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Original Article

Doctors' views on the quality of claims provided by pharmaceutical representatives: A comparative study in Malaysia and Australia

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الملخص

أهداف البحث: ينظر الأطباء إلى ما يقدمه ويقوم به ممثلي شركات الأدوية من المنظور المهني السليم. ومع ذلك، فقد أظهرت الدراسات أن هذه اللقاءات بين الأطباء وممثلي شركات الأدوية تؤدي إلى وصف علاجات أقل مثالية. وفي الواقع لا توجد دراسة تقيم وجهة نظر الأطباء تجاه مصداقية وجودة العروض التي يقدمها ممثلو شركات الأدوية للأطباء في ماليزيا وأستراليا. تهدف هذه الدراسة إلى مقارنة وجهة نظر الأطباء الأستراليين والماليزيين على تفاصيل المبيعات ونوعية العروض التي يقدمها ممثلو شركات الأدوية.

طرق البحث: قمنا باختيار أطباء الرعاية الأولية في أستراليا وماليزيا لتقييم زيارة ممثلي مبيعات شركات الأدوية للأطباء، ومن ثم تعبئة استبانة على المنتج المقدم من ممثلي شركات الأدوية وطرق نقاشه وتقديمه للحقائق خلال اللقاء. بعد ذلك تم دراسة نتائج الاستبانات وتحليلها إحصائيا ومقارنتها بين الدولتين.

النتائج: كان رأي أغلب الأطباء أن العروض المقدمة من ممثلي شركات الأدوية مقنعة وزادت من معلوماتهم، وربما أثرت في وصفهم للعلاجات. إن غالبية عروض التسويق الدوائي التي سجلها الأطباء في أستراليا وماليزيا وصفت بالغموض. كما أشار الأطباء إلى أن حوالي ثلث العروض التسويقية لا لبس فيه (أستراليا ٣١٪ وماليزيا ٣٣٪). وفي الغالبية العظمى من العروض التسويقية الأولية (أستراليا ٦٥٪، ماليزيا ٨٤٪) من ممثلي شركات الأدوية كانت دقيقة بشكل شبه كامل.

الاستنتاجات: أبدى الأطباء في أستراليا وماليزيا وجهات نظر إيجابية تجاه العروض التسويقية لممثلي شركات الأدوية، على الرغم من أن المعلومات المقدمة من قبلهم تبدو متغايرة.

الكلمات المفتاحية: أستراليا؛ عروض؛ ماليزيا؛ ممثلي شركات الأدوية؛ ترويج

Abstract

Objectives: Doctors perceive the interactions with pharmaceutical representatives as professionally appropriate. However, studies have shown that the interaction is associated with less rational prescribing of medications. No previous study has assessed doctors' opinions of the presentation of pharmaceutical representatives and the quality of claims provided to the doctors in Australia and Malaysia. The aim of this study was to compare the opinions of Australian and Malaysian doctors of sales explanations and quality of claims provided by the pharmaceutical representatives.

Methods: We recruited samples of primary care doctors in Australia and Malaysia to evaluate pharmaceutical sales visits. After a visit, doctors were asked to fill out a questionnaire on the main product and claims discussed during the visit. Descriptive statistics were employed, and Chi-square analysis and clustered linear regression were used to assess differences between doctors from both countries.

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Results: The majority of doctors reported that the presentations were convincing as well as likely to change their prescribing habits and improved their knowledge. The majority of marketing claims recorded by doctors in Australia and Malaysia were classified as vague claims. Approximately one-third of the claims were unambiguous (Australia 31% and Malaysia 33%). In a majority of the presentations (Australia, 65%, Malaysia, 84%), doctors indicated that the primary claims by the pharmaceutical representatives were entirely or nearly accurate.

Conclusions: Doctors in Australia and Malaysia held generally positive views of the presentations of pharmaceutical representatives, although the information being presented varied.

