CONSUMERS' EXPECTATIONS OF

OVER-THE-COUNTER (OTC) MEDICINES:

LOCATION OF SALE

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ABSTRACT

Over-the counter (OTC) medicines are used commonly for treating minor illnesses. Even though most Canadians believe that OTC medicines are safe and effective, they can pose some risk through side effects and interactions if people do not take them with due care. With notable exceptions, people in Canada can purchase OTC medicines from pharmacies or non-pharmacy outlets such as convenience stores. Global trends in medicine-related legislation are leading to more of these products ending up in retail outlets other than pharmacies. Therefore, understanding public attitudes involving OTC medicine is becoming more and more important. Public expectations of OTC medicines in relation to location of sale were investigated in this study. It was hypothesized that the product buying public would perceive medicines differently based on where they are sold.

Adult Saskatoon residents over 18 years old (n = 2547) were randomly selected from a telephone registry. Advance letters were initially mailed to them, followed by a ten page questionnaire and two reminder letters. Non-response letters were only sent to subjects who did not reply after two reminders. Subjects were asked to indicate what attributes (effectiveness, safety, potency, side effect propensity, price, etc.) they would expect from OTC medicines depending on where they were purchased – pharmacies versus convenience stores.

The usable response rate was 57.5 percent. Almost every participant (96.1 percent) had bought OTC medicines from pharmacies. Most respondents (80.7 percent) were aware that OTC medicines could be purchased in convenience stores; however, only 42.2 percent of respondents had purchased OTC medicines from such locations. Significantly different expectations for the two locations were seen for product variety and quality, price, and ability to get help. Pharmacies should have a better selection of products and be of better quality than these OTC medicines sold in convenience stores. Public expectations for OTC product potency, safety, effectiveness, propensity for side effects, and package information did not differ across locations. The findings of this study suggest that location of sale has minimal effect on Saskatoon residents' expectations of OTC medicines along clinical attributes. Saskatoon residents also appear

to have healthy attitudes regarding OTC medicines and realize care is needed during their use. This may have implications in how people use such products after they are purchased and may be important for how they are scheduled for the Canadian marketplace.

ACKNOWLEDGMENTS

DEDICATION

This Thesis Is Dedicated to

My Parents, Yu-Hsin Lo and Mei-Fang Hsu

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CHAPTER 1: INTRODUCTION

The four essential levels of care are self-care, primary professional care, general specialist care, and tertiary specialist care.[1] Self-care is the broad base of health care, and a frequent part of everyday life. For instance, if a symptom is not considered serious, people will often choose to ignore it or self-treat it, rather than seeking a professional's help. In recent years, the idea of self-care has been strongly promoted by governments in many countries. People are being encouraged to monitor their own illnesses, self-treat minor symptoms, prevent diseases, and improve/maintain their health. Studies in the United Kingdom and the United States show that people provide 66-95 percent of all health care for themselves and their families.[2-6]

Within the self-care structure, over-the-counter (OTC) medicine is a major element. People often use OTC products to treat their minor illnesses, which usually are common health problems such as colds, headaches, heartburn, and sore feet. In a British study, Dunnell and Cartwright found that using OTC medicine was the most frequently reported response to symptoms associated with minor illnesses, surpassing "doing nothing," "seeing a physician," and all other treatment options.[7] According to this study, 96 percent of the study population believed the OTC medicines really did help. Another British study reported that 66 percent of the respondents had taken OTC medicines during a one-month study period, in contrast to the 25 percent who had taken prescription medicines during the same period.[8] In Canada, OTC drugs are also commonly used and thus play an important role in its health care system. For instance, a Canadian report showed that over 90 percent of Canadians used an OTC product in 1991.[9] A more recent study indicated that 58 percent of Canadians took an OTC medication in the last six months.[10] These studies suggest that OTC medicine is indeed a common choice for treating minor conditions.

The Canadian OTC market has been growing year by year. In 1999, the self-

care products industry generated approximately $2.9 billion in sales (including OTC drugs and natural health products).[11] According to a report released by the Canadian Institute for Health Information, an estimated $3.3 billion was spent on the OTC market (including OTC drugs and personal health supplies) in 2001, a 13.8 percent increase over 1999.[12] One explanation for this growth is that more and more OTC products are available on the market.

If the medicine is classified as an unscheduled drug in Canada, it can be sold from any retail outlet. Products such as Benylin DM, Sudafed, Tylenol, Advil, and Nicorette gum are in this category.

In the United States, there are no restrictions and OTC products can be purchased from all locations. Thus, people in North America can purchase such products from pharmacies or from non-pharmacy outlets. In an American OTC survey in 1995, 46 percent of OTC medicines were purchased from pharmacies, with the majority (54 percent) bought from non-pharmacy outlets.[13] This means that more than half of OTC purchases were made without the direct or indirect supervision of a pharmacist, which could have resulted in some potential risks such as misuse, misdiagnosing diseases, and adverse effects/drug interactions.

Although Canadians can purchase OTC medicines in many places (pharmacies, convenience stores, and supermarkets), most OTC purchases take place in pharmacies. One possible reason is that Canada has more strict drug classifications, so there are not as many medicines sold outside of pharmacies. Another reason is that most food stores/supermarkets in this country have their own pharmacies, thus people may prefer to purchase OTC products there. A third reason is that convenience stores may offer less OTC product selection than pharmacies do (for those specific agents they are legally allowed to sell). For example, an anecdotal examination of one of the convenience store chains in Saskatoon found approximately 30 kinds of OTC products, far less than the number available in most pharmacies.

Even though OTC products are believed to be safe for self-treatment, pharmacists are concerned about the impact of product sales outside pharmacies. They worry that such products may not be given the respect they require by the public, that they are indeed potent medicines that must be used judiciously. One writer coined the

phrase – the *de-medicinization of OTC medicines* – to reflect a possible negative trend that denigrates OTC medicines to the level of other simple consumer goods such as breakfast cereals or household cleaning products.[14] Furthermore, as governments switch more medicines to OTC status and the medicines become more potent,[15,16] public attitudes to OTC medicines will become more important. This leads to an important question – does the location of sale influence public attitude to the medicine? In other words, does a shopper feel that an OTC product purchased in a convenience store is less of a "medicine" than one purchased in a pharmacy? Does it require less vigilance during its use because 'it is so safe that even 7-11 sells it'? Unfortunately, no evidence exists to answer such questions, either in Canada or in the United States. Research is needed to explore people's experiences and expectations when purchasing OTC products in pharmacies and non-pharmacy outlets under the premise of optimal patient care.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In recent decades, self-care has been promoted in many countries (United States, Canada, Britain, Australia, Japan etc) as part of a public policy agenda. The main impetus for this is to divert people from the formal health care system, to save resources while still meeting acceptable levels of care. There is evidence that more and more people are taking greater responsibility for their own health, as witnessed by the self-help movement of the seventies and the boom in herbal and alternative health measures of the eighties, the latter of which shows little sign of abating. Once a common practice across centuries of human history, self-diagnosis and self-treatment are making a comeback. OTC medicines are the most common choice for self-treatment, with almost everyone having some experience in using or purchasing such medicines.

2.2 Self-Care, Self-Medication, and Minor Illness

2.2.1 Definitions of Self-Care/Self-Medication

There has been growing interest in self-care over the past two decades. For the years of what is now known as the golden age of medicine (1930s to 1950s), self-care was actually frowned upon by the medical establishment. The reason was that in the wake of tremendous achievements in drug discovery of the time, more traditional ways of treating illness were considered both unsafe and ineffective. Accordingly, patients were encouraged by physicians to seek formal care for even the most mundane of illnesses and to use modern pharmacotherapies to rectify the problem.

What is self-care? It can be simply said that individuals partaking in self-care take charge of protecting, maintaining, and improving their own health status.

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Lunde cites a definition of self-care from WHO:[1]

> Self-care refers to unorganized health activities and health-related decision-making by individuals, families, friends, colleagues at work, etc.; it includes self-medication, self-treatment, social support in illness, first aid in a 'natural setting', ie, the normal social context of people's everyday lives. Self-care is definitely the primary health resource in the health care system. It does not imply purposeful organization and is often provided on an ad hoc basis in intimate settings.

Lunde has indicated that self-care includes four main aspects: health promotion, disease prevention, treatment of minor illnesses and injuries, and the management of chronic diseases and rehabilitation.[1] Under this definition, changing lifestyle patterns would be a form of self-care.

Self-medication is also a form of self-care, and a critical one. Products to be used for such purposes can be defined as those "the average consumer can use to treat minor, self-limiting illnesses without the intervention of a prescribing, dispensing or monitoring health professional with relative assurance of its safety and effectiveness."[17] Medications of this type are usually known as non-prescription or over-the-counter (OTC) products.

2.2.2 Benefits of Self-Care/Self-Medication

Even though self-care/self-medication is as old as human history, governments and health insurers still encourage the public to do more of it. The main reason for promoting self-care is to reduce health care expenditures. A national report in Canada suggests that appropriate self-care activities can decrease the economic burden on formal health care systems.[18] With regard to the financial impact of minor illness, a Canadian study in the province of Ontario found that 13.2 percent of all visits to physicians in 1989 were for the treatment of colds and flu. The total cost for these conditions were almost $300 million, taking up 12.5 percent of the provincial government's payment to physicians.[19] Because colds are a very common type of minor illness in which most people can self-treat by using OTC medications, this expenditure might be unnecessary. Temin provides a piece of evidence to this point.[20] He determined that 1.65 million Americans with cold symptoms did not visit a doctor from 1974 to 1989 due to the

variety of cough/cold preparations available on the OTC market. It was estimated that $77 million per year could be saved, including payments for physician services and government spending on prescription drugs.

Deregulation of medicines – the switching of prescription medicines to non-prescription status – also can result in health care expenditure reduction.[21-24] An OTC industry-supported Canadian study measured the economic impact of non-sedating antihistamines newly available to the OTC market in 1994. It found that the provincial government of Ontario saved $11.6 million from these drugs switching to OTC status. Further, consumers were purported to save $4.4 million by reducing the time needed for visiting doctors and the costs of obtaining prescriptions. The total savings from these reclassified drugs was therefore $16 million.[25]

Self-care/self-medication not only has economic benefits to a health care system, but has advantages to consumers and to health professionals as well. For consumers, self-care/self-medication can be very convenient. Time can be saved by avoiding doctor visits. Evans *et al* cite a consumer study in Britain that the average waiting time in a doctor's office is 24 minutes for a patient with an appointment, and 45 minutes for a patient without an appointment.[26] The situation in Canada is likely similar. Moreover, cheaper prices in comparison to those of prescription medicines are another reason why people choose OTC products (although this is mainly in effect for those who do not have insurance coverage). In Canada circa 1998-99, 25 percent of the population (12 years old and over) did not have any public or private insurance coverage for prescription medicines.[27]

For health professionals, promoting self-care/self-medication can decrease physician workload, and in turn, extend the scope of the pharmacist's advisory role. According to results from several American and British studies, physicians agree that a great number of their daily consultations are associated with minor illnesses that can be handled by less formalized care.[7,21,28-29] Moreover, the increasing numbers of self-care/self-medication activities provide a great opportunity for pharmacists to offer more pharmaceutical care to the public. Detailed literature on the pharmacist's role in self-care/self-medication is covered later in this chapter (2.4, p.13).

2.2.3 Common Types of Minor Illnesses

There is no clear definition of a minor illness. However, generally speaking, a symptom associated with a short-term, trivial and self-limiting illness is considered a minor ailment. The kinds of minor illnesses that can occur are rather diverse and are very common health problems. It has been estimated that 100 to 150 million general practitioner consultations a year in Britain are for conditions that may be self-treatable.[29] Bissell *et al* cite a survey that showed over 90 percent of the British population experienced at least one ailment per person in 1995.[30] A Canadian survey (1991) similarly reported that 88 percent of adults had suffered at least one minor illness in the previous 12 months.[9] In Irigoyen and Mulvihill's one-year cohort study,[31] medical students reported an average of 4.4 minor illnesses per person per year.

Most studies to determine frequency of symptom presentation allow people to self-report what they have experienced in a given period of time.[4,6,7,32] Several observation studies have also been conducted in community pharmacies.[30,33-34] A few studies have linked symptoms to variables such as personal experiences and perceived meaning of symptoms.[35,36]

The listing of the most frequently occurring minor illnesses for a specific country is useful for researchers studying self-care/self-medication. In 1991, Canadian Facts compiled a Consumer Usage and Attitude Study to examine Canadians' attitudes, behaviours, and consultation practices when suffering with specific minor ailments.[9] This report listed the top eleven minor illnesses. A cold (60 percent of Canadian adults suffered with at least one in 1990) was the most common illness, followed by headaches (40 percent), body pain (40 percent), upset stomach (29 percent), and allergies (22 percent). Other ailments included eye irritation/redness (16 percent), skin irritation/rashes (15 percent) and so on. A survey (1995) prepared by the Reader's Digest also listed Canada's top ten self-limiting conditions: 1) headache (76 percent); 2) cough/cold (70 percent); 3) sore throat (47 percent); 4) muscle aches/pains (38 percent); 5) sinus congestion (37 percent); 6) indigestion (20 percent); 7) arthritis (16 percent); 8) insomnia (14 percent); 9) menstrual cramps (13 percent); and 10) allergy/hay fever (12 percent).[37]

2.3 OTC Medication Usage

2.3.1 OTC Medicines and Regulatory Systems

An OTC medicine is a medicine that can be purchased without a prescription from a physician. When a prescription medicine has been used for a long time and is considered safe and effective, to have low potential for misuse/abuse, and will pose minimal problems with average consumer use, manufacturers can apply to have it deregulated to OTC status. If that status is granted, the medicine may then be sold without prescription. Once holding this legislative status, certain restrictions are in place to dictate where the product can be sold. The regulatory systems differ greatly among nations. In Canada, for example, there are four drug categories (schedule I, II, III, and Unscheduled) for the conditions of sale. The definitions of each drug category according to the National Association of Pharmacy Regulatory Authorities (NAPRA) are as follows:[38]

> Schedule I drugs require a prescription for sale and are provided to the public by the pharmacist following the diagnosis and professional intervention of a prescriber;
>
> Schedule II drugs are available only from the pharmacist and must be retained within an area of the pharmacy where there is no public access and no opportunity for patient self-selection;
>
> Schedule III drugs are to be sold from the self-selection area of the pharmacy which is operated under the direct supervision of the pharmacist;
>
> Unscheduled drugs can be sold without professional supervision. Adequate information is available for the patient to make a safe and effective choice and labelling is deemed sufficient to ensure the appropriate use of the drug. These drugs may be sold from any retail outlet.

Schedules II and III are considered by some to be transition phases. That is, a drug will 'pass through these categories on the legislative journey' from prescription to unscheduled status (and subsequent retail sale allowed at any location). As of 2003 in Canada, there were 73 agents in the category of Unscheduled Drugs, 88 agents in Schedule III, and 176 agents in Schedule II.[38]

The four-category system for controlling the sale of OTC medications is similar to the Australian system. Many European countries also have an intermediate class (either pharmacist- or pharmacy-only sales) of medicines. In a few countries (The Netherlands and Sweden by way of example), OTC medicines are not allowed to be sold from non-pharmacy outlets.[39] Only two categories (prescription and non-prescription) exist in the United States.[40] Different regulatory systems remain an important factor affecting OTC markets across countries.

2.3.2 OTC Retail Market

OTC products are an essential component of any health care system. According to a one-year survey in the United States, six of the ten most frequently used drugs, including the top four, were OTCs.[41] In another report, 60 percent of medicines purchased by consumers were OTCs.[42] In fact, OTC products account for the majority of all medications used in most countries. There were almost 16,800 OTC drugs (the total number of medicines was 22,000) available on Health Canada's list of drugs approved for human use in the year 2000.[27] According to the Consumer Healthcare Products Association, there were more than 100,000 OTC products (approximately 1,000 active ingredients) available in the United States as of 2001.[43] The number of OTC medicines available in the United States is much higher than any other nation. Consequently, North America is the leading OTC market in the world; accounting for 31 percent of global sales of OTC products in 1995. Western Europe ranked second (26 percent), followed by Japan (16 percent).[44]

In dollar value, OTC sales comprise from 10 to 30 percent of total medication sales in various countries (circa 1996), for example, 26 percent in Switzerland; 24 percent in the USA; 20 percent in Britain; 18 percent in Germany; 15 percent in Japan; and 11 percent in France.[45] Reasons for this include differences in health care funding, cultural health beliefs, and the range of OTC drugs available on the market of each nation.

In recent years, OTC spending has been increasing in many countries, except in Japan where people are more likely to use formal medical care rather than self-care.[45] In

the United States, retail sales of OTC products (excluding Wal-Mart) in 2001 were $17.1 billion, up 2.4 percent over 2000 ($16.7 billion).[46] Canadians spent $3.3 billion on the OTC market in 2001 (20 percent of all drug expenditures) according to a report released by the Canadian Institute for Health Information.[27] In general, OTC drugs cost about $100 per person per year. The OTC expenditure in 2001 increased 3 percent over the previous year and has risen by 73.6 percent (from $1.9 billion to $3.3 billion) since 1995.[27] According to a market report, $3.6 billion (estimated) in self-care product retail sales were generated by manufacturers in both 2002 and 2003; the expenditures grew 4.4 percent and 0.2 percent, respectively.[47] Factors contributing to this trend are increased product production, switches from prescription-only status, and rising sales of herbal remedies. Simple increases in population may also be a factor.

2.3.3 Pharmacy versus Non-Pharmacy Sales

A pharmacy is not the only choice for consumers when buying OTC medicines. Food stores, supermarkets, mass merchandisers, department stores, and convenience stores are also options. Analyzing OTC sale patterns from pharmacies and non-pharmacy outlets is important for understanding market trends and consumer purchase behaviors. However, there are only a few reports that provide information for both types of outlets in the U.S. and Canada. Several American surveys (from 1992 to 1998) asked participants to indicate where they usually purchase their OTC products.[13,48-50] Results show that higher (but varied) percentages of participants (from 46 to 72 percent, depending on different store options) purchase OTC medicines from drug stores rather than the other retail outlets. In 1998, another American market report presented the proportions of OTC sales (for each drug category) accrued in drug stores, food stores, and mass merchandisers during the previous year.[51] For most categories of OTC products, pharmacies held the major part (at least 40 percent) of the market. The situation is similar in Canada, but with even a higher proportion of OTC sales from drug stores. According to ACNielsen in 1997, drug stores shared 79 percent of the consumer drug category in Canada.[52] Based on recent sales data (2003) from ACNielsen's Market Track Service, drug stores have a much greater share of sales for most OTC categories

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than any other channel (grocery stores, mass merchandisers, and convenience stores).[53] By way of one example, 55 percent of all stomach remedies were sold from drug stores, compared with 25 percent sold in grocery stores, and 20 percent sold from mass merchandisers.

Although clear-cut evidence that pharmacies outpace non-pharmacy outlets in OTC sales is not available, mainly because many grocery stores and mass merchandisers now have their own pharmacy departments, a pharmacy still appears to be the chosen location for consumers to purchase OTC medicines. It is worthwhile to note, however, that even though the majority of OTC medicines may be sold from pharmacies, such outlets are facing a challenge by other retailers. Because of the global trend of encouraging self-medication, more and more medicines are being switched to non-prescription (U.S.) or unscheduled (Canada) status. Accordingly, it is expected that OTC sales in non-pharmacy outlets will rise.

2.3.4 Usage Figures of OTC Medicines

OTC products are an important element of self-care. Due to greater availability of such products and increasing interest in self-care, use of OTCs is also increasing. In a Canadian report, Northcott and Bachynsky indicated that the utilization of OTCs had grown significantly from 1979 to 1988. They also found that the use of OTCs was almost twice as prevalent as was the use of prescription medicines, both in 1979 and in 1988.[54]

Nowadays, most people have experience using OTC medicines. According to recent surveys, similar percentages of Americans and Canadians have used at least one product within similar periods. A nation-wide survey conducted in the U.S. in 2001 by the National Council on Patient Information and Education (NCPIE) found that three in five American adults had taken at least one OTC medicine in the past six months.[55] A Canadian survey conducted in January 2002 by the Drug Information and Research Center (DIRC) of Ontario reported that 58 percent (approximately 14 million adults) had taken one or more OTC medicine in the previous six months.[10] Another Canadian national survey was conducted in March 2003,[56] in which 1500 people were interviewed

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by telephone. This report revealed that non-prescription medicine was the most common type of health product used by the general public – 66 percent of respondents had used one in the past six months, compared to prescription medicines (59 percent) and to natural health products (58 percent).

It appears Americans may be more inclined to use OTC medicines than are Canadians. The NCPIE and DIRC surveys indicate that the average number of different OTC medicines used within 30 days by Americans (2.2 different products) is higher than the number used within 30 days by Canadians (1.4 different products).[10,55]

The categories of OTC products used by consumers are varied and may differ among countries.[9,51,55,57] However, the top ten OTC product categories in American and Canadian markets are relatively similar. In the United States, cough/cold and related products were the top sellers in 2003, followed by headache remedies, antacids, laxatives, first aid products, anti-smoking products, eye care products, pain remedies (other than headache), foot preparation, and lip remedies.[58] A Canadian market report conducted by ACNielsen indicated the top 10 OTC categories in 2003, in descending order, were: cough/cold remedies ($259.5 million); internal analgesics ($208.5 million); vitamins ($142.3 million); antihistamines ($80.1 million); upset stomach remedies ($65 million); dietary aids/nutritional supplements ($62.0 million); products for smoking cessation ($64.1 million); herbal remedies ($49.9 million); topical wound care/first aid ($46.2 million); and sun protection/tanning ($45.0 million).[53] Sales of herbal products have been identified for potential growth both in Canada and in the U.S.[51,59]

People choose OTCs to maintain their health and treat minor health problems. For an industry-sponsored report, Heller noted that 92 percent of Americans were satisfied with the OTCs they had used in both 1983 and 1992, with 93 percent saying they would use them again for similar conditions.[60] In Segall's study of more than 500 people in Winnipeg, it was found that 63 percent of respondents had taken at least one OTC product in the previous two-week period, with 94 percent feeling they were very effective for their self-limiting conditions.[61]

2.3.5 Demographics of Users

Although most people have used OTCs at some time, the rate of OTC use can vary with social factors such as gender, age, geographic, social class (education and income), and health status.[62,63] Women appear to have more occasions to use OTC products and higher consumption rates than men.[9,64-69] Young adults are prominent users of OTCs, exceeding the rate of usage seen in the elderly and children.[64,65,68,70] Fisher *et al* found that 62.3 percent of OTC consumers ranged from 20 to 44 years old during the two months of their study in 40 Dublin pharmacies, compared with the 20.3 percent who were 45 to 65 years old; only 17.4 percent were aged 65 years and over.[68] The specific types of OTC medicines associated with age also may influence usage.[65,71,72] For example, the elderly used more laxatives than youths, while, the opposite trend was found in the use of analgesics.[71] There is also some evidence that people with higher levels of education, high household income, and upper-class status are more likely to use OTCs for treating minor illnesses and maintaining their health.[9,64,65,71] As well, people with poor health status seem to use more OTC medicines.[73]

2.4 Pharmacist's Role in Self-Care

2.4.1 The Responsibilities of Pharmacists

Pharmacists are increasingly recognized as key players in health care delivery. Providing information about minor illness treatment and the selection of OTC products are now recognized as critical duties for pharmacists around the world. The work of Hassell *et al* provides an example.[74] In this study, 10 pharmacies were chosen, with interactions between customers and pharmacy staff observed during one week. As well, 44 customers were interviewed by telephone to understand their reasons for their visits and attitudes toward pharmacy services. Results showed that pharmacy staff played a very important role in minor symptoms given that 94 percent of events occurred with advisement. Many participants indicated that pharmacies were their first place to seek help for treating minor illnesses.

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In the early beginnings of this field of study, the report of the 1986 Nuffield Inquiry in Britain supported an extended role for the pharmacist. This role was to reach beyond the dispensing of drugs to incorporate the provision of advice to clients. It involved communicating with other health professionals about medications and therapies and contributing to the provision of more cost-effective health services.[75] Pharmacy organizations have established practice guidelines for pharmacists when dealing with self-medication. The Fédération Internationale Pharmaceutique (FIP) states several principles for pharmacists when offering professional care to patients in the self-care area. The statements of principle are as follows:[76]

> Pharmacists have a professional responsibility to provide sound, unbiased advice and to ensure that self-medication is resorted to only when it is safe and appropriate to do so.
>
> The pharmacist is ideally qualified and placed to advise on the need to consult a prescriber and that advice, because it will be based on expert knowledge, is bound to be better and safer than advice given by a friend or member of that person's family.
>
> Pharmacists have the necessary knowledge to advise on safe storage of medicines in the home and on safe disposal of medicines once a course of treatment has been completed or, in the case of a medicine, which is obtained for occasional use, when the expiry date has been reached.
>
> Pharmacists can also advise that medicines prescribed for one individual or purchased for the treatment of a specific medical condition should not be used by another person without professional advice first being sought.
>
> Pharmacists have a responsibility to report to the person's doctor, the manufacturer, and the regulatory authorities for medicines, any relevant information about an adverse reaction encountered by an individual, which may be associated with a medicine purchased without prescription.

In Canada, Suveges and Allen prepared the groundwork for current standards in a report entitled *Standards of Practice – Non-prescription Drugs* to the National Association of Pharmacy Regulatory Authorities in 1995. This report listed six standards to guide Canadian pharmacists' responsibilities concerning OTC medicines, specifically for Schedule II and III drugs. These standards are as follows:[77]

The pharmacist shall locate non-prescription drugs in the area of the pharmacy consistent with the appropriate drug schedule classification which reflects the level of risk of the drug.

The pharmacist shall be available, accessible and approachable to consult with the patient who is seeking to self-medicate with a non-prescription drug.

