

# ANALYSIS OF INFORMATIVE AND PERSUASIVE CONTENT IN PHARMACEUTICAL COMPANY BROCHURES IN LIBYA

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## ABSTRACT:

**Objective:** To examine the patterns of promoted drugs, the quality of information provided, the references cited, and the persuasive techniques used in pharmaceutical brochures in Libya.

**Method:** Cross-sectional analysis of pharmaceutical brochures collected between August and November 2010 from doctors' offices in three cities: Tripoli, Benghazi and Sebha.

**Result:** From 300 collected brochures, we took 190 promotional materials for 132 promoted products. Antibiotics (n=52; 27%) made up the largest proportion. Cardiovascular products (n=39; 20.5%) came next, with antihypertensive agents (n=23) approximately six-tenths (58.9%) and statins (n=9) nearly a quarter (23%) of that class. Twenty seven products (14.2%) were gastrointestinal tract agents (GITs) and 10 of the GITs were proton pump inhibitors (PPIs). Over 90% of brochures provided the generic name, indications, dosage regimen and brief pharmacological effects of the drugs they advertised. However, information on contraindications, precautions, pregnancy and lactation, and adverse effects appeared in only 70.5% of advertisements. Drug Overdose information appeared in only 33% of brochures, and out of the 134 (70%) of brochures that cited references, only 28 (20.8%) of these brochures cited their references appropriately. Only four of the advertisements displayed the generic name as prominently as the brand name and most (n=136; 71.5%) used only the trade name in the prescribing information section. Graphical presentations, emotional texts and pictorial content appeared in 60%, 88.9%, and 96.3% of brochures respectively.

**Conclusion:** Almost all brochures did not adhere to WHO ethical criteria for drug promotion and mostly relied on persuasive techniques.

## المخلص العربي:

**دراسة تحليلية لمحتوى المعلومات وطرق الإقناع في إعلانات كتيبات شركات الأدوية في ليبيا**  
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**الهدف:** دراسة أنماط الأدوية التي يتم الترويج لها في الكتيبات الإعلانية لشركات الأدوية في ليبيا وكذلك نوعية المعلومات والمراجع التي تحتويها بالإضافة إلى طرق الإقناع المستخدمة فيها.

**الطريقة:** تحليل مقطعي للكتيبات الإعلانية لترويج الأدوية والتي قد تم جمعها من مكاتب الأطباء في طرابلس وبنغازي وسبها في الفترة ما بين شهري أغسطس ونوفمبر 2010.

**النتائج:** مائة وتسعون كتيب إعلاني لـ 132 منتج دوائي تم إختيارها من مجموع كلي لـ 300 إعلان. النسبة الأكبر كانت للمضادات الحيوية (ع 27+52%)، تليها إعلانات أدوية القلب والأوعية الدموية (ع 39+20.5%) منها 23 إعلان لأدوية إرتفاع ضغط الدم والتي شكلت ما يقرب من ستة أعشار هذه المجموعة (58.9%) وأيضاً 9 إعلانات لأدوية إرتفاع الدهون (الاستاتين) أي ما يقرب من ربع هذه المجموعة (23%). سبعة وعشرون إعلاناً كانت لأدوية الجهاز الهضمي (14.2%) منها 10 إعلانات لمثبطات مضخة البروتون. أكثر من 90% من هذه الإعلانات تحتوي على الاسم العام وكذلك الاستعمال ونظام الجرعة والتأثير الدوائي. بينما محاذير الاستعمال والاحتياطات والتأثيرات الجانبية ومعلومات استعمال الدواء في فترة الحمل والإرضاع ذكرت في 70.5% من هذه الإعلانات. معلومات زيادة الجرعة للدواء ذكرت بنسبة 33% من الكتيبات ومن أصل 134 مادة إعلانية (70%) والتي استشهدت بالمراجع، 28 كتيب (20.8%) فقط تمت كتابة مراجعها بشكل مناسب. فقط أربعة إعلانات عرضت الاسم العام متساوياً في طريقة عرضه مع الاسم التجاري وأيضاً معظم الإعلانات (ع 136+71.5%) استخدمت الاسم التجاري في بند معلومات لوصف الدواء. العروض البيانية والعبارة العاطفية وكذلك العروض التصويرية ظهرت في 60% و 88.9% و 96.3% من هذه الإعلانات على التوالي.

**الاستنتاجات:** تقريباً جميع الكتيبات لم تلتزم بالمعايير الأخلاقية للإعلانات الدوائية لمنظمة الصحة العالمية، ومعظمها تعتمد على تقنيات الإقناع.