Keywords: Australia; Claims; Malaysia; Pharmaceutical representatives; Promotion

Introduction

Pharmaceutical companies employ pharmaceutical representatives to provide information on their medicines to doctors. In France, pharmaceutical companies spent approximately €3300 million (USD$ 4368 million) on the activities of pharmaceutical representatives, which is equal to 75% of the total promotional budget.[1] In Australia, more than 70% of general practitioners regularly meet pharmaceutical representatives in their daily practice.[2] Doctors have reported that their interactions with pharmaceutical representatives are professionally appropriate.[2,3] However, studies have shown that the reliance of doctors on commercial information may lead to less rational prescribing of medications.[4]

Evidence has shown that doctors have a wide range of opinions regarding the presentation of pharmaceutical representatives.[5–9] Some studies have reported that doctors' views toward the presentation and information provided by pharmaceutical representatives were primarily negative.[5,6] In 2010, a study examined 58 American doctors' views of and interactions with representatives of the pharmaceutical industry.[5] Doctors had partially negative views of the educational and informational value of the activities. In 2012, among the 608 doctors surveyed in Libya, 56% (n = 342) indicated that verbal information was not always consistent with the written information that was provided.[6]

In contrast, some studies suggest that a majority of doctors have positive views toward the presentations of pharmaceutical representatives.[7–9] In 2006, a survey of a nationally representative random sample of 2608 doctors in the US indicated that 74% of doctors judged the information provided by pharmaceutical representatives as somewhat or very useful.[7]

In 2003, 107 doctors in the United Kingdom (UK) participated in a qualitative survey to examine the reasons for receiving visits from pharmaceutical representatives.[8] Most doctors meet with pharmaceutical representatives because they quickly provide new drug information. Doctors viewed pharmaceutical representatives as legitimate information providers.[8]

Concerns have been raised regarding the quality of information provided by pharmaceutical representatives. A recent multi-country study involving Canada, France and the United States (US) determined that pharmaceutical representatives commonly presented positive information regarding their products but often omitted negative aspects, such as side effects, contraindications and interactions.[10] The information regarding the imbalance of medicines provided by pharmaceutical representatives in Australia and Malaysia was also noted in a subset of this survey, which was recently reported.[11]

A previous discussion on the influence of pharmaceutical representatives has also focused on the provision of samples, gifts and invitations to company-sponsored programs to doctors.[12–14] These gifts and samples have the potential to bias the judgement of doctors and are associated with increased prescribing costs and increased prescribing of new medicines.[15–17] In addition, gifts may lead to favourable attitudes toward pharmaceutical presentations.[18,19]

In Australia and Malaysia, pharmaceutical promotion of prescription medicines is self-regulated by pharmaceutical companies.[20,21] Medicines Australia and the Pharmaceutical Association of Malaysia (PhAMA) codes of conduct are designed to complement the requirements dictated by government legislation.[20,21] The pharmaceutical company codes provide standards for the ethical promotion of pharmaceutical products to healthcare professionals.[20,21]

Medicines Australia has allocated resources for monitoring promotional activities and publishes comprehensive reports of all code breaches and sanctions imposed as well as details of industry sponsored educational events on its website.[20,21] In addition, pharmaceutical representatives are required to participate in an educational program that is endorsed by Medicines Australia.[20] To the best of our knowledge, no study has assessed and compared doctors' opinions of the presentations of pharmaceutical representative in Australia and Malaysia, which are examples of developed and emerging countries with different resources to control promotional activities.

This study aimed to determine the views of Australian and Malaysian doctors of sales presentations and the quality of claims provided by pharmaceutical representatives. The objectives were as follows:

1. To examine the opinions of Australian and Malaysian doctors on the persuasiveness of the presentation, the quality of information presented, the likelihood that they would start prescribing the pharmaceutical representatives' products or prescribe them more frequently and the value of the visit in terms of knowledge gained.
2. To classify the types of marketing claims made about benefits or harms including unambiguous, vague, emotive and non-clinical claims.

3. To examine the provision of samples, gifts and invitations to company-sponsored programmes by pharmaceutical representatives to doctors.

Materials and Methods

Ethics statement

This study was approved by the Human Research Ethics Committee of the University of South Australia, Universiti Sains Malaysia and Universiti Kebangsaan Malaysia.

Study design

We recruited samples of primary care doctors in Australia and Malaysia to evaluate pharmaceutical sales visits. This study was conducted from August 2007 to April 2009 (20 months). Doctors who met with pharmaceutical representatives in their regular practice and were practicing at least 25 h per week during the study period were invited to participate. Doctors who agreed to join the study were required to fill out a written consent prior to participation in the research.