The pharmacist shall interact with the patient to receive and provide information needed when that patient is seeking to self-medicate with a non-prescription drug.

The pharmacist shall respect the patient's right to confidentiality by endeavouring to ensure that pharmacist/patient communication takes place in an area where the discussion cannot be overheard by others.

Where continuity of care is an important factor in achieving an optimal therapeutic outcome, the pharmacist shall document the service provided.

The pharmacist, and/or the pharmacy manager, shall assemble the human, material and financial resources needed to promote the rational use of non-prescription drugs.

Current guidelines, however, put less emphasis on the medicine's legislative category. For instance, National Association of Pharmacy Regulatory Authorities published the *Model Standards of Practice for Canadian Pharmacists* in April 2003 and these are defined as competency elements that transcend drug type.[78] For example:

A pharmacist must gather patient information and assess its relevance to patient care.

A pharmacist must identify a patient's desired therapeutic outcomes.

A pharmacist must identify a patient's actual and potential drug-related problems.

The most important principle of international or Canadian guidelines is to ensure that pharmacists help patients to use OTC medicines safely and effectively. To this end, pharmacists must interview patients to determine symptoms, current disease states, other medication/treatments that patients previously used or currently take, and patient risk factors (eg. allergy history or dietary restrictions) when they are consulted about minor ailments. According to a patient's situation, pharmacists usually consider one of three recommendations: provide advice only (without a product); recommend an OTC medicine or an unmedicated measure or both; or refer the client to appropriate medical

personnel.[79] If OTC medicines are needed, pharmacists are responsible for suggesting the most appropriate product for the symptoms and advising patients on proper use.

2.4.2 The Frequency of Consumer-Pharmacist Interaction

A variety of consultations regarding prescription drugs, OTC products, herbal remedies, and minor illnesses take place in pharmacies. In some reports, the majority of consultations involve prescription drugs, followed by OTC medicines and minor illnesses. The ratio of consultations for OTC medicines and prescriptions has been about 1:2.5 in the United States,[80] and approximately 1:2 (29 percent versus 60 percent) in Britain.[81] In another American study, results indicate that when people actually ask for advice, the ratio of OTC type questions (19 percent) is a bit higher than those for prescriptions (12 percent).[82]

Although consultations for OTCs might at times be lower than those for prescription drugs, a tremendous number of OTC consultations still occur every year. For example, over 15 million OTC interventions took place in Canada in 1993.[18]

There is interest beyond the total number of OTC sales taking place in a given pharmacy or country. Of further interest is the percent that involve a pharmacist in the transaction. Various methods are used to determine the rate of consumer-pharmacist interaction; a survey is one of the more common. The majority of Americans (55 percent) and Canadians (58 percent) have indicated they *always* or *often* discuss OTC medicines with their pharmacists.[80,83] Forty-two percent of Canadians have asked pharmacists for advice on their minor illnesses.[84] According to Pharmacy Post's *Survey on OTC Counselling & Recommendations*, pharmacists engaged in an average of at least 10 OTC consultations per day in recent years (12 counselling events in 2002, 14 in 2000, 13 in 1999, 10 in 1998, and 13 in 1997).[85] While survey results can provide general information, they may not be accurate because they are based on estimates made by pharmacists or consumers.

A diary method may help researchers to obtain more accurate results because transactions are recorded, either by a pharmacist or an observer on-site. However, this method also has drawbacks – the validity of results will be affected by the accuracy and

consistency of the recorder. Several studies of this type have been done in Canada, England, and Australia. A Canadian report indicates that pharmacists give advice on minor illness an average of 2.8 times per day.[18] Of all OTC sales that occur in a day, results have seen high rates for those occurring with advice in England (31 percent) and in Australia (47.8 percent).[86,87]

Observing every product sale by independent observers who are not pharmacists is likely the most reliable method. Most studies of this kind have been conducted in European countries;[68,87,88-91] only a few are available for North America.[92,93] The results are influenced by the scope of the study and the regions involved, among other things. For example, two British studies show very different results. One-third of OTC sales (33 percent) were advised by members of the pharmacy staff in a small study of six pharmacies in England,[88] while 15 percent were advised sales in a large scale study involving 225 pharmacies across England, Scotland, and Wales.[89] Canada has seen similar results, but with the location limited to only one city (Saskatoon). In the first study, the type of product observed (cold and allergy only) and the number of pharmacies was also limited.[92] On average, 13.6 percent of transactions involved pharmacists. In the second study, 11.6 percent was the extent of involvement, which involved a wider range of products and more pharmacies.[93]

According to an Irish report, around 22.3 percent of OTC sales are supported with verbal counselling.[68] A Netherlands study determined 15 percent of OTC sales occurred with advice.[90] Only 10 percent of products sold have been accompanied by a pharmacist's advice in Sweden.[91]

An important aspect of the counselling process involving OTCs is who initiates the process. Krska and Kennedy asked consumers about their expectations and experiences when purchasing OTC medicines in the north of Scotland. They found that 70 percent of respondents wanted advice about symptoms or OTC products. As well, six in ten clients (59 percent) reported that they expected to be asked questions about their symptoms by pharmacists. Almost half of the customers (46.5 percent) expected to receive advice about the OTC medicines they bought.[94]

It appears the rate of consumer-pharmacist interaction is now reasonably well known. The time taken during counselling has also been determined. In general,

consultations on OTC medicines take but a few minutes. The majority of counselling incidents take up to three minutes in the United States,[95] 2.5 minutes in England [26] and 1.5 to 2.2 minutes in Canada.[96,97]

The above information may suggest there is room for pharmacists to contribute more in the area of self-medication. One situation gaining attention as a factor in the lower than desirable interactive rates, at least for Schedule II agents, is product requests by name. For instance, of 1,000 purchase events in ten Australian pharmacies, 72.5 percent of consumers requested a specific product by name; only 23.9 percent asked pharmacy staff for advice.[98] The degree to which advice was received, though, did vary according to product type. Requests for analgesics and antacids by name were higher than that seen for respiratory system products, where more consumers consulted with pharmacists. Product requests by name tend to impede the exchange of professional information.

Besides requests by name, there are other barriers that may also deter the asking (or offering) of advice. In order to fulfil their advisory role, pharmacists should attempt to overcome such barriers.

2.4.3 Barriers to Interaction

Discovering and understanding interactive barriers is important to the profession because such barriers influence pharmacist performance in providing advice. Many studies have determined the kinds of barriers that exist in the current environment. In a 1996 workshop held by the Saskatchewan Pharmaceutical Association, Saskatchewan pharmacists were asked to point out any possible barriers to pharmacists' offering OTC counselling.[99] Fourteen possible barriers were listed (not in any particular order): 1) pharmacist workload and interruptions; 2) lack of reimbursement; 3) issues of liability; 4) patient unwilling to receive advice; 5) physical barriers in the pharmacy between pharmacist and consumer; 6) inability to get patient information; 7) inadequate staffing; 8) costs and training of staffing; 9) lack of confidence; 10) lack of knowledge; 11) lack of communication skills; 12) too many products on the market; 13) confidentiality and

privacy issues; and 14) noise and confusion in pharmacies. Several common barriers will now be discussed.

Lack of time is a common barrier, not only for the consumer seeking a pharmacist's advice, but also for the community pharmacist undertaking the OTC consultation. In Krska and Kennedy's study, over three-fifths of customers said that a lack of time prevented them from using a pharmacy service for minor illness treatment and OTC selection.[94] Lack of time has ranked as a top barrier by pharmacists in several studies.[100-102] In these, most pharmacists say that they would like more time to do more counselling on self-medication. There are several reasons that likely lead to this lack of time. First, pharmacists carry heavy workloads in dispensaries. Rutter *et al* determined that dispensing activities accounted for the largest proportion (37 percent) of a typical pharmacist's time in Great Britain.[103] Second, many pharmacists are concerned about the business aspect of their community pharmacies. For instance, Bell *et al* found that many pharmacists spend significant amounts of time on management and on business-oriented tasks in their pharmacies.[104] Perhaps by extension, when consumers are asked why they do not consult pharmacists on OTC medicine use, many have said that the pharmacist is too busy and do not want to bother him/her.[105,106]

However, in other studies, researchers have found that the time issue is less important than other factors, such as pharmacists' attitudes toward self-medication consultation.[107,108] For example, a Canadian survey asked pharmacy owners and managers to indicate the reasons why they do not counsel patients on OTC medicines and prescription medicines.[107] While 40 percent of respondents stated that a lack of time was a reason for not providing advice on OTC medicines, only 14.5 percent of the group indicated this as a factor for prescription medicines. These results suggest that some pharmacists may not feel their duty to provide OTC advice is as important as the obligation to advise on prescription medicines.

Pharmacist lack of confidence, knowledge, and/or communication skills can also quell their advisory role in self-medication. Reports reveal many pharmacists believe that if they could simply obtain more information/education on OTC products and the applicable communicative skills, they could engage in more consultations.[102,108]

Even if a given pharmacist was fully qualified and willing to provide OTC advice, some consumers' negative attitudes toward receiving advice are barriers. Results from a Canadian survey showed that "patients do not ask," a feeling that "counselling is not required," and "patients refused counselling" were the top three reasons for pharmacy owners/managers not advising some patients on OTC medicines.[107] In a study conducted in Scotland, "public expectations to not be questioned" was chosen by ten participants (of a total of 22 participants) to be the most frequent situation as to why pharmacists were not providing advice to patients.[108] Two Canadian studies which observed OTC purchases in pharmacies provided consumer input into this issue – most consumers (145/151) who had not received advice said they in fact did not want it;[106] however, only 0.5 percent of advice offered by pharmacists was actually refused.[92]

A lack of private counselling areas in many pharmacies is a commonly described barrier.[102,104] A private consultation area not only helps both pharmacists and customers concentrate on their discussion, but it also protects customer privacy. For example, Harper *et al* suggest that 75 percent of customers will not go to the pharmacy to ask advice about an embarrassing itch.[109] They also found that customers asked more questions on symptoms in the private counselling area than did those in front of the counter.

According to the this evidence, lack of private counselling areas may result in lost opportunities for counselling.

2.5 Response of the Public to Minor Illness

When people suffer with minor ailments, they tend to choose a subsequent course of action among three main options. First, they can choose to do nothing. People today are very busy, so if their minor ailments do not interfere with normal activities, this may be the response. This is a very common choice for people. Second, they can choose to self-treat. Reader's Digest suggests that 79 percent of consumers in Canada self-medicate in some way,[110] whether with an OTC medicine or herbal product. Finally, a person can opt for professional help, the least common of the three choices when involving a perceived minor illness.

Table 2.1 represents public response to minor illness from five countries. It appears that, in general, people of different cultures have similar responses to minor illnesses across years and countries. To explain some of the discrepancy seen with the comparative Canadian data, it can be noted that *prescription medicines* was not provided as an option to respondents, thereby skewing the numbers.

Table 2.1: Actions Taken by People in Response to Minor Illness

Action taken	Australia[111] (1979) %	New Zealand[111] (1981) %	USA[111] (1982/83) %	Britain[112] (1987) %	Canada[110] (1995) %	Britain[113] (2000) %
No action	40	48	37	45	29	46
Home remedy	17	29	14	9	8	9
OTC product	22		35	24	50	25
Prescription in home	3	12	11	13	-	14
Doctor/dentist	6	11	9	13	14	10

2.5.1 Factors Influencing Responses to Minor Illnesses

The action chosen by the public to minor illness will depend on a number of factors. Such factors include sex, age, socioeconomic status, family structure and support system, previous experience with symptoms, types of symptoms, potential embarrassment, time, costs, social/cultural attitudes, and surroundings.[32,35,45,61,114-144]

Several studies show that females are more likely to seek advice for common minor ailments from health care professionals than are males.[114-117] In Bell *et al*'s study, researchers tested gender differences in four treatment options based on a total of twelve symptoms. Women preferred to consult a health professional (either physician or pharmacist) for eight of the symptoms given. Men were more likely to self-treat for most

symptoms listed, except foot problems.[116]

Age is a factor in decision-making behaviours. Generally speaking, older people (≥ 60 years) are more likely to seek advice from their pharmacists or doctors.[9,116]

Socioeconomic status appears to play a role in predicting illness behaviours.[118-121] Koos found that upper class respondents more frequently felt they required medical care than did lower class persons.[118] This result is supported by another three studies.[119-121] In the United States, Anderson *et al* analyzed respondents' actual reactions to 15 minor ailments. They discovered that the proportion of physcian consultations for these conditions tended to increase as household income, education, and occupational rank increased.[119] Hetherington and Hopkins reported that people with low income are significantly more "symptom-insensitive" than those of high income.[120]

Previous experience likely plays a key role in attitudes and behaviours involving minor illnesses. Several studies have focused on the relationships between prior experience and illness behaviours for a given symptom. Safer *et al* reported that patients with familiar or frequently experienced symptoms (> 11 days) took a much longer time than did patients with new symptoms (< 3 days) to make decisions.[122] In Banks and Keller's study, 239 families were randomly selected and then a member of the family (usually the mother) was interviewed. For a list of symptoms, subjects were asked if anyone in the family had displayed such symptoms. They were questioned on what choice of treatment they would make, without considering their previous experience. Those who had previous symptom experience, though, expressed less anxiety or concern than those to whom the illnesses were new.[35]

It is not surprising that people may have different responses when they suffer different kinds of conditions. Many researchers are interested in understanding reactions to common symptoms of minor illness. Verbrugge and Ascione analyzed the incidence of symptoms related to respiratory and musculoskeletal illnesses to see how people cared for them. For (mainly acute) respiratory symptoms, OTC drugs were chosen more often than prescription medicines. But for musculoskeletal symptoms (chronic), prescription medicines became more important than OTC choices. Furthermore, persons with respiratory symptoms used less formal medical care than did those with musculoskeletal symptoms.[123] Thus, according to Verbrugge and Ascione's findings,

people approach chronic and acute health problems in different ways. Symptoms such as cold/flu, cough, sore throat, headache, heartburn, constipation, and indigestion are reported by respondents as disorders that they tend to self-treat.[61,32,111,116] However, when people experience backache, red eyes, depression and chesty cough, they prefer to consult health professionals, especially physicians.

Access to medical care and cost are issues for many people. Long waiting times in a doctor's office and medical insurance coverage may be important reasons for people to avoid a physician. A Japanese study, for instance, found that Japanese visit a doctor more frequently than they buy an OTC product for treating minor ailments because of easier access to medical care. The other reason may be that OTC products are not covered by medical insurance, whereas prescription medications are reimbursed.[45]

2.5.2 Information Sources Used

Health professionals, word of mouth (family members and friends), mass media (health books and advertisements), and product labels are very common sources used by people when seeking information about minor illnesses or OTC medicines. The Internet can now be added as a new information source for the public; one report indicated that 10 percent of consumers rely on this source of data.[124]

For most types of minor illnesses, doctors and pharmacists are the most often used sources of information. Results from a Canadian survey show that 30 to 80 percent of respondents for a given illness consult physicians about their conditions, and 20 to 40 percent get information from pharmacists.[125] Doctors are seen as a first choice for many for treating minor illness. A Scottish study found that 68.5 percent of respondents would see a doctor first for advice.[126] In the same study, only 8.2 percent considered pharmacists as their first port of call for managing their ailments, even lower than family members (16.3 percent). A study in Hamilton showed that community pharmacists were the first choice for only 18 percent of a sample population.[127] The elderly and parents who seek advice for their children have not considered pharmacists as the most important, nor a frequent, source.[128,129]

For others, it is the pharmacist who is approached first. In a study by Bell *et al* in Britain, 58.1 percent of participants indicated that they would seek advice from a pharmacist rather than from a doctor, *if* symptoms were not serious enough to visit the doctor. Over 10 percent of participants indicated they would seek a pharmacist's advice if short of time for a doctor's appointment.[116] This report also found that men were more influenced by the recommendations of friends and families than were women.

Griffle found that almost 60 percent of clients rely on the advice of health care professionals when selecting an OTC product.[80] A Canadian OTC industry report (1999) showed that 22 percent of Canadians sought the advice of a doctor on OTC products; 25 percent said that pharmacists were their primary information source.[130] A Canadian survey conducted in 2001 showed that 65 percent of respondents *always/often* obtained OTC information from pharmacists, followed by advertising (63 percent), media reports (57 percent), word of mouth (53 percent), physicians (34 percent), product labels (20 percent), and the Internet (10 percent).[131]

Advertisements (including television, newspaper, and magazines) of OTC medicines are important sources. In an American survey, participants were asked to indicate which cited information source(s) they had turned to within a six month period. The top four common sources were *advertising or promotion from TV/newspaper/magazines* (49.7 percent), followed by a *doctor* (47 percent), *articles or information from TV/newspaper/magazines* (46 percent) and a *pharmacist* (38 percent).[55] The main role of advertising is to create consumer awareness of OTC products. Respondents of the industry-sponsored *Consumer Usage & Attitude Study* in 1991 said that advertising did help them to understand what OTCs were available for different illnesses.[9] Sooksriwong and Leelanitkul found that the majority of Thai consumers got information about drug names from advertising, including television, printed matter, and radio. Families and friends were their second source of information on drug names.[132]

A product label provides valuable information to OTC users, if the time is taken to read it. Data from the *Consumer Usage & Attitude Study* indicated that 91 percent of Canadians claim to have read the label carefully before using a product for the first time.[9] An American study showed that a similar proportion of Americans (95 percent)

read some portions of the labels on OTC products.[55] Active ingredients, usage direction, dosage level, and warnings were the common sections customers claimed to have read.[10,55]

Other reports provide less enthusiastic results. A Canadian study reported that 62 percent of participants *always* read labels; 16 percent *often* read them; 9 percent were on record as *sometimes*; 6 percent as *seldom*; and 7 percent *never* read them.[83] Comparing Canadian and American national consumer surveys suggests that most do not read full information appearing on the package of an OTC product when they buy it for the first time. For example, only 40 percent of Canadians read active ingredients, followed by the dosage level (34 percent), the symptom it treats (26 percent), possible side effects (23 percent), directions for usage (18 percent), and warnings (10 percent) when they buy a product for the first time.[10] American data showed that the proportion of readers in each section were even lower than the Canadian statistics – directions for usage (19 percent), dosage level (16 percent), symptom it is used for (12 percent), possible side effects of usage (10 percent), and warnings (7 percent).[55] In the American survey, researchers also found that more Americans would read directions for usage (22 percent) and dosage level (25 percent) when they <u>take</u> the medicine for the first time, rather than when they <u>buy</u> it for the first time.

Even though information appearing on the package of an OTC medicine is limited, most Canadians (90 percent) felt satisfied with it.[130]

In summary, physicians and pharmacists are the main sources when the public seek information about minor illnesses and OTC medicines. Advertising and product labelling also play an important role.

2.5.3 Pharmacist Influence as OTC Consultants on Consumers

Pharmacists have a professional obligation to provide OTC counselling to the public. Such activity should be evaluated by the profession within the process of quality assurance. Similarly, how consumers perceive pharmacists in this role is also an important issue. Information on consumer satisfaction with pharmacists and pharmacy services in this area is available.[133-140]

An American study provides indirect information about how consumers think of pharmacists in this role. Gore and Madhavan surveyed 3,000 Americans on the credibility of four information sources (physicians, pharmacists, family members, and friends/colleagues) for OTC medicines.[141] Only 458 subjects replied to the questionnaire; response was therefore low at 15.2 percent. The results found that acceptance of both pharmacist and physician recommendations was high (75 percent and 76 percent, respectively). Comparatively, slightly over half of respondents *usually* or *sometimes* accepted recommendations from their family members or friends/colleagues. Participants were also asked to rate these four sources on three dimensions of credibility – expertise, trustworthiness, and empathy. Pharmacists were rated lower than physicians on all three dimensions. However, consumers believed that pharmacists were more expert and trustworthy than were family members or friends/colleagues. On the dimension of empathy, pharmacists were perceived to embrace the least of this attribute of the four sources. Therefore, while a reliable source of information, pharmacists may have to improve upon a humanistic aspect of their interaction with clients.

Several surveys show that pharmacist recommendations have a high acceptance rate by clients. In an 1995 American survey, pharmacists reported that clients bought recommended OTCs more than 80 percent of the time.[142] In 1998, results from a telephone survey of 1,008 American adults found that 73 percent would take a pharmacist's advice for an OTC product, even if the product differed from the one they had been using for years. As well, if the product recommended was not highly advertised, 70 percent of respondents still would accept the advice. If their pharmacist and friends/families had differing recommendations for an OTC product, 67 percent would choose the pharmacist's choice. Further, 59 percent would buy the product recommended by a pharmacist, even if it was more expensive than the one they usually bought.[50] Results from another American consumer survey showed that most consumers (98 percent) feel *extremely* or *somewhat* satisfied with OTC information given by pharmacists, and at times, more satisfied than when receiving such information from physicians.[143]

In a study conducted in Britain in 2000, Bell *et al* determined that 19.6 percent of their respondents were influenced by recommendations of a pharmacist when they

purchased OTCs, compared with 14.5 percent by a doctor, and 10.2 percent by an advertisement.[116]

2.5.4 Risks of Self-Care/Self-Medication

Although an OTC product becomes available without a prescription because of a favourable safety profile, its use will not be devoid of all risk. Such risks could include incorrect self-diagnosis, incorrect choice of therapy, incorrect dosage, occurrence of side effects, drug interactions, and so on.

Improper use is a major problem with OTC consumption. One U.S. survey showed that 33 percent of American adults (extrapolated to be 64 million) took more than the recommended dose of OTC drugs.[55] Of these individuals, almost seven in ten (69 percent) admitted to taking more than the recommended amount at a single time; 63 percent took the next dose sooner than directed and 44 percent ingested more than the recommended number of doses per day. The findings also suggested that 91 percent of respondents using higher than the recommended dosages thought it would increase the effectiveness of the drug.

According to results from a national Canadian survey of similar design, the situation of incorrect OTC use seems better than that seen for American citizens, but still of concern.[10] Fifteen percent of Canadian adults stated taking more than the number of recommended doses for a day. It was estimated that nearly five million adults take the next dose of their OTC products sooner than directed on the label.

Even though OTC medicines are generally safe, they still have side effects. Caranasos *et al* found that 18 percent of all hospitalizations resulted from adverse reactions caused by OTC drugs during a three-year period.[144] Litovitz and Manoguerra determined that from 1985 to 1989, about 670,000 reports related to adverse effects and overdoses were received by poison control centers in children younger than 6 years old.[145] These cases included analgesics, cough/cold remedies, and gastrointestinal products.

The potential for OTC medicine-disease interaction may be underestimated by OTC users. For instance, 70 percent of hypertensive patients surveyed had taken an OTC

product during the previous two weeks, while less than 20 percent of these same individuals were aware that some OTCs could influence their blood pressure.[146] Similarly, non-steroidal anti-inflammatory drugs (NSAIDs) can potentially exacerbate the symptoms of asthma. However, one-third of asthmatic patients interviewed by Lamb *et al* still took aspirin or NSAIDs to treat some minor ailments. Only 27 percent of the asthmatic patients who bought OTCs would think of informing the pharmacist that they had asthma.[147]

Prescription-OTC drug interactions exist and OTC users need to realize the potential for their occurrence. In a paper on the frequency of daily OTC drug use and clinically significant OTC-prescription drug interactions in the Finnish adult population, Sihvo *et al* determined that 4 percent of OTC users (on average) may be potentially hurt by those interactions.[148] The paper highlighted the potential for interactions with ketoprofen, followed by ibuprofen and acetylsalicylic acid (ASA). Two studies by Honig and Gillespie found that many OTC drugs has the potential for clinically significant interactions with other drugs. Their examples of potentially problematic OTC groups were antacids, H_2-blockers, salicylates, NSAIDs, cough/cold/allergy remedies, and anti-asthma products.[149,150]

The continuous use of OTCs, the number of OTC medicines used, and the number of prescription drugs raise the risks for adverse interactions. For perspective, Andreasen and Damsgaard determined that the subjects of their study took, on average, 4.2 different prescription drugs and 2.5 OTC medicines.[72] Batty *et al* found that 32 percent of in-patients aged 65 years and over continually used OTC medicines during hospital admission.[70]

2.5.5 Patronage Motives Associated with Location of Sale

According to business writers, consumer buying strategies typically consist of four stages, which are rationalized as follows:[151]

Stage 1 -- Decide how much to buy of each broadly-defined category of goods (for example, convenience, non-convenience) for the relevant planning horizon;

Stage 2 -- Decide which store, or combination store, to visit;

Stage 3 -- Maximize utility with reference to convenience goods, obtaining demand schedules for each product category or, when brand loyalty exists, for special brand;

Stage 4 -- Once in the store, decide which brands to buy and revise decisions made in Stage 3 if this is made convenient by store prices and/or assortment composition (that is, by new information).

Consumers choose not only among goods, but also among various types of stores. In Canada, when a consumer decides to purchase an OTC medicine, a pharmacy is not the only option. People also can buy such medicines (depending on the agent) from other retail outlets such as convenience stores, supermarkets, food stores, and department stores (and for the latter three, either with or without pharmacy departments). Patronage motives that can affect store selection are now discussed.

According to several marketing studies, store image is an essential factor in influencing consumer decisions.[152,153] Customer image of a given retail outlet is affected by their experiences, attitudes, and expectations of that store.[154-156] According to Lindquist's research, image descriptors include merchandise quality, prices and characteristics of goods, product selection, retail service provided with goods, store location, store layout, advertising, sales, reputation, and so on.[157]

Several studies have attempted to determine patronage motives involving pharmacies.[49,137,158-160] In these studies, participants have been asked to indicate their primary reasons for using a pharmacy. One British study in 1992 indicated that the pharmacy being *close to home* was selected by the majority of participants (43.7 percent), followed by *good advice* (13.7 percent), *prompt service* (9.8 percent), *competitive prices* (9.3 percent), *range of products* (8.7 percent), *close to work* (5.1 percent), *close to doctor* (4.9 percent), and *other* (4.8 percent).[158] A similar British study was again done in 1997 and *close to home* was still the top choice.[116] However, more people selected *range of products* as their primary reason than those who selected *good advice*. As well, *close to doctor* became a more important reason than *competitive prices* and *prompt service*.

