Medicines information in medical journal advertising in Australia, Malaysia and the United States: A comparative cross-sectional study

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Abstract

Objective: The aim of this study was to compare the provision of medicines information in medical journal advertising in Australia, Malaysia and the United States.

Methods: A consecutive sample of 85 unique advertisements from each country was selected from the advertisements published between January 2004 to December 2006 in three widely circulated medical journals and one prescribing reference manual. The availability of brand name and generic name, indication, contraindications, dosage, side-effects, warnings, interactions and precautions was compared between the three countries.

Results: We examined 255 distinct advertisements for 136 pharmaceutical products. Journal advertising in Australia, Malaysia and the US usually provided brand names and generic names (range 96 -100%). Information on dosage was significantly less likely to be mentioned (32%) in the US than in Australia (92%) and Malaysia (48%) ($P < 0.001$). Warning information was significantly less likely to be provided in Australia (5%) than in the US (81%) and Malaysia (9%) ($P < 0.001$). Apart from information on brand name, generic name, warnings and dosage, other product information significantly less likely to be provided in journal advertising in Malaysia than in Australia and the US ($P < 0.001$). Similar trends in the provision of product information for the same medicines published in these countries were noted. Brand name and generic name were always provided in the three countries (100%). However, information on the negative effects of medicines was less frequently provided in Malaysia than in Australia and the US.

Conclusions: Journal advertising in Australia, Malaysia and the US failed to provide complete product information. Low quality of information provided in Malaysia indicates the need for effective regulation of provision of medicines information in journal advertising. Different standards of medicines information provided in these three countries suggest that pharmaceutical promotion needs to be better controlled at the international level.

Keywords: Pharmaceutical advertisements, promotion, regulation, Malaysia, Australia.

Introduction

Journal advertising is used by pharmaceutical companies as a marketing strategy to promote pharmaceutical products to health professionals. In 2004, pharmaceutical companies in the United States (US) spent $0.5 billion on journal advertising [1]. The companies have been criticised for providing poor quality information[2-4] that may negatively influence doctors' prescribing behaviour[5, 6].

Following the World Health Organization (WHO) Conference of Experts on the Rational Use of Drugs in1985, the WHO has introduced a set of Ethical Criteria for Medicinal Drug Promotion[7]. The Ethical Criteria for Medicinal Drug Promotion was established to support and encourage the improvement of health care through the rational use of medicinal drugs[7]. It sets out the general standards for ethical promotion of pharmaceutical products that can be used as a model by governments[7].

The International Federation of Pharmaceutical Manufacturers Association (IFPMA) code of conduct sets standards for the ethical promotion of medicines by pharmaceutical companies[8]. The IFPMA code generally is based on the WHO Ethical Criteria for Medicinal Drug Promotion[7]. However, the IFPMA code allows less medicines information to be presented in advertisements than the WHO Ethical criteria[7, 8]. Contrary to the WHO Ethical Criteria, the IFPMA code does not require information on warnings, major interactions, and content of active ingredient per dosage form or regimen and name of other ingredients known to cause problems to be provided in advertisements. The IFPMA code requires that all promotional material should be consistent with locally approved product information[8].

In addition to the IFPMA, in most countries pharmaceutical promotion is controlled by governmental agencies[9] and/or by the pharmaceutical companies through voluntary codes of conduct, most often underpinned by legislation[10].The US is a country with a long-established control system by governmental agencies[9]. Australia[11] and Malaysia[12] are examples of developed and emerging countries, respectively, where pharmaceutical companies self-regulate their promotional activities by implementing voluntary codes of conduct which complement the requirements set by government legislation. The codes, regulations and legislation provide standards for all types of promotional materials for prescription medicines including all printed and audiovisual promotional materials.