Recruitments of general practitioners

The doctors were asked to monitor four to ten encounters with pharmaceutical representatives. A doctor-pharmaceutical representative encounter was defined as one meeting between doctor(s) and pharmaceutical representative(s) that happened at the doctor's office. The meeting was based on an appointment and had to be longer than one minute. "Corridor" meetings with pharmaceutical representatives were not considered suitable for this study.

Australia

Two mechanisms were employed to recruit doctors in Australia.

1. Eleven divisions of general practices contacted general practitioners on our behalf. These organisations are members of the network of the Australian Divisions of General Practice and funded by the Australian Government Department of Health and Ageing.[22]
2. Doctors who were Healthy Skepticism[23] subscribers were invited to participate in the study and could nominate two doctors who would also be willing to participate. Healthy Skepticism is an international non-profit organisation aiming to improve health by reducing harm from misleading drug promotion.[23]

Malaysia

In Malaysia, primary care treatment of the public is provided by three different types of doctors. These are general practitioners in private clinics, family medicine doctors who are undergoing specialist training in teaching hospitals and family medicine specialists in teaching hospitals or private clinics. All types of primary care providers were included in this study.

1. Doctors from family medicine departments in two teaching hospitals in Malaysia, Universiti Sains Malaysia and Universiti Kebangsaan Malaysia were invited to participate in this study and asked to nominate two other general practitioners from private practice.
2. The Malaysian Medical Association (MMA)[24] invited its members to participate in the study.

Overall, 3038 doctors in Australia and 819 doctors in Malaysia were invited to participate in this study by letter and email. A reply letter with a prepaid envelope was attached to the invitation letter. A follow-up letter or email was sent if no reply was received within two weeks. In Australia, we also posted a brief advertisement in the newsletter provided by the South Australia Divisions of General Practice Inc. to invite doctors to participate in this study. The newsletter was sent to 1738 general practitioners in the division.

An information sheet was sent to doctors who agreed to participate in the study. Participating doctors were asked to provide personal details regarding gender, age, years in practice, postgraduate qualifications, number of doctors in practice and average number of pharmaceutical representatives they meet with every week. Each doctor was assigned an identification code.

Pharmaceutical representatives were made aware of the study and asked for consent to participate. Only doctors were allowed to obtain written consent from pharmaceutical representatives.

Questionnaire

After a pharmaceutical representative's visit, the doctors filled out a questionnaire focussing on the main product and claims discussed during the meeting. The majority of the questionnaire was based on questionnaires developed in previous studies.[25–27] The face validity of the questionnaire was assessed by six experts in the field of study and doctors in Australia, Malaysia and Canada. Then, the questionnaire was modified based on their comments. The questionnaire focused on the following items (Appendix 1):

Presentation assessment

The doctors were requested to rate the quality and value of the presentation as well as to provide their opinion on how convincing the presentation was and whether they would be more likely to prescribe the presented product.

Responses were further classified as follows:

Quality of presentations: 0–2.5 = not convincing, >2.5–5 moderately convincing, >5–7.5 convincing, >7.5–10 – very convincing (convincingness of presentations).

The quality of the information presented: 0–2.5 = poor, >2.5–5 satisfactory, >5–7.5 good, >7.5–10 outstanding.

Intention to start or increase prescribing: 0–2.5 = No change, >2.5–5 might change, >5–7.5 change, >7.5–10 intend to prescribe the product more often.

Value of the visit for improving your knowledge: 0–2.5 = Not useful, >2.5–5 moderately useful, >5–7.5 useful, >7.5–10 extremely useful.

Table 1: Nature of claims.

Claims	Example
Treatment effectiveness	Effective in treating osteoporosis.
Safety	A safe smoking cessation medication
Cost effectiveness	It is the most cost effective Angiotensin Renin Blocker.
Place in therapy	Indicated for dementia.
Convenient usage	Better compliance as once daily dosage.
Product properties	The medicine has the highest ability to activate receptors at the therapeutic dose.

Type of claims

The doctors recorded the main claim made by pharmaceutical representatives. The type of claim was classified by a researcher using the following classifications: effectiveness, safety, cost effectiveness, place in therapy, convenient usage and product properties (Table 1). The claims were further classified as follows: unambiguous, vague, emotive and non-clinical outcome (Table 2). This classification has been previously used in two other related studies of the quality of claims in medical journal advertising.[28,29]

The doctors were asked to judge whether the claim they recorded was accurate and to indicate if the word "safe" was used.