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In 2002, a similar study was conducted in the U.S.[159] Forty-four percent of Americans chose *convenient location* as their primary reason for using their regular pharmacy, followed by *price* (17 percent), *service* (13 percent), *other convenience* (12 percent), and *pharmacists/staff* (10 percent). Although *pharmacists/staff* and *services* were not the first reasons for selection, they appear to play an important role when people switch a pharmacy. The same study found that 33 percent of respondents who had switched pharmacies in the past two years revealed *poor service* as the main reason for changing. *Bad relations* with the pharmacists/staff and *high prices* were ranked second and third. Canadian results on pharmacy switches differ somewhat from this American data. The majority of Canadians who had changed pharmacies in one report said that *location* and *convenience* were the main reasons for switching. When these two factors were removed, *price* and *pharmacists/staff* became more important reasons.[160]

An American survey conducted in 1995 interviewed 1000 consumers to determine the importance of each of 11 reasons for drug store patronage.[49] Most participants (87 percent) thought *close to home* a very important reason. The importance of *knowledgeable staff, competitive prices, fast check out/no lines, good signs*, and *easy access/parking space* appear in descending order and were chosen as important by more than half of respondents.

Contemporary pharmacies face challenges in keeping their share of the OTC market from other competitors such as food stores and mass merchandisers. Consumer patronage motives from the perspective of pharmacies versus non-pharmacy outlets deserves attention. Only one study specifically has focused on this direct comparison. Gore and Thomas conducted a study of this type in 1995.[161] Of the 500 questionnaires mailed, the usable response rate was 49 percent. In this study, the authors chose 16 store images and 11 OTC information service attributes to determine their importance for patronage motives. They also compared average performances of three types of stores – food store, mass merchandise stores, and pharmacies. Overall, *reasonable price* was ranked the most important factor by American consumers when they selected from these outlets to purchase OTC medicines, followed by *quality of products stocked by the store, open during convenient hours, convenience of store location, availability of a wide variety of brands*, and *good store layout for fast and easy shopping. Access to a*

pharmacist came in eleventh place. However, the importance of these attributes, except *access to a pharmacist*, did not show significant statistical differences among the three types of stores. Pharmacy patrons rated significantly higher importance to the majority of attributes (15 of 27), especially those relating to OTC information services, than non-pharmacy patrons. Gore and Thomas, therefore, found that the ability to provide professional services on the products was one of the obvious advantages for pharmacies. However, perceptual differences held by the public as they pertain to the products themselves, between pharmacies and non-pharmacy outlets, is still unknown. It is unclear whether consumer perceptions of a given product are significantly changed by the place of purchase.

A Finnish report does provide some insight in this respect.[162] In Finland, health food products are regulated as foods. Unlike medicines, which can be sold only in pharmacies, health food products are sold without any restriction. Finnish consumers can easily buy such products anywhere across the country. By way of background, the authors cite data published by the Finnish Committee on Drug Information and Statistics of 1991. This data showed that, in 1990, the majority (65 percent of retail sales) of health food products were purchased from special health food shops, compared to 23 percent from grocery stores and only 7 percent from pharmacies. For their more current study, the authors were interested in consumer perceptions of pharmacy's role in the health food market. It was found that 66 percent of respondents agreed that a pharmacy is a convenient, reliable, and safe place to purchase health food products, yet only 15 percent bought such products from pharmacies. The majority of users still purchased health food products from specialty shops. The main reasons were that such shops have a better assortment and generally have lower prices than pharmacies. Based on this report, it seemed that consumer preference for purchase location was affected minimally by the product itself, but rather by image of the store – price, product variety, and the availability of professional help. The authors concluded:

> The public may associate the professional image of pharmacy with every purchase made in the pharmacy setting, regardless of whether the product purchased is a licensed pharmaceutical product. A remarkable health food products market in the pharmacy context may even obscure consumers' perceptions of the difference between scientifically-tested medicines and

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health food products. This problem is most obvious in the countries where consumers are used to buying only drug and some appliances closely related to health care from the pharmacy.

With more and more OTC products becoming available in non-pharmacy outlets, and being sold along with other products such as food items, consumer perceptions of OTC products can be rise in importance as pharmacists attempt to understand purchase and usage behaviour.

2.5.6 Consumer Perceptions of OTC Medicines

Consumers can easily and conveniently purchase OTC products from pharmacies or non-pharmacy outlets. Is there potential for the consuming public to consider such medicines with less importance than they are due? In an Italian report, five percent of participants stated that some OTC products (like laxatives) were hardly thought of as 'drugs' because they have been advertised almost as a part of "normal life components".[163] Several studies indicate that consumers perceive prescription medicines and OTC medicines as differing in safety, strength, and effectiveness. Consumers tend to consider prescription medicines as more powerful than their OTC counterparts.[164,165] One British study collected 1,650 comments on differences involving consumer perceptions of prescription medicines and of OTC medicines.[166] One-third of respondents thought that prescription medicines were stronger than non-prescription medicines. OTC medicines were considered to be safer than prescription medicines because prescriptions may have more (or relatively serious) side effects and were more likely to be misused.

Although likely outdated, an national survey sponsored by the U.S. FDA (1973) presented different results.[167] This study asked consumers to rate the safety of five categories of products. Food was rated the safest product. Prescription medicines were in the second place, followed by cosmetics and toys. Nonprescription medicines were thought to be the most dangerous products. A nation-wide Canadian survey conducted in 1990 also had similar findings.[83] The majority of Canadians (70 percent) believed that prescription medicines were *always/often* safe, compared to non-prescription medicines

(59 percent) and cosmetics (47 percent). As well, fewer Canadians (5 percent) thought prescription medicines were *seldom/never* safe, while 9 percent thought non-prescription medicines and 13 percent thought cosmetics were *seldom/never* safe. Moreover, respondents indicated that non-prescription medicines were less effective than prescription medicines. Approximately half believed that non-prescription medicines were *always/often* effective; 65 percent thought that prescription medicines were *always/often* effective.

In summary, the available evidence appears to indicate that consumers do indeed distinguish differences between OTC and prescription medicines. By extension, a concern appears to exist whereby the public may not consider medicines available without prescription as full-fledged 'medicines', ones that require a level of vigilance during use. Location of sale may be a factor in the development of such perceptions. Impressions held of OTC medicines may be important pre-determinants of actual behaviour, where failure to consider such agents as important medicines requiring due care, could expose the public to important drug-related risk.

CHAPTER 3: OBJECTIVES

3.1 Objective

The objective of this study was to determine whether citizens of Saskatoon have different expectations of OTC medicines, based on location of sale.

3.2 Significance of the Study

To the best of our knowledge, this is the first study of this kind within this context. Gore and Thomas did similar work, but with a focus on the retailer rather than the medicine.[161] They found that the most important attributes for consumers when choosing retail locations for OTC purchases were reasonable prices, quality products, convenient hours, and a convenient location. For perspective, access to a pharmacist was eleventh on a list of a possible 16 store attributes. However, expectations for receiving professional advice were much higher in pharmacies than food stores or mass merchandisers. The interests relevant to the research project being proposed here lie with the medicine itself. In other words, what properties do consumers specifically attribute to the medicine they are buying in relation to location of sale?

Data from this study will be added to the pool of information federal legislators currently use to determine which agents can be deregulated to full public access. If the consuming public treats OTC medicines equally, regardless of place of purchase, then less concern may be realized at the decision-making table. If, however, it is found that the consuming public takes more liberties with OTC medicines purchased at a non-pharmacy outlet, federal legislators may require more evidence from the petitioning manufacturer that safety will not be compromised as a result of deregulation.

3.3 Research Questions

1) Are there differences in public expectations of OTC medicine *potency* in relation to place of sale (pharmacy vs. convenience store)?

2) Are there differences in public expectations of OTC medicine *safety* in relation to place of sale (pharmacy vs. convenience store)?

3) Are there differences in public expectations of OTC medicine *side effects* in relation to place of sale (pharmacy vs. convenience store)?

4) Are there differences in public expectations of OTC medicine *effectiveness* in relation to place of sale (pharmacy vs. convenience store)?

5) Are there differences in public expectations for *information appearing on OTC medicine packaging* in relation to place of sale (pharmacy vs. convenience store)?

3.4 Null Hypotheses

Study hypotheses are:

1) There is no difference in public expectations of OTC medicine *potency* in relation to place of sale (pharmacy vs. convenience store);

2) There is no difference in public expectations of OTC medicine *safety* in relation to place of sale (pharmacy vs. convenience store);

3) There is no difference in public expectations of OTC medicine *side effects* in relation to place of sale (pharmacy vs. convenience store);

4) There is no difference in public expectations of OTC medicine *effectiveness* in relation to place of sale (pharmacy vs. convenience store);

5) There is no difference in public expectations for *information appearing on OTC medicine packaging* in relation to place of sale (pharmacy vs. convenience store).

CHAPTER 4: METHODOLOGY

4.1 Overview

This study was cross-sectional and descriptive in design. Data were gathered from residences in Saskatoon via a mail survey instrument. The questionnaire consisted of seven parts: 1) consumer background information about OTC purchase and use; 2) consumer information-seeking behaviours; 3) consumer experience with common symptoms and OTC products; 4) consumer impression of OTC medicines; 5) consumer impression of pharmacists; 6) consumer expectations of OTC medicines sold in pharmacies and in convenience stores; and 7) demographic characteristics of the sample.

4.2 Population/Sample

The population for this study were the residents of Saskatoon. According to the 2001 Census Report of Statistics Canada, the adult citizens of Saskatoon numbered around 160,000.[195] The Wilson Research Group indicates that, if a population is around 100,000, 382 valid responses would be needed to obtain a 95 percent confidence interval with ± 5 percent error. If the population was in fact 1,000,000 or over, only 384 valid responses would be needed.[169] The sample size required was confirmed by the *Survey System*[R], a software package for working with survey questionnaires, which indicated that at least 383 valid responses would be required for ± 5percent error, based on the current population of Saskatoon.[170]

Response rate is an important factor in survey methods because it affects the validity of research results. Mail surveys have lower response rates compared to other survey methods. Several studies showed that response rates in mail surveys related to pharmacy research were usually between 15 and 50 percent.[39,141,171] In particular, the

response rate of consumer surveys is the lowest (generally 10 to 15 percent). Two public surveys (utilizing two mailings) in the OTC area both had 15.2 percent response rates.[172,173] Accordingly, in order to achieve 383 valid responses, questionnaires were mailed out to 2,547 adult subjects (18 years and over), assuming a projected response rate of 15 percent.

Potential sampling frames to obtain subjects were the electoral register, the telephone book, and health insurance registration. In England, electoral registers are commonly used as sampling frames by researchers for local authority areas.[174] Telephone books are convenient sources but have some biases, such as the chance of losing persons who do not have phones. In this study, the sampling frame chosen (simply out of expedience for the study timeline) was the telephone registry with *SaskTel* and was obtained from *ASDE Survey Sampler Inc* of Montreal, Canada. To help control for male bias in the list, anyone who was 18 years old or above in the selected household was allowed to fill out the questionnaire. However, this measure may have reconfigured bias to a more female slant.

4.3 Instrument Development

A questionnaire was developed to gather the data for this study. Previous studies related to OTC use,[10,53,55,58] minor illnesses,[9,37] the pharmacist's advisory role,[106,175] consumer satisfaction with pharmacists or pharmacy services,[176,177] consumer perceptions of OTC products,[83,164-167] store images,[158,161] and demographics of OTC users [9,62,63] guided its development. References to survey research [178-187] and scale development [188] formed the basis for designing the questionnaire.

4.3.1 Components and Item Wording of the Questionnaire

Before an initial draft of the questionnaire was done, there were several wording concerns. Specifically, if an OTC drug had *side effects*, did the public think that it was not *safe* for use? Moreover, if an OTC drug was *potent*, did that mean it was *effective*? As well, the general public might be confused about what constitutes a *convenience*

store and a *pharmacy*, given that the business pattern of some pharmacies are similar to that of convenience stores. For example, listings of several pharmacies (such as Lakeview Pharmacy, Nordon Drugs, and Northumberland Drugs) could be found both under the categories of pharmacies and convenience stores in the Saskatoon phone book.

Accordingly, pre-testing was conducted to test several wordings that would potentially be used in the formal survey questionnaire. The "Wording Trial Document" (see Appendix A) was designed and distributed to the families and friends of 240 pharmacy students who were studying at the College of Pharmacy and Nutrition at the University of Saskatchewan. Subsequent to the results from the pre-test, an initial draft of the formal survey questionnaire was designed.

The questionnaire contained seven sections: 1) consumers' experiences when buying and using OTC medicines; 2) consumers' behaviours when they seek information regarding OTC use; 3) consumers' experiences with common minor illnesses and OTC products; 4) the impressions of OTC medicines held by consumers; 5) the impressions of pharmacists held by consumers; 6) consumers' expectations of OTC medicines sold in different places (pharmacy versus convenience store) with eleven comparator items for each location; and 7) demographic characteristics of the sample.

4.3.1.1 Purchase and Use of OTC Medicines

To determine consumer behaviour of medication use, there were eight questions related to availability of OTC products, accessibility of pharmacies and convenience stores, and medication usage. Three questions associated with convenience stores were initially designed for this study. The other five questions originally appeared in American (NCPIE) and Canadian (DIRC) consumer surveys.[10,55] These questions were used to not only understand Saskatoon consumers' behaviour, but also to compare these behaviours with other national and international data.

4.3.1.2 Information-Seeking Behaviour

Because the major information sources used by consumers are well known, the purpose of this section was to determine the frequencies at which the public reads product labels and asks advice from doctors and pharmacists. Two questions related to label reading when buying and using a product for the first time were taken from the NCPIE survey[55] and then modified for this study. Five sub-items for the information section (such as *directions for use* and *warnings*) were also from the NCPIE[55] and DIRC surveys.[10]

Taylor has reported on reasons why people do not want advice, and why people want advice but do not ask for it.[106] Nine reasons why consumers may choose not to ask a pharmacist for advice when buying an OTC medicine were used for this section, with most selected from Taylor's reason pool and then modified.

4.3.1.3 Minor Symptoms and Common OTC Products

In this section, nine common symptoms and ten types of OTC products were included. Two surveys have listed the ten most common symptoms experienced by Canadians.[9,37] Nine minor symptoms (such as headache, cold/flu, and heartburn) were chosen from these reports, and were matched to nine applicable OTC products. A tenth product was included (stop-smoking products) that did not have a symptom match, to round out one of the lists to an even ten. Stop-smoking products are on the top ten OTC sales lists in both Canadian and American markets.[53,58]

A five-point Likert scale was used to determine the effectiveness of each given type of OTC product.

The last question asked participants to indicate their current health status. There were six options, five of which were cited from the NCPIE survey;[55] *not sure* was added by the researchers.

4.3.1.4 Consumer Impressions of OTC Medicines and Pharmacists

There were seven statements (using five-point Likert scales) to measure consumer impressions of OTC medicines. An attitude study provided background content and wording for items 1, 2, 3, 4 and 7.[10, 55, 175,] Items 5 and 6 originally came from Barnett *et al*'s attitude study.[176]

Nine statements were used to determine consumer impressions of pharmacists, again using five-point Likert scales. Scope and item content was based on two studies involving pharmacist satisfaction.[138,177] Item 6 was taken verbatim from an attitude study.[176]

4.3.1.5 Consumer Expectations of OTC Products

Eleven expectations about OTC medicines were included in this section, with a seven-point Likert scale used to measure differences between the two locations (pharmacy versus convenience store). According to the literature on consumer perceptions of OTC medicines, the terms *safety*, *effectiveness*, *potency*, and *side effects* were used.[83,164-167] These will be deemed collectively as attributes of a *clinical nature* for discussion purposes. Furthermore, studies associated with patronage motives show that *quality*, *price*, *availability*, *usage instructions* on products, and *store services* are important factors for consumers selecting different places to purchase OTC medicines.[158,161] These items were collectively referred to attributes of a *merchandising nature*.

4.3.1.6 Demographics

Several demographic characteristics such as age, gender, education level, household income, and parental status influence consumer behaviour.[9,62,63] In this study, such characteristics were included to assess their influence on consumer behaviours and expectations.

There were five options to assess education level and four for household income. The options on education level were based on the design from the NCPIE survey[55], but slightly changed for a Saskatoon market. Responder options for household income were taken from a national survey conducted by Canadian Facts.[9]

4.3.2 Assessment by Experts

When the first draft of the questionnaire was done, it was evaluated by three experts. The version provided to the three experts appears in Appendix (B). One expert, Steven Pray, is a professor of non-prescription products and devices and the author of a book (*Non-Prescription Product Therapeutics*) in the United States. The other two experts came from Britain – Louise Hughes, an expert in minor illness and David John, an expert in pharmacy practice, including OTC matters. Their task was to evaluate the item pool to remove items judged to be obscure, unclear, or irrelevant. These items did not appear, or were revised, on subsequent versions of the questionnaire.

As responses may differ depending on whom the actual user is, the wording – *for yourself or for someone else* – was inserted into several questions in Part I and II. The experts also suggested that consumers might feel it difficult to accurately remember their consumption in the last six months. Thus, for several questions, the time period of *six months* was changed to *30 days*. In the section pertaining to consumer impressions of OTC medicines, several wordings were changed according to experts' suggestions. For statement 1, the term *several OTC medicines* was changed to *more than one OTC medicine*. For statement 6, the term *higher than* was used instead of *beyond*. The experts also suggested reversed phrasing to match a couple of items for validity purposes. Therefore, the statement, *Generally, I find prescription medicines to be more effective than OTC medicine,* was added for eventual comparison to *Generally, I find OTC medicines to be less effective than prescription medicines.*

In the expectations section, only minor wording was changed. For item 4, the term *a lot of* was suggested to replace *extensive*.

4.3.3 Questionnaire Sensitivity

Two focus groups of four consumers each were used to test the ability (sensitivity) of the questionnaire to meet study objectives. Four customers (two female and two male) had purchased OTC medicines only from convenience stores and four (two female and two male) had bought OTC products from both locations. The questionnaire was administered to each of these eight subjects, with results assessed as to whether subtle differences in consumer attitudes would indeed be identified by the device. For this step, volunteers not only were asked to complete questionnaires, but also were interviewed via telephone. According to these subjects' input and the results of the sensitivity test, the questionnaire was revised (detailed changes appear in section 5.1.2).

4.3.4 Pilot Test

With a revised questionnaire, a pilot test was undertaken. A small sub-set of the population (38 members of the general public) was asked to participate. Subjects included university students, middle-aged persons, and seniors and were recruited at the university cafeteria and through the neighbors, friends, and college colleagues of the researcher. They were required to fill out the questionnaires and to account for the time it took to complete. Finally, they were asked to provide suggestions and/or concerns about the questionnaire format and wording. Data from the pilot test were not included in the main results of the study.

Although there were minimal comments from these volunteers, the questionnaire was revised again (detailed changes appear in section 5.1.3). This revised version of the questionnaire was the final questionnaire (see Appendix C) used in the formal survey.

4.4 Instrument Validity and Reliability

Content validity of the questionnaire was addressed by identifying items from the literature and through assessment by both experts and participants in the pilot test. The

reliability of items (internal consistency) in Part IV and Part V of the questionnaire was assessed using Cronbach's alpha.[188]

This study also examined the test-retest reliability of the instrument. In the test-retest arm, the first 10 percent of respondents who replied during the formal survey were mailed the same questionnaire a month after receiving their first answered questionnaire. A financial reward was added to encourage subjects to respond the second time. Gift certificates from The Bay ($10) were sent to participants to thank them for their help after receiving their replies. The two sets of results were analyzed descriptively to determine test-retest reliability.

4.5 Instrument Delivery and Recovery

In order to improve survey return rates, use of an advance letter and follow-up letters are considered optimal.[179,181,182,187] For this study, advance letters (see Appendix D) were sent to the 2,547 subjects in June 2003, outlining the purpose of the study and pointing attention to its 'value' to the average consumer. A week later, the main mailing packages were sent. A cover letter (see Appendix E), a questionnaire, and a business reply envelope (postage applied) were included in each package. The cover letter again explained the nature of the study and outlined our reasons for asking their input. The first follow-up letters (see Appendix F) were mailed to all subjects two weeks after the questionnaires were sent out. The purpose of this step was to thank those who completed a questionnaire, and to remind those who had not. After another two weeks, the second follow-up letters (see Appendix G) were mailed only to the subjects who had not yet replied. A replacement questionnaire and a business reply envelope (postage applied) also were included. Data collection ended four weeks after the last letter was mailed. Finally, non-response cards (see Appendix H) were sent to all non-respondents to identify a minimum of characteristics for assessment of non-response bias. Only 100 non-responders (randomly selected) from all the non-responders received the cards due to a budget shortfall.

4.6 Data Analysis

Descriptive statistical terms such as mean, standard deviation (SD), and frequency were employed to report the results from individual items of the survey.

One-way ANOVA was used to test for differences in frequencies of store visits, number of products used, and number of minor illnesses consumers experienced. A paired t-test was employed to determine the difference in numbers of information sections on an OTC product's package that would be read by consumers when buying and using/giving the product for the first time.

The Wilcoxon Signed Ranks Test, the Mann-Whitney Test and the Kruskal Wallis Test were used to compare mean score differences in the ten expectation items for pharmacies versus convenience stores. These three tests were used for the nonparametric (ordinal) nature of the data.[189]

The Wilcoxon Signed Ranks Test is the nonparametric alternative to the dependent t test. In order to reject a null hypothesis (H_0) at a given α level, the obtained T value (from sampling distribution of the T statistic) must be less than or equal to the critical T value. However, if a sample number (N) is greater than fifty, the obtained T value must be transformed into a z score and a critical value taken from the normal distribution. As per the customary use of the term, the z score for this application indicates how far, and in what direction, that item deviates from its distribution's mean, expressed in units of its distribution's standard deviation. The z score transformation is useful when seeking to compare the relative standings of items from distributions with different means and/or different standard deviations.

The Mann-Whitney Test is the nonparametric alternative to the independent t test. To make a decision concerning H_0, a U value is computed. It must be less than or equal to the critical U value (from sampling distribution of the U statistic) to reject H_0. When N is greater than twenty, the obtained U value must be transformed into a z score and a critical value is taken from the normal distribution. In this study, these two tests utilize z scores due to the sample size incurred. Z scores are a special application of the transformation rules.

The Kruskal Wallis Test is the nonparametric alternative to the one-way ANOVA. The sampling distribution for this test is a chi-square distribution; therefore, this test is reported by using χ^2.

In order to test the reliability of the instrument, manual calculation and Cronbach's alpha were performed on the stability of the questionnaire over time (test-retest) and on the internal consistency of items, respectively.

All statistics were analyzed using SPSS 12.0 for Windows software, with statistical significance set at 0.05. To allow global values for select scales to be calculated, missing data from single items on such scales were replaced by the mean score for that item. An exception was data missing from Part VI; if this part was incomplete, all data from that one respondent's questionnaire would be excluded from analysis.

4.7 Ethics

Approval from the University of Saskatchewan Advisory Committee on Ethics in Behavioural Research was obtained on April 3, 2003.

By necessity, the researchers were aware of participants' names and mailing addresses. During the three-month study period, the master address list was kept under lock-and-key in the graduate student office. After completion of the study, the list was destroyed.

Identification numbers appeared on questionnaires and were used to identify non-responders for follow-up purposes. In order to protect responder confidentiality, surveys and demographics were identified only by a participant number and only aggregate data were reported.

CHAPTER 5: RESULTS

5.1 Instrument Development

5.1.1 Item Wording of the Questionnaire

As a preliminary step toward item generation, 240 pharmacy students were asked in March 2003 to forward a word-interpretation document to their families and friends on behalf of the researchers. These were handed out during class time at the College of Pharmacy and Nutrition. A total of 80 completed documents were received by the due date, for a response rate of 33.3 percent. All respondents had shopped for an OTC medicine in pharmacies. Only 50 percent had bought an OTC medicine from a convenience store. The age range of respondents was 17 to 73 years. More than half of participants (58.8 percent) were females.

Ability to differentiate potential wording on the final questionnaire was the main intent of this exercise. First, 81.3 percent of respondents felt they could distinguish between *pharmacies* and *convenience stores* within the retail market place. In order to confirm this, 13 store names were presented and participants were asked to indicate which ones were convenience stores. Almost every participant thought of *Husky Gas and Food*, *Mac's*, *7-11*, *Shell Gas and Food*, and *Stop'N'Go* as convenience stores (Table 5.1). Thus, it appeared that use of these two terms -- *convenience store* and *pharmacy* – on a questionnaire would not confuse the public. Table 5.2 shows that most respondents were quite familiar with shopping in these stores.

Respondents would eventually be asked to express their expectations of OTC medicines across a variety of parameters. To assess the public's ability to do this in relation to the concepts selected, meanings of wording-pairs (n = 10) were compared.

