information sources (bi)
☐ Other, please explain (bj)

8C Please briefly describe how this evaluation is carried out:

9 How successful do you believe the educational programme on drug promotion at your institution is in meeting its objectives?

☐ Very successful ☐ Somewhat successful ☐ Somewhat unsuccessful ☐ Not at all successful ☐ Unknown/ no comment

9A Any additional comments:

10 What do you see as the main barriers to success (Please check all that apply)

☐ Lack of interest from other university faculty or staff (a)
☐ Lack of integration of education about drug promotion into the curriculum (b)
☐ Previous student exposure to pharmaceutical promotion (c)
☐ Pharmaceutical industry financing of student activities at your institution (d)
☐ Perceived irrelevance to students' work after they graduate (e)
☐ Inadequate time allocation in the curriculum (f)
☐ Lack of continuation during students' clinical training (g)
☐ Students' overconfidence in their abilities (h)
☐ Students' desire to receive gifts from drug companies (i)
☐ Other, please explain (j)

11 What materials have been developed for education about drug promotion? (Please check all that apply)

- ☐ Course syllabus (a)
- ☐ Course readings and article reprints (b)
- ☐ Course notes (c)
- ☐ PowerPoint presentations or equivalent (computer files) (d)
- ☐ Printed overheads or presentation slides (no computer file) (e)
- ☐ Case scenarios (f)
- ☐ Individual or small group assignments (g)
- ☐ Audio-visual materials (h)
- ☐ Evaluation materials (i)
- ☐ Other, please explain (j)

11AA Are these materials publicly available on a website?

- ☐ NO
- ☐ YES – ***please state web address (url)***

12 Have you, or colleagues you are teaching with, published any articles or reports describing educational initiatives about drug promotion?

- ☐ NO
- ☐ YES – ***please list published articles or reports below:***

13 Would you like a copy of the manual on education about drug promotion that we intend to produce at the end of this research project?

- ☐ YES
- ☐ NO

14 **Please fill in the following. All personal information will be kept confidential; we will not release the information below to anyone outside our survey team.**

Your name: _____

Institution _____

Mailing address _____

_____

Office phone _____ ***Mobile phone*** _____

E-mail address _____ ***Fax*** _____

15 **We may need to contact you for additional information. How may we best reach you?**

☐ E-mail ☐ Phone ☐ Fax

☐ Other, please specify

_____

_____

16 **Can you suggest anyone else that we should contact, who is also teaching medical or pharmacy students about drug promotion?**

Name _____

Institution _____

E-mail _____

17 If you have any additional comments about any of the issues covered on this questionnaire or suggestions for the manual on education about drug promotion, please let us know:

When you have completed this questionnaire, please send as an e-mail attachment to **<sonja@haiweb.org>** with **'Drug Promotion Questionnaire'** in the subject line**.** In case of difficulties with e-mail, you can also fax it to Health Action International:

+31 20 685 5002

or send by mail:

Health Action International
Jacob van Lennepkade 334T,
1053 NJ Amsterdam, the Netherlands

Thank you very much for your help!

World Health Organization

HAI
HEALTH ACTION INTERNATIONAL EUROPE

Appendix 2: Country breakdown in total*

Country	Frequency
Antigua	1
Argentina	2
Australia	11
Austria	1
Bangladesh	1
Belgium	5
Canada	13
Croatia	2
Cuba	2
Czech Republic	4
Denmark	2
Ecuador	1
Egypt	1
Estonia	1
Fiji	1
Finland	2
France	10
Germany	5
Ghana	1
Greece	1
Hungary	1
Iceland	2
India	4
Indonesia	5
Iraq	1
Islamic Republic of Iran	1
Ireland	2
Italy	3
Kenya	1
Korea (Republic of)	3
Lebanon	2
Lithuania	1
Malaysia	5
Mauritius	1
Mozambique	1
Nepal	2
New Zealand	5
Norway	2
Pakistan	2
Palestinian Self-Rule Areas	1
Peru	1
Philippines	4
Poland	3
Portugal	3
Romania	2
Serbia and Montenegro	1
Slovakia	1
South Africa	10
Spain	12
Sri Lanka	1
Sweden	5
Switzerland	3
China, Province of Taiwan	2
Thailand	7
The Netherlands	3
Turkey	5
Uganda	3
UK	9
Ukraine	1
USA	35
Venezuela	1
Yemen	1
Zambia	1
Zimbabwe	2
TOTAL	**228**

* Includes Taiwan, Province of the People's Republic of China.