The availability of promotional materials

The doctors were requested to report if any free samples, gifts or invitations to company-sponsored programmes were offered.

The doctors were asked to store the completed questionnaires in a secure place and send the questionnaires to the researchers in a prepaid reply envelope.

Statistical analysis

All of the data were extracted by one researcher. Two pharmacists from Malaysia independently determined the nature and type of claims presented by pharmaceutical representatives in all of the encounters in both countries. Kappa tests were conducted with STATA version 10 to assess the consistency between observers.

The data entry was performed using SPSS database version 17.0. Descriptive statistics were produced. Chi-square analysis was used to assess differences in doctors' views on the sales presentations and quality of claims.

Table 3: Recruitment and participation of general practitioners.

General practitioners	Australia	Malaysia	Total
Invited	5046	819	5865
Agreed to participate	41 (1%)	48 (6%)	89 (2%)
General practitioners returned completed questionnaires	10 (24%)	24 (50%)	34 (38%)
Completed questionnaires included in the analysis	58	125	183
Number of products discussed	45	84	129

Clustered linear regression was conducted with STATA 10 to assess differences in the doctors' views of the presentations of pharmaceutical representatives between doctors in each country. This method allows us to take into account the fact that each general practitioner met several pharmaceutical representatives and returned several completed questionnaires.

Results

A total of 89 general practitioners agreed to participate in the study, and 34 general practitioners returned 183 completed questionnaires (Table 3). More general practitioners returned the completed questionnaires in Malaysia than in Australia. In Malaysia, from 127 returned questionnaires, two were excluded because the main products discussed were baby milk formula and a fermented milk drink. In Australia, among the 10 general practitioners who returned the completed questionnaires, three were Healthy Skepticism members. On average, each general practitioner completed six and five questionnaires in Australia and Malaysia, respectively.

Australian general practitioners were older than Malaysian general practitioners ($P = 0.01$), had more years in practice ($P = 0.02$) and were more likely to have post-graduate qualifications ($P = 0.02$). Most doctors in both countries (Australia, 70% (7/10), Malaysia 58% (14/24)) met between one and three pharmaceutical representatives every week.

The majority of doctors reported the presentations were convincing, likely to change their prescribing habits and helped improve their knowledge (Table 4). The clustered regression analysis revealed no significant difference between countries regarding the doctors' views on the persuasiveness of the presentation ($p = 0.13$), quality of information presented ($p = 0.36$), likelihood that they would start prescribing the

Table 2: Types of claims.

Claims	Example	Explanation
A: Unambiguous clinical outcome:	When compared with DRUG X, DRUG Y delivers faster symptom relief.	Clear information on which drugs were compared to the rate of symptom relief.
B: Vague clinical outcome:	DRUG X is a new, effective pill with a low incidence of discontinuation due to skin problems.	How effective? Compare to what? How low?
C: Emotive or immeasurable outcome:	DRUG X – one of a kind or DRUG X – a source of healing power.	Immeasurable outcome
D: Non-clinical outcome (e.g., drug plasma half-lives or biochemical markers):	Using DRUG X resulted in a 30% increase in arterial luminal diameter in post-mortem dissections.	Non-clinical information

Table 4: Overall presentation assessment (in cm, on a 10-cm scale).

Assessment	Australia Median	Malaysia Median
Did you find the representative convincing?	7 ± 1.5	7 ± 1.6
What did you think about the quality of the information presented?	7 ± 1.3	7 ± 1.4
Did you intend to start or increase prescribing of the drug?	5 ± 2.9	6 ± 2.8
What did you think about the value of the visit for improving your knowledge of the main drug?	6 ± 2.6	7 ± 2.7

products or prescribe them more frequently ($p = 0.08$) and value of the visit in terms of the knowledge gained ($p = 0.28$).

The nature of the claims made in Australia and Malaysia were not significantly different (Table 5). Approximately half of the main claims reported by general practitioners in Australia (57%, 33/58) and Malaysia (50%, 63/125) were about treatment effectiveness (Table 5). In the majority of presentations (Australia, 47/58 (81%), Malaysia, 109/125, 88%), general practitioners reported that pharmaceutical representatives claimed that the promoted medicines were safe. Among the safety claims made by pharmaceutical representatives, the majority of claims (Australia 60%, 28/47, Malaysia 54%, 59/109) indicated that their promoted medicines were as safe as or safer than a competitor's product or placebo including "As safe as any other angiotensin receptor blockers products" or "The medicine is safer than other fenofibrate".