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### الكلمات المفتاحية:

شركات الأدوية، كتيبات، إعلانات، معلومات الأدوية

## INTRODUCTION:

Advertising is a key element of marketing strategy and advertising messages consist of a combination of information and persuasion<sup>1</sup>. Advertising in brochure form is a common “educational” gift supplied by pharmaceutical company representatives (PCRs) during their promotional visits and it can provide written reinforcement of any verbal message provided by PCRs. In Libya, a concurrent study found that 79% of surveyed respondents reported they were supplied promotional printed material by PCRs during promotional visits<sup>2</sup> and 94% of the respondents reported that new information about pharmaceutical products was the main benefit they received from their interactions with PCRs<sup>3</sup>. A brochure is a passive, convenient source of education and requires little effort to access. It may be tailored to a doctor’s request. It provides a summary of the scientific literature with graphs and references to support its advertising claims. It conveys information to readers in an attractive way since it is designed to be persuasive, with memorable headlines and impressive visuals. Advertising seeks to increase brand awareness and to change attitude and behaviour. The means of changing someone’s attitude is persuasive communication whether verbal or visual<sup>4</sup>. Aristotle<sup>5</sup> stated that individuals are persuaded based on the credibility of the source, emotional appeals, rational appeals or a combination of these elements. The Elaboration Likelihood Model (ELM)<sup>6</sup> describes how attitudes can be influenced by persuasive messages. It assumes that there are two routes through which persuasive messages are processed: the central route is depicted by thoughtful consideration and evaluation of the arguments and that attitude shaped from this message is predominantly cognitive. However, in the peripheral route, the reader who is unable to fully process all information received or who is unwilling to engage in a deeper thought process can be persuaded by using ‘heuristic’ means, such as visual image, tunes, colours, and celebrity endorsements. Pharmaceutical company interaction has been reported as one of the primary influence on doctors’ prescribing decisions<sup>7, 8</sup>. Pharmaceutical companies claim that promotion provides scientific and educational information to the doctors and ensures that patients receive the products they need in the correct dosage with adequate information about the usage of the products in order to ensure a positive health outcome for the patient<sup>9</sup>. Rational responsible prescribing assumes that a medical

professional balance the positive and negative features of each product and consider all the alternatives. Pharmaceutical promotional activities are regulated by several international and national guidelines. The World Health Organisation (WHO) and the International Federation of Pharmaceutical Manufacturers Association (IFPMA) establish the standards for ethical promotion of medicines by pharmaceutical companies. They emphasize that promotional practices must be reliable, accurate, truthful and not misleading. In the USA, the Food and Drug Administration (FDA) regulations require that all promotional printed material be accurate, balanced and consistent with the approved therapeutic claims<sup>10</sup>. However, in many countries, pharmaceutical companies do not always comply with these standards. Existing research demonstrates that pharmaceutical drug brochures can provide insufficient<sup>11, 12</sup> and unsubstantiated information<sup>11, 13</sup> as well as vague and misleading claims<sup>11, 12, 14, 16</sup>. Libya began privatising the pharmaceutical system in 2003. Pharmaceutical supplies were previously provided to both the public and private sectors by the National Pharmaceutical and Medical Supplies Company, but drug companies are also permitted to market and supply their products to both public and private health sectors through local agencies. In 2009, over 300 international pharmaceutical manufacturers from Europe, Asia and the Middle East were registered as permitted drug suppliers for Libya<sup>17</sup>. In Libya, the quality of drug information of pharmaceutical advertisements is largely unreported. Hence, the aim of this study is to examine patterns of promoted products in pharmaceutical brochures and to evaluate the rationality of drug advertisements in the pharmaceutical brochures by using the WHO guidelines for ethical drug promotion. The study also investigates the prevalence of persuasive techniques and the quality of the cited references in these materials.

## METHODOLOGY:

The design of this study was based on WHO Ethical Criteria for Medicinal Drug Promotion and other principles from previous studies<sup>12, 18, 19</sup>. Brochures were collected from doctors’ offices in primary and secondary healthcare institutes in three cities in Libya (Tripoli, Benghazi and Sebha). As a convenience sample, three hundred brochures were collected between August and December 2010.

Brochures were sorted to exclude:

- 1) Monographs

- 2) Reminder brochures with only the name of the product and no risk information or suggestions for use
  - 3) Promotional material for medicinal devices and equipment
  - 4) Pamphlets heightening awareness of particular diseases without mentioning pharmacotherapy
  - 5) Advertisements for cosmetic products.
- Duplicates were removed while brochures with different advertisements for the same drug were included. Promoted products were categorised according to therapeutic classes and their formulation. We examined all the elements of the bro

chures and assessed their compliance with the WHO criteria for drug advertisements<sup>19</sup>, Table 1a. Citation references obtained for assessment were retrieved from Pub Med, the University of South Australia's database or Google search engine. In each piece of advertising, the whole of the written text, photos and graphs and any surrounding material were checked against the criteria for evaluating citations, references, text, graphical information and pictorial persuasive techniques in, Tables 1b and 1c. We used descriptive statistics for statistical analysis. All values were expressed as frequencies and percentages in graphs and tables.

Table 1a. Criteria for availability of drug information in brochures were assessed based on WHO criteria (1988) for medicinal drug promotion

- The name(s) of the active ingredient(s) using either international non-proprietary names (INN) or the approved generic name of the drug;
- The brand name.
- Content of active ingredient(s) per dosage form or regimen.
- Mechanism of action
- Pharmacological effect
- Approved therapeutic uses.
- Dosage form or regimen.
- Side-effects and major adverse drug reactions.
- Contra-indications
- Warnings and drug precautions.
- Pregnancy and lactation.
- Major interactions.
- Management overdose.
- Name and address of manufacturer or distributor.
- Reference to scientific literature as appropriate

Table 1b. Criteria for evaluation of references supporting claims in pharmaceutical brochures

- Type of reference (journal article, abstract, books, data on file, government documents, websites, etc.).
- Containing all of the information necessary to identify references. A citation was considered complete if it included, at a minimum, author(s) name, title, publisher, year of publication and volume regardless of the format styles.
- Whether the cited references were retrievable vs. non-retrievable. (Retrievable if soft copy is obtained from the above resources in the internet and non-retrievable if the reference is not available or data on file).
- Whether the study or authors were affiliated with the pharmaceutical industry.