Breakdown of responses by WHO Region

WHO African Region	Frequency
South Africa	10
Uganda	3
Zimbabwe	2
Ghana	1
Kenya	1
Mauritius	1
Mozambique	1
Zambia	1
Total number of responses	**20**

WHO Region of the Americas	Frequency
USA	35
Canada	13
Argentina	2
Cuba	2
Antigua	1
Ecuador	1
Peru	1
Venezuela	1
Total number of responses	**56**

WHO South-East Asia Region	Frequency
Thailand	7
Indonesia	5
India	4
Nepal	2
Bangladesh	1
Sri Lanka	1
Total number of responses	**20**

WHO Eastern Mediterranean Region	Frequency
Lebanon	2
Pakistan	2
Egypt	1
Iraqn	1
Islamic Republic of Iran	1
Palestinian Self-Rule Areas	1
Yemen	1
Total per region	**9**

WHO Western Pacific Region	Frequency
Australia	11
Malaysia	5
New Zealand	5
Philippines	4
Republic of Korea	3
China, Province of Taiwan	2
Fiji	1
Total per region	**31**

WHO European Region	Frequency
Spain	12
France	10
UK	9
Belgium	5
Germany	5
Sweden	5
Turkey	5
Czech Republic	4
Italy	3
Poland	3
Portugal	3
Switzerland	3
The Netherlands	3
Croatia	2
Denmark	2
Finland	2
Iceland	2
Ireland	2
Norway	2
Romania	2
Austria	1
Estonia	1
Greece	1
Hungary	1
Lithuania	1
Serbia and Montenegro	1
Slovakia	1
Ukraine	1
Total per region	**92**

Countries with 5 or more responses

Country	Frequency
USA	35
Canada	13
Spain	12
Australia	11
South Africa	10
France	10
UK	9
Thailand	7
Indonesia	5
Belgium	5
Germany	5
Sweden	5
Turkey	5
Malaysia	5
New Zealand	5

Names of courses, medical specialties etc. (longer text info)

Within the regular curriculum, medical faculty

Course name	No.
Pharmacology or 'basic pharmacology'	22
Clinical pharmacology	21
Pharmacotherapy, therapeutics, pharmacotherapeutics or 'rational pharmacotherapy'	12
Ethics, bioethics or medical ethics	6
Rational drug use/ rational use of medicines	5
Pharmacology and toxicology	4
Personal & professional development	3
Bachelor of Medicine	2
General practice	2
Health economics for medical students	2
Pharmacology and therapeutics	2
Practice of medicine (2) : managing conflicts of interests - physician and pharmaceutical industry relations (1)	2
2nd year symposium on commercialisation of medicine; 3rd year problem-based learning case on relations with pharmaceutical industry	1
Clinical epidemiology – problem-based curriculum (PBL)	1
Clinical sciences & Investigative medicine	1
Community medicine,	1
Critical appraisal	1
Critical approach to the biomedical literature	1
Degeneration and diseases of aging(Topic: effects of drug promotion on prescribing behaviour)	1
Delivery of health care	1
Development of medicines: clinical research methodology	1
Doctoring	1
Drug companies activities and medical ethics	1
Family medicine	1
Improving rational antibiotic use in Chinese hospitals	1
Information on medicines and publicity	1
Integrated in the course Medical drugs in society	1
Integrated in the problem-based curriculum	1
Issues in medicine	1
Medical personal & professional development (year 2), year 4 common programme	1
Medical sociology	1
Part of clinical discussion of 3 hours on dispensing and prescribing	1
Prescribing	1
Psychiatry clerkship (1 1/2 hr)	1
Public health	1
Scientific basis of medicine	1
Social pharmacology	1
The development of medicine	1
Use of medicines	1