Table 5.1 Consumer Ability to Distinguish Store-Type

| Store Name | Is this store a convenience store? | | | | | |
| | YES | | NO | | TOTAL | |
	Number	Percent	Number	Percent	Number	Percent
Circle Centre Pharmacy	1	1.2	79	98.8	80	100.0
Extra Foods	16	20.3	63	79.7	79	100.0
Husky Gas and Food	78	97.5	2	2.5	80	100.0
IGA Grocery	14	17.5	66	82.5	80	100.0
Lakeview Pharmacy	7	8.7	73	91.3	80	100.0
Mac's Stores	76	95.0	4	5.0	80	100.0
PharmaSave	9	11.4	70	88.6	79	100.0
7-11 Stores	78	97.5	2	2.5	80	100.0
Safeway Food and Drug	9	11.2	71	88.8	80	100.0
Sears Department Store	8	10.0	72	90.0	80	100.0
Shell Gas and Food Store	77	96.2	3	3.8	80	100.0
Shoppers Drug Mart	13	16.2	67	83.8	80	100.0
Stop 'N' Go Confectionary	78	97.5	2	2.5	80	100.0

Table 5.2 Consumer Shopping Experiences in Each Outlet

| Store Name | Have you shopped here? | | | | | |
| | YES | | NO | | TOTAL | |
	Number	Percent	Number	Percent	Number	Percent
Circle Centre Pharmacy	16	20.1	63	79.9	79	100.0
Extra Foods	57	72.2	22	27.8	79	100.0
Husky Gas and Food	30	37.5	50	62.5	80	100.0
IGA Grocery	65	81.2	15	18.8	80	100.0
Lakeview Pharmacy	9	11.2	71	88.8	80	100.0
Mac's Stores	64	80.0	16	20.0	80	100.0
PharmaSave	54	67.5	26	32.5	80	100.0
7-11 Stores	68	85.0	12	15.0	80	100.0
Safeway Food and Drug	74	92.5	6	7.5	80	100.0
Sears Department Store	70	87.5	10	12.5	80	100.0
Shell Gas and Food Store	52	65.0	28	35.0	80	100.0
Shoppers Drug Mart	78	97.5	2	2.5	80	100.0
Stop 'N' Go Confectionary	20	25.0	60	75.0	80	100.0

During questionnaire development, *effectiveness* versus *potency* and *safety* versus *side effects* were considered by the researchers to potentially pose the most problems. Of the sample surveyed, more respondents (70.9 percent) believed that the meaning of *effectiveness* differed from that of *potency*; 29.1 percent thought that the meanings of the two words were similar. For *safety* versus *side effects*, nearly three in five respondents believed that the meanings of these two words were indeed different. Table 5.3 presents the detailed results. Participants were then asked to explain their understanding of the meanings of *effectiveness* versus *potency* and *safety* versus *side effects*. The majority of respondents complied with this request. The detailed results are shown in Appendix I. Many respondents thought that *effectiveness* and *potency* had different meanings for two major reasons. First, they believed that *potency* pertained to how strong a medicine is, while *effectiveness* meant how well a medicine works. They also thought that greater *potency* did not necessarily mean higher *effectiveness*. Many people also thought that the meanings of *safety* and *side effects* were different because drugs could be safe but still have side effects; side effects were not necessarily unsafe. A few people felt *price* was synonymous with *safety*, *effectiveness*, *side effects*, and *potency*.

Table 5.3 Comparison of Meanings of Each Word-Pairing

Pairs of words	Considered to be Similar	Considered to be Different	Total
	N (%)	N (%)	N (%)
Cost vs *Price*	63 (79.7)	16 (20.3)	79 (100.0)
Safety vs *Effectiveness*	3 (3.7)	77 (96.3)	80 (100.0)
Price vs *Safety*	1 (1.2)	79 (98.8)	80 (100.0)
Effectiveness vs *Potency*	23 (29.1)	56 (70.9)	79 (100.0)
Side effect vs *Potency*	8 (10.1)	71 (89.9)	79 (100.0)
Price vs *Effectiveness*	3 (3.7)	77 (96.3)	80 (100.0)
Safety vs *Side effect*	31 (40.8)	45 (59.2)	76 (100.0)
Side effect vs *Price*	2 (2.5)	78 (97.5)	80 (100.0)
Effectiveness vs *Side effect*	8 (10.0)	72 (90.0)	80 (100.0)
Price vs *Potency*	5 (6.2)	75 (93.8)	80 (100.0)

5.1.2 Expectations Scale Pre-Test

The purpose of this activity was to pre-test the scale for question-wording pertaining specifically to expectations. The average age of the eight participants for this pre-test was 30 years (range: 21 to 52 years). Two were parents with children under 16. The majority had university degrees. Their household incomes varied – three respondents earned less than $20,000 a year; two were in the range of $20,000 to $39,999; one was at $40,000 to $59,999; and the remaining two exceeded $60,000.

Table 5.4 shows that for the eleven expectation items, there was no significant difference between expectations on medicine characteristics for the two locations (a pharmacy versus a convenience store), although differences across items did exist. Expectations of professional help, for example, was quite different for the two locations. While a seven-point scale may garner more variability (and be more sensitive) than a five-point scale, a definitive conclusion on test sensitivity was not possible with the data obtained. One main hurdle in assessing test sensitivity was the complete lack of existing data on the scaling required to pick up differences if they did indeed exist.

5.1.3 The Reliability of Questionnaire

To determine the internal reliability of the eight statements purported to reflect consumer impressions of OTC medicines (Part IV) and the nine statements purported to reflect consumer impressions of pharmacists (Part V), Cronbach's alpha was utilized. Cronbach's alpha for Part IV was 0.49 and 0.82 for the battery of items in Part V. Acordingly, modifications were made only to the items of Part IV. The statement "*I read the instruction carefully before taking an OTC medicine for the first time*" was removed and the phrasing of several statements (items 5, 7, and 8) was modified.

Table 5.4　Expectations Scale[a] Pre-Test: Difference in Public Expectations of OTC Medicines for Two Locations (Convenience Store versus Pharmacy)

Items	Convenience store Mean (SD)	Pharmacy Mean (SD)	Difference [b] in Mean	Z score [c]
1. I expect a good selection of OTC medicines.	2.00 (0.75)	7.00 (0.00)	- 5.00	- 2.56
2. I expect OTC medicines to be effective.	5.87 (1.25)	6.25 (1.04)	- 0.38	- 1.00
3. I expect OTC medicines to be safe.	5.63 (2.07)	5.88 (2.10)	- 0.25	- 1.00
4. I expect a lot of information on the packages.	5.38 (1.19)	5.75 (0.71)	- 0.37	- 1.00
5. I expect OTC medicines to be potent.	4.88 (0.99)	5.00 (1.07)	- 0.12	- 1.00
6. I expect OTC medicines to have very few side effects.	4.25 (1.67)	4.37 (1.77)	- 0.12	- 1.00
7. I expect to find OTC medicines I have used before.	3.75 (1.75)	6.63 (1.06)	- 2.88	- 2.12
8. I expect low prices on OTC medicines.	2.88 (2.10)	4.63 (1.85)	- 1.75	- 1.23
9. I expect OTC medicines to be less effective than prescription medicines.	4.50 (2.07)	4.25 (2.38)	0.25	- 1.00
10. I expect professional help.	1.13 (0.35)	6.88 (0.35)	- 5.75	- 2.64
11. I expect to find good quality products.	2.75 (1.58)	6.87 (0.35)	- 4.12	- 2.54

[a.] Scale: 1 (Strongly Disagree) to 7 (Strongly Agree)
[b.] The mean score of Convenience Stores minus the mean score of Pharmacies.
[c.] *Wilcoxon Signed Ranks Test*

5.1.4 Wording Suggestions from Interviewees

The eight participants of the expectations scale pre-test were interviewed as well. Participants were asked to provide suggestions and identify concerns for the questionnaire design. Subsequent to such concerns, few changes were made. For instance, several examples of pharmacy and convenience store outlets were provided

within the directions in the hopes of adding clarity when responding. To avoid confusion about what constitutes an OTC medicine, the passage – *OTC medicines in this case do not include vitamins and herbals* – was added to the introductory part of the questionnaire.

Overall, most respondents thought that the instructions on the questionnaire were clear and they did not have trouble in answering questions.

5.1.5 Pilot Test

Thirty-eight members of the public were selected from the residents of a university neighbourhood. These people included students, middle-aged people, and the elderly. Thirty-four of the 38 went on to participate in this pilot study while four refused.

Overall, all respondents completed their questionnaires within ten minutes and most felt satisfied with the format and wording. Therefore, only a few changes were made at this juncture. First, respondents suggested adding examples for OTC medicines. Because such examples were difficult to fit in the lines of the questionnaire, they were added in the cover letter sent with it. Second, key words within questions were capitalized such as *PAST SIX MONTHS*, *FOR ANY REASON*, *DIFFERENT*, *BUYING*, USING/GIVING, and *FIRST TIME*. Finally, one statement -- *Generally, I find OTC medicines to be less effective than prescription medicines* – was removed from Part IV. As well, the wording of Statement 6 in this part was modified – the term *OTC medicines* was used instead of "… *medicines without a prescription* …".

At this point, the final version of the questionnaire was ready for use in the main survey.

5.2 Study Results

This survey was conducted from June 27 to September 4, 2003.

5.2.1 Response Rate

A total of 2547 advance letters were distributed to subjects. A copy of the questionnaire was sent with a cover letter to each subject a week later. This group represented the sample.

A total of 445 questionnaires remained undelivered by the end of data collection. The reasons for the undelivered mail included address changes (n = 411), incomplete addresses (n = 7), and deceased persons (n = 27). Therefore, the final sample size was considered to be 2102. A further 27 subjects informed the researchers that they refused to participate in this study, but this number was not subtracted from the denominator.

When the data collection period closed, a total of 1296 questionnaires had been returned. Ninety-four of these questionnaires were incomplete in major sections, therefore were excluded from data analysis. They were not counted in the response rate numerator, leaving the total number of valid questionnaires at 1202. Thus, the response rate of the study was 57.2 percent.

Sixteen questionnaires were received after the closing date; this group did not include in the data analysis, even though the questionnaires were complete.

5.2.2 Demographics of Subjects

The age range of respondents varied widely from 18 to 97 years, with the average age being 52.7 years (SD = 16.4). The majority of respondents (n = 719/1189; 60.5 percent) fell within the range of 35 to 64 years. The proportions of males (51.1 percent) and females (48.9 percent) were very similar. Nearly 90 percent of respondents had completed a basic level of formal education (high school) and there were 32.6 percent of respondents with college/university degrees. Comparing respondents' household incomes, the researchers found that incomes exceeding $60,000 constituted the largest group (429/1198; 35.8 percent). Only 12 percent of respondents' household incomes (n = 144) were lower than $20,000. Most participants (n = 1033; 86.0 percent) reported that they were healthy. Just over 70 percent of participants were neither parents

nor guardians of children (under 16 years old) at home. The demographic results are shown in Table 5.5.

Table 5.5 Demographics of the Study Population

Characteristics (number of respondents completing the item)	Frequency	Percent
Age groups (N = 1189)		
■ 18 – 24	36	3.0
■ 25 – 34	133	11.2
■ 35 – 44	226	19.1
■ 45 – 54	295	24.8
■ 55 – 64	198	16.6
■ 65 – 74	155	13.0
■ 75 – 84	118	9.9
■ 85 and over	28	2.4
Gender (N = 1200)		
■ Male	613	51.1
■ Female	587	48.9
Education level completed (N= 1198)		
■ Less than high school graduate	130	10.9
■ High school graduate	245	20.5
■ Trade/Technical school	237	19.8
■ Some College/University	195	16.3
■ College or University graduate	391	32.6
Household income (N = 1198)		
■ Under $20,000	144	12.0
■ $20,000 to $39,999	276	23.1
■ $40,000 to 59,999	265	22.1
■ $60,000 and over	429	35.8
Current health status (N = 1202)		
■ Poor	27	2.2
■ Fair	133	11.1
■ Good	442	36.8
■ Very good	418	34.8
■ Excellent	173	14.4
■ Not sure	9	0.7
A parent or guardian of children under 16 at home (N = 1202)		
■ Yes	337	28.0
■ No	865	72.0

5.2.3 Consumers' Experiences with Buying and Using Medicines

Participants were asked to indicate whether they were aware OTC purchases could take place in convenience stores. A very high proportion of respondents (n = 970/1194; 81.2 percent) realized that OTC medicines could indeed be purchased in such outlets. Analyzing demographic factors (gender, highest education completed, household income levels, and a parent/guardian of children under 16 years old at home) found some patterns of public awareness of OTC purchases in convenience stores. Figure 5.1 reveals that more than 80 percent of respondents with relatively high education (*trade/technical school* at 85.7 percent; some *college/university* at 80.4 percent; *university/college* graduate at 82.9 percent) were aware of this possibility. Respondents with high household incomes had the greatest awareness of OTC medicine purchases being possible from convenience stores (Figure 5.2). Figure 5.3 indicates that young people also had high awareness. Respondents who were parents/guardians of children under 16 (86.4 percent) were slightly more aware of this situation than those who were not (78.5 percent). However, there was no apparent difference in awareness between males (n = 498/608; 81.9 percent) and females (n = 470/584; 80.5 percent).
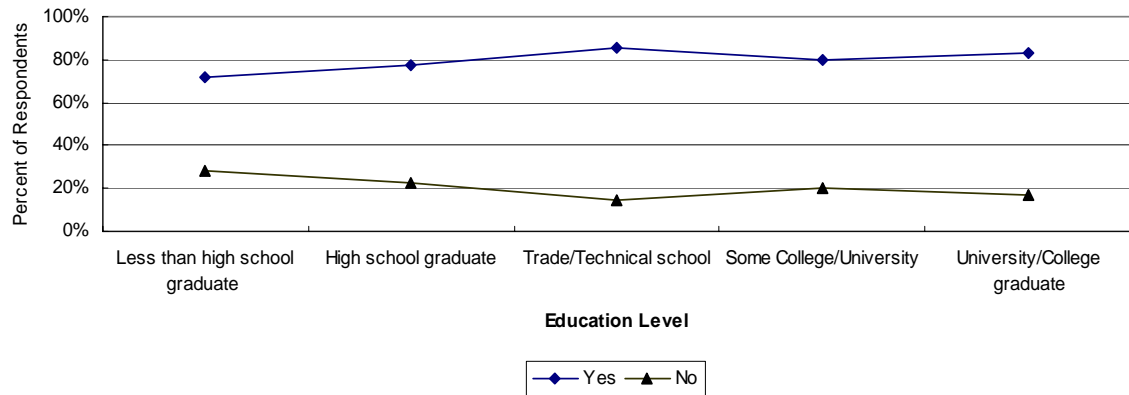
Figure 5.1 Percentage of Consumers Aware of the Option to Purchase OTC Medicines in Convenience Stores by Education Level
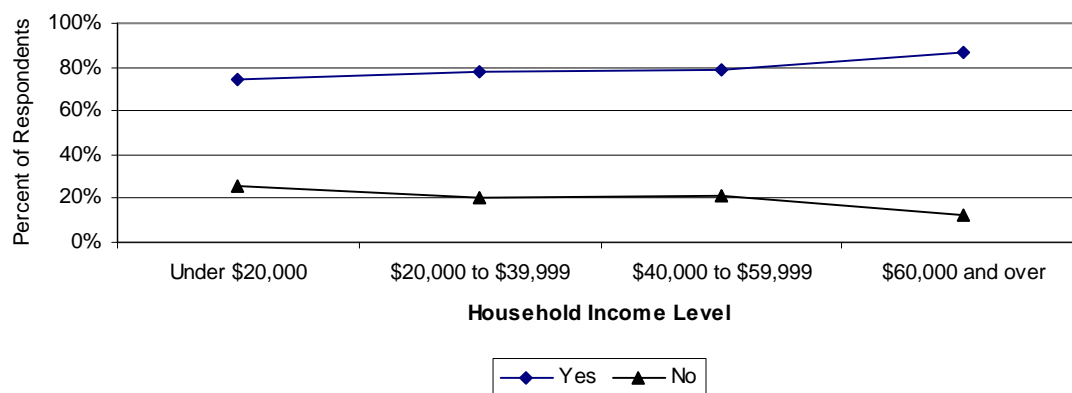
Figure 5.2 Percentage of Consumers Aware of the Option to Purchase OTC Medicines
in Convenience Stores by Household Income
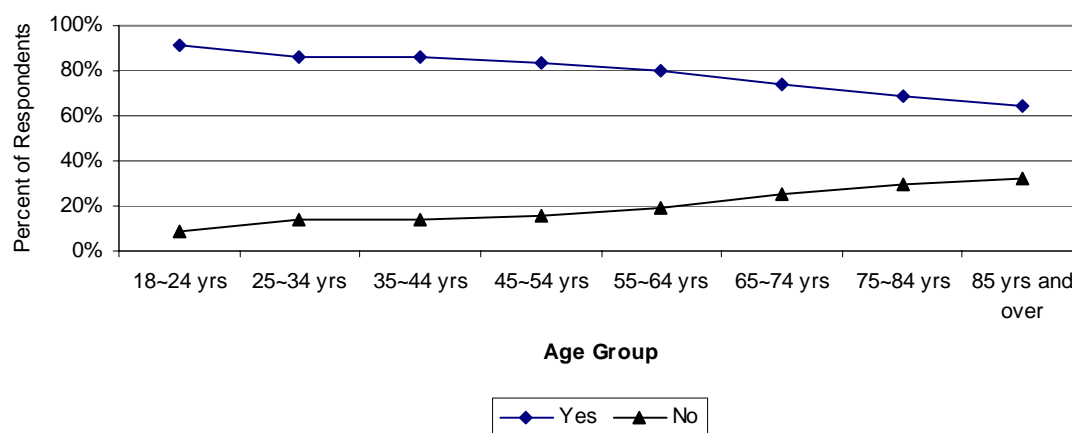
Figure 5.3 Percentage of Consumers Aware of the Option to Purchase OTC Medicines
in Convenience Stores by Age

While most respondents knew that OTC medicines could be purchased in
convenience stores, only 42.2 percent had done so. Pharmacies appeared to be the
location of choice for the majority of respondents, where 96.1 percent (n = 1155/1199)
had purchased them from pharmacies. Figure 5.4 shows the number of consumers who
had purchased OTC medicines in pharmacies and in convenience stores.
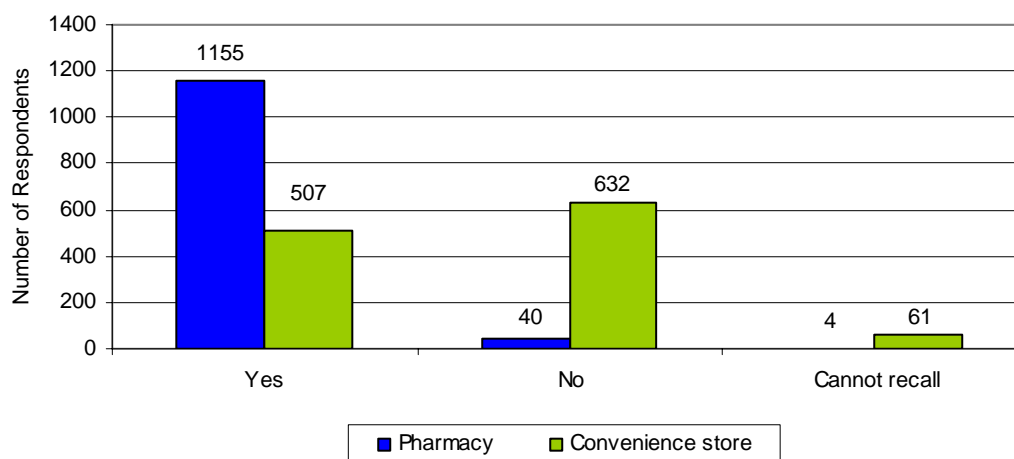
Figure 5.4 Number of Consumers Who Had Purchased OTC Medicines from Either
Location – Pharmacy vs. Convenience Store

As seen in Figure 5.5, slightly more men (45.8 percent; n = 280/612) than women (38.6 percent; n = 226/586) had bought OTC medicines in convenience stores. This difference disappeared for pharmacies, where the percentage of male buyers (96.4 percent; n = 590/612) and female buyers (96.2 percent; n = 563/585) were similar. Figure 5.6 shows that a greater percentage of respondents with higher education had purchased OTC medicines both from convenience stores and pharmacies when compared to respondents with low educational levels.

A somewhat greater proportion of respondents who had high household incomes also had bought such medicines from both locations (see Figure 5.7).

The percentage of consumers purchasing OTC products in convenience stores decreased with age (see Figure 5.8). Although the same suggestive relationship of age to purchase could be found in pharmacy patrons, there was only a slight decrease (94.4 percent to 85.7 percent) with advancing age.

In Figure 5.9, a higher percentage of participants who were parents/guardians of children under 16 years of age (49.0 percent; n = 165/337) bought OTC medicines in convenience stores when compared to childless households (39.6 percent; n = 342/863).
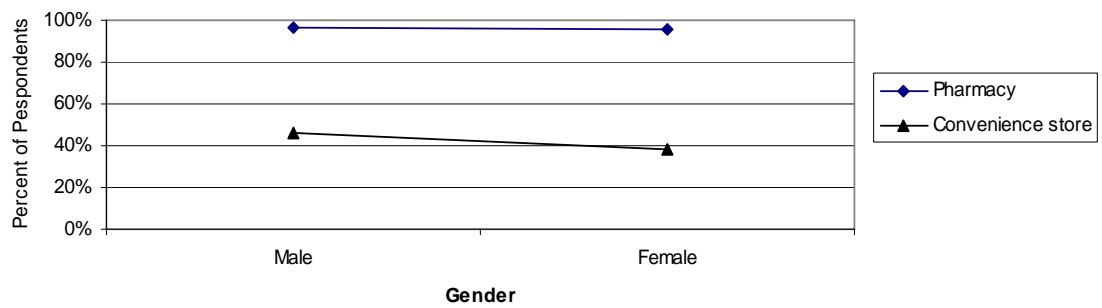
Figure 5.5 Percentage of Male and Female Consumers Who Had Purchased OTC Medicines from Each Location
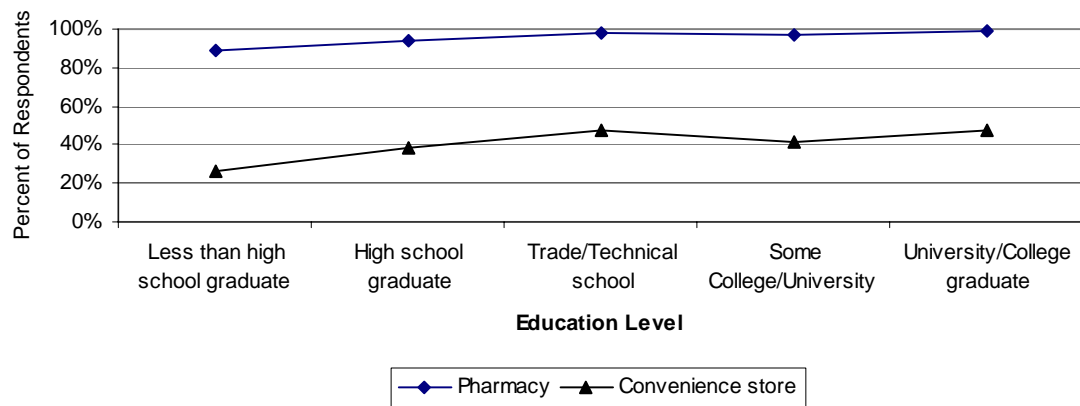
Figure 5.6 Percentage of Consumers Who Had Purchased OTC Medicines from Each Location by Education Level
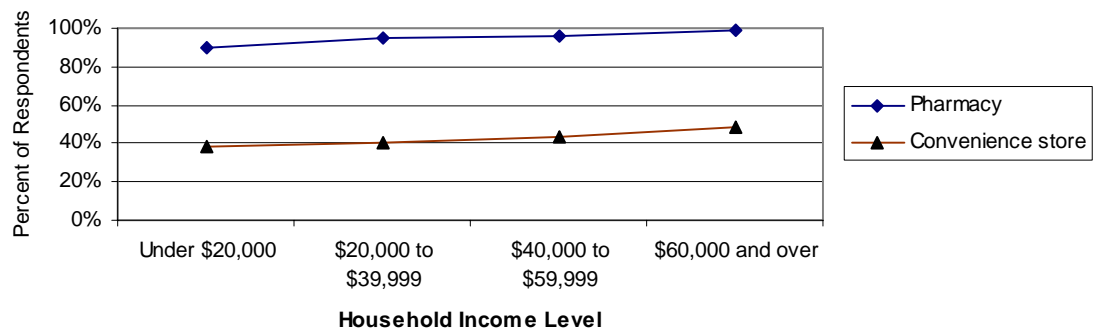
Figure 5.7 Percentage of Consumers Who Had Purchased OTC Medicines from Each Location by Household Income
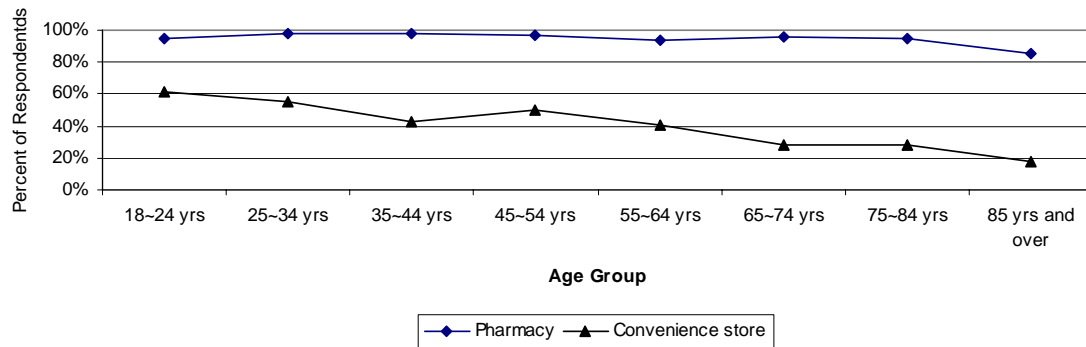
Figure 5.8 Percentage of Consumers Who Had Purchased OTC Medicines from Each
          Location by Age
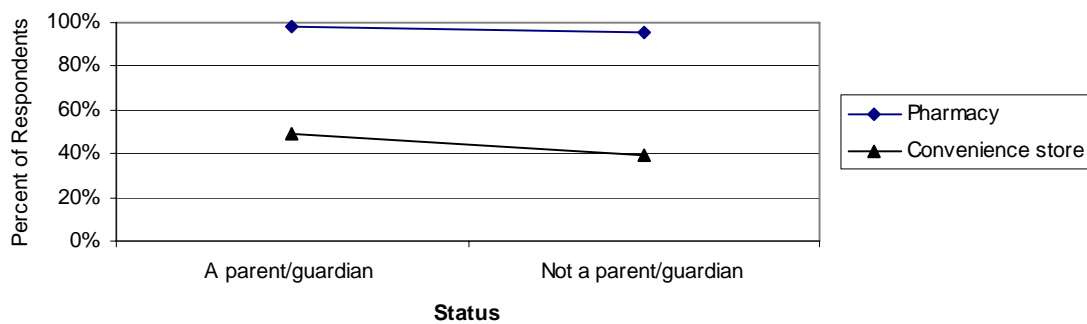
Figure 5.9 Percentage of Consumers Who Had Purchased OTC Medicines from Each
          Location by Parental/Guardian Status

Respondents reported they had made an average of 1.0 OTC purchases from
convenience stores within the past six months, in contrast to an average of 3.1 such
purchases from pharmacies (Table 5.6). To calculate the mean values for each location,
the data from respondents who selected *more than two times*, but did not go on to
indicate the exact number of visits, were excluded (11 convenience store respondents
and 71 pharmacy respondents).