Table 1c. Criteria for analysing presentation styles and persuasion techniques in the textual and pictorial part of promotional brochures.

- Graphs.
- Variation of font headlines between trade names and generic name
- Variation of font size of within the brochure between the prescription information sections vs. the general text (legibility measured as equivalent Arial point size).
- Emotional texts (rhetoric, metaphors and hyperboles words and phrases)
- Using trade name instead of general name in prescription information section.
- Availability of images (products, patient or others).

## RESULTS:

### Characteristics of promoted products

Of 300 collected brochures, 190 promotional materials were evaluated for 132 non-proprietary products (Appendix 1).

Out of these 190 brochures, (n=22; 11.5%) of advertisements were combination fixed dose

products "multiple active ingredients" compared to 168 (88.4%) were single active ingredients the majority of promoted products (n=153; 80.5%) were oral products while external use and parenteral products were (n=18; 9.5%) for each. Of 132 products identified by a generic name, only

25 (19% are on the WHO Essential Medicines list (2011). The largest category of drug was antibiotics (n=52; 27.3%), Table 2. The most frequently promoted were amoxicillin/clavulanic acid (n=9) and clarithromycin (n=7), Appendix 1. The second major category of promoted products was cardiovascular (CV) drugs (n=39; 20.5%). Over the half of these drugs were antihypertensive agents (n=23; 58.9%), and angiotensin receptor blockers (ARBs) products (n=9) were the most frequent. Other well-promoted antihypertensive drugs were Amlodipine (n=4) and Valsartan (n=3). Statins made up (23%) of the CV products and atorvastatin appeared five times. Antithrombotic agents made (17.9%) of the CVs drugs and clopidogrel appeared four times. Twenty seven products (14.2%) were gastrointestinal agents (GITs) and PPIs represent 10 products from these GITs. Non-steroidal anti-inflammatory drugs (NSAIDs) comprised nearly 10% of total promoted products (n=17; 8.9%). Diclofenac was the most promoted product in this category (n=4) and there was one advertisement for a COX-2 selective inhibitor, Etoricoxib. Oral hypoglycaemic drugs (n=11) were approximately six per cent (5.7%) of the total. Glimepiride was found five times (4 times as a single product) and metformin four times (only once as a single active ingredient). Classification of promoted products is presented in, Table 2.

Drug category	N	%
Antibiotics	52	27
Hypoglycaemic Ags	11	6
Cardiovascular Ags	39	21
GITs	27	14
Analgesics	17	9
Rheumatologic Ags	5	3
Respiratory Ags.	10	5
Dermatologics	8	4
anti-cancer Ags	6	3
Miscellaneous	16	8
Total	190	100

### Adherence to WHO criteria for drug advertisements:

In all the 190 advertisements, the brand name were mentioned in all brochures and (n=172; 90.5%) mentioned the generic name with the trade name. General information such as the active ingredients appeared in 173 cases (91%). Indications, dosage regimen and brief pharmacological effects were mentioned in (n=174; 91.5%), (n=173; 91%) and (n=178; 93.6%) of cases respectively. The availability of this information is summarised in, Figure 1. Safety information on contraindications, precautions, preg-

nancy and lactation, and adverse effects information were presented in these advertisements as (n=135; 71%), (n=134; 70.5%), (n=131; 69%) and (n=136; 71.5%) respectively. Major interactions information was less presented (n=107; 56.3%). Mechanism of action and overdose management were also presented frequently- in just under one half (n=93; 49%) and one third (n=63; 33%) of the advertising materials respectively, Figure 1. Out of the 134 (70.5%) of brochures that cited references, only 27 (20.1%) of brochures cited their references in appropriate format.

### THE STUDY'S MAIN FINDINGS:

- Pharmaceutical brochures information is not always accurate or unbiased
- Emotional statements and visual contents in brochures are pervasive, persuasive, recall-inducing and influential.
- Pharmaceutical advertisements should adhere to the international ethical standards of pharmaceutical promotion.
- An approved code of conduct for pharmaceutical promotional activities needs to be established in Libya

### References:

The 190 promoted brochures gave a total of 750 References; an average of approximately 4 references each (range from 1 to 24). Of these references claims, only two-thirds (n=505, 67.3%) were retrievable. Of the 505 verifiable references, journal articles were (n=347; 69.2%), Abstracts (n=137; 26.7%), books (n=12; 2.3%) and websites (n=9; 1.7%). Of the 347 journal articles cited in support claims, (n=211; 60.8%) were funded by pharmaceutical companies, or the authors were affiliated with those companies, Table 3. Of 243 non retrievable references, 158 were incomplete (65%) and data on file (n=33, 13.5%) while only (n=40; 16.3%) of these references were cited in complete format. Non English language references were reported in 7 references (2.8%). In general, (n=217/750, 29%) of the cited references whether retrievable or non-retrievable were complete reference formats, Table 3. Only one of these brochures achieved full compliance with the WHO criteria.