Within the regular curriculum, pharmacy faculty

Course name	No.
Pharmacy practice	6
Health care ethics or pharmacy ethics	5
Pharmacy law	5
Pharmaceutical marketing; and hospital pharmacy (2); and healthcare system (1)	4
Pharmacology ; 2hr drug information course re relationship with drug industry (1)	4
Clinical pharmacy; deontology and pharmaceutical legislation (1)	3
Forensic pharmacy	3
Pharmacotherapy; applied pharmacotherapeutics	3
Pharmacy - critical appraisal series	3
Pharmacy in the health care system	3
Profession of pharmacy	3
Communication skills	2
Industrial pharmacy practice; industrial pharmacy modules	2
Public health pharmacy (Year 1)	2
Social pharmacy	2
Pharmacoepidemiology and pharmacoeconomics	1
Pharmacy information systems and literature evaluation	1
Biomedical literature evaluation	
Biopharm and drug registration	
Community pharmacy practice, dispensing lab.	
Drug literature evaluation	
Drug regulation, pharmaceutics	
Drug use, drug information, the pharmaceutical organizations and the law, economy	
Foundations of pharmacy; issues in pharmacy (2 courses)	
Health policy and pharmacy management, case conference on pharmacotherapy, clinical drug trials	
Hospital pharmacy	
Included in courses: information sources; drug policy; pharmacy & law;	
Medicines promotion at the pharmaceutical market	
Pharmaceutical care; pharmaceutical regulations and deontology	
Pharmaceutical regulatory affairs (translation)	
Pharmaco informatics (Year 2)	
Provincial and national healthcare	

2. Elective courses – medical faculties

Subject	No.
Clinical pharmacology	7
Pharmacology	6
Pharmaceutical marketing	2
Continuing education and information	
Development of new drugs and healthcare products (Desarrollo de nuevos farmacos y produtos sanitario	
Doctors and the pharmaceutical industry	
Drug pedagogics	
Ethics of the pharmaceutical industry	
Family medicine electives	
Health policy elective	
Improving rational antibiotic use in Chinese hospitals	
Molecules to man	
Pharmacoeconomics	
Pharmacoepidemiology	
Pharmacotherapy	
Physicians and Big Pharma	
Promoting rational drug use (promotion included in course)	
Sources of pharmacological information on medicines (Fuentes de informacion farmacologica de medicamentos)	

Elective courses – pharmacy faculties

Subject	No
Pharmaceutical marketing	4
Hospital pharmacy	2
Pharmaceutical sales techniques; Principles of pharmaceutical marketing	2
Pharmacoepidemiology	2
Clinical pharmacy	
Communication	
Drug promotion	
Drugs & behaviour (drugs & society), drug education	
Ethics in pharmacy practice	
Health policy analysis	
Healthcare management	
Information and communication	
International health care systems	
Intro to health care delivery	
Management for the pharmacist	
Non-prescription drug therapy	
Pharmaceutical policy	
Pharmacoeconomics	
Pharmacy and law	
Understanding the pharmaceutical industry (connaissance de l'industrie pharmaceutique)	

1C. If education about drug promotion is included within residency or specialty training, which specialty/specialties – medical

Specialty	No.
Clinical pharmacology	8
All or most	5
Internal medicine	4
Pharmacology	4
Family medicine	3
General practice	2
Paediatrics	2
Psychiatry	2
Clinical pharmacology and toxicology	
General surgery	
Master degree	
Medicine	
Module on therapeutics for the national exam [module 11 - items de thérapeutique générale dans le cadre de l'examen national classant (en remplacement de l'internat]	
Neurology	
Obstetrics & gynaecology	
Urology	