Thirty-three respondents reported they had purchased OTC medicines at least
three times from convenience stores during this period. A total of 382 respondents had
purchased OTC medicines at least three times from pharmacies, with 47 stating this

exceeded ten times within six months. On the other hand, many respondents did not buy *any* OTC products from convenience stores (n = 189) nor from pharmacies (n = 80).

Table 5.6   Frequency of OTC Purchases from Either Location Within the Past Six
Months

Location	N	Minimum	Maximum	Mean	SD
Convenience stores	485	0	10	1.0	1.3
Pharmacies	1070	0	20	3.1	2.9

One-way ANOVA was performed to determine whether the mean values for OTC purchases at the two locations were significantly different across demographic characteristics. The frequency of OTC purchases in convenience stores (Table 5.7) and pharmacies (Table 5.8) were dependent variables, while gender, education level, household income, age groups, and parent/guardian status were independent variables.

Table 5.7 indicates there were significant differences in the number of OTC purchases in convenience stores across age groups.

Post-hoc analysis using the Scheffe test revealed that respondents aged *75 to 84 years* purchased OTC medicines in convenience stores significantly more often (1.66 times) than those in other groups: *25 to 34 years* (0.88 times); *45 to 54 years* (0.89 times); *55 to 64 years* (0.89 times); *65 to 74 years* (1.05 times) and *35-44 years* (1.17 times).

Table 5.7 Frequency of OTC Purchases in Convenience Stores Within the Past Six
          Months According to Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	1.40	0.70	0.42
Within groups	472	782.99	1.66	
Education level				
Between groups	4	15.11	3.78	2.30
Within groups	469	769.28	1.64	
Household income				
Between groups	3	12.54	3.13	1.91
Within groups	470	771.85	1.65	
Age group				
Between groups	7	26.71	3.82	2.34*
Within groups	466	753.52	1.63	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	1.76	1.76	1.06
Within groups	472	782.63	1.66	

* $p < 0.05$

According to the ANOVA analysis, significant differences in frequency of OTC
purchases in pharmacies (Table 5.8) existed for the variables household income and
status as a parent/guardian. Respondents without children made less OTC purchases
(2.94 times) in pharmacies than did those who had children at home (3.48 times). With
post-hoc analysis (Scheffe test), the results showed that respondents with lower incomes
(< $20,000 and *$20,000 to $39,999*) bought OTC medicines significantly less often from
pharmacies (2.59 times and 2.85 times, respectively) than did those with higher incomes
[*$40,000 to $59,999* (3.38 times) and ≥ *$60,000* (3.33 times)].

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Table 5.8 Frequency of OTC Purchases in Pharmacies Within the Past Six Months According to Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	22.13	11.06	1.36
Within groups	997	8114.21	8.15	
Education level				
Between groups	4	76.19	15.24	1.88
Within groups	994	8060.65	8.12	
Household income				
Between groups	3	104.69	26.17	3.24*
Within groups	995	8031.65	8.08	
Age group				
Between groups	7	65.97	9.42	1.16
Within groups	991	7985.09	8.15	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	59.68	59.68	7.37**
Within groups	997	8076.66	8.10	

*$p < 0.05$ **$p < 0.001$

As depicted in Table 5.9, participants indicated they visited convenience stores (for any reason) an average of 3.6 times a month ($SD = 5.5$) and visited pharmacies (for any reason) an average of 2.2 times a month ($SD = 2.5$). When calculating the mean of visit frequency, data from respondents (39 respondents for convenience stores and 30 respondents for pharmacies) who selected *more than two times*, but did not indicate the exact number of visits, was excluded.

Within the past 30 days for each respondent, the majority ($n = 764$; 66.6 percent) had visited convenience stores; 10 had visited over 30 times. At the same time, 382 respondents (34.5 percent) did not use such stores at all. For pharmacy visits, a high percentage of respondents ($n = 949$; 83.5 percent) had visited pharmacies during the past 30 days, with 24 revealing they went to pharmacies at least ten times. Only 188

respondents (16.5 percent) had not visited a pharmacy.

Table 5.9 Frequency of Visits to Either Location for Any Reason Within the Past 30
Days

Location	N	Minimum	Maximum	Mean	SD
Convenience stores	1107	0	60	3.6	5.5
Pharmacies	1137	0	30	2.2	2.5

There were no significant differences in pharmacy visits among the subgroups of gender, education level, household income, age, and status as parents/guardians of children still at home (see Table 5.10).

Table 5.10 Frequency of Pharmacy Visits Within the Past 30 Days According to
Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	5.10	2.55	0.40
Within groups	1135	7220.94	6.37	
Education level				
Between groups	4	40.60	8.12	1.28
Within groups	1132	7185.43	6.35	
Household income				
Between groups	3	42.02	10.51	1.66
Within groups	1133	7184.02	6.35	
Age group				
Between groups	7	13.30	1.90	0.30
Within groups	1129	7129.20	6.28	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	15.24	15.24	2.40
Within groups	1135	7210.80	6.35	

Table 5.11 shows that significant differences in convenience store visits existed among the subgroups of each independent variable. Men visited convenience stores (4.02 times) more times than did women (3.14 times), while parents/guardians of young children did much more shopping (5.14 times) in convenience stores than did childless subjects (2.98 times).

Table 5.11 Frequency of Convenience Store Visits Within the Past 30 Days According to Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	230.54	115.27	3.86*
Within groups	1105	32977.45	29.87	
Education level				
Between groups	4	776.93	155.39	5.28**
Within groups	1103	32431.06	29.46	
Household income				
Between groups	3	712.62	178.16	6.04**
Within groups	1104	32495.37	29.49	
Age group				
Between groups	7	3582.34	511.76	18.85**
Within groups	1100	29505.85	27.14	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	1028.00	1028.00	35.30**
Within groups	1105	32179.99	29.12	

*p < 0.05 **p < 0.001

According to the results of post-hoc analysis (Scheffe test), there were significant differences in frequencies of convenience store visits between the groups of people who had *less than high school* (1.61 times) versus those who either had *graduated from high school* (3.21 times), *trade/technical school* (4.62 times), *some university/college* (3.83

times), or *university/college* (3.73 times). Household income produced significant differences between the groups of *under $20,000* (2.23 times) and *$40,000 to $59,999* (4.48 times), as well as between the group *under $20,000* (2.23 times) and $\geq$ *$60,000* (4.04 times). Younger respondents shopped in convenience stores more frequently than older ones (Figure 5.10).
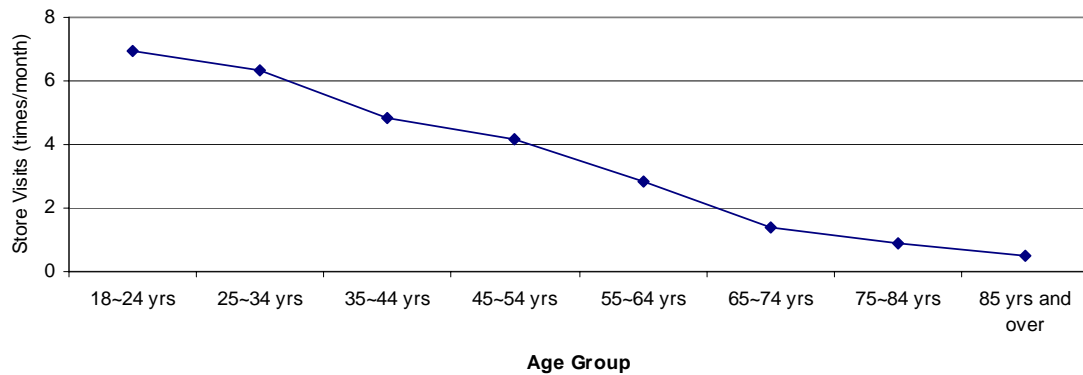
Figure 5.10 Frequency of Convenience Store Visits Within the Past 30 Days by Age

Within the context of a 30-day period, an average of 1.6 different OTC medicines (SD = 1.4) and 1.6 different prescription medicines (SD = 2.0) were taken by the sample (Table 5.12). When calculating these means, data from respondents (12 for OTC medicines and 11 for prescription medicines) who selected *more than two products,* but did not indicate the exact number of products, was excluded.

Table 5.12 Number of Different Medicines Taken Within the Past 30 Days

Type of medicine	N	Minimum	Maximum	Mean	SD
OTC medicines	1068	0	12	1.6	1.4
Prescription medicines	1187	0	20	1.6	2.0

Most respondents (n = 950; 80.5 percent) indicated that they had taken at least one OTC medicine within the past 30 days; several (n = 43) took more than four different agents. In contrast, 19.5 percent did not take any OTC medicine within those same 30 days. For prescription medicines, 61.9 percent of respondents (n = 741) took at least one during the past 30 days, with 12 percent (n = 94) taking more than four different medications. However, 38.1 percent of respondents (n = 457) did not take any prescription medicines within the past 30 days.

Analysis of the mean number of OTC medicines taken, results show there were no significant differences among subgroups of each demographic variable except gender (Table 5.13). On average, females used more OTC medicines (1.8) than males did (1.4).

Table 5.13 Number of OTC Medicines Taken Within the Past 30 Days According to Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	36.44	18.22	9.06**
Within groups	1166	2342.43	2.01	
Education level				
Between groups	4	10.34	2.07	1.01
Within groups	1163	2374.84	2.04	
Household income				
Between groups	3	4.03	1.01	0.49
Within groups	1164	2374.84	2.04	
Age group				
Between groups	7	10.15	1.45	0.71
Within groups	1160	2351.05	2.05	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	1.47	1.47	0.72
Within groups	1166	2377.41	2.04	

**$p < 0.001$

Unlike the ANOVA results for number of OTC medicines taken, there were significant differences in the average number of prescription medicines used within the

past 30 days across all subgroups of each demographic characteristic, except gender (Table 5.14). For example, participants who were not parents/guardians of children under 16 took just over twice as many prescription medicines (1.9) than those who were parents/guardians of children under 16 (0.8).

Table 5.14 Number of Prescription Medicines Taken Within the Past 30 Days According to Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	0.46	0.23	0.06
Within groups	1185	4874.35	4.12	
Education level				
Between groups	4	149.74	29.95	7.49**
Within groups	1182	4725.06	4.00	
Household income				
Between groups	3	163.55	40.89	10.26**
Within groups	1183	4711.25	3.99	
Age group				
Between groups	7	816.75	116.68	33.80**
Within groups	1179	4024.69	3.45	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	285.81	285.81	73.80**
Within groups	1185	4588.99	3.87	

$**p < 0.001$

In order to examine where differences existed, the post-hoc Scheffe Test was employed. First, for education level, there were significant differences between mean prescription use for those attaining *less than high school* (2.4) against the groups of *trade/technical school* (1.5), *some college/university* (1.2), or *university/college graduate* (1.2). The difference was also significant between respondents who were *high school graduates* (1.8) and those who were *university/college graduates* (1.2). Figure 5.11 shows that respondents with lower education appeared to take more prescription

medicines within the given time period compared to those with higher education.

Second, for household income, significant differences in mean prescription medicine usage could be seen between respondents with incomes $\geq$ *$60,000* (1.1) and those *under $20,000* (2.1), and in $\geq$ *$60,000* versus *$20,000 to $39,999* (1.9). In general, respondents with high household incomes took fewer prescription medicines than those with low household incomes (Figure 5.12).
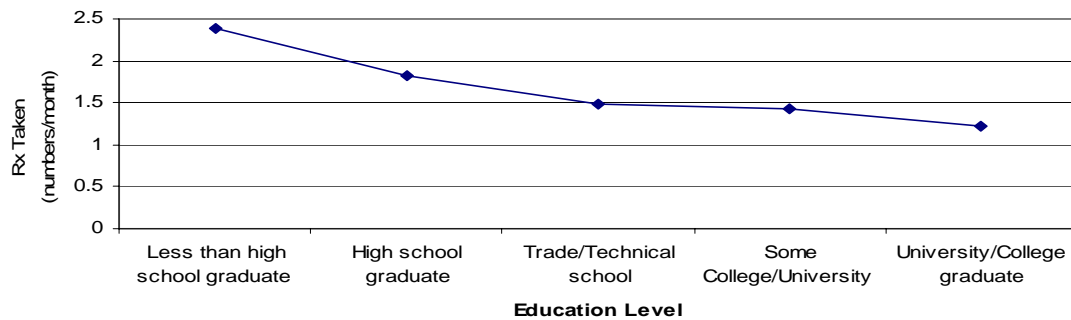
Figure 5.11 Average Number of Prescription Medicines Taken Within the Past 30 Days by Education Level
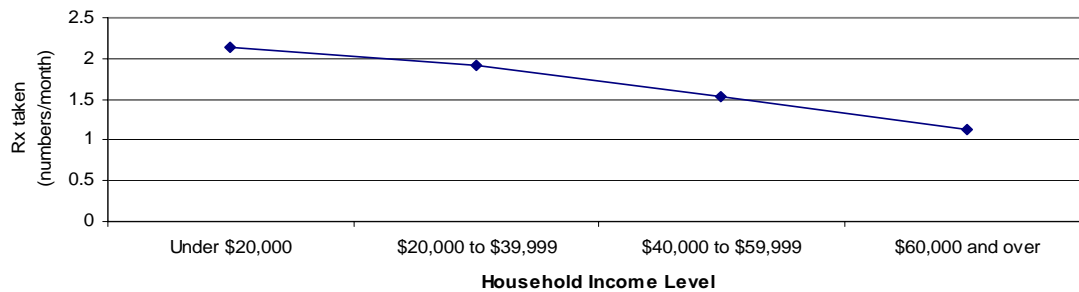
Figure 5.12 Average Number of Prescription Medicines Taken Within the Past 30 Days by Household Income

Finally, significant differences existed between the young (*under 35 years*; mean = 0.9) and the middle age group (*35 to 64 years;* mean = 1.2), as well as the young and elderly age group *(> 65 years*; mean = 3.1). Significant differences also were evident

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between middle age and elderly groups. Overall, older respondents took more prescription medicines (Figure 5.13).
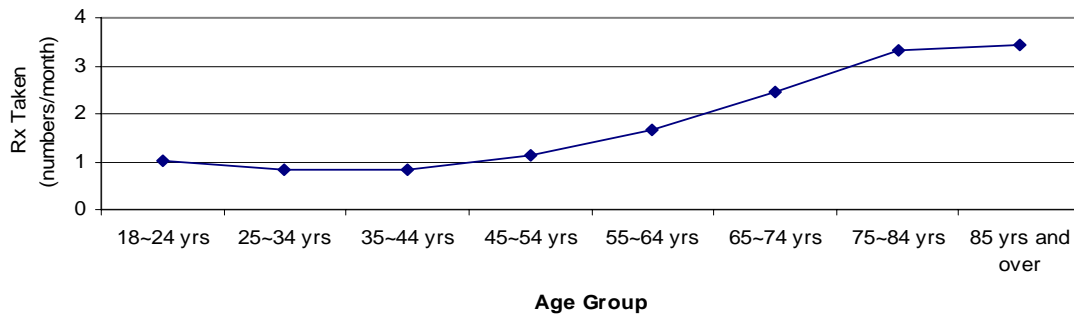
Figure 5.13 Average Number of Prescription Medicines Taken Within the Past 30 Days by Age

Encountering side effects when taking any medicine can affect medicine-taking behaviour. When asked about their side effect experiences when taking OTC medicines, 86 respondents reported they could not recall and therefore could not respond. Of those who could recall (n = 1108) either way, 21.1 percent (n = 234) said they had experienced side effects when taking OTC medicines. The majority (n = 874; 78.9 percent), though, had never experienced any side effect from an OTC medicine (see Figure 14).
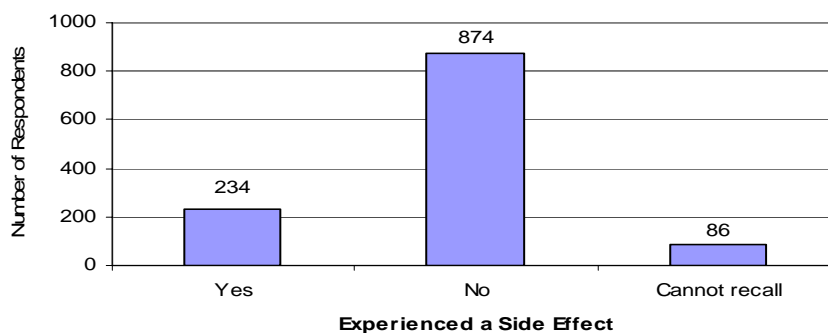
Figure 5.14 Consumers Claiming to Have Experienced Side Effect(s) Upon Taking OTC Medicines

5.2.4 Information-Seeking Behaviours

In the process of medication usage, a person will have to buy a product, then use it once home. There is a possibility that different types of information are needed for each of these two steps. For example, when buying a product, the agent's indication for use would likely be paramount in the mind of the purchaser. Right before taking it for the first time, the dosing regimen and possible side effects might be more timely.

Table 5.15 shows that, whether buying (76.9 percent) or using/giving (80.0 percent) an OTC product for the first time, a high proportion of respondents would read the information on the package. Only a few people said that they would not read this information when buying (n = 49; 4.1 percent) or using/giving (n = 47; 3.9 percent) it for the first time.

Table 5.15 Consumer Claims for Reading Information on OTC Medicine Packaging When **BUYING** or **USING/GIVING** a Product for the First Time

Reading Frequency	BUYING N (%)	USING/GIVING N (%)
No	49 (4.1%)	47 (3.9%)
Sometimes	228 (19.0%)	193 (16.1%)
Always	923 (76.9%)	957 (80.0%)

First-time purchasing and package reading behaviors are the points of comparisons represented in Figures 5.15 to 5.19. Figure 5.15 illustrates that higher percentages of female versus male respondents (81.1 percent and 72.7 percent, respectively) claimed to always read package information. Figure 5.16 shows parents/guardians of children under 16 (83.1 percent) as frequent information readers. Education levels are compared in relation to package reading practice in Figure 5.17. Approximately 80 percent of respondents in the *some university/college* (79.5 percent) or *university/college graduation* (80.8 percent) groups claimed to always read the information. Figure 5.18 shows the percentage of income groups who claimed to always

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read the package, with the *$20,000 to $39,999* segment being quite high. For age groups (Figure 5.19), slightly lower percentages of respondents in the younger groups (*18 to 24 years* and *25 to 34 years*) and the oldest group ($\geq$ *85 years*) read the information when compared to other age segments.
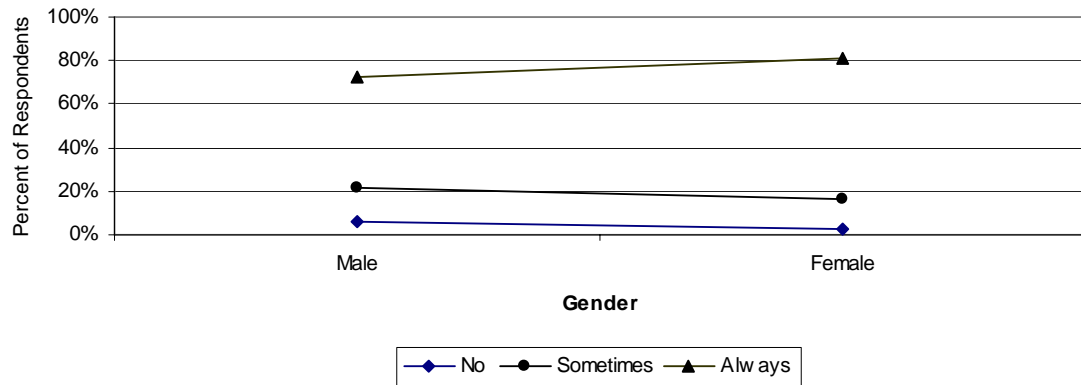
Figure 5.15 Propensity to Read OTC Medicine Package Information When **BUYING** a Product for the First Time by Gender
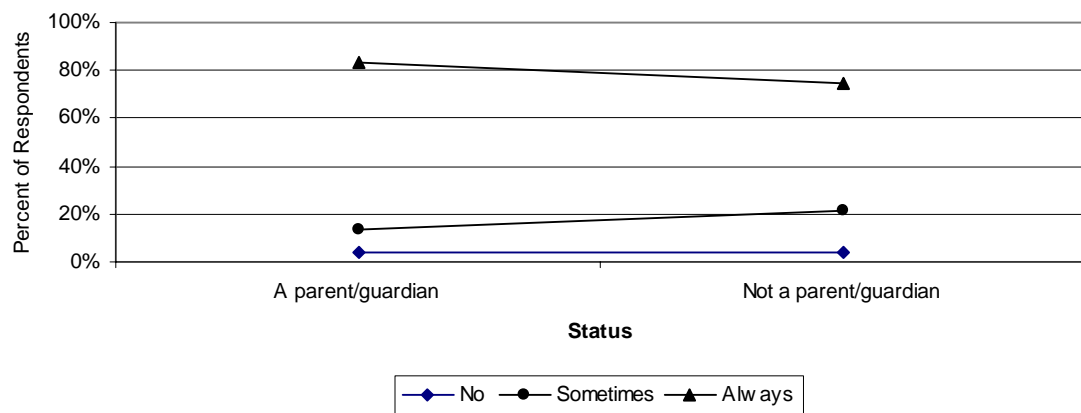
Figure 5.16 Propensity to Read OTC Medicine Package Information When **BUYING** a Product for the First Time by Parent/Guardian Status
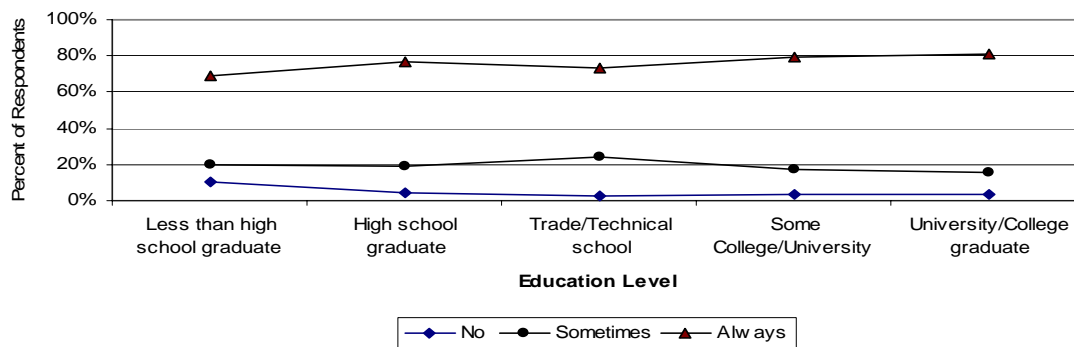
Figure 5.17 Propensity to Read OTC Medicine Package Information When **BUYING** a Product for the First Time by Education Level
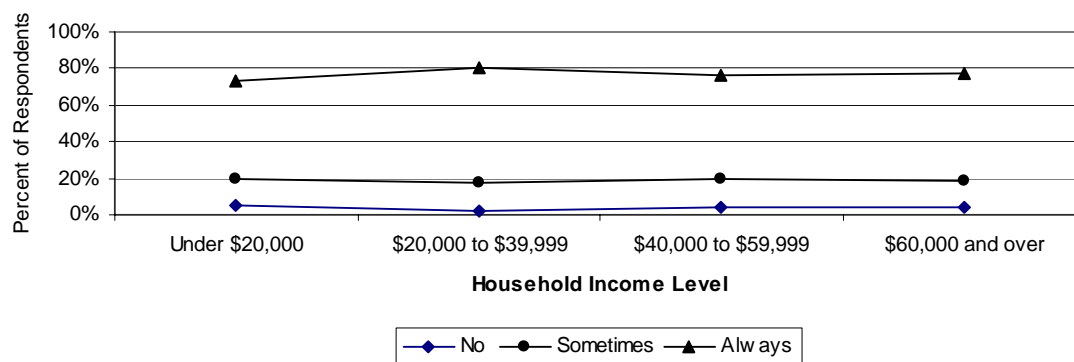
Figure 5.18 Propensity to Read OTC Medicine Package Information When **BUYING** a Product for the First Time by Household Income
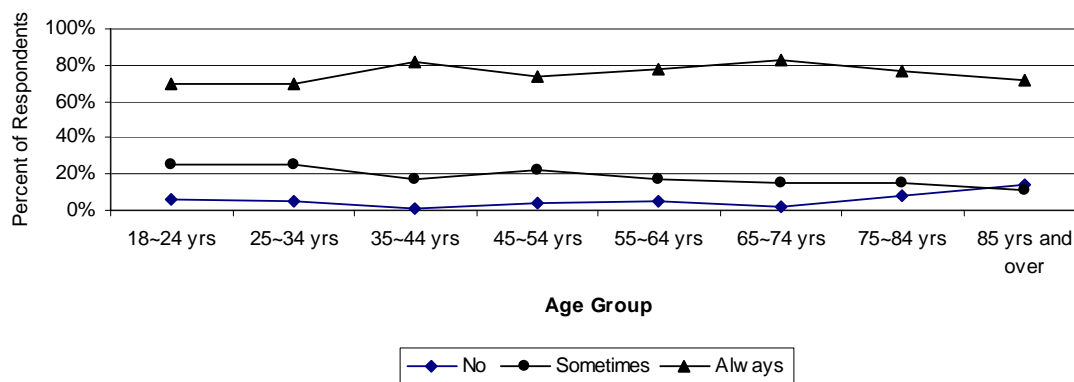
Figure 5.19 Propensity to Read OTC Medicine Package Information When **BUYING** a Product for the First Time by Age