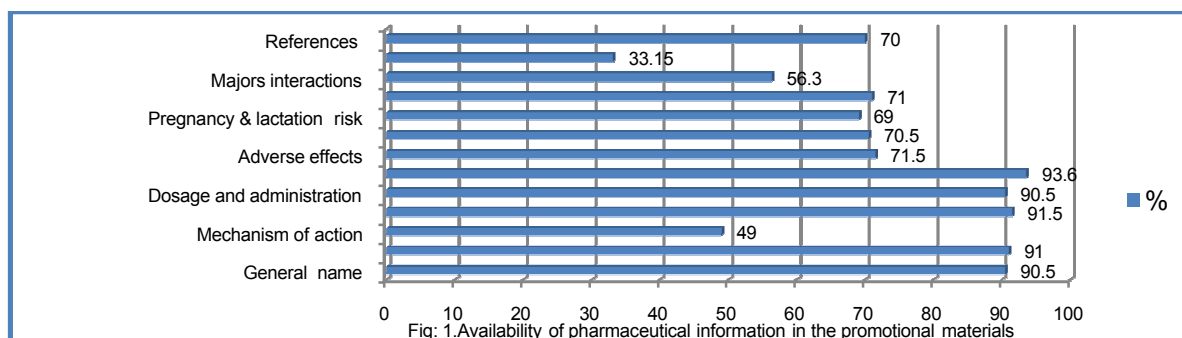


Table 3. characteristics of 750 References reported in PCRs brochures

Non-retrievable	Retrievable	Incomplete references	Complete references	Data on file & PDR	Meeting & conference	Non-English study
243/750	513/750	491/701	210/701	31/750	5/750	19/750
32.4	68.4	70%	30%	4.1%	0.6%	2.5%
Retrievable(513)						
Full article	abstract	book	website	Sponsored full article	Non-sponsored	
355/513	137/513	12/513	9/513	218/355	137/355	
69.2%	26.7	2.3%	1.7%	61.4	38.5	
Non-retrievable reference ( n=243)						
	Incomplete	complete	Data on file	Non-English	Others	
N	158	35	33	7	7	
%	65%	14.5%	13.5%	2.8%	2.8%	

### Persuasive techniques used in brochures:

Graphical presentations were displayed in (n=114; 60%) of promotional brochures. Of 190 surveyed brochures, only (n=4; 2.3%) of the advertisements displayed the generic name as prominently as the brand name. The majority of the 190 (n=136; 71.5%) used only the trade name instead of the general name in the context of prescribing information section, Table 4. The majority of prescribing information (n=118; 62%) appeared in a font size less than the main body text, and almost a half of brochures (49.4%) used a font size less than eight point. One in

eight (n=24; 12.6%) dropped to six points or below (Arial font readability equivalent). The majority of printed materials had pictorial information "pictures" (n=183; 96.3%) and emotional statements (n=169; 88.9. %), Table 4. Most pictures showed the promoted products (n=150; 78.9%) and a large proportion of also showed the patient or end user of the products (n=76; 40%). Less frequently, pictures focused on the site of drug action (n=26; 13.7 %). There were also a few brochures with other illustrations such as cartoons, landscapes or animals.

Table 4. categorisations of visual and verbal contents of pharmaceutical brochures

Name	N	%
Pictures	183	96.3
Graphs	114	60
Emotional phrases (metaphors, exaggerations)	169	89
Frequent using Trade name PI	136	72.5
Font and style of trade name different from the general name of promoted	186	97.8
Font of PI text (4-8) Arial	94	49.4
Font PI less than the major body text	118	62

PI: Prescription Information.

### DISCUSSION:

As far as we know, this is the first study in Libya to focus on quantitative aspects of the information and persuasive content in pharmaceutical brochures circulated to doctors' offices by PCRs. The different categories of drugs in the pharmaceutical brochures in this study provided an

insight into the marketing of drugs in Libya. The majority of promoted drugs (80.5 %) were oral dosage form and a minority (9.5% each) for external and parenteral use. A similar trend was reported in a study in Zimbabwe<sup>12</sup> in which oral dosage products accounted for 61% of the total