Specialty or specialized training – pharmacy

Specialty	No.
Community pharmacy (includes post graduate community pharmacy training)	4
Hospital pharmacy	2
Pharmacy practice residency	2
As part of summer Practical Pharmacy training for 300 hours total period	
Business pharmacy track	
Clinical pharmacy	
Drug information practice residency	
Postgraduate level	
Professional doctors in pharmacy and medicine	

Other types of teaching – medical

	No.
Community health programmes	
Field work in clinics and hospitals	
In the clinics and on the wards there are discussions	
A new module for students – critical appraisal of clinical trials (nouveau module pour les étudiants du DCEM2 et 3: Lecture critique d'articles: analyse des essais thérapeutiques)	
It sometimes is mentioned briefly in other courses	
During critical appraisal sessions conducted in journal clubs	2
I teach at a course for students at the 'biopharmaceutical science programme' -more directed at supplying Pharma with R & D professions. Course on clinical trials methodology examines evidence for various promotional statements.	
Opportunistic discussions on ward rounds and in clinics	
Topic is discussed during all items concerning drug choice and prescribing, as antidepressive agents, antihistaminica, antibiotics, antihypertensive agents. etc	
Assignments to publish a drug brochure	
Conferences arranged according to new trends and actual problems	
Seminars	
We issue projects on evidence based prescribing to be completed by students	
Informally, at rounds, while doing clinics, while seeing drug reps	
Handing out articles on relevant matters (eg recent quarrel about brand/generic ARVs)	
Case studies following visits to doctors' surgeries and pharmacies	
Within short training course on promoting rational drug use	
Included in pharmacology lectures	
One to one on ward rounds, at clinics etc.	
I am asked to present at Grand Rounds; I and others speak to our residents and fellows when I attend	
On clinical rotations faculty are encouraged to address this - it is sporadic and dependent of faculty preceptor	
I work it into all my teachings but many colleagues feel differently and either do none, or teach the opposite, i.e. that my view is paranoid or is 'serving the government'	
Via e-campus	
Post grad course on clinical and experimental pharmacology	
Largely the hidden curriculum; student initiatives - no free lunch speakers etc.	
In "promoting rational drug use" courses and also courses/workshops on "drug and therapeutics committees"	
The issues of drug promotion come up continuously during student training. I would be amazed if the students here were not very aware of the issues.	
Not consistently. Former Merck rep discussed drug industry promotional tactics from 'insider' perspective; group of students has set up similar 'no free lunch' group involving one seminar (debate with medical rep)	
Seminar on clinical pharmacology	
At times, the subject surfaces in classes in BioEthics	
Drug fair	
We have a drug information centre which provides education and training to health professionals - this includes drug promotion	
Post graduate dispensing course for doctors	

	No.
Faculty has a student group 'Students Involved in Rational Health Activity' they also have a few activities in drug promotion	
Medical ethics – chapter on access to innovations and information (Ethique médicale; chapitre sur l'accès à l'innovation et sur l'information)	
Through informal extracurricular evening sessions (one per semester) through other contacts within our problem-based curriculum	
Considerable time spent educating general practitioners	
Formation médicale continue des cardiologues	
Also as part of drug information course - required course	
Course on the pharmaceutical industry	
In some lectures (other than pharmacotherapy course) I explain about drug promotions and how drug companies affect doctors to prescribe their medications	
It is discussed when specific groups of drugs are presented e.g. SSRI or proton pump inhibitors or NSAIDs	
I'm not clear on what question means; we integrate it into clinical pharmacology, evidence-based medicine and ethics teaching within the curriculum over the full 5 years of the B.Med programme	
2nd year pharmacology course	
Included in subject "clinical pharmacology" an hour or so - plus some years a seminar with the students (2hours). Use WHO video "Good morning Mrs Dealer". Plus 3 hour bioethics for post grads	
Pharmacology and therapeutics involve rational drug therapy and rational prescribing and understanding essential drug concept and criticism on drug combinations	
During therapeutic teaching	
Refer to this contentious issue during discussion on therapeutics	
Because I was responsible for some years for drug advertising control in Lithuania and for drug information, I learn promotion praxis; during pharmacology lectures/seminars I always present cases of wrong drug promotion and familiarise students with rules	
Intermittent lectures to interested students and residents. In addition, a module on this topic is included – but not every year - in a required course for medical students	
Instruction in pharmacoeconomics, evidence-based medicine and medical ethics	
Information on promotion included in 'Advanced Therapeutics' course at end of 4th year Medicine just before students write their licensing exams	
One seminar within the speciality of family medicine	
Occasionally during lectures of basic or clinical pharmacology	
Course on information on medicines 'cours sur l'information sur le medicament'	
As a component of the Medical Ethics course which is compulsory for all students	
Brief mention in Medical Pharmacology course	

