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# Ohio pharmacists' perceptions of over-the-counter drug advertising

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*The University of Toledo*

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A Thesis

entitled

**Ohio Pharmacists' Perceptions of Over-the-Counter Drug Advertising**

by

**Priyanka S. Potnis, B. Pharm.**

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the  
Master of Science Degree in Pharmaceutical Science

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The University of Toledo

December 2012



An Abstract of  
Ohio Pharmacists' Perceptions of Over-the-Counter Drug Advertising

by

Priyanka S. Potnis

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the  
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Over-the-counter (OTC) drugs are one of the most important and easily available public health aids for the treatment of common conditions or symptomatic relief. Although there are different means of providing the consumers with drug information, advertising seems to be one of the best ways and a powerful method of broadcasting information. Numerous changes have occurred in pharmaceutical advertising in recent times. This research is conducted with the intention of exploring the advertising of OTC drugs from the point of view of pharmacists.

The purpose of this study was to evaluate various aspects of pharmacists' perceptions of over the counter drug advertising. This was a cross sectional exploratory study design. Pharmacists were provided with a survey to identify their perceptions about OTC drug advertising. Data was obtained from 292 pharmacists licensed in the state of Ohio, registered under the Ohio State Board of Pharmacy, practicing within the state of Ohio and working in a community pharmacy setting.

Construct validity and reliability of the questionnaire were tested using Rasch measurements. Descriptive statistics and Chi-Square Tests for Independence were generated to study the relationship between measures for each of the research questions and the demographics & miscellaneous variables.

A large number of the surveyed pharmacists (81.5%) were found to have negative attitude towards OTC drug advertising. A majority of the pharmacists (84%) believed that it has a great effect on the patients and the patients are highly influenced by OTC drug advertisements (90%). However, 91% of the pharmacists agreed that their choice of the drugs was not impacted much. An equal distribution was seen among pharmacists who thought over-the-counter drug advertising improves and those who thought that it does not improve patient-pharmacist interactions. Results of the chi-square test indicated a significant difference between the impact of over-the-counter drug advertising on pharmacists' choice of drugs based on gender  $X^2(1, N = 292) = 12.58, p < .01$  and location of the pharmacy  $X^2(2, N = 292) = 11.63, p = 0.003$ .

Results show that nonprescription drug advertisements are falling short in their attempts to attract the pharmacists. Pharmacists feel that the appropriateness and effectiveness of currently seen over-the-counter drugs advertisement are less than optimal and that advertisements need to focus on conveying quality information to the pharmacists and the patients rather than the promotional aspects.

For my parents, who supported me each step of the way. Your love and encouragement made this possible.

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# Table of Contents

Abstract	iii
Acknowledgements	vi
Contents	vii
List of Tables	x
List of Figures	xi
1. Introduction	1
1.1 Background	1
1.1.1 Use of Over-the-Counter Drugs	2
1.1.2 Prescription to OTC Switches	3
1.1.3 Safety Concerns of OTC Drugs	4
1.1.4 Pharmacists' Role in Over-the-counter Drug Use	5
1.1.5 Trends in Over-the-counter Drug Advertising	7
1.1.6 Role of Federal Trade Commission in OTC Drug Advertising	8
1.2 Rationale	9
1.3 Significance	11
1.4 Goal	12
1.5 Objectives	12



1.6 Research Questions	13
2. Literature Review	14
2.1 Use of Over-the-counter Drugs	14
2.2 Over-the-counter Drugs and Pharmacists	18
2.3 Influence of Over-the-counter Drug Advertising on Consumers	21
2.4 Over-the-counter Drug Advertising and Pharmacists	24
2.5 Over-the-counter drug advertising internationally	26
2.5.1 Impact on patients	26
2.5.2 Impact on pharmacists	26
3. Methods	28
3.1 Study Design	29
3.2 Study Variables	29
3.3 Sample Selection	30
3.3.1 Inclusion Criteria	31
3.2 Sample Size Determination	32
3.4 Survey Instrument	32
3.5 Instrument Administration and Data Collection	34
3.6 Data Analyses	35
4. Data Analyses and Results	37
4.1 Reliability and Validity	37
4.2 Response rate	39
4.3 Respondent characteristics	40

4.4 Descriptive statistics for the objectives	43
4.4.1 Pharmacists' attitude towards OTC drug advertising	43
4.4.2 Pharmacists' beliefs about the effects of OTC drug advertising	45
4.4.3 Impact of OTC drug advertising on pharmacists' recommendations	46
4.4.4 Influence of OTC drug advertising on patients' choice of the drugs	47
4.4.5 Effect of OTC drug advertising on patient-pharmacist interactions	48
4.5 Association between pharmacists' perceptions and demographic & miscellaneous variables	50
5. Discussion	54
5.1 Discussion of Results	54
5.1.1 Reliability and validity	54
5.1.2. Pharmacists demographics and other variables	55
5.1.3 Discussion of study objectives	56
5.2 Limitations	62
5.3 Implication for future research	63
5.4 Conclusion	64
References	65
A Pre-Notification Letter	74
B Survey Cover letter	75
C Survey	79

## List of Tables

3.1	Distribution of pharmacists based on practice setting	31
3.2	Calculation of scores for the objectives	36
4.1	Rasch analysis results	39
4.2	Demographic characteristics of the pharmacists	41
4.3	Miscellaneous characteristics of the pharmacists	42
4.4	Items measuring pharmacists' attitude towards over-the-counter drug advertising	43
4.5	Items measuring pharmacists' beliefs about the effects of over-the-counter drug advertising	45
4.6	Items measuring impact of OTC drug advertising on pharmacists' recommendations	46
4.7	Items measuring the influence of OTC drug advertising on patients' choice of the drug products	47
4.8	Items measuring effect of over-the-counter drug advertising on patient-pharmacist interactions	49
4.9	Chi Square test for Gender * Impact of OTC drug advertising on pharmacists' recommendations	51
4.10	Chi Square test for Location of the pharmacy * Impact of OTC drug advertising on pharmacists' recommendations	52

## List of Figures

2-1 Trends in Over-the-counter drug retail sales (2000-2009)	16
2-2 Sales of Over-the-counter drugs by categories (2008-2011)	17
2-3 Preferred Over-the-counter brand recommendations of pharmacists	20

# **Chapter 1**

## **Introduction**

This chapter gives an introduction of over-the-counter (OTC) drugs, their use and safety concerns. It discusses the role played by pharmacists in OTC drug industry and trends in the advertising of OTC drugs. The chapter further provides the goals and objectives of the study and the rationale and significance behind it.

### **1.1 Background**

Over-the-counter or non-prescription drugs are one of the most important and easily available public health aids for the treatment of common and mild conditions or symptomatic relief. Over-the-counter drugs comprise of a range of products from acne treatment to cough and cold products to weight control products. In the past, pharmaceutical manufacturers relied on physicians and pharmacists to provide the drug information to the patients.<sup>1</sup> However, with the advent of technology, medications came to be marketed to the consumers, using a variety of media, thus enabling them to make drug choices for themselves. Although there are different means of providing the consumers with drug information, advertising seems to be one of the best ways and a powerful method of broadcasting information. This research is conducted with the

intention of exploring the advertising of OTC drugs from the point of view of pharmacists, the profession that largely involves dealing with OTC drugs.

### **1.1.1 Use of Over-the-Counter Drugs**

Over-the-counter (OTC) drugs are medicines that are available for sale directly to a consumer. According to the U.S. Food and Drug Administration (FDA), OTC drugs are defined as the medications that can be used safely and effectively by the general public even without a prescription.<sup>2</sup> Over-the-counter drugs are those which.<sup>3</sup>

- Do not need a prescription from a healthcare professional.
- Can be easily bought in stores.
- Are regulated through OTC drug monographs that cover the acceptable ingredients, doses, formulations, and labeling. Over-the-counter products that are in confirmation with the existing monographs do not require FDA review for marketing.
- Are used to self-treat minor symptoms or conditions that do not require the supervision of a physician.

Non prescription drug products can be subcategorized as<sup>4</sup>:

- Unrestricted drugs: Those drugs, which can be bought without the pharmacists' approval, off-the-shelf.

- Restricted drugs: Those drugs kept behind the pharmacy counter; obtained only by the pharmacists' approval e.g. Pseudoephedrine, Emergency contraceptives etc.

There are more than 80 therapeutic categories of OTC drugs.<sup>2</sup> About 100,000 OTC products are available in the market today comprising of 800 active ingredients.<sup>2</sup> Fifty-seven percent of health problems in the United States are treated with non-prescription drugs.<sup>5,6</sup> Findings from a recent study showed that 82% of women and 71% of men in America have used an OTC drug in the previous six months.<sup>5</sup> This is close to twice their number of physician visits or taking a prescription medication.<sup>5</sup> In 2008, the retail sales for OTC drugs approached \$17 billion.<sup>7</sup> These statistics depict the booming rate at which the OTC drug market is growing. This is also an indication that OTC drugs play a vital role in the healthcare of people. Today, OTC medicines account for the majority of all medications used in the United States, including many that were once available only by prescription.

### **1.1.2 Prescription to OTC Switches**

Prescription to OTC switch refers to the marketing of a pharmaceutical that was once used as prescription only, as a non-prescription product.<sup>8</sup> The indication, strength, dose, duration of use, dosage form, and route of administration of the product remains the same.<sup>8</sup> These products are deemed safe enough by the FDA for use without a prescription from a physician.<sup>9</sup> Even though prescription drug products are not switched to OTC status without a substantial amount of evidence regarding the safety, problems have still

been encountered due to the inappropriate use of the switched drugs.<sup>10</sup> Because these products were once deemed as prescription only, their misuse, either out of ignorance or intentional, can cause side effects, hospitalizations or even deaths in some cases.<sup>11</sup>

Since 1976, more than 80 ingredients, which translates to about 700 drug products have made the switch.<sup>11</sup> Due to this growing number of prescription to OTC switches, it has now become necessary to ensure that the OTC drugs are handled with the same caution as prescription drugs. Care must be taken to ensure that they are not used irresponsibly, since they may cause some serious damage to patients' health.

### **1.1.3 Safety Concerns of OTC Drugs**

Non-prescription drugs are usually perceived to be safe for use by the consumers because they do not need a physician's prescription. However, certain cases of misuse or overuse of OTC drug products resulting in adverse drug events have been recorded, leading to the conclusion that they may not be totally harmless.<sup>12</sup> Any type of drug, including over-the-counter medications, alters body's functions from its usual state and can cause harm to the human body if not taken as directed. As is the case with any medication, overdoses from over-the-counter medications can occur.<sup>13</sup> Therefore pharmacovigilance is very important even in the case of non-prescription drugs.<sup>14</sup>

In the United States, there have been occurrences of withdrawal of certain drugs from the market due to concerns regarding their safety. One such example is the generic drug phenylpropanolamine that used to be a common constituent of cough and cold



preparations. Its sale was discontinued after it was found to be associated with hemorrhagic strokes.<sup>12</sup> A 2005 study conducted to assess the frequency of over-the-counter non-steroidal anti-inflammatory drug (NSAID) use estimated that, about 36 million Americans use OTC pain medications daily.<sup>15,16</sup> The study also concluded that many times these medicinal agents are taken in an inappropriate manner, with about 44% of the consumers self-administering more than the recommended doses.<sup>15,16</sup> This can pose a potential threat to the users, since they may be unaware of the adverse effects of the drugs. Approximately 16,500 deaths and 103,000 hospitalizations are reported each year due to NSAID related complications alone.<sup>17</sup> Drug-drug interactions can also be caused due to the use of OTC agents, if taken without the approval of a health care professional, combined with an ongoing prescription drug therapy. Therefore, conscientious monitoring by health care professionals to ensure safe use of OTC drugs is warranted.