advertising, followed by parenteral preparations (22%) and topical preparations with only 4%. This trend is not unexpected since the oral route, in general, is the most convenient and usually the safest and least expensive for the patient. For rational drug use essential drugs must be available<sup>21</sup>. All of the promoted products in these brochures are produced by foreign manufacturers. The study found that only 25 items from 132 promoted products consistent with the WHO's list of essential medicines. The Libyan Health Law, act number 106 of 1973 and its explanatory notes of 1975, states that registration of medicines with the Libyan Ministry of Health should precede the availability of any medicine in the Libyan market. Since all the promoted drugs assumed to be approved by the ministry of health, one may raise question as to whether these products cover the essential drugs needed in Libya. Full discussion about the selection process of the list of essential medicines is beyond the scope of this paper. The study revealed that anti-infective agents had the highest rate of promotion (27%), particularly the three classes: B-lactams, macrolides and quinolones. Amoxicillin/clavulanic acid, and clarithromycin antibiotic were the most frequently promoted products of all. This promotion of antibiotics is consistent with the trend of drug prescriptions in Libya. A previous study reviewed 700 prescriptions from Tripoli and Al-zawiya and found 25% of prescribed medicines were antibiotics<sup>22</sup>. Another retrospective drug utilization study in different wards of Zawiya Teaching Hospital<sup>23</sup> found that amoxicillin/clavulanic was the most-used antibiotic in two consecutive years, 2008 and 2009. The current study did not assess the relationship between the written information provided by the PCRs and doctors' prescribing behaviour. However, Zoutman, et al.<sup>24</sup> assessed antibiotic prescribing for upper respiratory tract infections (URTIs) by family doctors and the subsequent influences on antibiotic prescribing and found that doctors who relied on commercial information sources, such as PCRs, were more likely not to prescribe first line antibiotics for acute sinusitis. The current study found that broad spectrum antibiotics were more frequently promoted than narrow products. In Libya, there are no national therapeutic guidelines or policy for rational prescribing of antibiotics. Overuse of antibiotics, particularly broad-spectrum antibiotics, in primary care is a major contributing factor to increased prevalence of resistant pathogens in the community<sup>25</sup>. Of the cardiovascular medications (n=39; 20.5%), antihyperten-

sives were the most promoted subclass (n=23; 58.9%), and ARBs were the more frequently advertised (n=9) than other antihypertensives. Consistently, the increased use of gastrointestinal drugs was driven by increased advertising of PPIs. We found that PCRs are more likely to promote new generation products like broad spectrum antibiotics, anticoagulants, antihypertensives, statins, and PPIs, than existing drugs. Doctors' choices of drugs are influenced by perceived pharmacological advantages and cost effectiveness over the alternatives. Newer drugs sometimes offer improvements over existing therapies. However, a study in Canada<sup>26</sup> assessed 1147 new products showed that only 142 (12.3%) were the drug of choice to treat effectively a particular illness or to provide a substantial improvement over existing drugs. Previous studies<sup>27, 28</sup> reported that claims about new drugs may be inaccurate or biased and may encourage usage of more expensive branded drugs. Recently (2012), the United States Justice Department fined the GlaxoSmithKline (GSK) company \$US 3 billion for unlawfully promoting unauthorized uses "off-label use" of paroxetine and bupropion, and for failing to report safety data about the controversial GSK diabetes drug rosiglitazone. The aggressive promotion of new drugs suggests that the new drugs are superior to existing products despite doubts in the literature about their actual value<sup>29</sup>. Prescribing new and expensive drugs because of pharmaceutical marketing is the main reason for rising prescription expenditures. The effectiveness of drug detailing is directly dependent on the quality of drug information provided and this will have a direct effect, positively or negatively, on doctors prescribing decisions. Rational prescribing assumes that a medical professional balances the positive and negative features of each product and considers all the alternatives. Brochures should contain all relevant and pertinent scientific information. In this study, almost all brochures fail to comply with the WHO Ethical Criteria for Medicinal Drug Promotion. They provide unbalanced information about their products. Information regarding indication, dosage regimen and pharmacological properties was satisfactory in most cases (>90%). However, safety information which may discourage use of a drug was less frequently presented. The risk information (contraindications, pregnancy and lactation information, precautions, adverse effects and major interactions) were reported in average 67.7% of the promoted literatures. This finding matches another study conducted in Libya in (2010) in

which 41 - 65% of the medical practitioners surveyed reported that PCRs rarely or never mentioned safety information<sup>30</sup>. To omit safety information can negatively impact on rational drug prescribing decision and patient healthcare outcome. In this study, 30% of brochures (n=56) did not contain any reference to support the claims. Similar finding were also observed in other studies<sup>31,33</sup>. Pharmaceutical companies provide bibliographical references in brochures of promoted products to give apparent respectability and credibility to the advertisements. However, the quality of these references varies widely and some are not readily accessible. A systematic review study by Othman et al.<sup>34</sup> found that citation errors are widespread in pharmaceutical company advertisements worldwide. This study found that nearly one third (32.6%) of the total references (n=750) could not be retrieved. Further analysis revealed that the majority of non retrievable references (n=158; 65%) contained only partial bibliographic information, compared to 16.3% (n=40) completely formatted. Also a considerable number came from private sources such as industrial data on file (n=33; 13.5%), which is in most cases not available from pharmaceutical companies when it is requested<sup>31,35</sup>. It is also noteworthy that presenting a citation does not mean that the claims in advertisements are valid. Lankinen et al.<sup>36</sup> found in that all of unambiguous claims by pharmaceutical companies did not cited with strong scientific evidence but they had relatively more supporting references than other claims. Therefore, regardless of the claims in an advertisement, high-quality citations are crucial for credibility, and if the cited reference is non-retrievable, the information is unreliable. Full bibliographic information enables health professionals to check validity of the claims in the brochures. In this study, the majority of references of journal researches 218 (61.4%) involved work sponsored by or authors affiliated to pharmaceutical companies compare the figure of 58 % from Cooper et al<sup>31</sup>. In a systematic review<sup>37</sup>, 16 studies assessed the relationship between the outcome and source of funding. This review found that 13 studies revealed the existence of relationship between funding by pharmaceutical industries and the trial outcomes in favour of their funded products. Funding predicates bias, one might say. Another two studies<sup>35, 38</sup> found the majority of pharmaceutical advertisements to be based on studies of poor methodological quality. Therefore, concerns about brochures are well established. The current study found that graphical data ap-