Other types of teaching – pharmacy

Within doctor's degree (PhD)

Drug information rotation

- regular workshops, seminars, conferences, CPD/CPE(continuous pharmacy education) programmes

Drug information services, clerkship at the drug company

- eight weeks practical training course at a pharmaceutical company
- we have an elective clerkship rotation in pharmaceutical sales, taken by 2-3 students a year
- topic for master's thesis
- 1 hour lecture in the epidemiology module for all students in third year (AP300), practicals for all students in third year (AP 301)
- professional training in a drug stores or in a pharmaceutical company
- pharmacy professional training

Mini project, survey, seminar

Through research opportunities with faculty members
Integrated into teaching of pharmaco-epidemiology , communication and conselling, etc.
A required assignment necessitating research of DTCA and considerations of the pros and cons of the practice
One of the topics students may choose for their graduation thesis is drug promotion. It is chosen every year. Last year focussed on med reps in Hungary, next year topics on comparison of advertising rules for OTCs and internet
Assignment evaluating a pharmaceutical advertisement given to students.
Main focus is determining whether or not advert is evidence-based
Critical Appraisal series is to develop students' ability to apply research clinically, developing broad skills underpinned by healthy scepticism, e.g. 'Drug Industry Insights'
Written assignment where students must critically appraise advertisements for pharmaceuticals
some clinical rotations cover this material
drug promotion is taught in forensic pharmacy curriculum under the headings of drug law. Mostly it depends on the exposure and understanding of the teacher that how much he covers - usually within framework of drug law
When they are writing their theses at the end of their studies, they might take up drug promotions as part of their research (in general write about a group of drugs)
mentioned in many courses by staff who are pharmacists
1. Post information on Notice Board; 2. Part of Module in Rational Drug Management course
lectures, fill out an application for registration of medicines into of our Act and related regulations. discussions on GMP, etc. and marketing etc. is done in Pharm Practice
students complete clerkship rotations during their last professional year. if they elect to do a pharmaceutical industry rotation, they are likely to learn about drug promotion
we encourage our preceptors, especially pharmaceutical companies, who accept our students for experimental learning courses, to emphasize on the topic

Seminars every week on drug promotion

- we intend to add drug promotion to future courses
- intro clinical course dealing mainly with self-treatment. this course introduces 'critical appraisal' of products on market - by therapeutic class
- discussed in the drug information class, but not in great detail and is not a requirement for that class
- discussed in a required course "The US Healthcare System"

[i] The following websites were contacted:

http://www.fip.org/education/SoPListHomePage.html
http://www.pharmacy.org/schools.html
http://www.pharmweb.net/pwmirror/pw8/pharmweb8.html
http://www.globepharm.org/colleges-of-pharmacy.html
http://www.iime.org/database/
http://www.cpr.net/schools_libraries/world_wide/
http://www.who.int/hrh/wdms/en/
http://www.immunize.org.uk/medlink.html