Most doctors (73%, 24/33, $p < 0.001$) who reported the intention to prescribe the promoted products viewed the pharmaceutical representatives as very convincing. Approximately two-thirds of the general practitioners (69%, 35/51, $p < 0.001$) who rated the quality of information presented as outstanding valued the visit as extremely useful for improving their knowledge of the main drug. No significant differences were determined for the intention to start or increase prescribing by doctors who reported the presence or absence of safety information provided by pharmaceutical representatives ($p = 0.91$).

The Kappa (k) for the inter-rater reliability between the researchers on the nature (0.81, $z = 32.9$, $p < 0.001$) and type (0.68, $z = 19.7$, $p < 0.001$) of claims indicated a substantial agreement.

The majority of claims recorded by general practitioners in Australia and Malaysia were classified as vague claims (Table 6). Approximately one-third of the claims were unambiguous claims (Australia, 31% 18/58), (Malaysia 33%, 42/125) (Table 7). In both countries, doctors indicated that most of the claims that were classified as vague were judged to be entirely accurate (Australia 31%, 11/31, Malaysia 13%, 10/76) or mostly accurate (Australia 69%, 25/36, Malaysia 84%, 64/76). The clustered regression analysis found no significant differences between countries regarding the way doctors reported the quality of claims ($p = 0.34$) provided to them by pharmaceutical representatives.

Table 5: Nature of claims.

Classification of claims	Australia n/58 (%)	Malaysia n/125 (%)	P- value (Comparison Australia and Malaysia)
Treatment effectiveness	33 (57)	63 (50)	P = 0.95
Safety	8 (14)	21 (17)	
Cost effectiveness	1 (2)	5 (4)	
Place in therapy	10 (17)	23 (18)	
Convenient usage	2 (3)	5 (4)	
Product properties	4 (7)	8 (7)	

Table 6: Type of claims.

Classification of claims	Australia n/58 (%)	Malaysia n/165 (%)	P- value (Comparison Australia and Malaysia)
Unambiguous	18 (31)	41 (33)	P = 0.76
Vague	36 (62)	76 (60)	
Emotive	0	2 (2)	
Non-clinical	4 (7)	6 (5)	

Healthy Skepticism subscribers (HSS) and non-subscribers (HNS) reported similar trends in assessing the quality ($p = 0.06$) and value of the presentation ($p = 0.23$), assessing whether they found the presentation convincing ($p = 0.18$) or would be more likely to prescribe the presented product ($p = 0.67$) and the accuracy of the claims ($p = 0.73$).

Most of the general practitioners in both countries (Australia 69%, Malaysia 63%) reported that they received samples, gifts or invitation to a company-sponsored program (Table 9). Promotional brochures were more likely to be distributed in Malaysia (68%) than in Australia (36%) ($\chi 2 = 16.43$; $df = 1$, $P < 0.001$). Samples were more likely to be offered in Australia (41%) than in Malaysia (24%) ($\chi 2 = 5.75$; $df = 1$, $P < 0.02$). Continuing medical education was more likely to be offered in Malaysia (70%) than in Australia (23%) ($\chi 2 = 19.61$; $df = 2$, $P < 0.001$). In general, the value of the gifts was estimated to be $100 or less in local currency. Forty per cent of Malaysian doctors who received samples estimated their value to be between $100 and $500. Nearly a quarter of both Australian and Malaysian doctors indicated that they received an invitation to a company-sponsored program that was valued at $100 to $500.

No significant differences were noted in the physicians' judgement of how convincing the presentation was ($p = 0.63$), the quality of information presented ($p = 0.56$), intention to start or increase prescribing ($p = 0.09$) and the value of the visit for improving knowledge ($p = 0.12$) pertinent to the presence or absence of offered gifts.