In Australia, pharmaceutical advertising is regulated by government legislation through the Therapeutic Goods Act 1989[13]. Medicines Australia, which represents research-based pharmaceutical companies, administers a code of conduct for promotional practice[11]. Similarly, in Malaysia pharmaceutical advertising for prescription medicines is regulated by government legislation through the Medicine (Advertisement and Sale) Act 1956[14]. The Pharmaceutical Association of Malaysia (PhAMA), which represents pharmaceutical companies, administers a code of conduct as a guide for the advertising of prescription medicines[12]. Adherence to the codes is a condition of Medicines Australia and PhAMA membership. Failure to comply with the codes will result in sanctions including discontinuation or modification of any practice that is determined to breach the code, the issuance of retraction statements, fines, suspension or expulsion from Medicines Australia or the PhAMA[11, 12].

In the US, pharmaceutical promotion is regulated by the Food and Drug Administration (FDA)[15]. The FDA's Division of Drug Marketing and Communication (DDMAC) is responsible for ensuring that promotion of medicines is in compliance with the FDA's rules and regulations[15]. The laws require that pharmaceutical advertising provide accurate and balanced information relating to the medicine's risks and benefits[16]. FDA may issue regulatory letters to any pharmaceutical company that is found to be in breach of the laws. The letters may serve as a basis for additional regulatory action including recalls or seizures of promotional materials or activities, and criminal prosecution[16].

Most pharmaceutical companies are international companies. Generally, every pharmaceutical company has their own set of ethical standards based on the standards set forth in the IFPMA code of conduct. According to the codes that are publicly available[17-19], promotional materials should support the appropriate use of medicines by presenting information accurately, without exaggeration and must follow all relevant local laws and company policies and procedures.

Despite the existence of regulations and control of medicine promotion, the quality of medicines information in journal advertising has been questioned. A systematic review[20] identified nine studies that evaluated provision of medicines information. Three were multinational comparative studies and seven studies were single country studies. The multinational comparative studies revealed that the provision of balanced medicines information in journal advertising was a problem both in developed and developing countries. The negative effects of a medicine, which may discourage use of that medicine, less commonly appeared in advertisements. All of the multinational comparative studies were published before 1998. Similar to multinational studies, single country studies suggested that medicines information was poorly presented in journal advertising. In 1992, a content analysis of 109 pharmaceutical advertisements in ten leading American medical journals found that in 40% of the cases, information on efficacy was not balanced with that on contraindications and side effects [21]. In Australia, only one study[22] examined the availability of medicines information in journal advertising. In 1994, in a review of 12 advertisements in four medical journals, 9% failed to mention approved names of the medicines[22].The provision of information on the negative aspects of medicines, which is essential for appropriate use of medicines, was not further explored in this study.

To our knowledge, no study has assessed the quality of medicines information in journal advertising in Malaysia and the most recent studies in Australia and the US were published in 1994 and 1992 respectively. No comparative study has been conducted on the quality of medicines information in journal advertising among these three countries. Moreover, no comparative data is available on the presentation of medicines information for the same products in different countries. This study provides the first data on the standards of journal advertising in Malaysia, recent data on the quality of information in journal advertising in Australia and the US, and also comparative data on the quality of information in journal advertising in Australia, Malaysia and the US.

We aimed to compare the provision of medicines information in medical journal advertising in Australia, Malaysia and the United States. The specific objectives were:

– to compare the availability of medicine information (brand name, generic name, indications, contraindications, dosages, side-effects, warnings, interactions and precautions) in pharmaceutical advertisements.

– to assess whether specific aspects of Medicines Australia's and Pharmaceutical Association of Malaysia's (PhAMA) codes of conduct were implemented in practice.

– to compare the availability of medicines information in pharmaceutical advertisements for the same medicines promoted in Australia, Malaysia and the US.

Methods

This research was specifically designed as an exploratory and descriptive analysis of the availability of medicines information in medical journal advertising in Australia, Malaysia and the United States.

Selection of advertisements

We used a convenience sample of one major national family practice journal in Australia and the US. As there was no such journal in Malaysia, we chose the Medical Journal of Malaysia and the Monthly Index of Medical Specialities (MIMS), the latter because it is widely used by general practitioners as a reference.