With analyzing respondents' information reading behaviours when <u>using/giving</u> an OTC product for the first time, patterns were similar to their behaviours when buying the product (Figures 5.20, 5.21, 5.22, 5.23, and 5.24).
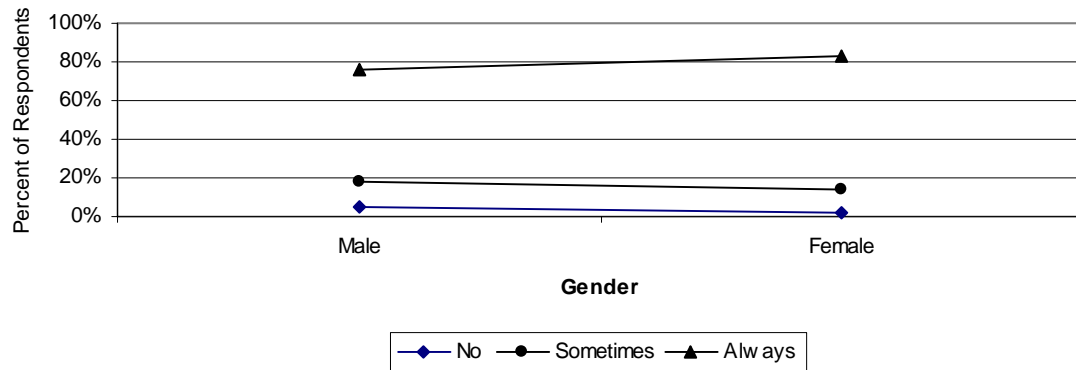
Figure 5.20 Propensity to Read OTC Medicine Package Information When
USING/GIVING a Product for the First Time by Gender
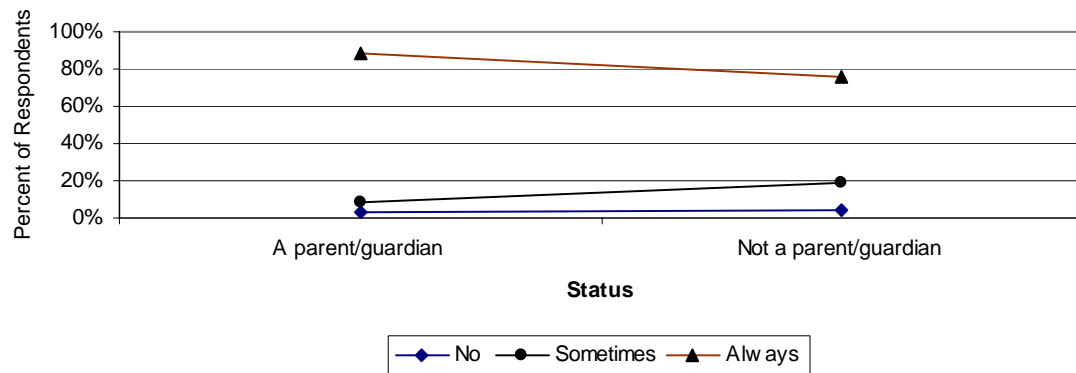
Figure 5.21 Propensity to Read OTC Medicine Package Information When
USING/GIVING a Product for the First Time by Parent/Guardian Status
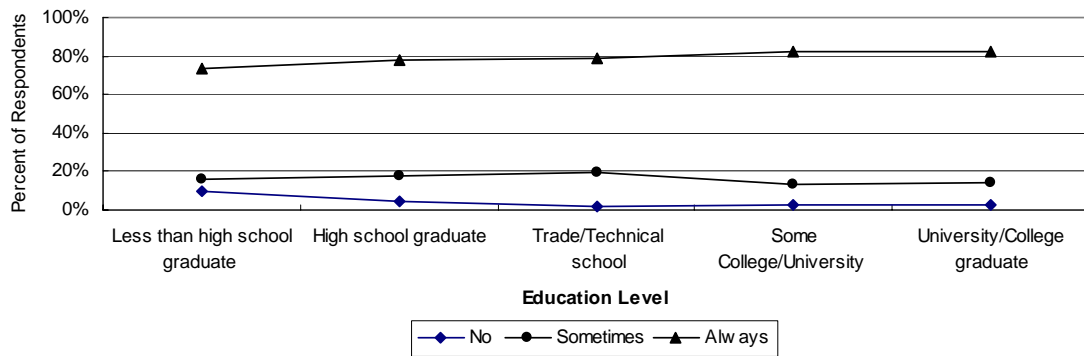
Figure 5.22 Propensity to Read OTC Medicine Package Information When
USING/GIVING a Product for the First Time by Education Level
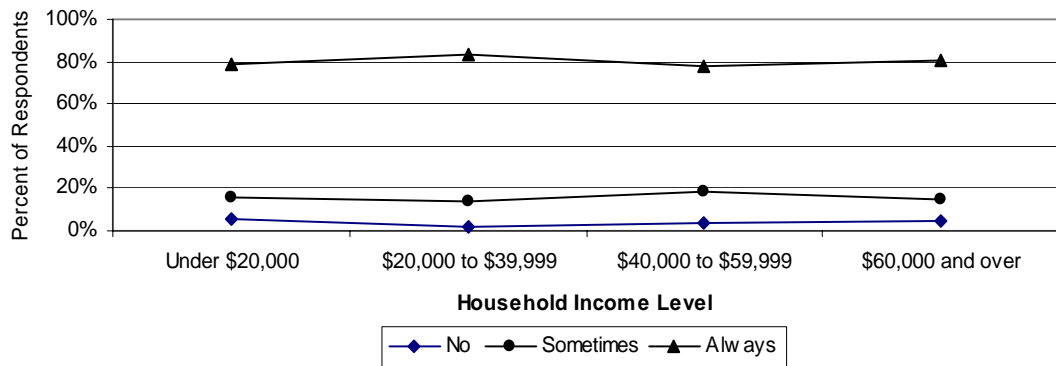
Figure 5.23 Propensity to Read OTC Medicine Package Information When
USING/GIVING a Product for the First Time by Household Income
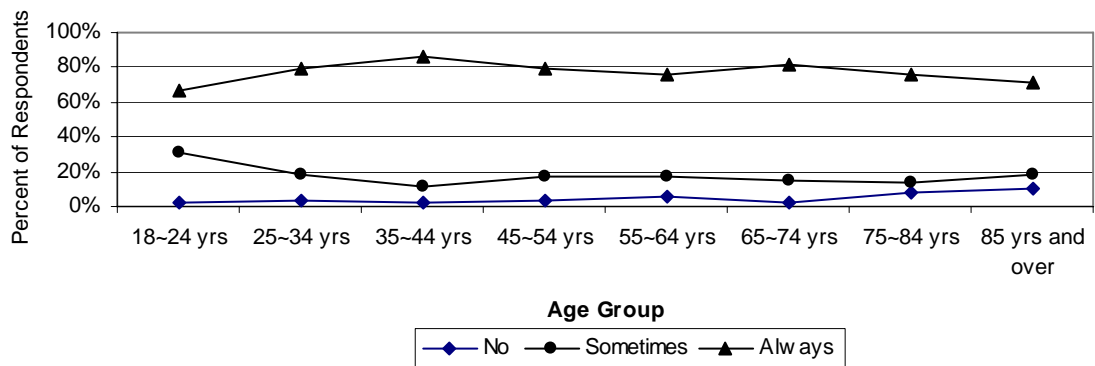
Figure 5.24 Propensity to Read OTC Medicine Package Information When
USING/GIVING a Product for the First Time by Age

Regarding the types of information participants would read, six options were provided on the questionnaire – *Directions for use*, *Symptom(s) it treats*, *Warnings*, *Active ingredient(s)*, *Possible side effects*, and *Other*. Participants were asked to check all that applied. However, when respondents indicated they did NOT read information on an OTC medicine's package, they were not required to answer this question. Table 5.16 shows the details of how many information sections consumers would read when buying and using/giving the product for the first time. On average, consumers would read 4.0 sections (SD = 1.3) when they first purchased a specific OTC medicine, and they would read 3.9 sections (SD = 1.4) when they used the product for themselves or gave it to someone else for the first time. With paired t-test analysis, there was a significant difference between the numbers of sections read when buying and using/giving, although this is likely of little practical importance.

Table 5.16 Claims for Information Sections Read by Consumers When **BUYING** and **USING/GIVING** a Product for the First Time

Number of sections selected	BUYING N (%)	USING/GIVING N (%)
One section	54 (4.6%)	104 (9.0%)
Two sections	114 (9.8%)	108 (9.3%)
Three sections	143 (12.3%)	144 (12.5%)
Four sections	283 (24.3%)	272 (23.5%)
Five sections	477 (40.9%)	455 (39.4%)
Six sections	45 (3.9%)	26 (2.2%)
No need to answer	49 (4.2%)	47 (4.1%)
Missing data	37	46

With ANOVA analysis for mean sections claimed to be read by consumers when buying an OTC product for the first time (Table 5.17), there were significant differences between gender and among education levels. Females would read slightly more sections (4.2) than males (3.9), while respondents with higher educational levels (*some college/university* = 4.3; *college/university graduation* = 4.2) would read slightly more

sections on average than would other educational groups (*less than high school graduation* = 3.8; *high school graduation* = 3.9; and *trade/technical school graduation* = 3.8).

Table 5.17 Information Sections on an OTC Product Package That Would be Read by Consumers When **BUYING** a Product for the First Time by Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	29.37	14.68	9.55**
Within groups	1114	1711.60	1.54	
Education level				
Between groups	4	48.14	9.63	6.31*
Within groups	1111	1692.83	1.53	
Household income level				
Between groups	3	3.54	0.88	0.57
Within groups	1112	1736.94	1.56	
Age group				
Between groups	7	20.38	2.91	1.88
Within groups	1108	1696.44	1.55	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	4.02	4.02	2.58
Within groups	1114	1736.94	1.56	

*p < 0.05 **p < 0.001

Statistical analysis with the same test on mean sections read when using/giving an OTC product for the first time revealed no significant differences among demographic subgroups except gender (Table 5.18). It appears women would read slightly more information sections (4.0) than men (3.7).

Table 5.18   Information Sections on an OTC Product Package That Would be Read by Consumers When **USING/GIVING** a Product for the First Time by Demographic Parameters

Variable	df	SS	MS	F
Gender				
Between groups	1	19.66	9.83	5.36*
Within groups	1107	2026.79	1.83	
Education level				
Between groups	4	16.60	3.32	1.80
Within groups	1104	2029.85	1.84	
Household income level				
Between groups	3	5.63	1.41	0.76
Within groups	1105	2040.82	1.85	
Age group				
Between groups	7	24.96	3.57	1.95
Within groups	1101	1993.12	1.83	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	3.32	3.32	1.80
Within groups	1107	2043.13	1.85	

*$p < 0.05$

For respondents who *sometimes/always* read information on the package, most of them would read *Directions for use* when buying and using/giving an OTC product, followed by the *Symptoms it treats, Warnings*, *Possible side effects*, and *Active ingredients* (Table 5.19). Slightly more respondents would read each section (except *Directions for use*) when they purchased an OTC medicine for the first time, compared to first occasion of use/giving the product.

Only a few respondents selected *Other* aspects that would be read when buying ($n = 66$) and using/giving ($n = 47$) an OTC product. These respondents indicated that they would like to know *Dosage* ($n = 19$ when buying the product; $n = 16$ when using it), *Cost* ($n = 18$ when buying the product; $n = 3$ when using it), *Expiry date* ($n = 15$ when buying the product; $n = 11$ when using it), *Age restriction* ($n = 8$ when buying the product; $n = 7$ when using it), *Manufacturer* ($n = 3$ when buying the product; $n = 3$ when

using it), and *Non-medical ingredients* (n = 3 when buying the product; n = 2 when using it).

Table 5.19 Frequency of Each Information Section That Would be Read by Consumers When **BUYING** and **USING/GIVING** an OTC Product for the First Time

	Buying		Using/Giving	
	Yes	No	Yes	No
Information section	N (%)	N (%)	N (%)	N (%)
Directions for use	1077 (96.5%)	39 (3.5%)	1085 (97.8%)	24 (2.2%)
The symptoms it treats	993 (87.0%)	123 (11.0%)	903 (81.4%)	206 (18.6%)
Active ingredients	605 (54.2%)	511 (45.8%)	542 (48.9%)	567 (51.1%)
Warnings	900 (80.6%)	216 (19.4%)	870 (78.4%)	239 (21.6%)
Possible side effects	856 (76.7%)	260 (23.3%)	833 (75.1%)	276 (24.9%)
Other	66 (5.9%)	1050 (94.1%)	47 (4.2%)	1062 (95.8%)

Physicians are a common source of OTC-related information. When asked about this reference, a large number of respondents (n = 357; 29.7 percent) said they *occasionally* asked a medical doctor for advice about OTC medicines, 298 respondents *sometimes* asked, while 22.7 percent (n = 273) *never* asked for such advice (Table 5.20).

Table 5.20 Propensity to Ask a Medical Doctor for Advice on OTC Medicines

Frequency	Number (N)	Percent (%)
Always	106	8.8
Usually	167	13.9
Sometimes	298	24.8
Occasionally	357	29.7
Never	273	22.7
Missing data	1	-

In comparing subgroups of each demographic variable, slightly more females than males claimed to *always* (9.5 percent vs. 8.0 percent) or *usually* (15.8 percent vs. 12.1 percent) ask a doctor's advice about OTC medicines (Figure 5.25). Similarly, slightly fewer females (21.3 percent) *never* asked a doctor for advice than their male counterparts (24.1 percent).
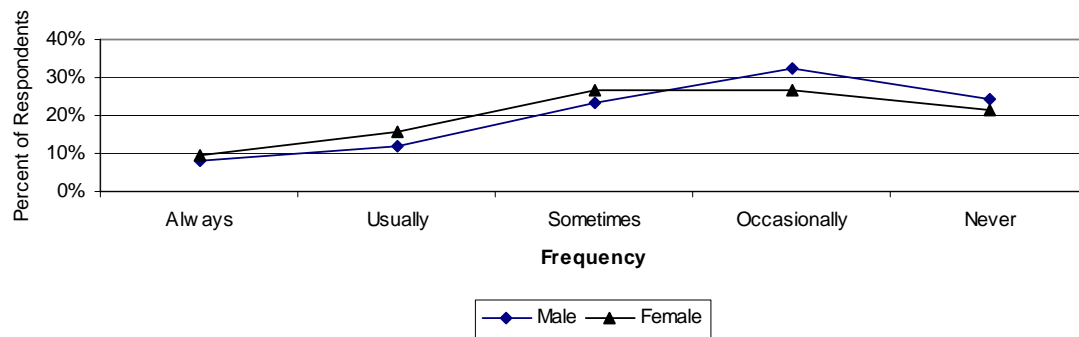
Figure 5.25 Propensity to Ask a Medical Doctor for Advice on OTC Medicines by Gender

Figures 5.26, 5.27, and 5.28 show that respondents who were not parents/guardians of children under 16, who only completed the high school education, or who had lower household incomes were more likely (as expressed by selecting *always* and *usually*) to ask a doctor for advice about OTC medicines. Any pattern for age was more nebulous (see Figure 5.29).
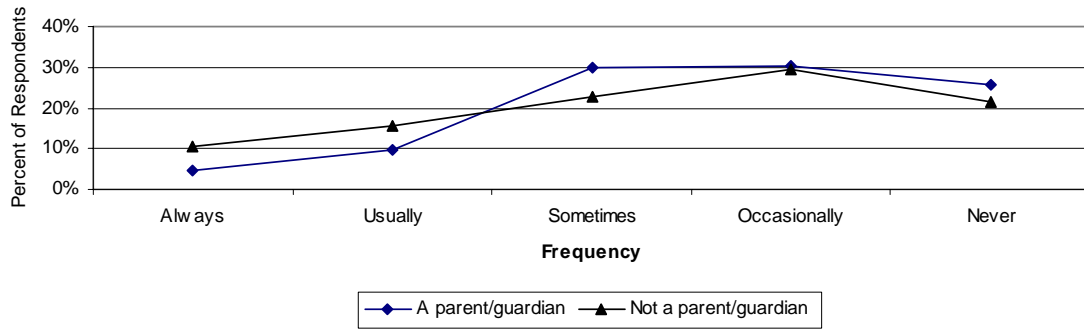
Figure 5.26 Propensity to Ask a Medical Doctor for Advice on OTC Medicines by Parent/Guardian Status
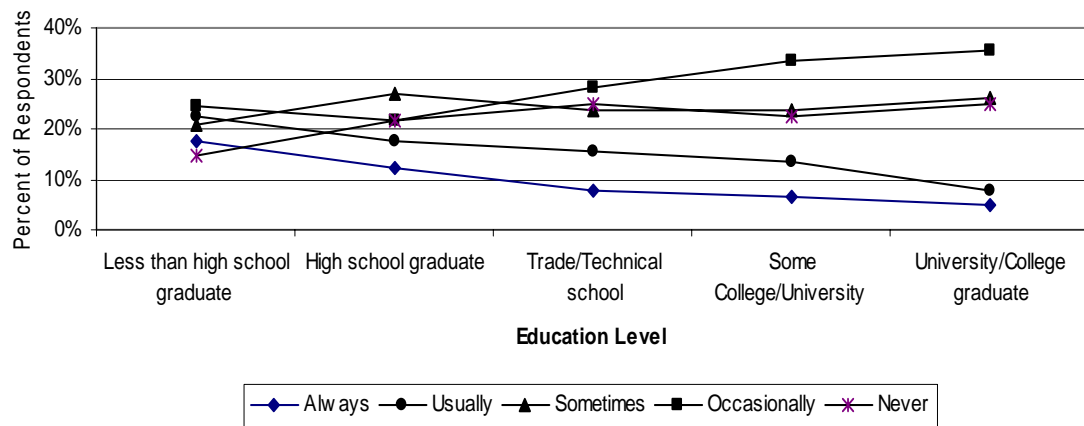
Figure 5.27 Propensity to Ask a Medical Doctor for Advice on OTC Medicines by Education Level
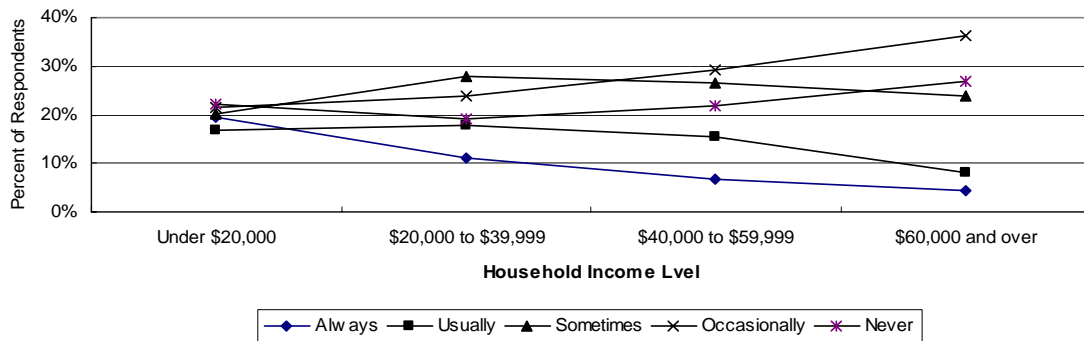
Figure 5.28 Propensity to Ask a Medical Doctor for Advice on OTC Medicines by Household Income
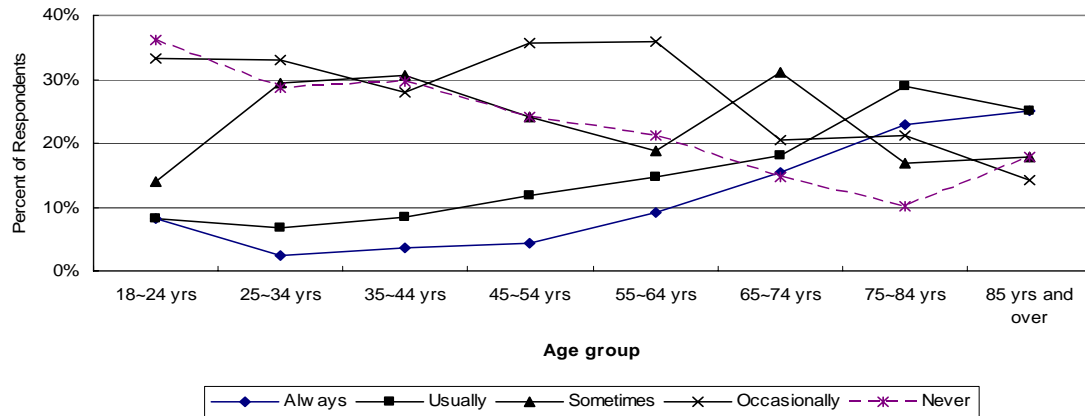
Figure 5.29 Propensity to Ask a Medical Doctor for Advice on OTC Medicines by Age

A second common source of information is that of a pharmacist, who commonly finish in polls as the first or second choice for consumers (along with physicians). For this survey, the majority of respondents (n = 1037; 86.5 percent) had received advice from pharmacists regarding OTC medicines. However, nearly one tenth (n = 109; 9.1 percent) said they had never received such advice. Only a few respondents (n = 53; 4.4 percent) did not remember whether they had received advice about OTC medicines from pharmacists (Table 5.21).

Table 5.21 Percentage of Consumers Who Had Received Advice from Pharmacists
Regarding OTC Medicines

Claim of receiving advice from pharmacist	Number (N)	Percent (%)
Yes	1037	90.5
No	109	9.5

As shown in Figures 5.30, 5.31, 5.32 and 5.33, over 80 percent of respondents in the demographic subgroups of gender, status as a parent/guardian of children under 16, education level and household income had received advice about OTC medicines from pharmacists. There were no apparent important differences among these subgroups.