#### **1.1.4 Pharmacists' Role in Over-the-counter Drug Use**

Pharmacists are one of the most accessible health care professionals that can help consumers make the most educated choices about the use of OTC drugs. Since pharmacists are available at the point of purchase, they can assist the patients in the selection of appropriate OTC products, help them understand detailed health information and refer the patient to a physician, if necessary.<sup>18</sup> A study conducted in 2003 for the National Council on Patient Information and Education (NCPPIE) found that 66% of Americans deemed selecting an OTC medication to be a challenge, especially because of the wide range of competing products available.<sup>19</sup>

Nearly two in five Americans were reported to consult a pharmacist when buying non-prescription medications.<sup>19</sup> A study was conducted to see consumer habits and interests regarding non-prescription medications.<sup>20</sup> It showed that about 40% of the surveyed consumers consult a qualified professional while buying a non-prescription drug. Forty-four percent of those surveyed reported consulting pharmacists about the effects of non-prescription drugs.<sup>21</sup> A 2007 *Drug Topics'* OTC Recommendation Survey of pharmacists from different settings found that about 58% of respondents counseled more customers about OTCs in 2006 than in the previous year. Thirty-two percent of pharmacists said they counsel 16 to 30 patients a week. Other responses ranged from up to 15 patients (21%) to more than 75 patients a week (9%).<sup>22</sup> Patients are also willing to compensate the pharmacists for OTC drug related counseling they need. A recent study to determine the patients' willingness to pay for pharmacists' services on proper use of OTC medications revealed that more than twice (51%) the number of patients are willing to pay for pharmacist provided services for OTC drug counseling than a decade ago.<sup>5</sup>

In today's OTC drug market, there is a wide variety of products with multiple active ingredients, a vast array of brands and their line extensions. Advertising is one of the marketing strategies used by the pharmaceutical companies to introduce these products to the consumers. These advertisements are characterized by persuasion and coaxing by the companies of the marketed products. Trying to make appropriate decisions regarding OTC medications can be daunting and confusing for patients.<sup>18</sup>

### **1.1.5 Trends in Over-the-counter Drug Advertising**

Pharmaceutical manufacturers spend a substantial amount of time and money towards the development of efficient advertising strategies.<sup>23</sup> US pharmaceutical spending on DTCA has risen tremendously from \$791 million in 1996 to \$4.86 billion in 2005.<sup>24</sup> According to the literature, close to \$3 billion was spent to advertise OTC drug brands in 2008.<sup>4</sup> The spending on different media was as follows: Network television (\$834.5 million), national magazines (\$684.7 million), and cable television (\$668.2 million).<sup>4</sup> These numbers provide an estimate of the tremendous resources directed by the drug manufacturers towards gaining the public's attention and thereby increasing the sales of their products.

There are certain advantages associated with the advertising of pharmaceutical products. It allows the consumers to gain knowledge about the drugs and thereby makes them capable of taking control of their health.<sup>25,26</sup> Furthermore, advertising also helps physicians and pharmacists keep up with the recent trends in the pharmaceutical market.<sup>25</sup> Advertising contributes to the healthcare field by providing people with a variety of choices. It helps them recognize between the different options available to them, raises awareness of conditions and potential treatment options among the patients. It is also considered to provide a guarantee of quality, reliability, consistency and facilitating product search and informed selections by the consumers.<sup>27</sup>

In spite of the advantage of non-prescription drug advertising, literature shows that some health care experts have a negative attitude towards it.<sup>28</sup> There is a general perception that the advertisements do not emphasize as much on consumer education as

on the promotion of drug products.<sup>28</sup> This can cause a misunderstanding or misuse of the information provided to the consumers.<sup>28,29</sup> A review of the material on drug promotion from the database of the World Health Organization and Health Action International found that there is a varied opinion among health professionals regarding the appropriateness of drug advertising (not prescription drugs), however most of them believe that the information provided by the pharmaceutical companies is often biased.<sup>30</sup>

Pharmacists and pharmacy students participating in a study to analyze OTC ads in pharmaceutical journals and magazines reported that even though the primary purpose of the ads was providing product information, OTC advertising tended to be misleading.<sup>31</sup> Certain OTC drug advertisements were found not mentioning the side effects of the drugs and some were found not following the Federal Trade Commission guidelines.<sup>29</sup>

### **1.1.6 Role of Federal Trade Commission in Over-the-counter Drug Advertising**

Pharmaceutical advertising is regulated by two agencies: the Federal Drug Administration (FDA) and the Federal Trade Commission (FTC). Prescription drug advertising is regulated by the FDA and OTC drug advertising is regulated by the FTC.<sup>31</sup> Before the passage of the Kefauver-Harris Act in 1962, pharmaceutical advertising, both for prescription and non-prescription drugs was governed by the FTC.<sup>4,32</sup> After 1962, the jurisdictional transfer of prescription drugs from the FTC to the FDA strengthened the review process for prescription drugs.<sup>4,32,33</sup> OTC drug advertising, however, is still under

the regulation of the Federal Trade Commission. The regulations of the FTC are not as stringent as that of the FDA.

The FTC controls OTC drug advertising under the amended Section 5 of the FTC Act. Under the Federal Trade Commission Act, all advertising must be truthful and non-deceptive, advertisers must have evidence to back up their claims, and advertisements cannot be unfair.<sup>34</sup> The FTC defines deceptive advertising as one that represents or omits information in such a way that it is likely to mislead reasonable consumers.<sup>4</sup> The material claims in the advertisements, such as the representation of a product's performance, features, safety, price, or effectiveness are reviewed from the perspective of a "reasonable consumer" and the advertisement is deemed deceptive if it conveys a false or misleading impression. Similarly, omission of material information is also interpreted as deceptive advertising.<sup>4</sup> The Federal Trade Commission has investigated about 229 cases of false and deceptive claims for over-the-counter products over the previous years.<sup>35</sup> Deceptive advertising can lead to improper drug use by patients and hence a close analysis of OTC drug advertisements by the Federal Trade Commission seems essential.

## **1.2 Rationale**

Literature has shown that advertising has an effect on the selection of drugs and brand differentiation by consumers.<sup>36</sup> If not taken appropriately, OTC drugs can be unsafe and can lead to adverse drug reactions and interactions. Although consumers can independently purchase most OTC drugs, they often seek advice from health professionals.<sup>5,18,19,22</sup> Pharmacists are one of the most easily approachable healthcare

professionals who can advise the consumers on the proper use of medications in case of a dilemma and hence their opinions in this field matter a lot.

Previous studies published in the literature have found that pharmacists are concerned about the contents of OTC drug advertising, representation of drug products in these advertisements, and the potential harm to the health and well-being of patients because of the influence of drug advertising.<sup>28,29,31,37</sup> Pharmacists' views on OTC drug advertising have been assessed in different studies conducted in and outside the United States.<sup>4,37,38</sup> However, there is a scarcity of research conducted in this field. Since the 1970s, only 24 OTC drug-advertising studies have appeared in the literature, with mixed findings.<sup>4</sup> Among these studies, very few have been carried out in the United States and generally seem to be focused on a specific medium of OTC drug advertising such as magazines or journal ads.<sup>4,29,31</sup>

Recently, no substantive research has been done to understand pharmacists' perceptions of nonprescription drug advertising in today's times and the effects that the ads have on the interaction between patients and their pharmacist. There have also been many drugs to undergo prescription to OTC switches in recent years. This may have had an effect on the way the medications are portrayed in advertisements and the way these advertisements are perceived by the pharmacists. What the literature lacks is up to date research that looks at the pharmacists' perceptions of OTC drug advertising.

### **1.3 Significance**

Even though consumers are exposed to the claims and appeals of purchasing OTC drugs at almost twice the rate of prescription drugs, this area of drug marketing has been very scarcely analyzed compared to the greater number of studies on direct to consumer advertising of prescription drugs.<sup>4,39</sup> The results of this study will bring into light the pharmacists' opinions of OTC drug advertising. In recent years, numerous changes have occurred in pharmaceutical advertising, with the increased use of television and the internet as opposed to magazines and journals, and the increased number of drugs being switched from prescription-only to non-prescription status.

A review of the previous studies have found that promotion has had an influence on the attitudes and prescribing behaviors of physicians.<sup>30</sup> However, it remains a mystery whether or not the pharmacists, who also serve to be important decision makers regarding medications, are also affected the same way. This study will provide evidence of pharmacists' viewpoint of OTC drug advertising and will be useful for researchers, other pharmacists, policy makers and consumers alike. The study hopes to gather more information not only on the attitudes and on the beliefs of the pharmacists, but will also demonstrate if their perceptions are affected by various factors such as gender, practice setting, number of years of practice, location of the pharmacy, prescription volume, degree of exposure to OTC drug advertisements etc.

The study will be a contribution to the limited and scattered literature on OTC drug marketing and promotions. The findings of this study may suggest that there is a need to explore this untapped area and will serve as a stepping-stone for further research.

In today's era of healthcare reform, studies like this, which bring forth the opinions of those professionals who play a vital role in patient health care, will especially be useful. Such studies will help create a clearer picture of health care in United States, which seems to be on the verge of a drastic change in the years to come.

## **1.4 Goal**

The goal of the present study is to evaluate various aspects of pharmacists' perceptions of over the counter drug advertising.

## **1.5 Objectives**

The specific objectives of the study are as follows:

1. To investigate pharmacists' attitude towards OTC drug advertising
2. To determine pharmacists' beliefs about the effects of OTC drug advertising.
3. To evaluate the impact of OTC drug advertising on pharmacists' choice of OTC drug products.
4. To determine pharmacists' observations about the impact of OTC drug advertising on the selection of OTC drug products by the patients.
5. To evaluate the role played by OTC drug advertising in patient- pharmacist interactions.



6. To assess, statistically, the differences observed between pharmacists' perceptions based on demographic and other factors.

## **1.6 Research Questions**

The research questions of the study are as follows:

1. What are pharmacists' attitudes towards OTC drug advertising?
2. What are pharmacists' beliefs about the effects of OTC drug advertising?
3. Does OTC drug advertising have an impact on pharmacists' choice of OTC drug products?
4. Does OTC drug advertising have an impact on the selection of OTC drug products by the patients according to pharmacists?
5. Does OTC drug advertising play a role in patient-pharmacist interactions?
6. Are there any differences observed between the perceptions of the pharmacists based on demographic and other factors?