Discussion

General practitioners in Australia and Malaysia typically held positive views of the presentation of pharmaceutical representatives. These practitioners rated the presentations as moderate and moderately high in terms of the persuasiveness of the presentation, the quality of information presented, the likelihood that they would start prescribing the pharmaceutical representatives' products or prescribe them more frequently and the value of the visit in terms of knowledge gained. These positive views are consistent with the results from previous studies, which were conducted in the US,[7,9] Peru[30] and the UK.[8]

Table 7: Doctors' responses to claims by various pharmaceutical representatives.

Variables		Australia n/58 (%)	Malaysia n/125 (%)	P- value (Comparison Australia and Malaysia)
Did you feel the main claim was accurate?	Entirely accurate	19 (33)	14 (11)	P = 0.01
	Mostly accurate	38 (65)	105 (84)	
	Entirely inaccurate	0	2 (2)	
	Mostly inaccurate	1 (2)	4 (3)	
Representatives claim that the product was safe	Yes	47 (81)	109 (88)	P = 0.27
	No	11 (19)	16 (13)	

Doctors' responses to claims by various pharmaceutical representatives.

Table 8: Some examples of marketing claims.

Claims	Nature	Type	Reason	Doctors' judgement	Country
" Longer half-life than other angiotensin receptor blocker"	Product properties	Non-clinical	Pharmacokinetics information	Mostly accurate	Malaysia
"Reduce incidence of MI in post infarct and stroke patients"	Treatment effectiveness	Vague	How good?	Mostly accurate	Australia
"Powerful BP reduction in a combined fixed dose tablet"	Treatment effectiveness	Emotional	"Powerful" – Immeasurable outcome	Mostly accurate	Malaysia
"Superior than Viagra"	Treatment effectiveness	Emotional	"Superior" – Immeasurable outcome	Mostly accurate	Malaysia
"No weight gain with its use"	Safety	Unambiguous	Clear explanation on the safety profile	Mostly accurate	Australia
"Indicated in anxiety-depression"	Place in therapy	Unambiguous	Clear explanation on indication	Mostly accurate	Malaysia
"Effective in treating osteoporosis"	Treatment effectiveness	Vague	How effective?	Entirely accurate	Australia
"Less side effects"	Safety	Vague	Compare to which medicines? How safe?	Mostly accurate	Malaysia

Table 9: Promotional materials.

Promotional materials		Australia n/58 (%)	Malaysia n/125 (%)	P- value (Comparison Australia and Malaysia)
Did the representative give you any promotional brochures?	Yes	21 (36)	85 (68)	P < 0.001
	No	37 (64)	40(32)	
Did the representative give you any samples?	Yes	24 (41)	30 (24)	P = 0.02
	No	34 (59)	95 (76)	
If yes, what is the estimated value?	<$100	22/24 (92)	17/30 (57)	P = 0.002
	$100–500	2/24(8)	12/30 (40)	
	>$500	0	1/30 (3)	
Did the representative give you any gifts	Yes	18 (31)	52 (42)	P = 0.17
	No	40 (69)	73 (58)	
If yes, please specify (e.g., pen, notepad, etc.)	Pens	9/18 (50)	38/52 (73)	P = 0.04
	Notepads	2/18 (11)	13/52 (25)	
	Others (Pillow, ruler, calendar, planner, bag, knife)	10/18 (56)	12/52 (23)	
What is the estimated value of the gifts?	<$100	17/18 (94)	52/52 (100)	P = 0.09
	$100–500	1/18 (6)	0	
	> $500	0	0	
Did you receive any invitation to a company-sponsored program? (e.g., medical education program, dinner, conferences, symposiums and research trials).	Yes	13 (22)	30 (24)	P = 0.81
	No	45 (78)	95 (76)	
If yes, please specify	Free lunch or dinner	10/13 (77)	3/30 (10)	P < 0.001
	CME	3/13 (23)	21/30 (70)	
	Conference	0	6/30 (20)	
What is the estimated value?	<$100	10/13 (77)	18/30 (60)	P = 0.28
	$100–500	3/13(23)	7/30 (23)	
	>$500	0	5/30 (17)	