The journals selected to cover primary care practitioners' publications were:

– Australian Family Physician, which is the official journal of the Royal Australian College of General Practitioners (readership = 38,608 with about 28,000 of these being general practitioners) (Jonathon Tremain, personal communication 2009 Feb 02).

– American Family Physician, which is the official clinical journal of the American Academy of Family Physicians (readership = over 188,200, no data are available on the general practitioners' readership)[23]. MIMS, which is regarded as an official drug reference of the Malaysian Medical Association (MMA) (readership = 7000, with about 4200 of these being general practitioners) (Eileen Khoo, personal communication 2009 Feb 03),

– Medical Journal of Malaysia (MJM), which is the only Malaysian medical journal that is subscribed by the three established medical schools in Malaysia, University of Science Malaysia, National University of Malaysia and University Malaya (readership = over 3500, no data are available on the general practitioners' readership) (Matilda Cruz, personal communication 2009 Feb 03).

We estimated that the majority of general practitioners in Australia subscribed to the Australian Family Physician. However, we were unable to accurately estimate the percentages of general practitioners subscribed to the journals and prescribing index in Malaysia and the US because the information on the total number of general practitioners for each country was not available in the public domain.

A consecutive sample of 85 unique advertisements from each country was chosen from the selected publications. The publications were published between January 2004 to December 2006. An abstraction form was developed to record the availability of product information.

All prescription medicine advertisements were extracted. A product advertisement different from other advertisements for the same product in terms of graphic presentation or written content was considered to be one unique advertisement. All unique advertisements of the same product that appeared in separate issues of a publication were counted as one advertisement.

The availability of brand name and generic name, indication, contraindications, dosage, side-effects, warnings, interactions and precautions in the main body of advertisements and separate fine print product information was recorded. The separate fine print product information that appeared on different page of advertisement but in the in the same publication was considered as part of the advertisement if there was a statement provided to readers to refer to it.

The presence or absence of information on Pharmaceutical Benefit Scheme (PBS) listings and restrictions (a requirement of Medicine Australia's code of conduct) and the provision of minimum abbreviated product information which must include approved indication, dosage, contraindications, precautions and side effects (a requirement of the Pharmaceutical Association of Malaysia's (PhAMA) code of conduct) was also recorded.

Data analysis

Data entry was undertaken using SPSS database version 14.0. Chi-square analysis was used to assess differences between countries. The Bonferroni correction for multiple comparisons was applied in dividing our significance level (0.05) by the number of tests that were conducted, and applied the value as our new cut off level for statistical significance.

Results

Inter-rater reliability

All data were extracted by one researcher. Three other researchers, a researcher from Australia, a pharmacist and a family medicine specialist from Malaysia, independently determined the availability of product information in a randomly selected sample of 30 advertisements from each country. The availability of product information was defined as the presence or absence of any information on brand name, generic name, indications, contraindications, dosages, side-effects, warnings, interactions and precautions. We did not assess the completeness or accuracy of product information. Kappa tests were conducted with STATA version 10 to assess the consistency between observers. Kappa (κ) for inter-rater reliability for the presence or absence of product information between the researchers was 0.91 (almost perfect agreement) ($z = 63.3$, $p < 0.001$)[24].

A total of 255 distinct advertisements for 136 pharmaceutical products were included in the analysis. All advertisements in the US (n=85) and none in Australia and Malaysia referred readers to separate fine print product information. All advertisements were published over a two-year period (Table 1).