## **Chapter 2**

### **Literature Review**

This chapter gives a brief overview of the topics relevant to this study and covers a review of the literature. The topics reviewed for this study are:

- Use of over-the-counter drugs
- Over-the-counter drugs and pharmacists
- Influence of over-the-counter drug advertising on consumers
- Pharmacists' opinions of over-the-counter drug advertising

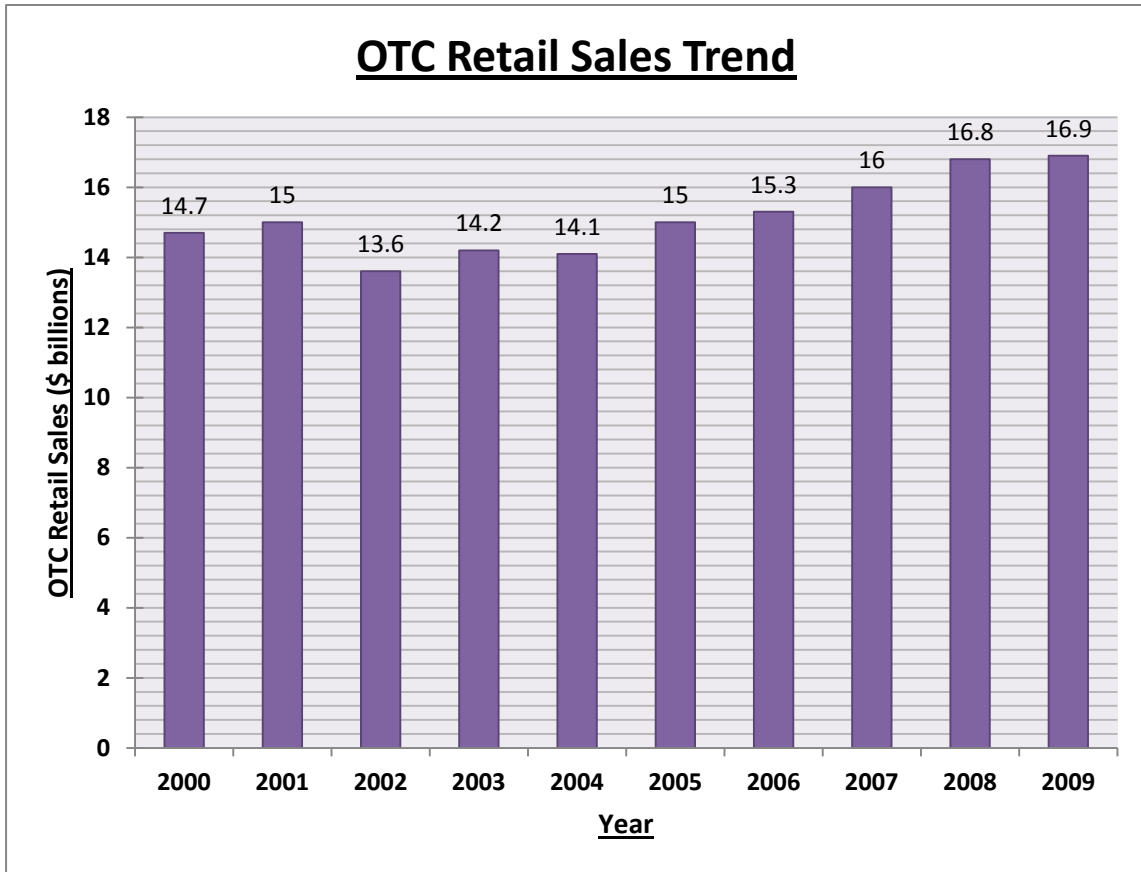
#### **2.1 Use of Over-the-counter Drugs**

More and more Americans are using various types of nonprescription, over the counter (OTC) medicines than ever before.<sup>19</sup> According to a report by the Consumer Healthcare Products Association (CHPA), there are more than 100,000 OTC drug products on the market today encompassing about 800-1,000 active ingredients.<sup>2</sup> Of these

products, more than 700 contain ingredients and dosages that were available only by prescription less than 30 years ago.<sup>19</sup> Patients are left in an unsteady and confusing position as they attempt to self treat themselves using the OTC medications based on the very limited information that they receive from the healthcare providers and the advertisements.<sup>17</sup>

A growing number of prescription drugs, which are deemed safer, are being switched to OTC status. Since 1976, eighty nine prescription ingredients have made the switch to OTC status which have made them more easily available to the patients than before.<sup>40</sup> When attempting to understand the patient perceptions about drug advertising and prescription-to-nonprescription switches, Koch et al. found that 58% of the participants preferred using a non prescription drug to treat an illness before approaching a physician.<sup>41</sup> It was also noticed that only 17% of participants believed that nonprescription drugs were safer than prescription medications. In spite of this, 45% of the respondents indicated that they would like to see more prescription drugs switched to nonprescription status.<sup>41</sup>

A Roper survey of about 1500 Americans found that 77% had used non-prescription drugs in the last six months to treat at least one of their health conditions.<sup>17, 7</sup> They also reported that 82% of American women and 71% of men used an OTC drug in the previous six months which is nearly twice their physician visits or the use of prescription medication.<sup>7, 5</sup> A report by the Consumer Health Products Association, found that nonprescription products amounted to about \$17 billion in sales, (excluding Wal-Mart Stores sales) which is a tenfold increase since 1972.<sup>5, 7</sup> Figure 2.1 shows the trends in Over-the-counter drug retail sales from 2000 to 2009.



**Figure 2-1. Trends in Over-the-counter drug retail sales (2000-2009)**

**Source: Over-the-counter Retail Sales, Consumer Healthcare Products Association, 2010, excluding Walmart stores.**

As per the year 2000 estimate, of approximately 3.5 billion health problems treated annually, more than half (57%) are treated with a nonprescription drug. Figure 2.2 shows the sales of over-the-counter drugs by categories between 2008 and 2011.

OTC Category	2008 (in millions)	2009 (in millions)	2010 (in millions)	2011 (in millions)
Acne Remedies	\$338	\$339	\$350	\$363
Analgesics, External	\$318	\$305	\$313	\$337
Analgesics, Internal (includes other pain products)	\$2,451	\$2,492	\$2,341	\$2,357
Antidiarrheals	\$169	\$166	\$163	\$144
Anti-Smoking Products	\$493	\$494	\$485	\$494
Cough/Cold and Related	\$4,083	\$4,207	\$4,054	\$4,237
Eye Care	\$459	\$472	\$500	\$525
First Aid	\$645	\$650	\$675	\$686
Foot Care	\$349	\$336	\$336	\$340
Heartburn (includes anti-gas)	\$1,242	\$1,270	\$1,386	\$1,354
Laxatives	\$807	\$822	\$832	\$875
Lip Remedies	\$417	\$407	\$419	\$428
Oral Antiseptics and Rinses	\$744	\$731	\$722	\$754
Sunscreens and Blocks	\$477	\$499	\$550	\$584
Toothpaste	\$1,251	\$1,268	\$1,288	\$1,356
All Others	\$2,515	\$2,525	\$2,557	\$2,611

**Figure 2-2. Sales of Over-the-counter drugs by categories (2008-2011)**

**Source: The Nielsen Company (total U.S. food, drug, and mass, excluding WalMart)**

## **2.2 Over-the-counter Drugs and Pharmacists**

In today's society, pharmacists play a pivotal role of self-care consultants. This means that they constantly interface with the consumers requesting health information, provide advice, or counsel patients regarding OTC drug products.<sup>42,43</sup> They function as consumer advocates in matters related to health care which includes assisting the patients in selecting OTC products, their dosages and forms that can effectively treat the patient's condition in a safe manner.<sup>43</sup>

Based on a study by the American Pharmacists Association (APhA), pharmacists are of the opinion that 82% of consumers purchase OTC products recommended by the pharmacists.<sup>44</sup> They also reported, on average, counseling 29 patients per week about nonprescription medicines.<sup>44</sup> Ninety percent of the patients seeking pharmacists' advice were those who required assistance with identifying the most appropriate product; 80% had worries about using an OTC product with other prescription medications; 79% of the patients suffered from some kind of an acute or chronic condition and a large number of patients in this group were worried about taking OTC products with their specific disease or condition.<sup>44</sup>

A study conducted by S. H. Hong et al. to determine the willingness of patients to pay for pharmacist self-care services on proper use of over-the-counter medications revealed that more than twice as many patients (51%) were willing to pay up to \$5 for a 5 minute pharmacist consultation service for patient self care than a decade ago.<sup>5</sup> This willingness to pay for the pharmacist provided services was significantly associated with the community pharmacy setting especially for the grocery or chain pharmacies.<sup>5</sup> These

findings suggest that patients value the assistance of pharmacists in self care techniques to better handle their health care.

Pharmacists make more than 80 million recommendations to their patients every month, across the country.<sup>45</sup> These recommendations are often followed by the patients, as pharmacists are perceived to be one of the most accessible and trusted healthcare providers.<sup>19,45</sup> The 2008 Pharmacy Times OTC Recommendation Survey conducted to explore the preferred OTC brand recommendations of pharmacists in 142 OTC categories reported the following brands. It can be seen that most of the brands are advertised very frequently on television, internet or in magazines.<sup>46</sup> Figure 2.3. depicts the preferred over-the-counter brand recommendations of pharmacists as per the 2008 Pharmacy Times OTC Recommendation Survey.

# Pharmacy Times OTC Master's Circle



Category	Product	% of Pharmacist Recommendations	Category	Product	% of Pharmacist Recommendations
Nasal Strips	Breathe Right 	91.60	Blood Pressure Monitors	Omron 	66.20
Lactose Intolerance Products	Lactaid 	91.10	Thermal Care	ThermaCare 	65.00
Antidiarrheals	Imodium A-D 	90.00	Urinary Tract Infection Pain Relief	Azo Standard 	64.58
Emergency Contraception	Plan B 	80.10	Nasal Decongestants—Oral	Sudafed 	63.70
Zinc Lozenges	Cold-EEZE 	76.80	Incontinence	Depend 	62.90
Snore Aids	Breathe Right 	76.50	Stool Softeners	Colace 	62.90
Urinary Tract Infection Prevention— Cranberry Products	Azo Cranberry 	74.31	Zinc Cold	Cold-EEZE 	62.00
Wound Care	Neosporin 	74.00	Diabetic Cough	Diabetic Tussin 	61.40
Vaginal Antifungals	Monistat 	73.00	Liquid Bandage	New Skin 	60.20
Nutritional Supplements	Ensure 	71.80	Adhesive Bandages	J&J Band-Aid 	59.03
Cold Sore Products	Abreva 	70.90	Multivitamins	Centrum 	59.00
Ocular Nutritional Supplements	Ocuwite 	68.80	Hearing Aid Batteries	Duracell 	59.00
Teething Products	Baby Orajel 	68.75	Saline Nasal Moisturizers	Ocean 	58.90
Lice	Nix 	68.20	Urinary Tract Infection Testing	Azo Test Strips 	58.33
Nasal Decongestants—Sprays	Afrin 	68.20	Migraine Pain	Excedrin Migraine 	57.10
Cold Remedy Nasal Spray	Zicam 	68.20	Teeth Whitening Kits	Rembrandt 	57.00
Scar Treatments	Mederma 	68.20	Herbal Supplements—Menopause	Estroven 	55.30
Toothpaste—Sensitive	Sensodyne 	68.06	Ear Pain Relief	Similasan 	55.00
Teeth Whitener	Crest Whitestrips 	68.00	Children's Analgesics	Children's Tylenol 	52.30
Adult Expectorant	Mucinex 	67.50	Health Supports (Braces)	Futuro 	51.10
Ear Wax Removal	Debrox 	67.00	Artiflatulence	Gas-X 	50.40
Sore Throat Liquids	Chloraseptic 	67.00			

Figure 2-3. Preferred Over-the-counter brand recommendations of pharmacists

Source: 2008 Pharmacy Times Over-the-counter Recommendation Survey



## **2.3 Influence of Over-the-counter Drug Advertising on**

### **Consumers**

The surge in prescription drug advertising has led to the diversion of attention from an equally important issue of direct to consumer advertising for non-prescription drugs.<sup>17</sup> This area is more significant because the patient can make treatment decisions without interacting with a healthcare professional which may leave them in a potentially dangerous situation.<sup>17</sup> In the case of OTC medication purchases, patients rely on advertisements to provide appropriate product information.<sup>29</sup>

A survey conducted by Major et al. for determining the habits and demands of a population regarding non-prescription medications found that 65% of the respondents, who take non-prescription medications regularly, watch drug related advertisements several times a day.<sup>47</sup> Also, 40% of those surveyed said that they consult a professionally-qualified person about their buying decisions regarding the non-prescription medicines.<sup>47</sup> In another study conducted for determining the pharmaceutical purchasing behaviour of the consumers, about half of the participants reported that they considered pharmaceutical advertising to be educational, something which helps them become more informed about the drugs they use. Forty-two percent of the participants said that they will base their next purchase decision on the advertisements that they have seen.<sup>48</sup> In a survey conducted exclusively for Drug Store News by ICR Survey Research Group, 71% of the respondents reported their fondness to try new products that they see advertised.<sup>49</sup>