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However, as seen in Figures 5.34, a lower proportion of respondents in the age group of *18 to 24 years* (67.6 percent) had received advice from pharmacists.
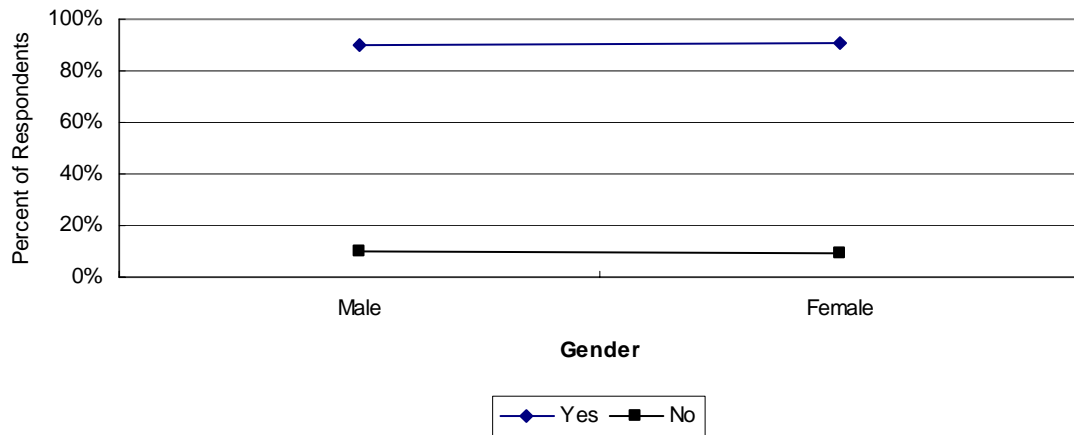
Figure 5.30 Consumer Receipt of Advice from Pharmacists on OTC Medicines by Gender
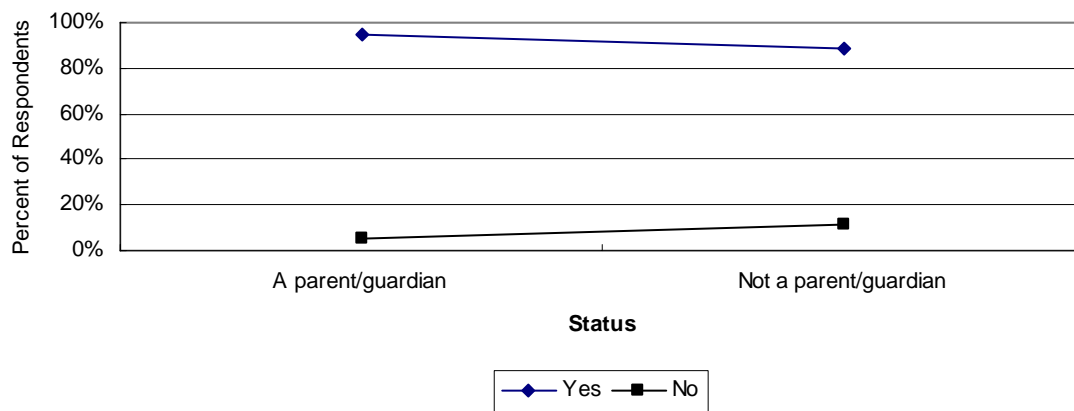
Figure 5.31 Consumer Receipt of Advice from Pharmacists on OTC Medicines by Parent/Guardian Status
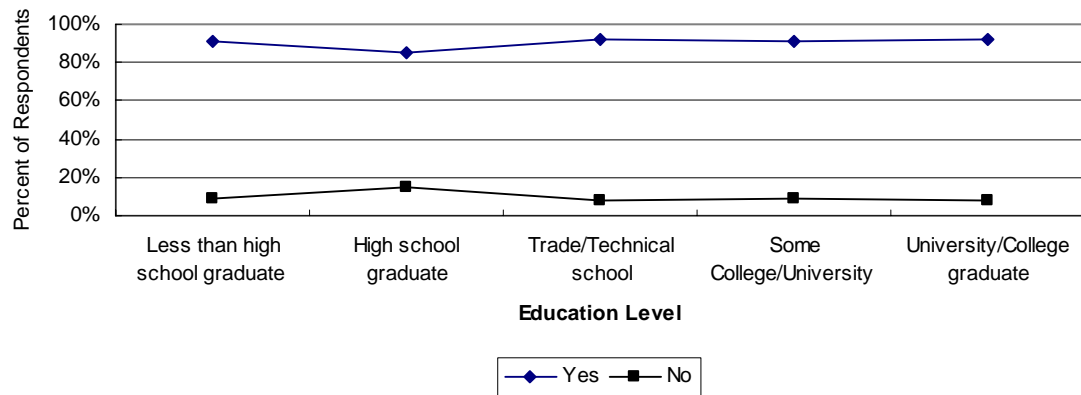
Figure 5.32 Consumer Receipt of Advice from Pharmacists on OTC Medicines by Education Level
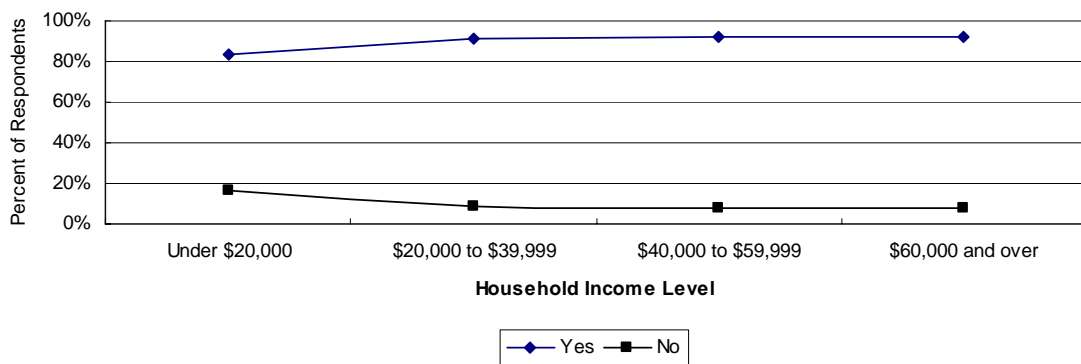
Figure 5.33 Consumer Receipt of Advice from Pharmacists on OTC Medicines by Household Income
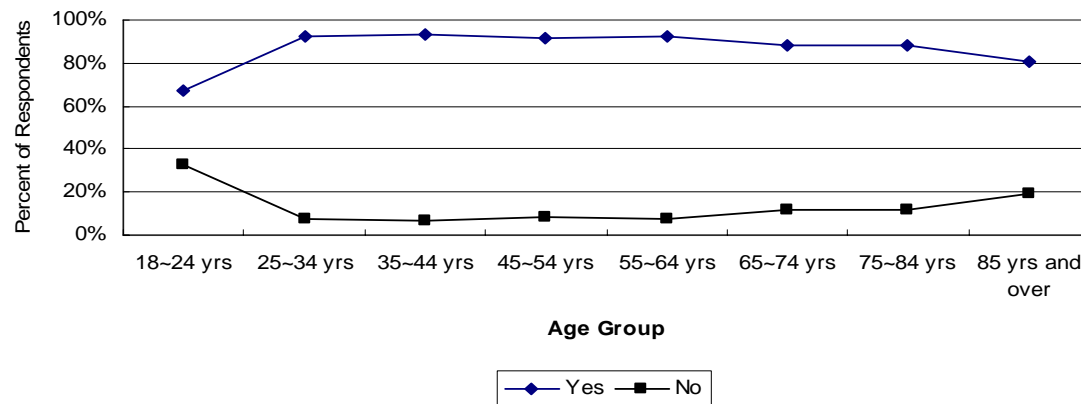
Figure 5.34 Consumer Receipt of Advice from Pharmacists on OTC Medicines by Age

Most respondents (n = 1086; 90.4 percent) would ask pharmacists for advice when buying an OTC product for the first time: 281 respondents (23.4 percent) *always* asked a pharmacist's advice, while 288 (24.0 percent) *usually* would ask. Only one-tenth of respondents (n = 114; 9.5 percent) indicated that they *never* ask for pharmacists' advice on OTC medicines (Table 5.22).

Table 5.22 Propensity to Ask Pharmacists for Advice When Buying OTC Medicines for the First Time

Frequency	Number (N)	Percent (%)
Always	281	23.4
Usually	288	24.0
Sometimes	339	28.3
Occasionally	178	14.8
Never	114	9.5
Missing data	2	-

If respondents did not *always* ask pharmacists for advice when they purchased OTC products for the first time, they were then asked to indicate the two most important reasons why they did not always do so. Accordingly, 281 respondents were not required to answer this question. Another 121 respondents should have answered this section, but did not. A total of 800 respondents did go on to address this issue, providing a total of 1223 selections. However, nearly half (n = 371; 46.3 percent) provided only one reason, not two. Table 5.23 presents the frequency for each reason chosen. Of the choices provided, 569 of the 800 respondents (71.1 percent) selected – *I do not have difficulty in selecting products* – as the most frequent response. This was followed distantly by *I generally receive advice from a doctor* (n = 198; 24.8 percent) and *Pharmacists are too busy to talk to me* (n = 122; 15.3 percent). A lack of trust for pharmacists was not an important reason for these consumers. Forty-four respondents (5.5 percent) indicated reasons other than the ones provided. These reasons included: *I get product information*

from other sources (n = 16; 2.0 percent), *There is usually enough information on the package* (n = 26; 3.3 percent), and *Privacy reasons* (n = 2; 0.3 percent).

Table 5.23 Reasons Consumers Do Not Always Ask a Pharmacist for Advice When
Buying an OTC Medicine for the First Time (N = 800)

Reasons	Number (N)	Percent (%)
I usually forget to ask	89	11.1
I do not have difficulty in selecting products	569	71.1
I am generally buying the product for someone else	45	5.6
I generally receive advice from a doctor	198	24.8
I am usually too busy to stop	91	11.4
Pharmacists are too busy to talk to me	122	15.3
I never buy such products	8	1.0
I do not trust pharmacists	3	0.4
I generally buy OTCs in places other than pharmacies	54	6.8
Other	44	5.5

5.2.5 Minor Illnesses

Nine symptoms known to make up the majority of minor illnesses were listed on the questionnaire. Participants were asked to select all the symptoms they had experienced within a six-month period (February to August 2003) from these nine choices. Table 5.24 presents the details of the number of minor illnesses a consumer experienced in that period. On average, respondents suffered 3.6 different minor symptoms (SD = 1.9).

Table 5.24 Minor Symptoms Experienced by Respondents Within the Past Six Months

Numbers of minor symptoms	Number (N)	Percent (%)
None	42	3.5
One	115	9.6
Two	203	16.9
Three	234	19.5
Four	231	19.2
Five	179	14.9
Six	100	8.3
Seven	61	5.1
Eight	27	2.2
Nine	10	0.8

With ANOVA analysis (Table 5.25), significant differences were seen between gender, parent status, and among age groups. Females experienced slightly more minor symptoms (mean = 3.9; SD = 1.9) than did males (mean = 3.4; SD = 1.9). Parents/guardians suffered slightly more minor symptoms (mean = 4.0; SD = 1.86) than those who without children under 16 at home did (mean = 3.5; SD = 1.92). Interestingly, a trend (Figure 5.35) appeared to be in place where younger respondents suffered more distinct symptoms than their older counterparts. Respondents in the age group of *18 to 24 years* experienced the highest number of different minor symptoms – an average of 5.1 symptoms (SD = 1.8) – in that six-month period, followed by those in the age group of *25 to 34 years* (mean symptoms = 4.3; SD = 2.0), *35 to 44 years* (mean = 3.9; SD = 1.9), *45 to 54 years* (mean = 3.8; SD = 1.8), *55 to 64 years* (mean = 3.5; SD = 1.9), *85 years and over* (mean = 3.4; SD = 2.0), and *75 to 84 years* (mean = 2.9; SD = 1.7). Respondents *65 to 74 years* suffered the fewest, with an average of 2.9 symptoms (SD = 1.9).

Table 5.25 Number of Minor Symptoms Experienced by Consumers Within the Past Six Months by Demographic Parameters

Variables	df	SS	MS	F
Gender				
Between groups	1	69.78	34.89	9.65**
Within groups	1200	4337.24	3.62	
Education level				
Between groups	4	29.01	5.80	1.59
Within groups	1197	4378.02	3.66	
Household income level				
Between groups	3	2.27	0.76	0.21
Within groups	1110	4068.38	3.67	
Age group				
Between groups	7	316.36	45.20	13.20**
Within groups	1194	4044.39	3.43	
Status as parent/guardian of children (under 16 at home)				
Between groups	1	47.56	47.56	13.10**
Within groups	1200	4359.46	3.63	

**$p < 0.001$
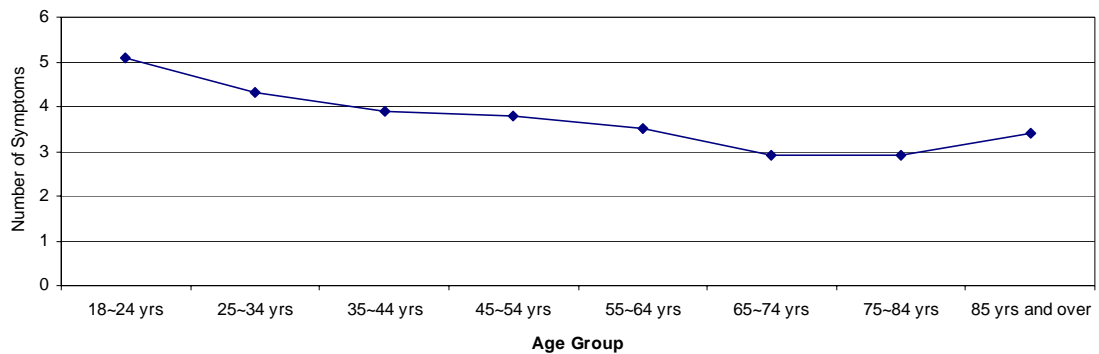
Figure 5.35 Mean Number of Minor Symptoms Experienced by Consumers Within the Past Six Months by Age

From February to August 2003, 96.5 percent of respondents (n = 1160/1202) experienced at least one minor symptom. Of these 1160, 17.1 percent (n = 198) suffered more than six different minor symptoms during those same six months. Figure 5.36 shows the frequency of each symptom consumers personally had experienced in this period. *Headache* (n = 769; 64.0 percent) and *muscle pain* (n = 728; 60.6 percent) were the two most common. Nearly half had experienced *sore backs* (n = 591; 49.2 percent). As part of a potential seasonal influence, *colds/flu* were common (n = 553; 46.0 percent) as were *allergies of the nose/eyes* (n = 418; 34.8 percent). *Constipation* was the least common symptom; only 15.1 percent of respondents (n = 181) experienced this symptom.
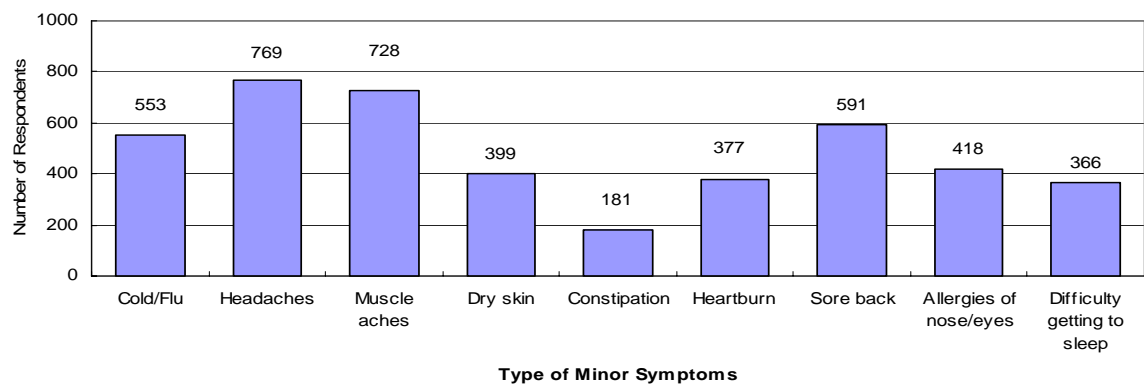
Figure 5.36 Frequency of Each Symptom Experienced by Respondents Within the Past
Six Months

When comparing symptoms by gender (Figure 5.37), it was determined that more women experienced *headaches* (71.0 percent vs 57.1 percent), *dry skin* (38.8 percent vs 27.6 percent), *constipation* (20.6 percent vs 9.6 percent), *allergies of nose/eyes* (37.6 percent vs 32 percent), and *difficulty in getting to sleep* (34.9 percent vs 26.3 percent) than did men. In contrast, *heartburn* was the only symptom where more men than women had experienced the symptom to any significant difference (34.3 percent vs 28.3 percent). For several symptom complexes, such as *colds/flu* (46.8 percent vs 45.1 percent), *muscle aches* (59.1 percent vs 62.0 percent), and *sore back* (48.9 percent vs

87

49.4 percent), similar proportions of males and females had suffered through them during the past six months.
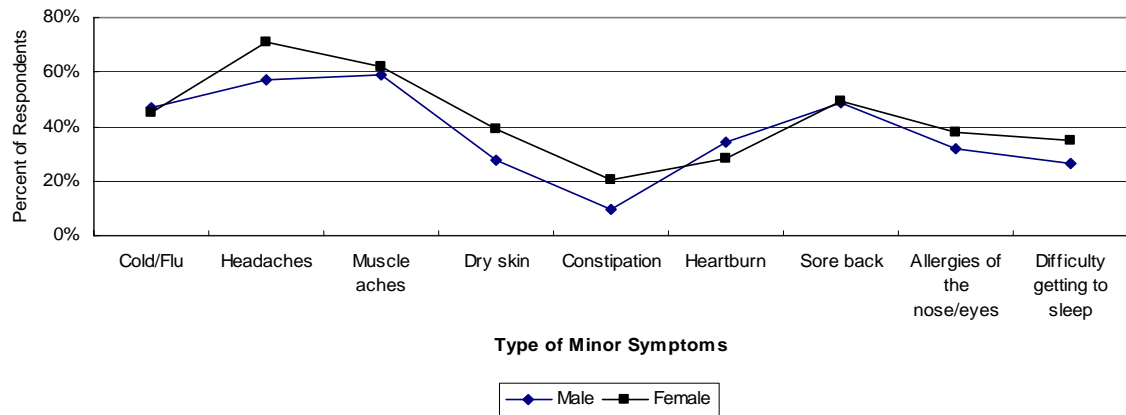
Figure 5.37 Percentage of Male and Female Respondents Who Experienced Each Symptom

Comparing nine symptoms by age groups, apparent trends were found for four symptoms (headaches, dry skin, constipation, and difficulty getting to sleep). Figure 5.38 shows that the proportions of consumers who experienced headaches decreased as age increased. For dry skin, more younger people (18 – 44 years old) suffered from it more than did others. It was apparent that higher proportions of respondents in the oldest age groups experienced constipation more often than other groups did. Twenty to thirty-five percent of respondents in each age group had difficulty in sleeping, except those in the oldest and youngest groupings. More than the half of respondents in these two groups (52.8 percent and 53.6 percent, respectively) had sleeping problems.
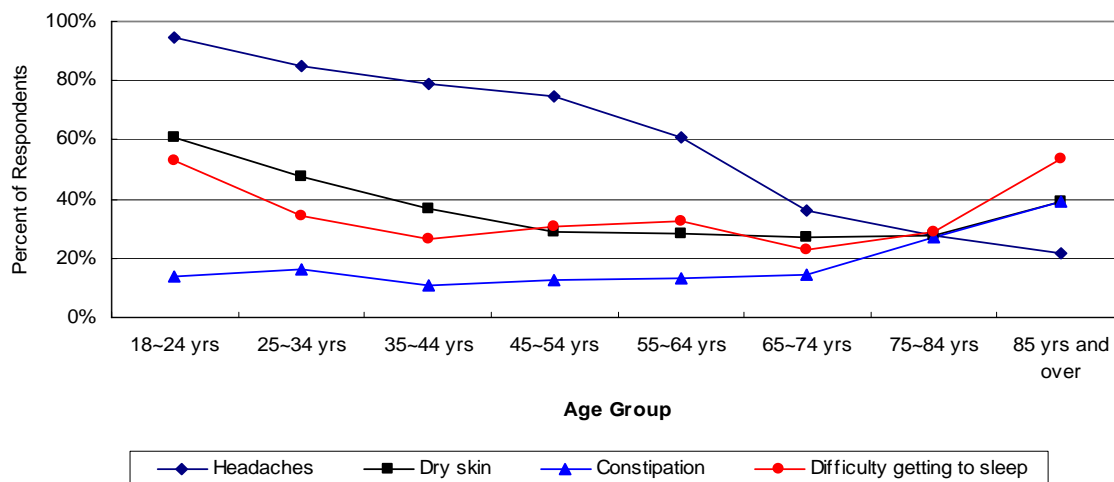
Figure 5.38   The Percentages of Consumers in Each Age Group Who Had Experienced
Headaches, Dry Skin, Constipation and Difficulty Getting to Sleep

5.2.6 OTC Use and Effectiveness

There were ten common types of OTC products listed on the questionnaire, to allow respondents to select ones they personally used in a six-month period. These products were matched with the nine symptoms listed above. The "extra" product not assigned to any given symptom was that of *stop-smoking products*. Table 5.26 shows the details of how many types of OTC medicines respondents used within the past six months. Usually, respondents had taken/used one to three kinds of OTC medicines. A few respondents (n = 71; 5.8 percent) had used more than five OTC medicines. About the same number of participants (n = 85; 7.1 percent) had not taken any OTC medicines. Overall, respondents used an average of 2.7 types of different OTC products within this period.

Table 5.26 Number of Different Types of OTC Products Used Within the Past Six
        Months

Numbers of different products	Number (N)	Percent (%)
None	85	7.1
One	211	17.6
Two	296	24.6
Three	263	21.9
Four	171	14.2
Five	105	8.7
Six	40	3.3
Seven	25	2.1
Eight	3	0.2
Nine	3	0.2
Ten	0	0.0

As shown in Table 5.27, pain relievers were the most popular product. They
(78.5 percent) were used at least twice as frequently as the next most commonly used
agents. Cold medicines ranked in second place (38.3 percent), followed by dry skin
products (30.7 percent) and upset stomach remedies (27.1 percent).

Table 5.27 Types of OTC Products Consumers Used Within the Past Six Months

Type of OTC medicines	Have used the medicine	
	Yes N (%)	No N (%)
Cold remedies	460 (38.3%)	742 (61.7%)
Cough remedies	312 (26.0%)	890 (74.0%)
Pain relievers	944 (78.5%)	258 (21.5%)
Anti-histamines	314 (26.1%)	888 (73.9%)
Sleeping aids	104 (8.7 %)	1098 (91.3%)
Stop smoking products	58 (4.8%)	1144 (95.2%)
Upset stomach remedies	326 (27.1%)	876 (72.9%)
Laxatives	121 (10.1%)	1081 (89.9%)
Dry skin products	369 (30.7%)	833 (69.3%)
Sore muscle rubs	252 (21.0%)	950 (79.0%)

If participants indicated that they had used any medicines on the list within the past six months, they were then asked their opinions on the effectiveness of that medicine. The scale used to determine whether the agent worked for them ranged from 1 (strongly disagree) to 5 (strongly agree). For all types of OTC medicines presented, mean effectiveness scores were above 3. Mean scores for several types were in fact above 4, such as pain relievers (4.1), antihistamines (4.0), upset stomach remedies (4.0), and laxatives (4.1). Over 80.0 percent of the users of these types of medicines (pain relievers = 90.4 percent; antihistamines = 80.9 percent; upset stomach remedies = 84.7 percent; and laxatives = 88.4 percent) reported that they *agreed* or *strongly agreed* with the statement -- *I found that the medicine worked for me.* Less support was evident for sleeping aids and stop-smoking products. Further details are shown in Table 5.28.

Table 5.28 Perceived Effectiveness of Each Type of OTC Medicine

Type of Medicine	Strongly Disagree N (%)	Disagree N (%)	Unsure N (%)	Agree N (%)	Strongly Agree N (%)	Mean (SD)
Cold remedies	8 (1.7)	20 (4.4)	80 (17.4)	315 (68.5)	36 (7.8)	3.76 (0.7)
Cough remedies	10 (3.2)	24 (7.7)	48 (15.4)	196 (62.8)	32 (10.3)	3.70 (0.9)
Pain relievers	9 (1.0)	23 (2.4)	53 (5.6)	628 (66.5)	225 (23.8)	4.11 (0.7)
Anti histamines	3 (1.0)	8 (2.6)	44 (14.0)	184 (58.6)	70 (22.3)	4.00 (0.8)
Sleeping aids	9 (8.7)	14 (13.5)	17 (16.4)	53 (51.0)	11 (10.6)	3.41 (1.1)
Stop-smoking products	8 (13.8)	9 (15.5)	13 (22.4)	23 (39.7)	4 (6.9)	3.11 (1.2)
Upset stomach remedies	0 (0.0)	11 (3.4)	37 (11.4)	207 (63.5)	69 (21.2)	4.03 (0.7)
Laxatives	1 (0.8)	2 (1.7)	9 (7.5)	74 (61.2)	33 (27.3)	4.14 (0.7)
Dry skin products	2 (0.5)	18 (4.9)	53 (14.4)	239 (64.8)	55 (14.9)	3.89 (0.7)
Sore muscle rubs	4 (1.6)	15 (5.9)	47 (18.7)	151 (59.9)	34 (13.5)	3.78 (0.8)

Effectiveness as measured by statement –– "I found that the medicine worked for me."
Scale: 1 (Strongly disagree) to 5 (Strongly agree).

5.2.7 Consumer Impressions of Care Needed When Using OTC Medicines

In this section, seven statements related to OTC medicines were included: four were worded with a positive slant (statements 2, 5, 6, and 7), while three were negatively-worded (statements 1, 3, and 4). Participants were asked to quantify their opinions on each by using a scale from 1 (strongly disagree) to 5 (strongly agree). Table 5.29 presents the frequency data and mean scores of public opinion for each item. For statements 2, 5, and 6, a high percentage of respondents either *agreed* or *strongly agreed* that: *When taking an OTC medicine, I should be careful with it* (95.0 percent); *Taking some prescription medicines with certain OTC medicines can cause problems* (87.7 percent); and *It can be dangerous to take certain OTC medicines if I have other medical conditions* (88.7 percent). However, when asked about the statement -- *Generally, I find prescription medicines to be more effective than OTC medicines* -- only about half of respondents (56.2 percent) *agreed* or *strongly agreed*, with nearly one-third (31.4 percent) not being sure about their opinions.

Regarding statements with negative wording, 81.2 percent of respondents *disagreed* or *strongly disagreed* with Statement 4 (*OTC medicines are safe to take at higher than recommended doses*); less than 10.0 percent *agreed* or *strongly agreed* with it. About half of participants *disagreed* or *strongly disagreed* with both of the following statements*: It is generally safe to take more than one OTC medicine at a time* (45.9 percent) and *OTC medicines rarely cause side effects* (52.3 percent). Given the phrasing of the items, this inversely indicated the need for a degree of care on the part of medicine users. It should be noted that a sizeable percentage of respondents *agreed* or *strongly agreed* with both these statements (29.0 percent and 21.8 percent, respectively).

Table 5.29 Impressions of Care Needed Regarding Use of OTC Medicines

Statements	Strongly Disagree N (%)	Disagree N (%)	Unsure N (%)	Agree N (%)	Strongly Agree N (%)	Mean (SD)
1. It is generally safe to take more than one OTC medicine at a time.	134 (11.1)	418 (34.8)	301 (25.0)	319 (26.5)	30 (2.5)	2.74 (1.1)
2. When taking an OTC medicine, I should be careful with it.	11 (0.9)	18 (1.5)	31 (2.6)	746 (62.1)	396 (32.9)	4.25 (0.7)
3. OTC medicines rarely cause side effects.	155 (12.9)	473 (39.4)	311 (25.9)	242 (20.1)	21 (1.7)	2.58 (1.0)
4. OTC medicines are safe to take at higher than recommended doses.	435 (36.2)	541 (45.0)	116 (9.7)	82 (6.8)	28 (2.3)	1.94 (0.7)
5. Taking some prescription medicines with certain OTC medicines can cause problems.	11 (0.9)	15 (1.2)	121 (10.1)	593 (49.3)	462 (38.4)	4.23 (0.8)
6. It can be dangerous to take certain OTC medicines if I also have other medical conditions.	19 (1.6)	16 (1.3)	101 (8.4)	558 (46.4)	508 (42.3)	4.26 (0.8)
7. Generally, I find prescription medicines to be more effective than OTC medicines.	20 (1.7)	129 (10.7)	377 (31.4)	481 (40.0)	195 (16.2)	3.58 (0.9)

Scale: 1 (Strongly disagree) to 5 (Strongly agree).