Table 1. Circulation list of advertisements

Country	2004	2005	2006	Total
Australia	15	32	38	85
Malaysia	33	31	21	85
US	24	25	36	85

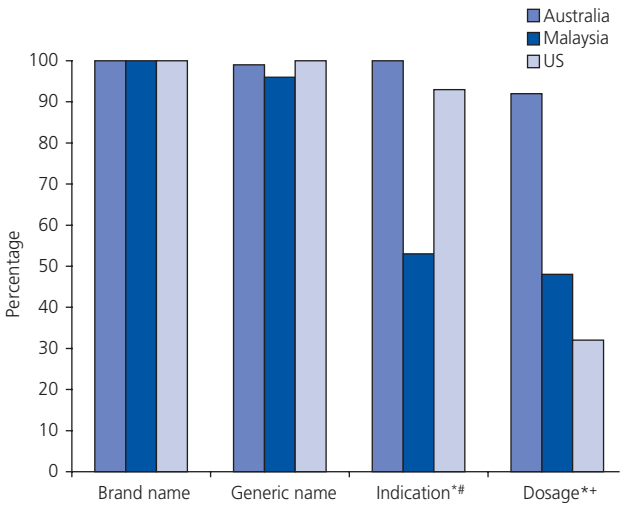
Availability of product information

The availability of product information varied between countries (Figure 1 and 2). In the US, most information was frequently found in advertisements (range 81-100%). However, information on dosage was significantly less likely to be mentioned (32%) than in Australia (92%) and Malaysia (48%) ($\chi 2 = 66.8$; df=2, $P < 0.001$). Similar to the US, in Australia, most information was always provided (92-100%) but warning information was significantly less likely to be provided (5%) than in the US (81%) and Malaysia (9%) ($\chi 2 = 144.1$; df=2, $P < 0.001$).

In Malaysia, information on side effects, contraindications, warnings, interactions and precautions appeared in less than half of advertisements (range 9-41%). Apart from information on brand name and generic name, warnings and dosage, other product information was significantly less likely to be provided in advertisements published in Malaysian journals than in Australian and US journals ($P < 0.001$).

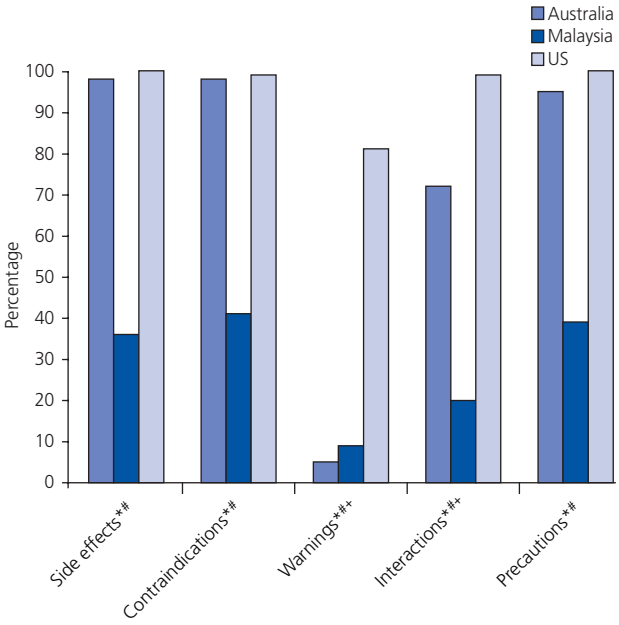
Nearly all advertisements (98%) appearing in the Australian medical journals provided information on Pharmaceutical Benefit Scheme (PBS) listings and restrictions. In Malaysia, 31% of advertisements provided the minimum abbreviated product information including approved indication, dosage,

Figure 1. Comparative availability of information on benefits of medicines in advertisements (n/85 x 100%)



Product information
* for p < 0.001 for comparison Australia/Malaysia,
# for p < 0.001 for comparison Malaysia/US,
+ for p < 0.001 for comparison Australia/US,
Non significant if no symbol

Figure 2. Comparative availability of information on harmful effects of medicines in advertisements (n/85 x 100%)



Product information
* for p < 0.001 for comparison Australia/Malaysia,
# for p < 0.001 for comparison Malaysia/US,
+ for p < 0.001 for comparison Australia/US,
Non significant if no symbol

contraindications, precautions and side effects as required by the Pharmaceutical Association of Malaysia (PhAMA) code of conduct.