A 2004 study conducted by Brownfield et al. explored the quantity, frequency, and placements of drug advertisements on television. It showed that, of the overall

commercial airtime, OTC ads constituted about 4.8% compared to 2.3% for prescription drug ads.<sup>39</sup> The researchers recorded all programs and advertisements that appeared on network television in a southeastern city during a selected week and coded each prescription and OTC drug ad for its frequency, length, and placement by time of day and television program genre. It was observed that, although prescription drug ads were longer in length, OTC drug ads formed a larger part of the total DTCA.<sup>39</sup> The mean length of OTC drug ads was about 21.7 seconds. The commercials appeared most frequently during news programs and soap operas and during the middle-afternoon and early-evening hours.<sup>39</sup> Many of the ads were particularly geared towards women and elderly viewers.<sup>39</sup>

A study conducted by Kavanoor et al. explored the effects of ad credibility and ad format (direct comparative vs. non-comparative) on consumers' beliefs, attitudes, and purchase intentions for OTC medications. Three different experiments were conducted which looked at different methods of enhancing the ad credibility. In the first experiment, the advertisements provided multiple explanations for claimed superiority, the second showed substantiation of the claims made in the ad and the third one depicted that the FTC approved the ad information. It was found in all three experiments, direct comparative advertisements and ads that have higher credibility tended to produce more favorable brand beliefs, brand attitudes and purchase intentions among the customers.<sup>23</sup>

Research has looked at comparing external information search behaviors of consumers for prescription versus non-prescription drugs. Respondents were asked to rate the importance of about 20 different information sources that generally assist them in obtaining knowledge about non-prescription drugs. It was reported that consumers

consider interpersonal sources such as friends and family members and mass media sources, which include the various forms of advertising to be more important sources for nonprescription drugs than for prescription drugs.<sup>50</sup>

The phenomenon of consumers basing their OTC purchase decisions on the advertisements they see is prevalent worldwide. The following studies give evidence of the same. In a study conducted to assess the television advertising of pharmacy medicines in the United Kingdom, 48% of the patients reported having purchased an over-the-counter medicine in the past having first been made aware of it by an advertisement, television being the carrier medium in thirty-one percent of responses.<sup>24</sup>

A survey of Chinese consumers regarding the functions and consequences of pharmaceutical advertising on medical decisions found that there was a positive inclination towards pharmaceutical advertising especially because of the information that it provided about brand differentiation and market updates.<sup>51</sup> However, there was no feeling of trust with respect to pharmaceutical advertising, instead the consumers were concerned regarding manipulation and economic benefits of advertising of pharmaceuticals.<sup>51</sup> These studies help to compare the attitudes of the consumers in the United States to those in other countries. It can be inferred that the patients, worldwide, are influenced by the OTC drug advertisements they see.

## **2.4 Over-the-counter Drug Advertising and Pharmacists**

Despite the fact that there is public dependence on nonprescription drug advertising and there are certain advantages associated with it, health care professionals, such as pharmacists, are often seen to have a negative attitude towards OTC advertising.<sup>28,29,37,52,53</sup> It has been shown that patients tend to trust the advertised information of drug products blindly because of their conception that drug marketing is subject to extensive assessment by the government before being declared safe for public viewing.<sup>17</sup> However, a consumer report analysis of direct to consumer and direct to physician advertising violations cited by the FDA from January 1997 to November 2002 found that there had been more than 1,200 violations within this given period of time.<sup>17</sup> The FTC, which is responsible for the review of OTC ads has stated that they lack the sufficient time required to monitor each and every advertisement and that they largely rely on the manufacturers to voluntarily advertise accurate product information.<sup>17,29</sup> It has also been seen on certain occasions that the promotions of OTC medicines advertised by the manufacturers have generated a demand for the products even before the pharmacies have obtained the related merchandise which does not show the pharmacy and the pharmacists in a good light to the customers.<sup>54</sup>

An evaluation of the accuracy of printed non-prescription advertisements in the United States by pharmacists was studied by Sansgiry et al. in 1999. According to the pharmacists, only one out of 14 analyzed advertisements discussed side effects of the drug.<sup>29</sup> The study also revealed that three of the ads contained misleading information and that the drug manufacturers were non adherent to the FTC regulations.<sup>29</sup> Misleading

statements on advertisements may lead to inappropriate use of drug products by the consumers.<sup>29</sup> The pharmacists felt that all of the ads were intended for promotion rather than for patient education and that around 50% of the advertisements lacked accurate information that was necessary for the consumers to make informed choices during self-treatment decisions.<sup>29</sup>

A survey was conducted by Mackowiak et al. to investigate the pharmacists' and pharmacy students' attitudes toward OTC advertising.<sup>31</sup> Nine journal OTC ads were evaluated by a sample of community pharmacists attending a county association meeting and a sample of pharmacy students in their last professional year of college.<sup>31</sup> It was found that both the pharmacists and the students held negative attitudes towards OTC ads and reported that the primary purpose of the ad was providing product information (64% and 53% respectively).<sup>31</sup> Fifty-five percent of pharmacists and 48% of students believed that OTC ads tended to be misleading and both, pharmacists and students, believed that OTC advertising should be regulated by the FDA instead of the FTC, 90% and 81% respectively.<sup>31</sup>

In a study of physicians and pharmacists serving on pharmacy and therapeutics committees in Pennsylvania, 75% of pharmacists were reported to be unsatisfied with the marketing techniques used in the drug industry, particularly the drug information availability.<sup>53</sup> A survey of American Society of Health System Pharmacists conducted in 2005 by Farthing-Papineau and Peak found that 80% of the pharmacists were opposed to DTCA and believed that DTCA of products is excessive, not beneficial to compliance, and ineffective in providing patient education.<sup>53</sup>

## **2.5 Over-the-counter drug advertising internationally**

### **2.5.1 Impact on patients**

A 2010 study conducted in Hungary by Major and Vincze for determining consumer habits and interests regarding the non-prescription medications found that, 40% of the surveyed participants consulted a qualified professional, especially pharmacists (44%) about their decision before buying non prescription medications, similar to those in the United States.<sup>20</sup>

### **2.5.2 Impact on pharmacists**

Keeping the literature on OTC advertising in view, interviews of Australian retail pharmacists were conducted in 2010 by Chaar et al. to explore pharmacists' perceptions of DTCA in Australia and its impact on pharmacy practice. It was discovered that the pharmacists had concerns about the potential harm to the patients' health and well-being due to the influence of advertisements.<sup>37</sup> They also reported that DTCA of OTC drugs impeded the pharmacists in the discharge of their fundamental ethical responsibilities and led to a sense of disempowerment.<sup>37</sup> Pharmacists felt that their role in safeguarding the patients from the improper use of medicines was challenged due to DTCA of drug products.<sup>37</sup>

Another study by Major and Vincze carried out in Hungary to evaluate the pharmacist's views on self-medication, their perceptions of advertisements for OTC medicines, and their knowledge and awareness of people that purchase OTC medicines found that 34.9% of the pharmacists believe that the effects of OTC medicines are

exaggerated in the advertisements.<sup>55</sup> Around fifty-eight percent of the respondents believed that the consumers are aware of the medicine that is currently being advertised, but not of other medicines with similar effects. More than 70% of pharmacy professionals observed that patients only have a basic understanding of OTC medicines.<sup>55</sup>

The findings of these studies suggest that it is necessary to have a similar kind of research in the United States as well, which may uncover new findings about the beliefs of pharmacists in the USA.

There are few more studies carried internationally which bring forth the fact that drug advertising has an impact on the recommendations made by the pharmacists to a certain extent.<sup>56-58</sup> A research study conducted in Sidney by Roins et al., to understand the factors affecting the pharmacists' recommendation of non-prescription analgesics found that advertising was one of the factors that significantly influenced pharmacists' choice of the product.<sup>57</sup> It was also one of the factors influencing the preference for cough and cold products in Sydney as well as the choice of providing sugar free medicines by the United Kingdom pharmacists.<sup>56,58</sup>

A literature review of the research in OTC drug advertising was conducted by DeLorme et al. to collect findings related to the regulations, nature, functions, and scope of OTC drug advertising.<sup>4</sup> It was observed that a majority of the studies related to pharmaceutical advertising focused on direct to consumer advertising of prescription drugs. The reviewers could find just 24 studies related to OTC drug advertising published since the 1970s with fragmented and sporadic findings.<sup>4</sup> The study mentions that the subject of OTC drug advertising needs to be revisited for further investigations.<sup>4</sup>

## **Chapter 3**

### **Methods**

This chapter describes the methodology used for the study. The purpose of the study was to identify the perceptions of pharmacists regarding over the counter drug advertising. The chapter will focus on:

- Study design
- Sample selection
- Study variables
- Survey instrument
- Data collection
- Data analysis

Since the study involves participation of human subjects, an approval from the Institutional Review Board (IRB) at the University of Toledo was obtained.



### **3.1 Study Design**

This is a cross sectional exploratory study design. Pharmacists were provided with a survey to identify their perceptions about OTC drug advertising. The findings from the survey were used to answer the objectives of the study.

### **3.2 Study Variables**

Variables measured in this study are the cumulative scores for pharmacists' perceptions of OTC drug advertising concerning their attitudes, beliefs about the effects of OTC drug advertising and the impact of OTC drug advertising on pharmacists' choice of OTC drug products, on the selection of OTC drug products by the patients and on the role that it plays in patient-pharmacist interactions. The scores were obtained using a series of survey questions to address each of the given objectives. These variables were used to address the first five objectives of the study.

Other variables included the demographic factors such as gender, practice setting, location of the pharmacy, number of years of practicing as a pharmacist; and other miscellaneous factors such as where and how often are OTC drug advertisements seen by the subject, frequency of patient interaction regarding OTC drugs and weekly prescription volume. These were used in analyzing the sixth objective of the study.

### **3.3 Sample Selection**

The study population consists of pharmacists licensed in the State of Ohio and registered under the Ohio State Board of Pharmacy. A pharmacist database was obtained from the Ohio State Board of Pharmacy. The board maintains the mailing list of pharmacists licensed in Ohio, for those practicing in state as well as out of state. A total of 16,869 pharmacists were included in the database as of December 2010. The database is comprised of a list of pharmacists including their name, mailing address, city, state, zip codes, county number, county name, home phone, email address and practice type. The database was transferred from the Ohio State Board of Pharmacy via electronic mail in the form of an excel spreadsheet.

The pharmacists were sorted based on practice type and the database was restricted to the pharmacists working in a community setting, and practicing in the state of Ohio. The community pharmacy setting was selected so that the observations of the pharmacists dealing with a larger number of consumers of OTC drugs could be recorded. The list included pharmacists practicing in independent pharmacies, large chain pharmacies with more than 12 outlets, and small chain pharmacies with 2-11 outlets. The following table shows the distribution of pharmacists based on the practice types selected for the study.

**Table 3.1: Distribution of pharmacists based on practice setting**

<b>Practice setting</b>	<b>Number of pharmacists</b>
Independent community pharmacy	819
Large Chain pharmacies with 12+ Outlets	4524
Small Chain pharmacies with 2-11 Outlets	265
Total	5608

### **3.3.1 Inclusion Criteria**

In order to be eligible for participation in the study, the pharmacists had to be:

- Licensed in the state of Ohio
- Registered under the Ohio State Board of Pharmacy
- Practicing within the state of Ohio
- Working in a community pharmacy setting

Pharmacists, whose email IDs were not provided to the Ohio Board of Pharmacy, were excluded from the study. Less than 5% of the pharmacists were excluded from the study because of this criterion.