peared in nearly two thirds of the surveyed brochures (n=114; 60%). Remarkably, this percentage is quite high compared to another study done in India which found only 15.9% had graphs<sup>39</sup>. The visual approach communicates information summarises outcomes and simplifies the content of the advertisement. However, these graphs also may misrepresent data, leading to wrong inferences and incorrect conclusions. Cooper et al. found that of 74 graphs in medical journals, 8% had errors, 5% were visually confusing and 12% did not follow standard graphing techniques. Another study<sup>40</sup> reported that necessary information such as confidence interval of p value, power calculations and "number needed to treat" were often missed in pharmaceutical advertisements. It is important to note that the compliance of the content of pharmaceutical brochures for WHO essential criteria does not guarantee the safety or the effectiveness of promoted products. Since doctors are busy professionals, they may have little capacity to process abundance of advertising messages and editorial content. Under such circumstances, brand awareness, knowledge, and images affect doctors' cognitive beliefs leads to sympathy for the brand and brand preference, which in turn affects prescribing habits<sup>41</sup>. The way information is presented can greatly affect the cognitive activity of audience receiving it. Brochures incorporate various psychological and emotional techniques to persuade the reader. The primary purpose of drug advertisements is to create product awareness, attract attention, arouse interest, create positive attitudes, and influence prescribing decision. The persuasive aspects of both visual and text elements characterised most of the brochures. In advertising techniques, the font sizes, pictorials, headlines and body text of the brochures all have specific marketing influence. Hence, the level of understanding and comprehension of the advertisement are prerequisite into the consumer memory and change their attitude<sup>42</sup>. Consequently, clear writing captures the reader's attention and legible text is essential for speed and comprehension<sup>43</sup>. This study found that product-favouring information, such as trade name, pharmacological efficacy and emotional words and phrases about uniqueness, were presented in text with larger font size than generic drug names or the prescribing information sheets. Headlines draw attention and increase the persuasive connection with the brand name. A prominent brand name is easily to recall and retrievable while writing a prescription than general name. However, the smaller font size used for generic

information distracts attention from it and affects the capability of the information sheet to be comprehended properly. The decision making process can be influenced by retrieval of brand information from memory and this knowledge can be acquired from sources in the external environment. Busy practicing physicians are more likely to extract the information quickly and indistinct print decreases the interaction of readers with it. Advertising research confirms that frequent exposure to advertisements increases brand awareness<sup>44, 45</sup>. Over the half of brochures use the trade names instead of general name in the prescribing information sections. In the same way as with the font size, improving the memory of the brand name of the promoted product increases the chance of this brand name being prescribed by the doctor.

#### LIST OF ABBREVIATIONS:

PCR: Pharmaceutical Company Representative.  
WHO: World Health Organization.  
IFPMA: International Federation of Pharmaceutical Manufacturers Association.  
FDA: Food and Drug Administration.  
PPIs: Proton Pump Inhibitors  
ARBs: Angiotensin Receptor Blockers  
GITs: Gastrointestinal Tract Agents  
COX2: Cyclooxygenase2  
URTIs: Upper respiratory tract infections  
PDR: Physician's Desk Reference

Using branded drugs instead of generics is one of the reasons for rising prescription expenditures<sup>46</sup>. Steinman et al.<sup>47</sup> examined the frequency of physicians using brand or generic terminology for prescription medications. They found 79% of prescriptions used brand names and had a generic equivalent at the time of the survey. In Libya a study<sup>22</sup> found only 10% of medicines were prescribed by generic name. This lower rate in Libya may be attributed to the influence of the interaction of prescribers with PCRs. On the other hand, this could be also attributed to money spent on brand-name promotion. In the United States, the FDA recommends that generic name should have a prominence equal to that of the brand name including all printing features. If the running text spans more than one page, it also recommends that the established name accompany the generic name at least once per page<sup>48</sup>. Physicians want medicines to be safe, effective, tolerated, and acceptable to patients. Advertisements use several means such as pictures or emotive words to associate the brand name with these features. Pharmaceutical companies use a unique brand identity to differentiate their products from the competition and