Availability of product information for the same medicines by country

Four medicines were advertised in all the three countries in 32 unique advertisements (Table 2). One company promoted two medicines and three companies promoted one medicine respectively. Product information for all categories except for brand name, generic name, dosage and warnings was significantly less likely to be provided in advertisements published in Malaysia compared with Australia and the US (Figure 3 and 4). Our analysis of availability of product information for the same medicines found that brand name and generic name were always provided by all the pharmaceutical companies in the three countries. However, information on the negative effects of medicines was less frequently provided in Malaysia than in Australia and the US (Table 3).

Discussion

Pharmaceutical advertisements in medical journals in Australia, Malaysia and the US usually provided brand names and generic names. Information on indications, side effects, contraindications and precautions was more commonly provided in Australia and the US than in Malaysia. Information on dosage was less commonly mentioned in the US and information on

Table 2. Number of the same products advertised in Australia, Malaysia and in the United States

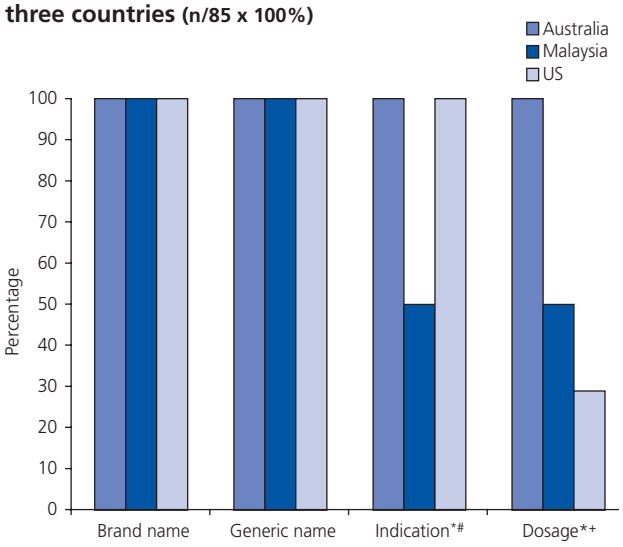
Generic name	Brand name	Company	Australia n	Malaysia n	US n	Total n
Candesartan	Atacand®	AstraZeneca	3	1	1	5
Ezetimibe/simvastatin	Vytorin®	MSD and Schering-Plough	2	1	1	4
Esomeprazole	Nexium®	AstraZeneca	4	2	1	7
Atorvastatin	Lipitor®	Pfizer	4	8	4	16
Total			13	12	7	32

warnings less likely to be provided in Australia. Similar trends in the provision of product information were noted for the four products advertised in these three countries. Pharmaceutical companies in Australia nearly always provide information on the Pharmaceutical Benefit Scheme (PBS) listings and restrictions. Two-thirds of advertisements in Malaysia failed to provide the minimum abbreviated product information as required by Pharmaceutical Association of Malaysia (PhAMA) code of conduct[12].

Complete information on benefits and risks of medicines provided in pharmaceutical promotion is crucial to doctors in order to determine the most appropriate treatment for patients. However, we found that essential information on negative effects of medicines was frequently missing in Malaysia compared with Australia and the US. Similar findings have been observed in two comparative multi-country studies, where more balanced information was provided in developed countries than in an emerging country[25, 26]. Even the minimum abbreviated prescribing information required by the Malaysian PhAMA code of conduct[12] was not commonly provided in our study. The failure of pharmaceutical companies in Malaysia to provide balanced and complete information as required by their marketing code is even more a concern as Malaysia has no comprehensive independent source of prescribing information unlike Australia and the US. Malaysian doctors may be more likely to rely on commercial sources of information[27].