The doctors' views regarding the educational value of the information given by pharmaceutical representatives are in contrast with research indicating that pharmaceutical representative presentations often provide incomplete information.[27,31] However, in addition to providing information, pharmaceutical representatives can employ a range of persuasive techniques that aim to influence doctors' opinions, such as appeals to authority figures, social validation acts and reciprocity acts through the provision of gifts.[32] In our study, approximately two-thirds of general practitioners in Australia (69%) and Malaysia (63%) indicated that they received samples, gifts or invitations to a company-sponsored program. This result is consistent with the results from other studies.[27,33] In a 2005 survey, most Australian specialists reported that they received food (90%), items for the office (90%), personal gifts (57%) and invitation to product launches, symposia or educational events (75–84%).[33] The provision of gifts may create indebtedness[17] that may result in inappropriate changes in prescribing drugs.[34,35] Although both the Australian and Malaysian code of conduct only permit the distribution of small gifts in the form of promotional aids, research has shown that even small gifts can have a negative effect on the prescribing behaviour of health professionals.[36] The results from a recent US study indicated that subtle exposure to small pharmaceutical promotional items influences attitudes toward marketed products among medical students.[37] Therefore, several professional organisations in several countries including the Royal Australasian College of Physician's in Australia[38] and the Wisconsin State Medical Society[39] in the US have adopted guidelines that prohibit the acceptance of gifts.

Samples were frequently given to doctors in Australia (41%) and Malaysia (24%). The provision of samples has been questioned because it may raise health care costs by promoting the use of new and expensive brand products.[14] In addition, samples being given to patients based on inadequate information may increase the risk of adverse drug reactions.[43–45] Although this result was based on a small sample size, it provides researchers with preliminary comparative data for future research that has potential important implications for the success of generic policies that were adopted by both Australia and Malaysia.[41,42]

Most of the claims recorded by general practitioners in Australia (62%) and Malaysia (60%) were classified as vague claims. Vague claims do not provide complete information based on measureable outcomes (e.g., "Better efficacy", "Effective"- without quantification). The insufficient information on the medicines provided in vague claims is unlikely to support doctors in making appropriate prescription decisions. This result adds to the body of evidence suggesting that most claims presented in pharmaceutical promotions are vague.[28,29]

In both countries, doctors indicated that most of the vague claims regarding benefits or harms were accurate (Australia 31%, Malaysia 13%) or mostly accurate (Australia 69%, Malaysia 84%).

This result suggests that doctors believed in the accuracy of claims despite most of the claims being classified as vague. Vague claims do not provide comprehensive medical information that allows doctors to judge the accuracy of claims. The doctors are susceptible to misinterpreting the accuracy of information provided by pharmaceutical representatives. In addition, these doctors are less likely to support the quality use of medicines when their prescribing practices were based on vague claims (Table 8).

Doctors may lack critical skills to objectively assess the quality of information provided in pharmaceutical promotions. This concern regarding critical appraisal skills has led to several initiatives to train doctors in analysing information on medicines.[40,41] The World Health Organization (WHO) and Health Action International (HAI) have collaborated to produce a manual that provides practical training for medical and pharmacy students to recognise a variety of promotional techniques.[40] The US Food and Drug Administration (FDA) introduced a "Bad Ad Program" that educates health care professionals to recognise misleading or inaccurate promotions and report them to the agency.[41] These programs are essential to encourage health professionals to be sceptical about medical information provided by commercial sources. Our results also highlight the need for doctors to rely more on non-commercial sources of information. The doctors in Australia have access to comprehensive independent sources of information on medicines, such as the National Prescribing Services,[42] The Australian Medicines Handbook[43] and Therapeutics Guidelines.[44] However, in Malaysia, limited independent information is available.[45] The Malaysian government should consider developing suitable and effective services to provide independent information on medicines to health professionals.

This study is an exploratory study. The small sample size and non-random sampling in this study limit the external validity of the study, and the results cannot be generalised to all Australian and Malaysian doctors. In addition, only general practitioners with an active interest in issues related to pharmaceutical promotions were more likely to participate. The scale used in our questionnaire on the doctors' opinion on the accuracy of the main claim included 'entirely' or 'mostly' accurate or 'entirely' or 'mostly' inaccurate. The scale did not enable doctors to consider middle values to be selected. Doctors might respond differently if a visual analogue scale was used.

Another limitation is that our results are based on self-reporting by general practitioners, which may be subject to recall bias. However, the surveys were completed immediately after the encounter. Therefore, the recall bias was likely to be limited. Because the claims were reported by doctors and classified by researchers, an overestimation of vague claims may have occurred.