also use emotional phrases or pictures subliminally to stimulate the cognitive process<sup>49</sup>. We found visual images (89%) or emotional texts (87.3%) in almost all of the brochures. All these marketing aspects are designed to work together to persuade physicians to prescribe a promoted product. In other words, repetition of the same message in different ways augments the value of the original message. Pictures provide motivation for readers to read and comprehend the brochures<sup>49</sup>. They are more understandable and more readily absorbed than similar message presented only in words since the pictures likely activate a visual as well as a verbal encoding process<sup>50</sup>. Pictures also create a positive attitude and more cognitive elaboration through emotional affects and the reinforcement of verbal text<sup>51</sup>. For instance, pictures of the promoted products (78% of total brochures) make implicit a set of unique associations with brand name and company product which are easily coded in the visual memory of the prescriber and which may take a longer time to deteriorate from the brain than text messages do. Similarly, pictures that imply superior patient healthcare outcome were found frequently in brochures (40% of total brochures). These emotional affects in advertisements are comprehensive, memorable and influential and divert the prescribers from a merely medical context to a sociocultural perspective<sup>52</sup>. Less frequently, brochures have informational pictures such as the mechanism or site of drug actions (n=26; 14%). There are several implications that can be derived from this research. The quality of information provided during drug detailing visits has repercussions for adopting or not adopting a particular drug<sup>30</sup>. In many developing countries, rational prescribing guidelines are either unavailable or not effectively implemented and PCRs are frequently the only source of drug information<sup>53</sup>. In absence of an independent source of drug information, as in Libya, commercial information tends to replace retrieval based evidence. Earlier studies reported that PCR interactions with doctors can have a negative impact on prescribing practice<sup>54</sup>. Our findings highlight the current state of pharmaceutical promotion in Libya and offer policy makers insight into areas for improvement. To ensure balanced information and consistent standards about promoted products needs a continuous process of monitoring, evaluation and appraisal of pharmaceutical advertisements by the health professional disciplines. Omitting specific requirements of information sheets such



as contraindications and adverse effects may be judged as breaching the Code of Practice. Hence, prescription information should include a clear statement for each requirements of drug information sheets according to WHO criteria, even if that information is non-applicable or unreported, to avoid missing any important elements. Most pharmaceutical brochures use emotional claims in promoting company products to reinforce their persuasive messages. Unethical pharmaceutical promotion and low quality of drug information lead to irrational prescribing of drugs. Physicians may underestimate or be unaware of hidden messages in images and emotional texts in advertisements, which can create a positive attitude toward promoted products. Physicians need to assess carefully the emotional statements and images in drug promotional literature before making any decisions based on them. Government and national medical agencies should also take practical positions in monitoring pharmaceutical promotion activities to ensure consistent standards and appropriate control of drug advertisements. Another problem that needs specific attention is that the Libyan regulations for pharmaceutical promotion urgently need to be reformed and updated, consistent with recent developments in pharmaceutical drug marketing. All drug advertising should include risk information and provide complete scientific evidence in citations that (a) actually support the claims and (b) can actually be retrieved. Claims should be balanced and factual without emotional information.

## CONCLUSION:

The common promoted products are antibiotics, cardiovascular drugs and PPIs. Almost all the circulated brochures of PCRs did not provide essential information recommended by WHO ethical criteria for medicinal drug promotion, with widespread citation errors in bibliographic references. The majority of pharmaceutical brochures employ persuasive techniques in their marketing, designed to be memorable and influential. Pharmaceutical companies should closely scrutinise their printed advertisements to ensure their content complies with international standards. Since the assessment of the rationality of promotional materials requires scientific skills, we support the idea that health professionals should be educated about critical appraisal and evaluation of evidence. This may also teach health professionals about marketing techniques and help them to attend more closely to visual presentations and to analyse them more critically.

**Limitations:** There are limitations to this study. The validity of the study results may be limited by the number of pharmaceutical brochures surveyed. The generality of our results is uncertain because we focused only on advertisements in Libya in 2010. The aim of this study was not to directly and objectively assess the accuracy and efficacy of the information provided by PCRs. We did not assess whether the references adequately substantiated each claim made in the advertisements. We did not attempt to request data on file from pharmaceutical companies. Although we investigated all journal advertisements in the database of the University of South Australia, this may not reflect the content of other databases or other types of electronic libraries. Hence, the use of a single database to assess the retrievability of references could be also considered a potential limitation.

## CONFLICT OF INTEREST:

The authors have not received any funding or benefits from industry or elsewhere to conduct this study.