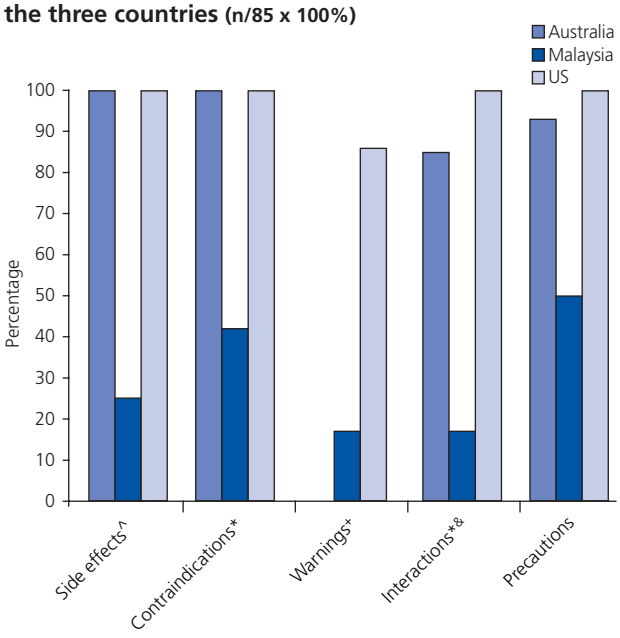
The quality of medicines information in journal advertising is lower in Malaysia than in Australia despite apparent similarities in the type of advertising control via the industry code of conducts. There may be several reasons which could explain the differences observed. Firstly, the administration of the code

Figure 3. Comparative availability of information on benefits for the same medicines advertised in the three countries (n/85 x 100%)



Product information
* for p < 0.05 after adjustment for multiple comparisons for Australia/ Malaysia,
+ for p< 0.001 for comparison Australia/US,
other results assumed to be non significant if no symbol

Figure 4. Comparative availability of information on harmful effects for the same medicines advertised in the three countries (n/85 x 100%)



Product information
* for p < 0.05 after adjustment for multiple comparisons for Aus/Mal,
^ for p< 0.001 for comparison Aus/Mal,
+ for p< 0.001 for comparison Aus/US,
& for p< 0.001 for comparison Mal/US,
Non significant if no symbol

Table 3. Availability of product information for the same medicines by each company

Company	Australia n=7	Malaysia n=3	US n=2
AstraZeneca	Brand name, generic name, indications, dosage, side effects, contraindications and interactions were provided in all advertisements. Precautions were missing in two advertisements and warnings were missing in all advertisements.	Brand name, generic name, indications, dosage, side effects, contraindications, interactions and precautions were provided in all advertisements. Warnings and precautions were missing in one advertisement.	Brand name, generic name, indications, dosage, side effects, contraindications, interactions and precaution were provided in all advertisements. Warnings were missing in one advertisement.

Company	Australia n=4	Malaysia n=8	US n=4
Pfizer	Only information on warnings was not provided in all advertisements.	Only brand name and generic name were provided in all advertisements	Only information on dosage was not provided in all advertisements.

Company	Australia n=2	Malaysia n=1	US n=1
Schering -Plough and Merck Sharp and Dohme	Brand name, generic name, indications, dosage, side effects, contraindications and interactions were provided in all advertisements. Warnings and interactions were missing in all advertisements.	Only brand name and generic name were provided in the advertisement.	Only information on dosage was not provided in the advertisement.

of conduct in Australia is a transparent process. Medicines Australia publishes on its website comprehensive reports on all code breaches and sanctions imposed[28]. In Malaysia, no similar information is available in the public domain. The PhAMA ethics committee discloses information about its rulings and the names of companies involved in complaints only to its members[12]. Public reporting of violations of the code is a strong incentive for pharmaceutical companies to comply with the code in order to avoid negative publicity and deterioration of their public image[29]. The availability of information on complaints, code breaches and sanctions may discourage repeated breaches and support a more careful approach to future promotional activities[29].

Secondly, the range of financial sanction imposed is lower in Malaysia than in Australia. PhAMA code of conduct states that a company that is found to be in breach could be fined up to US $ 13,917.00, much less than in Australia (up to US $ 135,280.00)[12]. This level of financial sanction is still small compared to the amount of money invested by pharmaceutical companies on promotion[30]. Increasing the amount of fines may deter pharmaceutical companies from breaching the code[29].