### **3.3.2 Sample Size Determination**

The study used a random sample of the pharmacists who met the inclusion criteria. Sample size was calculated using Macorr<sup>©</sup> Research Solutions online sample size calculator. In order to increase the probability of observing a treatment effect when it occurs, a confidence level of 95% was used to calculate the sample size. With a population size of 5,608, the necessary sample size was determined to be 360, which means that a minimum of 360 responses were needed for statistical analysis. Previous surveys of pharmacists in similar studies have obtained a response rate of 15-20% in general.<sup>59,60</sup> A conservative estimated response rate of 15% was used for this study. Therefore, to obtain a minimum of 360 responses, 2400 surveys were e-mailed, as per the calculation below:

$$\text{No. of surveys to send} = \text{Sample size} / 15\% = 360 * 100 / 15 = 2400$$

Two thousand and four hundred pharmacists were selected for the study from the list by simple random sampling.

### **3.4 Survey Instrument**

The instrument used for the study is a web-based questionnaire, constructed by the researcher. There was no previously validated survey available in the literature for investigating the research questions in this study. Hence, a new instrument was developed based on the published literature and under the guidance of the thesis advisor and the thesis committee members. The items in the instrument are based on various studies in

the literature that deal with similar issues concerning advertising of drugs.<sup>1,36,37,61,62</sup> The questionnaire was constructed to obtain responses from the target sample group of pharmacists about their perceptions of the OTC drug.

The survey consists of two sections. Section I is comprised of 30 questions. Items 1, 2, 3, 5, 8, 9, 23 and 24 of the survey are the attitudinal questions that were developed to provide an answer to the first objective, which is to investigate pharmacists' attitude towards OTC drug advertising. Items 6, 7, 11 and 12, assess pharmacists' beliefs about the effects of OTC drug advertising, the second objective. Items 4, 22, 25, 27, address the third objective, determining the impact of OTC advertising on pharmacists. Items 15 through 19 and 21, determine pharmacists' beliefs about the influence of OTC drug advertising on the selection of OTC products by the patients. Items 10, 13, 14, 20, 26 and 28 evaluate the role played by OTC drug advertising in patient-pharmacist interactions. All questions are measured on a 5-point Likert scale commonly used in the literature for similar surveys. In this scale, items can be rated from one to five; '1' denoting 'Strongly Agree' and '5' denoting 'Strongly Disagree'. Section II of the survey is comprised of eight questions measuring the demographic variables and other miscellaneous study variables related to the pharmacists' practice and their experience with OTC advertising.

Before emailing the survey to the sample pharmacists, a pilot study was conducted by administering the survey to the registered pharmacists who are faculty members in the College of Pharmacy and Pharmaceutical Sciences at the University of Toledo and to the registered pharmacists working in pharmacies near the University of Toledo. Thirteen responses were obtained for the pilot study and changes were made to

certain survey question based on the pilot survey analysis. An amendment was submitted to the IRB at University of Toledo.

### **3.5 Instrument Administration and Data Collection**

A pre-notification letter was sent to the survey participants stating that they will be invited to participate in a study conducted by researchers from the University of Toledo, College of Pharmacy and Pharmaceutical Sciences, in a few days. It stated the purpose of the study and gave the contact information of the researchers in case the pharmacists had any questions prior to participation in the study. A copy of the pre-notification letter can be found under Appendix A.

The survey was administered using the online survey tool SurveyMonkey™. SurveyMonkey™ provides an option of collecting the data in an Excel spreadsheet. It was later imported into IBM SPSS Statistics version 19 for analyses. The survey was emailed to the study participants with a cover letter describing the purpose of the study, the time required to complete the survey and the assurance of confidentiality of the responses. The letter also mentioned that by filling out the survey, the respondents would have an equal chance of winning one of the two \$50 gift cards sponsored by the researcher. This incentive was used in order to get a better response rate for the study. The consent of the pharmacists to participate in the study was implied by the completion of the survey. Appendix B contains the cover letter that accompanied the survey.

The survey was emailed in 4 phases over a period of 16 days. In the first phase, the survey was sent to all the participants selected by random assignment. A period of 4 days was given for them to complete the survey. The surveys were then resent to the non-respondents who were also given a period of 4 days to complete the survey. This was followed by a two more mailings of the survey to the remaining non-respondents. A copy of the survey is provided under Appendix C.

### **3.6 Data Analyses**

The questionnaire was tested for reliability and validity. Content and face validity for the questionnaire was determined by systematic examination of the survey by fellow pharmacy administration graduate students and the faculty members in the Pharmacy Healthcare Administration division at the University of Toledo. Construct validity and reliability of the questionnaire were tested using Rasch measurements on pilot responses. WINSTEPS Rasch analysis software was used for the purpose of Rasch analysis.

The data collected from the questionnaires was analyzed using the IBM SPSS Statistics version 19 for Windows. To analyze the results of the study, a total measure of the items addressing each of the objectives was obtained by summing the responses. Based on the total score for each objective, the responses were divided into predetermined categories as shown in Table 3.2.

**Table 3.2: Calculation of scores for the objectives**

Objective	No. of items	Maximum score	Categories	
To investigate pharmacists' attitude towards OTC drug advertising.	8	40	Positive attitude: Score $\leq$ 20	Negative attitude: Score $>$ 20
To determine pharmacists' beliefs about the effects of OTC drug advertising.	4	20	Large effect: Score $\leq$ 10	Small effect: Score $>$ 10
To evaluate the impact of OTC advertising on pharmacists' choice of drugs.	4	20	High impact: Score $\leq$ 10	Low impact: Score $>$ 10
To determine pharmacists' beliefs about the influence of OTC drug advertising on the selection of OTC products by the patients.	6	30	High influence: Score $\leq$ 15	Low influence: Score $>$ 15
To evaluate the role played by OTC drug advertising in patient-pharmacist interactions.	6	30	Increases: Score $\leq$ 15	Does not increase: Score $>$ 15

Descriptive statistics were reported for each of the objectives of the study and for the demographics of the study participants. Contingency tables and Chi-Square Tests for Independence were generated to study the relationship between measures for each of the research questions and the demographics & miscellaneous variables in section II.



## **Chapter 4**

### **Data Analyses and Results**

This chapter provides a detailed account of the results obtained after survey data analyses. The data input and analyses were carried out using IBM SPSS Statistics version 19. This chapter is divided in the following sections:

- Response rate
- Respondent characteristics
- Descriptive statistics for the objectives
- Association between pharmacists' perceptions and demographic & miscellaneous variables

#### **4.1 Reliability and Validity**

Face and content validity of the survey determined through the review of pharmacy administration graduate students and the faculty at the college of pharmacy and pharmaceutical sciences. In order to calculate the validity and the reliability of the survey instrument, a pilot study was conducted before sending out the survey. Thirteen

pharmacists practicing at different pharmacies in Toledo filled out the pilot survey. Their responses were analyzed using a Rasch model through the WINSTEPS® Rasch model computer program.

Item fit statistics were generated by WINSTEPS to ensure that all the items are measuring the same construct. Items were determined to be misfitting if the standardized fit statistic *ZStd* was greater than 2.0. Out of the 29 items of the pilot survey, five items were found to be misfitting. One item was removed from the survey whereas the remaining four items were re-worded.

To further check the validity and reliability of the instrument, items measuring each of the study objectives were separately analyzed using WINSTEPS. In order to claim uni-dimensionality of the items, at least 60% of the standardized residual variance must be explained. An iterative approach was used to determine the items best fitting a study measure based on the explained variance. In addition, the Rasch person reliability scores were obtained for items under each of the study variable. Based on the values obtained it can be inferred that the survey used for this study has a satisfactory reliability and validity. The results obtained from Rasch analysis are depicted in Table 4.1.

**Table 4.1: Rasch analysis results**

<b>Survey measure</b>	<b>Explained variance</b>	<b>Person reliability</b>
To investigate, pharmacists' attitude towards OTC drug advertising.	65.0%	0.61
To determine pharmacists' beliefs about the effects of OTC drug advertising.	65.7%	0.74
To evaluate the impact of OTC advertising on pharmacists' choice of drugs.	68.2%	0.72
To determine pharmacists' beliefs about the influence of OTC drug advertising on the selection of OTC products by the patients.	67.7	0.87
To evaluate the role played by OTC drug advertising in patient- pharmacist interactions.	65.4%	0.85

After completion of the survey collection, reliability for the survey was re-tested, using responses obtained from the 292 pharmacists who participated in the study. The Rasch reliability for the survey was 0.82 and the Cronbach's alpha value was 0.74. To be considered a reliable scale, an acceptable Cronbach's alpha value is  $\geq 0.7$ . Thus, the survey used for this research has satisfactory internal reliability.

## **4.2 Response rate**

The survey for the study was sent out to 2,400 randomly selected pharmacists and reached 2,231 pharmacists. The number of participants who completed the survey was 292. The survey was considered incomplete if more than five questions were left unanswered. None of the returned surveys had missing items. The calculated response rate was 13.08 %.

### **4.3 Respondent characteristics**

Survey pharmacists were asked certain questions to verify their demographic characteristics as well as some of the other miscellaneous characteristics related to over-the-counter advertisement exposure and their contact with the patients. The characteristics of the respondents are provided in Tables 4.2 and 4.3. A majority of the participants were females (57.5%) working in large chain pharmacies, previously defined as pharmacies with more than or equal to 12 stores (46.6%). Most of the pharmacists were working in pharmacies located in suburban regions (52.4%). A fairly equal distribution was observed in the number of years of practice for the pharmacists with most of them practicing for 21-30 years (29%).

Approximately 45.2% of the surveyed pharmacists mentioned coming across over-the-counter drug advertisements more than 10 times a week. Television was found to be the medium where over-the-counter drug advertisements were seen most frequently with about 72.3% of the participants reporting the same. It was followed by magazines and newspapers (22.6%). A large number of pharmacists agreed on interacting with the patients about OTC drugs more than 10 times a week (56%). About 30% of the participants were working at a pharmacy with prescription a volume between 500-1000 prescriptions/week.

The demographic and miscellaneous characteristics of the pharmacists who participated in the study are in tables 4.2 and 4.3 respectively.

**Table 4.2: Demographic characteristics of the pharmacists**

<b>Variable</b>	<b>No. of respondents (%)</b>
<b>Gender</b>	
Female	57.5% (168)
Male	42.5% (124)
<b>No. of years practicing as a pharmacist</b>	
1-10 years	26.4% (77)
11-20 years	23.3% (68)
21-30 years	29.1% (85)
> 30 years	21.2% (62)
<b>Practice setting</b>	
Large chain pharmacy (>=12 stores)	46.6% (136)
Independent pharmacy	23.3% (68)
Grocery store pharmacy	14.0% (41)
Small chain pharmacy (1 to 11 stores)	5.5% (16)
Other	10.6% (31)
<b>Location of the pharmacy</b>	
Suburban	52.4% (153)
Urban	25.7% (75)
Rural	21.9% (64)

**Table 4.3: Miscellaneous characteristics of the pharmacists**

<b>Variable</b>	<b>No. of respondents</b>
<b>How often are OTC drug advertisements seen per</b>	
1-5 times	23.6% (69)
6-10 times	29.8% (87)
More than 10 times	45.2% (132)
Never	1.4% (4)
<b>Where are OTC drug advertisements seen most</b>	
Television	72.3% (211)
Magazines/ Newspapers	22.6% (66)
Internet	4.5% (13)
Radio	0.7% (2)
<b>Interaction with patients about OTC drugs per week</b>	
1-5 times	20.9% (61)
6-10 times	21.6% (63)
More than 10 times	55.8% (163)
Never	1.7% (5)
<b>Average weekly prescription volume</b>	
Less than 500 prescriptions/week	12.7% (37)
500-1000 prescriptions/week	30.1% (88)
1001-1500 prescriptions/week	19.5% (57)
1501-2000 prescriptions/week	15.4% (45)
More than 2000 prescriptions/week	22.3% (65)

## 4.4 Descriptive statistics for the objectives

This section describes the analyses for the first five objectives of the study. All the items were measured on a 5-point Likert scale; ‘1’ denoting ‘Strongly Agree’ and ‘5’ denoting ‘Strongly Disagree’. Thus, the scores for each of the items could range from 1 to 5. For each of the questions, the categories chosen by the highest number of pharmacists has been shaded grey in the following tables.