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**APPENDIX1. LIST OF PROMOTED DRUGS IN PCRS BROCHURES**

1	Glimepiride (4)	67	Domperidone
2	Glimepiride/metformin	68	Metformin/ Glibenclamide
3	Clomiphene	69	Valsartan(3)
4	Loperamide	70	Indapamide
5	Bromohexine	71	Lansoprazole
6	Irbesartan	72	Ceftizoxime
7	Ibuprofen(2)	73	Gliclazide
8	Azithromycin(4)	74	Piroxicam(3)
9	Salicylic A, lactic A, polidocanol	75	Cefditoren.
10	Ranitidine	76	Cefixime
11	Calcipotriol\ betamethasone.	77	Cefdinir
12	$\alpha$ -Glucosamine / Ginkgo/ Biloba	78	Moxifloxacin
13	Salbutamol	79	Methyprednisolone
14	Ketoprofen (2).	80	Isoflurane
15	Mesalazine	81	Naproxen
16	Salmeterol/ fluticasone	82	Alginate acid/colloidal aluminium hydroxide / magnesium hydroxide
17	Fusidic acid	83	Polycresulen
18	Betamethson, Tolnaftate, Clotrimazole, Gentamycin	84	Methotrexate
19	Ciprofloxacin(4)	85	Gentamicin
20	Etoricoxib	86	Ofloxacin(2)
21	Meloxicam	87	Ornidazole
22	Nifedipine (2)	88	Acarbose(2)
23	Anastrozole(2)	89	Amoxicillin
24	Goserelin	90	Bisoprolol
25	Bicalutamide/ Goserelin	91	Levofloxacin
26	Diclofenac (5)	92	Paracetamol/chlorpheniramine/pseudoephedrine/Guaifenesin/pseudoephedrine
27	Risedronate	93	Codeine
28	Meclozine/ Pyridoxine	94	Simvastatin (2)
29	Clopidogrel (4)	95	Trimebutin
30	Esomeprazole (2).	96	Mebeverine
31	Amoxicillin/ clavulanic acid (9).	97	Vancomycin
32	Dextromethorphan	98	Imidapril.
33	Thiocolchicoside	99	Donepezil
34	Omeprazole(5)	100	Micronized
35	Pancreatic enzyme substitution	101	Vitex(12combination).
36	Candesartan12	102	Isosorbidedinitrate
37	Amlodipine(4)	103	Betamethasone/neomycin
38	Eprosartan	104	Metronidazole
39	Atorvastatin(5)	105	Carvedilol
40	Pioglitazone/ Metformin	106	Olmesartan /plus(HCZ)
41	Rosuvastatin(2)12	107	Lisinopril
42	Enoxaparin	108	Recombinant Human Granulocyte Colony-stimulating Factor(Rh-G-CSF)
43	Clarithromycin(7)	109	Mesalamine
44	Flucloxacillin/ Amoxicillin	110	Felodipine
45	Cefuroxime(3)	111	Meropenem
46	Diclofenac/ methocarbamol	112	Alfuzosine
47	Gemifloxacin	113	Tinzaparin
48	Prifiniumbromid	114	Alfacalcidol
49	Dexamethasone	115	Ursodeoxycholic acid
50	Lyophilized Fish Roe/Ginkobiloba	116	Fexofenadine
51	Pantoprazole(2)	117	Metformin.
52	Ketoconazole(2)	118	Lactulose
53	Candesartan/ hydrochlorothiazide	119	Roxithromycin
54	Calcium analogues and others	120	Dexchlorpheniramine/ pseudoephedrine/ guaifenesin
55	Polymyxin B, Neomycin, Dexamethasone	121	Dimethindene
56	Doxycycline	122	rh-Erythropoietin
57	Ceftazidime	123	Metoclopramide
58	Itraconazole	124	Dextromethorphan/ Guaifenesin / Menglycate
59	Sulbactam/ Ampicillin	125	Mometasone
60	Progesterone	126	Buflomedil
61	Levocetirizine	127	Losartan
62	Lipidosterolic extract of Serenoa repens	128	Dorzolamide/ Timolol
63	Ibuprofen/ Levometenol	129	Phloroglucinol, Trimethylphloroglucinol
64	Chondroitin sulphate	130	Guaifenesin/pseudoephedrine
65	Oral Clostridium, Butyricum & bifidobacterium	131	Fondaparinux
66	Benproperine	132	Dinoprostone



## APPENDIX2. EMOTIONAL WORDS AND PHRASES (RHETORIC, METAPHORIC AND HYPERBOLIC) IN PCRS BROCHURES

1	Nausea and vomiting not any more	39	gain power and vitality,
2	Golden standard for a healthy life.	40	for a best power,
3	the Sunshine X,	41	ensures clear benefits,
4	Xdrug can explore the heart of underwater region,	42	the truth about otitis media,
5	let him walk again without the cane,	43	efficacy shaped in convenience,
6	soothing the stream of fire,	44	unmatched pain killing strength, the top of the relief,
7	power on target,	45	"Xdrug the standard and still the best",
8	the prime choice is Xdrug successful,	46	sweet balance,
9	Xdrug advanced medicine for pain,	47	eternal youth,
10	"STOP",	48	the best known,
11	Starting where other end,	49	rewarded quality,
12	the fastest way to relief,	50	"Happiness is gold.. don't rob the moment",
13	power of the king,	51	"can't hit pathogens any harder",
14	no wasted shots full control,	52	only the best reaches the top",
15	maximum protection,	53	I can breathe easier with X drug",
16	let her live ,	54	"control beyond cholesterol",
17	evidence of CV benefits with Jupiter,	55	"an expert's choice",
18	the most tolerated power,	56	unique action,
19	"Fast.. Slow Together can Go",	57	start on winning note,
20	fire prevention,	58	play the right card,
21	efficacy you can depend on,	59	hit the right target,
22	clearly different,	60	Stop existing...start living,
23	"the rabbit rapid",	61	"experience the drop reach the goal",
24	"you can rely on",	62	Need to lower your pressure?",
25	"the power you can trust to work day after day",	63	mastering the common pathogens,
26	"First time recovery",	64	cutting edge antibiotics,
27	"blow your dandruff away",	65	fitted to your patients ,
28	on the right level you'll get further",	66	make life more streamlined,
29	keeping the balance,	67	proven safety,
30	"unity is strength..",	68	"No cri! Just comply",
31	the ultimate feeling of relief",	69	"bring down your cholesterol",
32	"health is real wealth",	70	do today's allergic require a potent treatment?",
33	"the fastest way to relief",	71	FDA approved
34	"omeprazole the real PPI",	72	, powerful yet kind,
35	the strongest link,	73	newest oral proton pump inhibitors ,
36	Trusted gaining from your experience,	74	enlarging step to recovery,
37	pliable power,	75	Protection.. beyond blood pressure,
38	the ideal solution,	76	your direction in anticoagulant