Efforts to improve the quality of medicines information provided in advertisements published in Malaysian medical journals are needed. A range of policy options need to be considered including the improvement of the PhAMA code of conduct by requiring public reporting of all code violations and increasing the financial sanctions when advertisements are found in breach of the code. Other policy options include proactive screening of all advertisements by an independent body before they are published in medical journals. This may prevent the dissemination of incomplete information to doctors which may lead to irrational prescribing. The Malaysian Advertisements Board (MAB) [14] is a unit of Ministry of Health Malaysia which oversees medicines advertisements in Malaysia. To date, the MAB has only provided a guideline on the promotion of non-prescription medicines to the public [14]. It scrutinises all publications from the print and electronic media concerning the use of medicines by the public. Although the MAB is empowered by law to set policies, directives and guidelines for all advertisements related to medicines that have medical and/or health claims, its activities do not focus on direct-to-doctors advertising [14]. The role of the MAB needs to be expanded to oversee direct-to-doctors advertising.

Most advertisements (95%) published in Australia failed to provide information on warnings. In contrast with Malaysia and the US, the Australian minimum product information [11] only requires provision of information on boxed warnings and not on all warnings included in the product information. Further analysis of the Australian advertisements found that only one advertisement did not provide the required box warning as included in the product information. Our results suggest that there is a need for Medicines Australia to strengthen its code of

conduct to include the requirement for warnings in the minimum product information. Australian health professionals may be missing important safety information in journal advertising.

Unlike in Australia and Malaysia, information on dosages is not required in the American advertisements [15]. Only a minority of pharmaceutical companies in the US voluntarily provided information on dosages in advertisements (32%). These findings suggest that most pharmaceutical companies will only provide the medicines information when they are required to do so. The FDA should be proactive in updating the requirements for the provision of medicine information in advertisements; given dosage information is essential for correct prescribing as well as for the appropriate use of medicines.

Our analysis on the provision of product information for the same medicines marketed in the three countries is limited by the small sample size (32 advertisements for four products). The medicines were promoted for cardiovascular and gastrointestinal diseases. At the time the advertisements appeared in journal advertising, the medicines were new and no generic options were available. The medicines provided no incremental benefit and in some countries they were more expensive than existing treatments. Moreover, the market for these medications was huge with global sales estimated at US$ 59 billion in 2006[31].

However, essential information required for appropriate prescribing was often missing in advertisements of the same medicines published in Malaysia compared with Australia and the US. All companies that had a product included in our analysis have their own guideline or code of conduct on pharmaceutical promotion[32-35]. All guidelines and codes of conduct state that companies have to comply with relevant international and local regulations. However, the different standard of information provided in these three countries suggests that the companies apply their marketing standards differently in different countries. Our findings lend support to earlier observations that some pharmaceutical companies employ different standards in their promotional activities in countries with different types of controls and resources to control promotional activities[36]. Collaboration between regulating bodies in different countries would be beneficial in controlling multi-country pharmaceutical promotion activities.

Our study showed that medicines information in journal advertising across these three countries was often incomplete and the problem was not limited to a developing country. These results are consistent with the findings of a recent systematic review that showed that the low quality of information in journal advertising was a global issue[20]. Effective control over incomplete medicines information in journal advertising would appear necessary not only in developing countries where regulation of pharmaceutical promotion might be weak but also in developed countries which have stricter regulations[10].

Our study was limited by the sample size. The results may not be generalisable to other countries and other medicines. Our study was designed to assess the presence or absence of product information. We did not attempt to examine the accuracy or completeness of information.

Conclusion

Pharmaceutical companies provide different standards of medicines information in Australia, Malaysia and the US. Less medicine information was provided in journal advertising in Malaysia than in Australia and the US. Warnings and dosage information was less likely to be presented in advertisements in Australia and the US respectively. As information on medicines in pharmaceutical promotion may influence doctors' prescribing practices, regulation of promotional practices in Australia, Malaysia and the US need to be strengthened, both by the government and pharmaceutical companies. Effective regulatory systems to control pharmaceutical promotional activities in countries with different local standards is crucial.

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