### 4.4.1 Pharmacists’ attitude towards over-the-counter drug advertising

The first objective of the study was to describe the attitudes of the pharmacists towards over-the-counter drug advertising. Items 1, 2, 3, 5, 8, 9, 23 and 24 of the survey are the attitudinal questions that provided answer to this objective. The items in Table 4.4 measured attitude of the pharmacists:

**Table 4.4: Items measuring pharmacists’ attitude towards over-the-counter drug advertising**

Item No.	Items measuring attitudes	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	OTC drug advertising makes me aware of different brands in the market.	11.0% (32)	72.6% (212)	8.6% (25)	7.5% (22)	.3% (1)
2	OTC drug advertising makes me aware of the functions of particular products.	4.5% (13)	49.7% (145)	22.9% (67)	21.6% (63)	1.4% (4)

3	OTC drug advertising makes me aware of new products in market.	21.9% (64)	74.0% (216)	2.4% (7)	1.7% (5)	.0% (0)
5	OTC drug advertising is beneficial to me for patient counseling on OTC drugs.	0.7% (2)	40.1% (117)	28.1% (82)	25.0% (73)	6.2% (18)
8	OTC drug advertising adheres to Federal Trade Commission guidelines.	1.4% (4)	26.4% (77)	56.2% (164)	13.4% (39)	2.7% (8)
9	OTC drug advertising emphasizes the safety of the products.	0.7% (2)	15.4% (45)	26.4% (77)	53.8% (157)	3.8% (11)
23	Information in OTC advertisements is adequate for making health decisions.	0.3% (1)	5.1% (15)	12.3% (36)	68.8% (201)	13.4% (39)
24	Information in OTC advertisements is enough for patients to decide whether to consult a healthcare professional.	0.3% (1)	14.4% (42)	19.5% (57)	58.2% (170)	7.5% (22)

Each item could have a maximum score of 5. Thus, the maximum score for the eight attitudinal items was 40. All the statements used for calculating the cumulative score for the attitudes of pharmacists were positive. This means that, if the pharmacists agreed to the statements, they were categorized as having a positive attitude towards over-the-counter drug advertising. Pharmacists were deemed to have a positive attitude if their total score was less than or equal to 20. For all the values above 20, pharmacists were categorized as having a negative attitude towards over-the-counter drug advertising. A majority of the surveyed pharmacists (81.5%) were found to have a cumulative score of more than 20 and thus a negative attitude towards OTC drug advertising.



#### 4.4.2 Pharmacists' beliefs about the effects of over-the-counter drug advertising

Items 6, 7, 11, and 12 investigate the second objective of the study, which sought to describe the beliefs of the pharmacists about the effects of over-the-counter drug advertising.

**Table 4.5: Items measuring pharmacists' beliefs about the effects of over-the-counter drug advertising**

Item No.	Items measuring pharmacists' beliefs about the effects of OTC drug advertising	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
6	OTC drug advertising could lead to people using medicines recklessly and thus causing adverse drug interactions with other pharmaceuticals.	24.0% (70)	60.3% (176)	10.6% (31)	4.8% (14)	.3% (1)
7	OTC drug advertising is responsible for the increased costs of OTC products.	17.8% (52)	51.7% (151)	24.0% (70)	6.5% (19)	.0% (0)
11	OTC drug advertising creates higher preferences for brands in cases where generics would suffice.	33.9% (99)	54.1% (158)	6.2% (18)	5.8% (17)	.0% (0)
12	OTC drug advertising misleads the consumers.	16.1% (47)	45.2% (132)	28.1% (82)	10.6% (31)	.0% (0)

With each item having a maximum possible score of five, the highest score for the beliefs measure, consisting of four questions, was 20. An agreement to the items in this category denotes that the pharmacists believed there are large effects of over-the-counter drug advertising on patients. Pharmacists, whose cumulative score for the above items

was found to be less than or equal to 10 were considered to believe that over-the-counter drug advertising has a greater effect on the patients than those with the score of more than 10. In all, 84% of the pharmacists believed that over-the-counter drug advertising has a large effect on patients.

#### 4.4.3 Impact of OTC drug advertising on pharmacists'

##### recommendations

Items 4, 22, 25 and 27, address the third objective of determining the impact of OTC drug advertising on pharmacists. The responses for these questions are as follows:

**Table 4.6: Items measuring impact of OTC drug advertising on pharmacists' recommendations**

Item No.	Items measuring impact of OTC drug advertising on pharmacists' recommendations	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
4	OTC drug advertising influences my decisions when customers seek advice.	1.7% (5)	12.0% (35)	31.8% (93)	45.9% (134)	8.6% (25)
22	The brands, which are advertised more often, are more trustworthy.	1.0% (3)	6.8% (20)	27.1% (79)	51.4% (150)	13.7% (40)
25	Advertising influences the decisions of stocking a drug in the drug store.	12.7% (37)	61.6% (180)	17.5% (51)	8.2% (24)	.0% (0)
27	I tend to recommend the OTC products, which are more advertised.	.3% (1)	4.5% (13)	20.2% (59)	63.0% (184)	12.0% (35)

There are four survey questions addressing this objective, each with a maximum score of 5. Thus, the score range for the impact of over-the-counter drug advertising on pharmacists' recommendations was between 4 and 20. Pharmacists were considered to be highly influenced by over-the-counter drug advertisements if they agreed to these survey items. If the total score for the four items was found to be less than or equal to 10, it showed that over-the-counter drug advertisements had a greater impact on the choice of drugs by the pharmacists. For values greater than 10, over-the-counter drug advertising was considered to have a lesser impact. A large number (91%) of pharmacists agreed that their choice of drugs was not impacted by over-the-counter drug advertising.

#### 4.4.4 Influence of OTC drug advertising on patients' choice of the drugs

Items 15, 16, 17, 18, 19 and 21, help to determine the influence of OTC drug advertising on the selection of OTC products by patients from pharmacists' viewpoint.

**Table 4.7: Items measuring the influence of OTC drug advertising on patients' choice of the drug products**

Item No.	Items measuring the influence of OTC drug advertising on patients' choice of the drug products	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
15	Exposure to OTC drug advertising encourages patients to form their own opinions about OTC products.	13.4% (39)	64.4% (188)	10.6% (31)	11.0% (32)	.7% (2)
16	Exposure to OTC drug advertising encourages patients to self-treat their condition more frequently.	25.7% (75)	64.7% (189)	6.5% (19)	3.1% (9)	.0% (0)

17	Exposure to OTC drug advertising encourages patients to buy OTC products whose advertisements are seen more frequently than the others are.	31.5% (92)	61.0% (178)	5.8% (17)	1.4% (4)	.3% (1)
18	Exposure to OTC drug advertising encourages patients to buy unnecessary OTC products.	25.7% (75)	52.4% (153)	17.1% (50)	4.8% (14)	.0% (0)
19	Exposure to OTC drug advertising encourages patients to buy OTC products unsuitable for their condition.	16.1% (47)	63.4% (185)	15.8% (46)	4.5% (13)	.3% (1)
21	Patients are often adamant on buying certain OTC drug products due to the advertisements they see.	22.9% (67)	57.5% (168)	11.0% (32)	8.6% (25)	.0% (0)

Since there are six questions measuring the impact of advertising on patient's selection of drugs, each with a maximum score of 5, the highest score that could be obtained for this measure was 30. An agreement to the statements in this category imputed that over-the-counter drug advertising had higher influence on the choice of drugs made by the patients. Patients were considered to be highly influenced by over-the-counter drug advertising if the score for the items in this section was less than 16. Ninety percent of the pharmacists were of the opinion that over-the-counter drug advertising greatly influences the patients' selection of over-the-counter medications.

#### **4.4.5 Effect of over-the-counter drug advertising on patient-pharmacist interactions**

Questions 10, 13, 14, 20, 26 and 28 evaluate the role played by OTC drug advertising on patient-pharmacist interactions.

**Table 4.8: Items measuring effect of over-the-counter drug advertising on patient-pharmacist interactions**

<b>Item No.</b>	<b>Items measuring the effect of OTC drug advertising on patient-pharmacist interactions</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neither Agree nor Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
10	OTC drug advertising helps patients have a better communication with pharmacist regarding OTC drugs	1.0% (3)	35.6% (104)	29.1% (85)	32.5% (95)	1.7% (5)
13	Exposure to OTC drug advertising encourages patients to ask about differences between brands.	6.8% (20)	60.6% (177)	14.0% (41)	18.2% (53)	.3% (1)
14	Exposure to OTC drug advertising encourages patients to seek more information about OTC drug products.	3.4% (10)	59.2% (173)	17.1% (50)	19.9% (58)	.3% (1)
20	Exposure to OTC drug advertising encourages patients to ask my opinion before purchasing OTC products.	3.4% (10)	33.2% (97)	29.5% (86)	31.5% (92)	2.4% (7)
26	Customers value my opinion when it comes to distinguishing between OTC drug products.	17.8% (52)	73.3% (214)	7.2% (21)	1.7% (5)	.0% (0)
28	OTC drug advertising leads to better patient- pharmacist interactions.	1.4% (4)	21.9% (64)	41.1% (120)	33.2% (97)	2.4% (7)

The maximum score that could be obtained for this measure was 30. Pharmacists, who believed that over-the-counter drug advertising increases the chances of patient-pharmacist interaction, tended to agree to the statements characterizing this objective. A score of 15 or below was deemed indicative of an increase in patient-pharmacist

interactions. Forty nine percent of the surveyed pharmacists believed that over-the-counter drug advertising increases the likelihood of patient-pharmacist interactions while fifty-one percent believed that it does not.

#### **4.5 Association between pharmacists' perceptions and demographic & miscellaneous variables**

Chi-Square tests for independence were performed between the cumulative scores for each of the five objectives and the demographic & other miscellaneous variables. This test was conducted to determine if any difference existed in the opinions of the pharmacists based on their demographic and other characteristics. An alpha level of 0.01 was adopted for this statistical analysis. Using a level of significance of 0.01, the critical value for a standardized residual would be -2.58 and +2.58.

The only research question that showed a significant association with some of the respondent characteristics was “does OTC drug advertising have an impact on pharmacists' choice of OTC drug products?” Results of the chi-square test indicated a significant difference between the impact of over-the-counter drug advertising on pharmacists' choice of drugs based on gender  $\chi^2(1, N = 292) = 12.58, p < .01$ . When converted to a z-score, the standardized residual for males was greater than 2.58, meaning that over-the-counter drug advertising had a greater impact on the recommendations of males than females. A significant association was also observed between the impact of over-the-counter drug advertising on pharmacists' choice of drugs and location of the

pharmacy  $\chi^2(2, N = 292) = 11.63, p = 0.003$ . The standardized residual for pharmacists working in an urban pharmacy setting was greater than 2.58, thus concluding that they were highly impacted by over-the-counter drug advertising. The impact of over-the-counter drug advertising was the least on pharmacists working in a suburban setting since their standardized residual value was less than -2.58. None of the other variables showed a significant association with each other. Table 4.9 and table 4.10 show the statistically significant results obtained from chi-square analysis.