Conclusion

Doctors in Australia and Malaysia typically held positive views of pharmaceutical representative presentations. Most claims were classified as vague. Because most doctors received samples, gifts or invitations to company-sponsored programs, they need to be aware of the potential consequences of the quality use of medicines.

Conflict of interest

Two of the authors (NO and AV) are members of Healthy Skepticism, which is an international non-profit

organisation aiming to improve health by reducing harm from misleading drug promotion. SBI and KO have been funded by several pharmaceutical companies including Pfizer (Malaysia) and Zuellig Pharma (Malaysia) to perform research and attend conferences. SBI declares that he has no financial disclosure or conflicts of interest relevant to this manuscript.

Authors' contributions

NO designed the study with input from AV and ER. NO applied for ethical approvals and recruited general practitioners in these two countries with the help of AV, ER, SBI and KO. NO gathered and interpreted the data and drafted the manuscript. NO, AV and ER were responsible for critical revision of the manuscript. All of the authors read and approved the final submitted version.

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Appendix 1

University of South Australia

Survey on quality of information provided by pharmaceutical representatives

Presentation details

Doctor's code:	❑ Personal presentation ❑ Group presentation If group presentation, please indicate number of doctors: ……
Presentation's date :	
Name of the main product detailed:	Current usage of the main product detailed: ❑ low ❑ medium ❑ high ❑ non user
The main product detailed was: ❑ A new medicine. ❑ Old medicine with new information/indication. ❑ Old medicine with general information	How long did the discussion last? ❑ 1-5 minutes ❑ > 5-10 minutes ❑ > 10 minutes ❑ > 20 minutes

Claims

1. What was the main claim made by the medical representative? Please provide details		
2. Did you feel the main claim was accurate?	❑ entirely accurate ❑ mostly accurate	❑ entirely inaccurate ❑ mostly inaccurate
3. Did the representative claim that the product was safe?	❑ Yes ❑ No	
If yes, please specify (e.g. safer than the competitor, no drug interaction, etc.)		
4. Did the representative advise you of the PBS listings and restrictions?	❑ Yes ❑ No	
4.1 If yes, please specify the PBS listings or restrictions mentioned to you.		

Overall presentation's assessment

5. Did you find the representative convincing?	
Not convincing 0	Very convincing 10
6. What did you think about the quality of the information presented?	
Poor 0	Outstanding 10
7. Did you intend to start or increase your prescribing of the drug detailed?	
No change 0	Intend to prescribe the product more often 10
8. What did you think about the value of the visit for improving your knowledge of the main drug?	
Not useful 0	Extremely useful 10

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University of South Australia

Survey on quality of information provided by pharmaceutical representatives
Availability of information

9. Did the representative give you the approved product information?	❑ Yes ❑ No
10.Did the representative spontaneously mention	
10.1 indications	❑ Yes ❑ No ❑ Unsure
10.2 dosage	❑ Yes ❑ No ❑ Unsure
10.3 contraindications	❑ Yes ❑ No ❑ Unsure
10.4 precautions for use	❑ Yes ❑ No ❑ Unsure
10.5 drug interactions	❑ Yes ❑ No ❑ Unsure
10.6 adverse effects	❑ Yes ❑ No ❑ Unsure
11. Did the representative answer your questions on contraindications, precautions, drug interactions, adverse effects?	❑ Yes ❑ No ❑ Partly ❑ No question asked
12. Given the nature of the drug detailed, do you think the representative should have mentioned contraindications, precautions for use, drug interaction or adverse effects spontaneously?	❑ Yes ❑ No

Promotional materials

13. Did the representative give you any promotional brochures?	❑ Yes ❑ No
14. Did the representative give you any samples?	❑ Yes ❑ No
If yes, what is the estimated value?	❑ <$100 ❑ $100-500 ❑ >$500
15.Did the representative give you any gifts	❑ Yes ❑ No
If yes, please specify (e,g. pen, notepad, etc.)	
What is the estimated value of the gifts?	❑ <$100 ❑ $100-500 ❑ >$500
16. Did you receive any invitation to a company sponsored program? (e.g. medical education program, dinner, conferences, symposiums, research trial).	❑ Yes ❑ No
If yes, please specify	
What is the estimated value?	❑ <$100 ❑ $100-500 ❑ >$500

Any other comment

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