**Table 4.9: Chi Square test for Gender \* Impact of OTC drug advertising on pharmacists' recommendations**

		Impact of OTC drug advertising on pharmacists' recommendations		Total	
		High Impact	Low impact		
Gender	Female	Count	6	162	168
		Expected Count	14.4	153.6	168.0
		Residual	-8.4	8.4	
		Std. Residual	-2.2	.7	
		Adjusted Residual	-3.5	3.5	
Male		Count	19	105	124
		Expected Count	10.6	113.4	124.0
		Residual	8.4	-8.4	
		Std. Residual	2.6	-.8	
		Adjusted Residual	3.5	-3.5	
Total		Count	25	267	292
		Expected Count	25.0	267.0	292.0

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.584 <sup>a</sup>	1	.000		
Continuity Correction <sup>b</sup>	11.128	1	.001		
Likelihood Ratio	12.711	1	.000		
Fisher's Exact Test				.001	.000
N of Valid Cases	292				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.62.

b. Computed only for a 2x2 table

**Table 4.10: Chi Square test for Location of the pharmacy \* Impact of OTC drug advertising on pharmacists' recommendations**

		Impact of OTC drug advertising on pharmacists' recommendations		Total
		High Impact	Low impact	
Location of the pharmacy you work at	Count	6	58	64
	Expected Count	5.5	58.5	64.0
	Residual	.5	-.5	
	Std. Residual	.2	-.1	
	Adjusted Residual	.3	-.3	
	Rural			



Suburban	Count	6	147	153
	Expected	13.1	139.9	153.0
	Count			
	Residual	-7.1	7.1	
	Std. Residual	-2.0	.6	
	Adjusted Residual	-3.0	3.0	
Urban	Count	13	62	75
	Expected	6.4	68.6	75.0
	Count			
	Residual	6.6	-6.6	
	Std. Residual	2.6	-.8	
	Adjusted Residual	3.1	-3.1	
Total	Count	25	267	292
	Expected	25.0	267.0	292.0
	Count			

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.633 <sup>a</sup>	2	.003
Likelihood Ratio	11.070	2	.004
N of Valid Cases	292		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.48.

# **Chapter 5**

## **Discussion**

This chapter provides a detailed discussion of the results of the study and how they relate to the existing literature. The chapter is divided into the following sections:

- Discussion
- Limitations
- Implications for future research
- Conclusion

### **5.1 Discussion**

#### **5.1.1 Reliability and validity**

All the five subscales of the survey, used to measure each of the study objectives, had satisfactory validity as per the Rasch analysis results of the pilot test. Additionally, these results also support the internal reliability of the survey. The final survey responses also produced an acceptable Cronbach's alpha value, further supporting the reliability of the instrument and indicating that the survey can be used satisfactorily for future studies.

### **5.1.2. Pharmacists demographics and other variables**

Of the 2,400 randomly selected pharmacists, the survey reached 2,231 pharmacists with a working email address. Two hundred and ninety two responses were obtained generating a final estimated response rate of 13.08%. The respondents were approximately equally distributed between males and females, and the number of years of practicing as a pharmacist. This was comparable to other studies surveying pharmacists from the state of Ohio as well as the overall distribution of gender and number of years of pharmacy practice of pharmacists in Ohio.<sup>63-65</sup> Most of the respondent pharmacists were working in a suburban large chain pharmacy setting. This was in line with the database used for this research since it consisted of about 80% of the pharmacists working in a large chain pharmacy. Therefore, the sample was deemed representative of the population of Ohio pharmacists.

The present study found that most of the pharmacists encounter OTC drug advertisements more than 10 times a week in different media. A study conducted by Brownfield et al. in 2004 claimed that 4.8% of the total advertisements seen on television were over-the-counter drug ads.<sup>39</sup> However, no study has yet been conducted to verify the amount of exposure to over-the-counter drug advertisements in different advertising media. Television was the most common source for over-the-counter drug advertisements as reported by almost three fourth of the sample pharmacists. This is in accordance with research which shows that, of all the over-the-counter drug advertising media, television received the maximum share of advertising expenditure.<sup>4</sup>

The survey also asked the pharmacists about their frequency of interaction with patients about over-the-counter drugs. This information was necessary to study the impact of the number of interactions on patient/pharmacist relationship. A large number of pharmacists agreed that they address the OTC drug related issues of patients more than 10 times a week. These findings are similar to the *Drug Topics' 2007 OTC Recommendation Study* that surveyed pharmacists nationally on various topics related to counseling patients about over-the-counter drugs.<sup>22</sup> The largest number of pharmacists participating in the *Drug Topics' 2007 OTC Recommendation Study* counseled about 16 to 30 patients a week.

### **5.1.3 Discussion of study objectives**

It has been observed in the past that physicians and pharmacists do not have a favorable attitude towards the advertising of prescription drugs.<sup>54,62,66</sup> A previous study conducted by Amonkar et al. surveyed Ohio pharmacists about prescription drug advertising. Their findings revealed that most of the pharmacists believed prescription drug advertising to be non-beneficial to the consumers.<sup>1</sup>

A few studies have tried to research the opinions of pharmacists towards over-the-counter drug advertising and have encountered similar findings.<sup>28,29,37,52,53,67</sup> A 2000 study conducted by Desselles and Aparasu to assess pharmacists' attitudes towards direct-to-consumer drug advertising of prescription medications found that 59% of the pharmacists did not support it.<sup>67</sup> Another national survey of pharmacists conducted in 2005 to decipher their perceptions of the pharmaceutical industry and industry practices

found that the respondents strongly disagreed with the direct-to-consumer drug advertising practices.<sup>53</sup>

In the current study, attitude of pharmacists was deduced by the cumulative score of a series of attitudinal questions. Results of the responses obtained from the survey show that pharmacists harbored a negative attitude towards the advertising of over-the-counter drugs. It was found that the pharmacists did not believe that OTC drug advertisements emphasized the safe use of the product or that their information content was adequate for making appropriate health decisions such as deciding whether to consult a healthcare professional.

It has been shown previously that print advertisements of over-the-counter drugs lacked accuracy of information. An evaluation of print advertisements in consumer periodicals by clinical pharmacists revealed that more than half of the advertisements lacked information necessary to make informed decisions.<sup>29</sup> A possible explanation may be that there is limited space to advertise the product in print medium. However, the results of the present study resonate with these findings and generalize them for all the advertising media. The Federal Trade Commission deems any advertisement that omits material information as deceptive. The fact that this holds true even for media like television and internet, where products can be described elaborately, may suggest that the advertisements may be violating some of the requirements put forth by the Federal Trade Commission. Respondents of this study reiterate the beliefs of the pharmacists, previously surveyed in two different studies by Mackowiak et al. and Sansgiry et al., that OTC drug advertisements can be misleading.<sup>29,31</sup>

Evidence has shown that patients can use over-the-counter drugs recklessly to treat their conditions.<sup>68,69</sup> For example, a 2010 study conducted by Guirguis to examine the use of non-prescription medicines among elderly patients with chronic illnesses found that the products were not used at the right dosages.<sup>69</sup> Such unsafe use can often result in adverse drug events. A large number of pharmacists in the present study were of the opinion that OTC drug advertising could lead to people using medicines recklessly, thus causing adverse drug interactions with other pharmaceuticals.

Overall, a majority of the pharmacists in the current study believed that the effects of over-the-counter advertising are unfavorable for consumers. They felt that OTC drug advertising creates higher preferences for brands in cases where generics would suffice and is responsible for the increased costs of OTC products. However there was no literature found to support this observation.

The research also aimed to evaluate the impact of over-the-counter drug advertising on pharmacists' recommendations. Since pharmacists are a valued source of information for over-the-counter drugs, it was essential to know if advertising is one of the factors that they would consider important while recommending a nonprescription drug product. As per the results obtained in this study, the pharmacists strongly opposed the idea of advertising having an effect on their preference for OTC drugs. They believed that advertisements hardly had any influence on their recommendations to the customers when they sought OTC drug related advice, nor did they think that the drug companies that advertised more extensively were any more trustworthy than the other companies were. These findings match the opinions of pharmacists recorded in the literature previously. In a study carried out by J. E. Kotecki in 2002, it was demonstrated that

advertising and other marketing strategies had a very slight effect on the over-the-counter recommendations of the pharmacists. They were more likely to be influenced by medical forces and made recommendations based on their training and knowledge.<sup>43</sup>

Interestingly, however, a large number of pharmacists agreed to the fact that advertising controls the decisions of stocking the drugs in the store. This is anomalous with their assertion that OTC drug advertising does not have an influence on the pharmacists. A possible explanation of this paradoxical situation may be that a majority of the pharmacists were employees of pharmacies owned by other companies (large/small chain pharmacies, grocery store pharmacies etc.). The literature has shown that high levels of advertising and promotion creates a high demand of the drug products among consumers.<sup>70,71</sup> The decision of stocking a product in the pharmacy, in conjunction with the patient demand, may not be driven by the pharmacists but by the companies owning the stores.

Another purpose of the present study was to understand pharmacists' opinions about the influence of OTC drug advertising on patients' selection of medications. As per the National Survey of Consumers and Health Professionals carried out by Harris Interactive Market Research, Americans get as much information regarding over-the-counter drugs from advertising, or television and print promotions, as they do from the physicians.<sup>19</sup> In a study conducted by Marcus et al. to evaluate consumers' risk perceptions of prescription and over-the-counter medications, direct to consumer drug advertising was listed as one of the most frequently used information source for patients.<sup>71</sup> Advertisements, with the portrayal of the product in an attractive light, are

designed to entice the consumers. It is therefore imminent that patients often base their drug selection decisions on these promotional means.<sup>20</sup>

The respondents of this survey were very strongly opinionated about the impact of OTC drug advertising on patients' choice of the drug products. They believed that over-the-counter drug advertising has led to patients being biased and thus, self-treating their conditions with products that are advertised more frequently. They expressed their concerns about the products purchased by the patients being unnecessary or worse, unsuitable for their conditions. Pharmacists found that oftentimes patients are adamant about buying certain OTC drugs based on the advertisements they have seen. The self-diagnosis and treatment is especially dangerous in the case of nonprescription drugs because the medications are easily accessible to the patients with no control of a health care professional and thus have a greater potential for misuse.

The result of the present study showed an equal distribution of pharmacists who thought that over-the-counter drug advertising improves and pharmacists who thought it does not improve patient-pharmacist interactions. Previous research has highlighted the effect of direct to consumer advertising of prescription drugs on conflicts in physician-patient relationships.<sup>66,72</sup> Patients have been shown to react negatively if the physician refuses to write a prescription for a drug that the patient requested based on advertisements.<sup>72</sup> However, DTCA of prescription drugs has also shown to foster patient-physician relationship by promoting a discussion about the advertised medicines between patients and physicians.<sup>73,74</sup> This is comparable to the results of the current study showing a mixed opinion among the pharmacists about the effect of over-the-counter drug advertising on the patient-pharmacist relationship.



The reason for these mixed findings may be that even though the pharmacists have stated that they counsel an increasing number of patients about over-the-counter drug use, the number is not substantial enough. Patients are often seen bypassing the pharmacist and obtaining the medicines on their own. As stated previously, patients may also have formed their own opinions about certain products and may be adamant about the use of the same. This can lead certain pharmacists to believe that their image as a gatekeeper of non-prescription drugs and in turn, their relationship with the patients is negatively impacted due to advertising. At the same time, however, the results of this study suggest that a large number of pharmacists have encountered patients who asked about differences between brands, sought more information about OTC products and valued their opinions after exposure to over-the-counter drug advertising. Pharmacists who had such experiences would be of the opinion that advertising has a positive effect on their interactions with the patients. Thus, this is a double-sided issue that needs to be further investigated.

As per the results of the Chi-square test, the only study variable that showed a variation based on the demographic variables was the impact of over-the-counter drug advertising on pharmacists' choice of drugs. It showed a significant difference based on gender and location of the pharmacy. Males were seen to be more influenced by over-the-counter drug advertising than females. It has been shown in a previous study by Kotecki et al. that while male pharmacists were influenced by marketing forces such as manufacturer's reputation and general advertisements/ product claims, female pharmacists were driven by social forces like cost of product and feedback of consumers, and their own experiences with the products, when making OTC recommendations.<sup>43</sup>

There was no literature to support the fact that the impact of OTC drug advertising on pharmacists' choice of drugs differed according to the location of the pharmacy.

Other variables did not have any effect on the perceptions of pharmacists. This further establishes the generalizability of the survey by exemplifying that the opinions of the pharmacists are not affected by any differences in the demographics of the pharmacist and other miscellaneous factors.

## **5.2 Limitations**

The results of the study hold true in the case of following limitations. The sample size was not large enough to reach the necessary statistical power. Hence, this study may be reliable only for the pharmacists from the state of Ohio and may not represent the opinions of pharmacists nationwide who may have a different outlook towards over-the-counter drug advertising.

The response rate obtained was low, compared to the other studies surveying pharmacists. This may be due to the use of an email survey. The participating pharmacists were sent only four reminders before the data collection was completed. This could have restricted the number of responses. Additionally, many of the emails could have been delivered to the spam or junk mail folders of the recipients or may have been deleted by them.

There is a possibility of selection bias since only the pharmacists registered with the Ohio Board of Pharmacy were considered for the study. Thus, their responses may

not be aligned with the responses of the pharmacists from other boards or with those who did not respond to the survey.

### **5.3 Implication for future research**

The perceptions of pharmacists from the state of Ohio about over-the-counter drug advertising were investigated in this study. This study serves as a stepping-stone for additional research in the field of over-the-counter drug advertising. In order to establish the reliability of the survey, the study needs to be repeated with pharmacists in different locations. It would be interesting to know if the opinions of pharmacists from the other states or in a nationwide survey coincide with the findings of this study.

A systematic study of pharmacists' views using a theoretical framework such as the theory of reasoned action may be conducted to further analyze their intentions of supporting drug advertising. Additional research can be done to seek the opinions of pharmacists about advertising of prescription drugs and a comparison can be made between those results and the results of the current study. Research can also be conducted to determine the attitudes of other healthcare professionals such as physicians towards the issue of over-the-counter drug advertising.

## **5.4 Conclusion**

As per the opinions of the surveyed pharmacists, the appropriateness and effectiveness of currently seen over-the-counter drugs advertisement are less than optimal. Although pharmacists stated that they use advertisements as a means of information about over-the-counter drugs, they believe that several areas of over-the-counter drug advertising need improvement. The study has demonstrated that nonprescription drug advertisements are falling short in their attempts to attract the pharmacists who play a vital role in nonprescription drug industry. Advertisements need to focus on conveying quality information to the pharmacists and the patients rather than the promotional aspects. Better regulations are required to ensure that advertisements can act as excellent tools for obtaining knowledge about the disease and its cure. This will not only help the patients, who are highly influenced by the advertisements, but will also help in creating better patient-pharmacist communication, thus improving the self care scenario in the United States.

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# Appendix A

## Pre-Notification Letter

Dear Pharmacists,

In a few days, you will be invited to participate in a study conducted by researchers from the University of Toledo, College of Pharmacy and Pharmaceutical Sciences. There have been many issues and concerns regarding the advertising of over the counter medications lately. However, very little is known about pharmacists' perceptions of OTC drug advertising. The purpose of this study is to obtain your valuable thoughts on this subject.

Your participation in this study is completely voluntary. Your participation and completion of this survey will automatically enter you for a chance to win one of two **\$50 Visa gift cards**. If you have any questions about the survey please contact me, Priyanka Potnis via email: [priyanka.potnis@rockets.utoledo.edu](mailto:priyanka.potnis@rockets.utoledo.edu) or by phone at (419)490-5354 or my advisor, Dr. Monica Holiday-Goodman at [mholida@utnet.utoledo.edu](mailto:mholida@utnet.utoledo.edu) or by phone at (419)383-1968.

Thank you very much for your cooperation.

Sincerely,

Priyanka Potnis  
MS Candidate  
Pharmacy Healthcare Administration

Dr. Monica Holiday-Goodman  
Associate Professor and Program Director  
Pharmacy Healthcare Administration

# **Appendix B**

## **Survey Cover letter**

### Ohio Pharmacists' Perceptions of Over-the-Counter Drug Advertising

#### Investigators:

Dr. Monica Holiday-Goodman

Associate Professor and Program Director

Pharmacy Health Care Administration

419.383.1968

Priyanka S. Potnis

Master's Candidate

Pharmacy Health Care Administration

419.490.5354

Dr. Gregory Stone

Associate Professor

Foundation of education

419.530.7224

Robert Bechtol

Clinical Assistant Professor

Pharmacy Health Care Administration

419.383.1956

Purpose: You are invited to participate in the research project entitled, “Ohio Pharmacists’ perceptions of Over-The-Counter drug advertising” which is being conducted at the University of Toledo under the direction of Dr. Monica Holiday Goodman and Priyanka S. Potnis. There have been many issues and concerns regarding the advertising of over the counter medications lately. However, very little is known about pharmacists’ perceptions of OTC drug advertising. The purpose of this study is to understand the valuable thoughts of pharmacists regarding OTC drug advertising.

Description of Procedures: This research study will take place at the University of Toledo, Toledo OH. To participate in this study, please complete the following survey keeping in mind all the types of over-the-counter drug advertisements that you come across every day. This survey is designed to take not more than 15 minutes of your time. Please complete the whole questionnaire, as each question is important in achieving valid results. Before you decide to participate or after you have completed the questionnaire, you may send an e-mail to the research team and we will debrief you about the data, theory and research area under study and answer any questions you may have about the research.

Potential Risks: There are minimal risks to participation in this study. Your responses will be held confidential. You have a right to stop your participation at any point.



**Potential Benefits:** Your participation and completion of this survey will automatically enter you for a chance to win one of two \$50 Visa gift cards. The only other direct benefit to you if you participate in this research may be that you will learn about how survey research are conducted and may learn more about Ohio pharmacists' perceptions of over-the-counter drug advertising. Others may benefit by learning about the results of this research.

**Confidentiality:** The software used for the administration of this survey maintains anonymity of the survey responses. We assure you that your responses will be kept confidential. Your answers will be combined with many others participating in this study and used only for statistical analysis. The researchers will make every effort to prevent anyone who is not on the research team from knowing that you provided this information, or what that information is. Although we will make every effort to protect your confidentiality, there is a low risk that this might be breached.

**Voluntary Participation:** Your participation in this study is completely voluntary and refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled and will not affect your relationship with the University of Toledo. In addition, you may discontinue participation at any time without any penalty or loss of benefits.

**Contact Information:** Before you decide to accept this invitation to take part in this study, you may ask any questions that you might have. If you have any questions at any time before, during or after your participation you should contact a member of the research team.

Priyanka S. Potnis

priyanka.potnis@rockets.utoledo.edu

419.490.5354

Dr. Monica Holiday-Goodman

mholida@utnet.utoledo.edu

419.383.1968

If you have questions beyond those answered by the research team or your rights as a research subject or research-related injuries, the Chairperson of the SBE Institutional Review Board may be contacted through the Office of Research on the main campus at (419) 530-2844.

Before you start the survey, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

CONSENT SECTION – Please read carefully

You are making a decision whether or not to participate in this research study. Your completion of the survey indicates that you have read the information provided above, you have had all your questions answered, and you have decided to take part in this research.

The date you complete the survey in order to enroll in this study, that is, today's date must be after the date indicated at the bottom of the page.

University of Toledo IRB Approved

Approval Date: December 12th, 2011

# Appendix C

## Survey



**Dear Participant:**

**Please answer the following questions by selecting the option that best describes your opinion toward the following statements.**

**Please read and answer each question carefully.**

Example : Exercise makes me feel active the whole day.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**Please complete the following survey keeping in mind all types of OTC drug advertising that you come across every day.**

## **Section I**

**As a pharmacist, I believe the advertisement of non-prescription pharmaceuticals...**

**1. ...makes me aware of different brands in the market.**

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**2. ...makes me aware of the functions of particular products.**

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

3. ... makes me aware of new products in market.
- Strongly Agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly Disagree
4. ... influences my decisions when customers seek advice.
- Strongly Agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly Disagree
5. ... is beneficial to me for patient counseling on OTC drugs.
- Strongly Agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly Disagree

6. ... could lead to people using medicines recklessly and thus causing adverse drug interactions with other pharmaceuticals.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

7. ... is responsible for the increased costs of OTC products.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

8. ... adheres to FTC guidelines.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

9. ... emphasizes the safety of the product.
- Strongly Agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly Disagree
10. ... helps patients have a better communication with pharmacist regarding OTC drugs.
- Strongly Agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly Disagree
11. ...creates higher preferences for brands in cases where generics would suffice.
- Strongly Agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly Disagree

12. ...misleads the consumers.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**Exposure to non-prescription pharmaceutical advertising encourages my patients to ...**

13. ... ask about differences between brands.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

14. ... seek more information about OTC drug products.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree



15. ... form their own opinions about OTC products.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

16. ... self treat their condition more frequently.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

17. ... buy OTC products whose advertisements are seen more frequently than the others.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**18.** ... buy unnecessary OTC products.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**19.** ... buy OTC products unsuitable for their condition.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**20.** ... ask my opinion before purchasing OTC products.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**In my opinion.....**

**21.** Patients are often adamant on buying certain OTC drug products due to the advertisements they see.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**22.** The brands which are advertised more often are more trustworthy.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**23.** Information in OTC advertisements is adequate for making health decisions.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**24.** Information in OTC advertisements is enough for patients to decide whether to consult a healthcare professional.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**25.** Advertising influences the decisions of stocking a drug in the drug store.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**26.** I tend to recommend the OTC products which are more advertised.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

**27.** OTC drug advertising leads to better patient- pharmacist interactions.

- Strongly Agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly Disagree

## **Section II**

**28.** Gender:

- a. Male
- b. Female

**30.** No. of years practicing as a pharmacist:

- a. 1-10
- b. 11-20
- c. 21-30
- d. < 30

**31.** Practice setting:

- a. Independent pharmacy
- b. Small chain pharmacy (1 to 11 stores)
- c. Large chain pharmacy ( $\geq$  12 stores)
- d. Grocery store pharmacy

**32.** Location of the pharmacy you work at:

- a. Urban
- b. Suburban
- c. Rural

- 33.** How often do you see OTC drug advertisements per week  
(on television, in print, on the internet etc.)?
- a. Never
  - b. 1-5 times
  - c. 6-10 times
  - d. More than 10 times
- 34.** Where do you most commonly see OTC drug advertisements?
- a. Television
  - b. Magazines/Newspapers
  - c. Internet
  - d. Radio
  - e. Billboards
  - f. Other: \_\_\_\_\_
- 35.** On an average, how often per week do patients interact with you about OTC drugs?
- a. Never
  - b. 1-5 times
  - c. 6-10 times
  - d. More than 10 times

**36.** On an average, what is your weekly prescription volume?

- a. Less than 500 prescriptions/week
- b. 500-1000 prescriptions/week
- c. 1001-1500 prescriptions/week
- d. 1501-2000 prescriptions/week
- e. More than 2000 prescriptions/week