Analysis of internal consistency for these seven statements produced a Cronbach's alpha of 0.5. Item correlation scores revealed that six statements (statements 1 to 6) had significant relationships with each other. However, statement 7 did not correlate well with statements 1, 2, 3, and 4. Accordingly, when Statement 7 was removed, the internal consistency of the remaining items improved (Cronbach's alpha = 0.6).

To create an overall attitude score to reflect the care required during OTC medicine usage, a sum score of all statements for each respondent was calculated. Before assigning such scores, values obtained for statements 1, 3, and 4 were reversed, while all scores for statement 7 were excluded. For this global attitude score, a minimum of 6 (if a respondent chose "1" on the scale for all six items) and a maximum of 30 (if a respondent chose "5" on the scale for all six items) was possible. Higher numbers represent impressions of increasing care needed. Figure 5.39 shows the frequency of each global score. The sum scores ranged from 13 to 30, with a mean sum score of 23.5 (SD = 3.1).
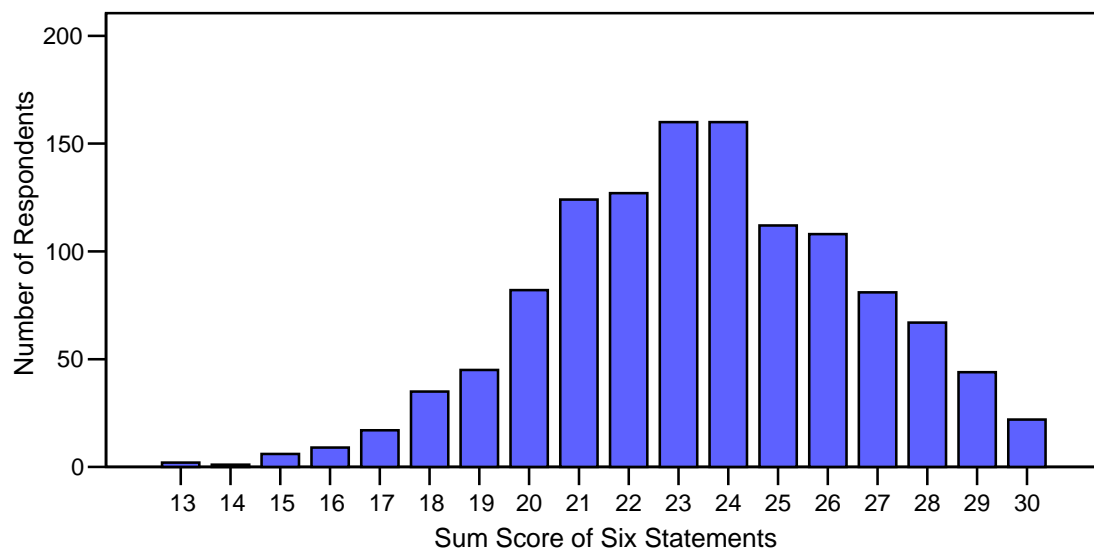
Figure 5.39 Frequency of Global Scores to Reflect Care Needed During OTC Medicine Use

For subsequent analysis, all respondents were separated into two groups on this issue. Participants whose sum scores were ≥ 24 were arbitrarily called the group that felt OTC medicine use had *high care demands*. That said, a score of 24 was the number which constituted an average of 4 (agree item) for each of six items. Those whose sum scores were ≤ 12 were (again arbitrarily) considered the group reflecting *low care demands*. A score of 12 was the total of an average of 2 (disagree item) for each of 6 items. No respondents fell into the group arbitrarily called low care demands. Nearly half of respondents (n = 594; 49.4 percent) had impressions that suggested OTC medicines required some degree of care during their use.

5.2.8 Consumers' Impressions of Pharmacists

Nine statements were created to determine public impressions of pharmacists, including five positively-worded statements (items 1, 2, 5, 6, and 7) and four negatively-worded statements (items 3, 4, 8, and 9). Participants were asked to select a number on a scale [scale range of 1 (strongly disagree) to 5 (strongly agree)] that best described their opinion for each statement. Table 5.30 presents the frequency and mean scores for the responses obtained. Mean scores for each of the five positive statements were high. Accordingly, most respondents *agreed* or *strongly agreed* that: *pharmacists were friendly* (n = 1115; 92.8 percent); *pharmacists had knowledge to deal with minor symptoms* (n = 1089; 90.6 percent); *pharmacists seemed to care about health concerns* (n = 1052; 87.5 percent); and *pharmacists usually spent as much time as necessary with consumers* (n = 1003; 83.4 percent). For items negatively-phrased, positive impressions of pharmacists would manifest with disagreement with the statement. This was seen – over 90 percent of respondents *disagreed/strongly disagreed* that: *pharmacists were not trustworthy* (n = 1144; 95.2 percent); *pharmacists lacked the necessary knowledge to deal with helping people to select OTC products* (n = 1087; 90.4 percent); and *pharmacists seemed unwilling to help* (n = 1084; 90.2 percent). However, 15.9 percent of respondents (n = 191) thought that *pharmacists were too busy to help them*. Quite a high number of respondents (n = 163; 13.6 percent) were also not sure that *pharmacists encouraged safe and effective OTC medicine use*.

Table 5.30 Consumers' Impressions of Pharmacists (N = 1202)

Statement	Strongly Disagree N (%)	Disagree N (%)	Unsure N (%)	Agree N (%)	Strongly Agree N (%)	Mean (SD)
1. Pharmacists seem to care about my health concerns.	4 (0.3)	25 (2.1)	121 (10.1)	790 (65.7)	262 (21.8)	4.07 (0.7)
2. Pharmacists usually spend as much time as necessary with me.	7 (0.6)	81 (6.7)	111 (9.2)	761 (63.3)	242 (20.1)	3.96 (0.8)
3. Pharmacists are not trustworthy.	550 (45.8)	594 (49.4)	42 (3.5)	6 (0.5)	10 (0.8)	1.61 (0.7)
4. Pharmacists seem unwilling to help.	469 (39.0)	615 (51.2)	53 (4.4)	49 (4.1)	16 (1.3)	1.78 (0.9)
5. Pharmacists are friendly.	4 (0.3)	18 (1.5)	65 (5.4)	827 (68.8)	288 (24.0)	4.15 (0.6)
6. Pharmacists encourage safe and effective OTC medicine use.	5 (0.4)	18 (1.5)	163 (13.6)	724 (60.2)	292 (24.3)	4.06 (0.7)
7. Pharmacists have the knowledge to deal with my minor symptoms.	7 (0.6)	9 (0.7)	97 (8.1)	788 (65.6)	301 (25.0)	4.14 (0.6)
8. Pharmacists lack the knowledge necessary to help me select an OTC product.	439 (36.5)	648 (53.9)	73 (6.1)	25 (2.1)	17 (1.4)	1.78 (0.8)
9. Pharmacists are often too busy to help me.	245 (20.4)	621 (51.7)	145 (12.1)	160 (13.3)	31 (2.6)	2.26 (1.0)

Scale: 1 (Strongly disagree) to 5 (Strongly agree).

Analysis of internal consistency for the nine statements revealed a Cronbach's alpha of 0.8.

For a general impression of pharmacists as viewed by the public, a sum score of all statements (for each respondent) was calculated. Before doing so, the scores for the negatively-worded items (statements 3, 4, 8, and 9) were reversed. The frequency of each sum score is shown in Figure 5.40. A minimum score of 9 (selecting "1" for all nine items) and a maximum score of 45 (selecting "5" for all nine items) was possible for this battery of items. The sum scores ranged from 18 to 45, with the mean sum score being 37.0 (SD = 4.2).
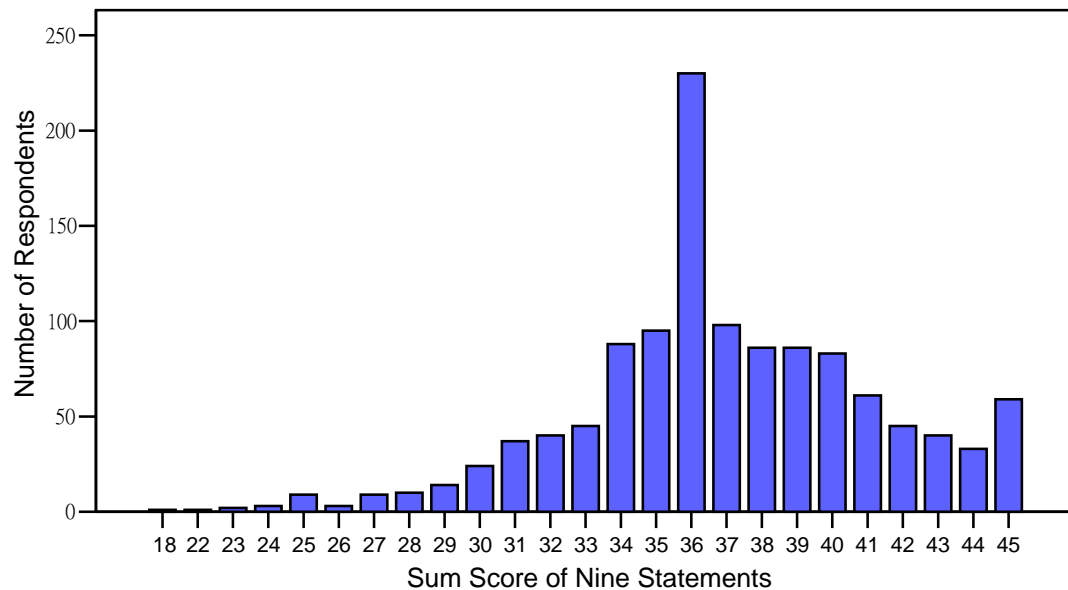
Figure 5.40 Frequency of Each Sum Score for the Impression of Pharmacists

For subsequent analysis, all respondents were separated into two groups on this issue. Participants whose sum scores were ≥ 36 were arbitrarily called the group that had a positive impression of pharmacists. A score of 36 was in fact the number which would be attained if an average of 4 (agree item) was selected for each of 9 items. Those whose sum scores were ≤ 18 were placed in the group with a so-called negative impression of pharmacists. Similarly to the process just described, a score of 18 was the total of an

average of 2 (disagree item) for each of 9 items. The majority of respondents (n = 821; 68.3%) had very positive impressions of pharmacists; only one person (0.1%) held the opposite impression.

5.2.9 Consumer Expectations of OTC Medicines According to Location of Sale

The main section of the questionnaire was designed to differentiate product attributes according to location of sale (if any in fact exist). Specifically we were interested in whether the public considers OTC products differently across various criteria. Respondents were asked to provide their opinions for each of ten product-specific expectations relative to OTC medicines, based on where that product could be purchased – in a convenience store or a pharmacy. In other words, for such medicines in general, does the public expect those found in pharmacies to be more effective, for example, than their counterparts in convenience stores? Tables 5.31 and 5.32 present frequency data for each of ten expectations for products purchased at either of the locations.

Regarding expectations of product attributes for OTC medicines sold <u>from a convenience store</u>, a majority of respondents expected (defined as selecting *somewhat agree* or higher) that such medicines should be *safe* (83.5 percent), *effective* (76.2 percent), to *come with a lot of information on the package* (88.6 percent), and *should have very few side effects when used* (65.3 percent). Slightly over half of respondents (58.1 percent) thought that OTC medicines sold in convenience stores should be less effective than prescription medicines, but still should be of good quality. The *potency* of medicine was an attribute where expectations were less demanding – 54.2 percent of respondents disagreed that OTC medicines should be potent when sold in convenience stores. Slightly over 40 percent (40.6) of respondents expected to purchase OTC medicines with low prices in convenience stores. Only 11.4 percent expected to find a *good selection of products* in convenience stores, nor did they expect to have *access to professional help* (14.9 percent).

On the other hand, regarding expectations of product attributes for OTC items sold <u>from a pharmacy</u>, approximately 90.0 percent of respondents expected (defined as

selecting *somewhat agree* or higher) that such medicines should be *safe* (92.1 percent), *effective* (89.0 percent), and to *come with a lot of information on the packages* (93.8 percent). As well, they felt pharmacies should stock medicines of *good quality* (97.6 percent). They also expected pharmacies to *provide professional help* (96.0 percent) and to *carry a variety of OTC products* (98.2 percent). Approximately three quarters (71.8 percent) of respondents believed that pharmacies could offer low prices on OTC medicines. A lower percentage of respondents (68.8 percent) expected that OTC medicines should have very few *side effects*. When asked about the potency of OTC products, only 56.0 percent of respondents *somewhat to strongly agreed* that such medicines should be *potent*; 27.1 percent selected the *neutral* option on the scale for this item. Just over half of respondents thought OTC medicines sold in pharmacies should be less effective than prescription medicines.

Table 5.31 Consumer Expectations of OTC Medicines Sold in **Convenience Stores**

Item	Strongly Disagree N (%)	Disagree N (%)	Somewhat Disagree N (%)	Neutral N (%)	Somewhat Agree N (%)	Agree N (%)	Strongly Agree N (%)
1. I expect a good selection of OTC medicines.	196 (16.3)	327 (27.2)	248 (20.6)	293 (24.4)	70 (5.8)	40 (3.3)	28 (2.3)
2. I expect OTC medicines to be effective.	10 (0.8)	24 (2.0)	34 (2.8)	218 (18.1)	271 (22.5)	435 (36.2)	210 (17.5)
3. I expect OTC medicines to be safe.	15 (1.2)	20 (1.7)	26 (2.2)	137 (11.4)	170 (14.1)	416 (34.6)	418 (34.8)
4. I expect a lot of information on the package.	12 (1.0)	9 (0.7)	16 (1.3)	100 (8.3)	141(11.7)	471 (39.2)	453 (37.7)
5. I expect OTC medicines to be potent.	62 (5.2)	97 (8.1)	116 (9.7)	376 (31.3)	248 (20.6)	219 (18.2)	84 (7.0)
6. I expect OTC medicines to have very few side effects.	39 (3.2)	61 (5.1)	84 (7.0)	226 (18.8)	261 (21.7)	357 (29.1)	174 (14.5)
7. I expect low prices on OTC medicines.	139 (11.6)	190 (15.8)	136 (11.3)	249 (20.7)	179 (14.9)	174 (14.5)	135 (11.2)
8. I expect OTC medicines to be less effective than prescription medicines.	62 (5.2)	98 (8.2)	95 (7.9)	249 (20.7)	216 (18.0)	334 (27.8)	148 (12.3)
9. I expect professional help.	541 (45.0)	250 (20.8)	100 (8.3)	132 (11.0)	32 (2.7)	59 (4.9)	88 (7.3)
10. I expect to find good quality products.	51 (4.2)	122 (10.1)	148 (12.3)	247 (20.5)	166 (13.8)	228 (19.0)	240 (20.0)

Scale: 1 (Strongly disagree) to 7 (Strongly agree).

Table 5.32 Consumer Expectations of OTC Medicines Sold in **Pharmacies**

Items	Strongly Disagree N (%)	Disagree N (%)	Somewhat Disagree N (%)	Neutral N (%)	Somewhat Agree N (%)	Agree N (%)	Strongly Agree N (%)
1. I expect a good selection of OTC medicines.	0 (0.0)	1 (0.1)	0 (0.0)	20 (1.7)	30 (2.5)	384 (31.9)	767 (63.8)
2. I expect OTC medicines to be effective.	1 (0.1)	2 (0.2)	6 (0.6)	123 (10.2)	239 (19.9)	521 (43.3)	310 (25.8)
3. I expect OTC medicines to be safe.	7 (0.6)	7 (0.6)	12 (1.0)	70 (5.8)	145 (12.1)	442 (36.8)	519 (43.2)
4. I expect a lot of information on the package.	5 (0.4)	5 (0.4)	5 (0.4)	59 (4.9)	123 (10.2)	489 (40.7)	516 (42.9)
5. I expect OTC medicines to be potent.	47 (3.9)	71 (5.9)	84 (7.0)	326 (27.1)	259 (21.5)	278 (23.1)	137 (11.4)
6. I expect OTC medicines to have very few side effects.	27 (2.2)	61 (5.1)	81 (6.7)	206 (17.1)	273 (22.7)	352 (29.3)	202 (16.8)
7. I expect low prices on OTC medicines.	16 (1.3)	23 (1.9)	54 (4.5)	247 (20.5)	309 (25.7)	336 (28.0)	217 (18.1)
8. I expect OTC medicines to be less effective than prescription medicines.	56 (4.7)	103 (8.6)	82 (6.8)	210 (17.5)	227 (18.9)	352 (29.3)	172 (14.3)
9. I expect professional help.	4 (0.3)	2 (0.2)	6 (0.5)	36 (3.0)	71 (5.9)	407 (33.9)	676 (56.2)
10. I expect to find good quality products.	1 (0.1)	1 (0.1)	3 (0.2)	23 (1.9)	75 (6.2)	426 (35.4)	673 (56.0)

Scale: 1 (Strongly disagree) to 7 (Strongly agree).

In Canada, OTC medicines can (to varying degrees) be sold from various retail outlets. Based on location of sale, consumers may have grown to have different expectations for the products at each. When comparing respondents' expectations for OTC medicines as sold in two different locations (convenience stores versus pharmacies), the Wilcoxon Signed Ranks Test was employed because the distribution of each expectation was skewed. Statistically significant differences existed for each of ten expectations across the two locations (Table 5.33).

The null hypotheses of this study were as follows:

1) There is no difference in public expectations of OTC medicine *potency* in relation to place of sale (pharmacy vs. convenience store);

2) There is no difference in public expectations of OTC medicine *safety* in relation to place of sale (pharmacy vs. convenience store);

3) There is no difference in public expectations of OTC medicine *side effects* in relation to place of sale (pharmacy vs. convenience store);

4) There is no difference in public expectations of OTC medicine *effectiveness* in relation to place of sale (pharmacy vs. convenience store);

5) There is no difference in public expectations for *information appearing on OTC medicine packaging* in relation to place of sale (pharmacy vs. convenience store).

Therefore, according to the results shown in Table 5.33, these five hypotheses were all rejected. However, expectation differences for OTC product *potency*, *safety*, *effectiveness*, *potential for side effects*, and *package information* may not have reached practical importance.

Table 5.33 Difference in Public Expectations of OTC Medicines Between Two
Locations: Convenience Stores versus Pharmacies

Item	Convenience store Mean (SD)	Pharmacy Mean (SD)	Difference [a] in Mean	Z score [b]
1. I expect a good selection of OTC medicines.	3.0 (1.44)	6.6 (0.64)	- 3.6	- 29.34**
2. I expect OTC medicines to be effective.	5.4 (1.24)	5.8 (0.96)	- 0.4	- 14.67**
3. I expect OTC medicines to be safe.	5.8 (1.29)	6.1 (1.05)	- 0.3	- 11.82**
4. I expect a lot of information on the packages.	6.0 (1.15)	6.2 (0.95)	- 0.2	- 8.51**
5. I expect OTC medicines to be potent.	4.4 (1.52)	4.7 (1.52)	- 0.3	- 11.42**
6. I expect OTC medicines to have very few side effects.	5.0 (1.52)	5.1 (1.49)	- 0.1	- 5.10**
7. I expect low prices on OTC medicines.	4.0 (1.88)	5.2 (1.31)	- 1.2	- 19.15**
8. I expect OTC medicines to be less effective than prescription medicines.	4.7 (1.66)	4.8 (1.67)	- 0.1	- 5.40**
9. I expect professional help.	2.5 (1.89)	6.4 (0.86)	- 3.9	- 27.93**
10. I expect to find good quality products.	4.7 (1.78)	6.4 (0.75)	- 1.7	- 23.77**

**$p < 0.001$
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mean score of *Convenience Stores* minus Mean score of *Pharmacies*
[b] Wilcoxon Signed Ranks Test

Further analyses were made in order to examine variables that might influence consumer expectations. To do this, the mean differences for the ten attributes as they apply to products both in pharmacies and convenience stores were calculated. Mann-Whitney and Kruskal-Wallis Test were then employed to compare subgroups for several variables. The variables chosen for comparison were *consumer awareness of product availability*, *previous purchase experience*, *previous product use*, *side effect history*, and *demographic characteristics* (eg. gender, age group, education level, and household income level).

Of all subjects surveyed, some were unaware that OTCs could be purchased in convenience stores. This awareness (or lack thereof) of product availability in convenience stores may have relevance to consumer behaviour. In other words, these consumers may expect agents at those locations to be much weaker or far safer than their pharmacy counterparts. To assess this, respondents were grouped as either aware (*YES* group) or not aware (*NO* group) that OTC medicines could be purchased from convenience stores. The two groups had significantly different expectations (Table 5.34). The differences across all ten expectations were small, however, ranging from 0.09 to 0.57. It should be noted that the *mean of difference* column, the value reflects a calculation of the attribute score expected of pharmacies (along the seven-point scale) minus the score for the same attribute expected in convenience stores. This approach was taken for all 10 attributes in both the *YES* and *NO* columns. Larger values, therefore, reflect greater expectations for pharmacy-based products over convenience stores. Using the first attribute (ie, *I expect a good selection*) as an example, the *YES* group (at 3.66) appear to expect more out of pharmacy-based products than the *NO* group (at 3.48).

Consumers had different history with respect to purchasing OTC medicines from convenience stores; some had done so while others had not. With these two groups separated as the point of interest, significant differences were found for five attributes, namely product *effectiveness*, *safety*, *package information*, *potentials of side effects*, and *professional help* (Table 5.35). There were no significant differences on the other five items. The differences across the ten attributes ranged from 0.03 to 0.28.

Table 5.34   Difference in Public Expectations According to Awareness That OTC
Medicines Could be Purchased in Convenience Stores

Item	Awareness of OTC product availability in convenience stores		Z score [b]
	YES N = 970 Mean of Difference [a] (SD)	NO N = 224 Mean of Difference [a] (SD)	
1. I expect a good selection of OTC medicines.	3.66 (1.61)	3.48 (1.78)	- 1.41
2. I expect OTC medicines to be effective.	0.40 (0.94)	0.66 (1.19)	- 3.57**
3. I expect OTC medicines to be safe.	0.29 (0.90)	0.50 (1.12)	- 3.68**
4. I expect a lot of information on the packages.	0.18 (0.80)	0.30 (1.00)	- 1.86
5. I expect OTC medicines to be potent.	0.32 (0.95)	0.47 (1.15)	- 1.66
6. I expect OTC medicines to have very few side effects.	0.08 (0.65)	0.22 (0.96)	- 2.02*
7. I expect low prices on OTC medicines.	1.32 (1.87)	0.91 (1.68)	- 3.25*
8. I expect OTC medicines to be less effective than prescription medicines.	0.08 (0.70)	0.24 (1.03)	- 3.79**
9. I expect professional help.	4.01 (2.09)	3.45 (2.21)	- 3.59**
10. I expect to find good quality products.	1.76 (1.81)	1.85 (1.82)	- 0.52

*p < 0.05 ; **p < 0.001
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mean of Difference = the expectation score for *Pharmacies* minus the expectation
  score for *Convenience Stores*
[b] Mann-Whitney Test

Table 5.35   Difference in Public Expectations According to Consumer Experience with Purchasing OTCs from a Convenience Store

Item	Consumer Had Purchased OTCs from a Convenience Store		Z score [b]
	YES N = 507 Mean of Difference [a] (SD)	NO N = 632 Mean of Difference [a] (SD)	
1. I expect a good selection of OTC medicines.	3.59 (1.57)	3.63 (1.69)	- 0.45
2. I expect OTC medicines to be effective.	0.30 (0.75)	0.58 (1.15)	- 3.59**
3. I expect OTC medicines to be safe.	0.22 (0.73)	0.42 (1.09)	- 2.57*
4. I expect a lot of information on the packages.	0.12 (0.62)	0.27 (0.96)	- 2.0*
5. I expect OTC medicines to be potent.	0.28 (0.87)	0.40 (1.09)	- 1.88
6. I expect OTC medicines to have very few side effects.	0.05 (0.61)	0.13 (0.78)	- 2.03*
7. I expect low prices on OTC medicines.	1.31 (1.88)	1.16 (1.83)	- 1.24
8. I expect OTC medicines to be less effective than prescription medicines.	0.09 (0.61)	0.15 (0.90)	- 1.45
9. I expect professional help.	4.05 (2.04)	3.75 (2.17)	- 2.30*
10. I expect to find good quality products.	1.80 (1.77)	1.77 (1.85)	- 0.61

*$p < 0.05$; **$p < 0.001$
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mean of Difference = the expectation score for *Pharmacies* minus the expectation score for *Convenience Stores*
[b] Mann-Whitney Test

The average number of OTC purchases made from convenience stores within a six month period was 1.04. Differences in expectations for convenience store products were examined for participants who purchased OTC products less than two times per six months from convenience stores and for those who made two or more purchases in the same time period (Table 5.36). There were no statistically significant differences for each of the five clinical attributes. Conversely, high frequency OTC buyers from convenience stores had higher expectations to have *a good selection of OTC products* (mean = 3.45) and to get *professional help* (mean = 2.77) in these locations than did low frequency buyers (means of 2.88 and 2.17, respectively).

For the next analysis, respondents purchasing OTC medicines from pharmacies more than four times per six month period were separated from those buying such products four times or fewer. Table 5.37 reveals that the more frequent buyers in pharmacies expected more in finding *good quality products* (mean = 6.55) and in obtaining *professional help* (mean = 6.53) in pharmacies than less frequent buyers (mean of 6.40 and 6.34, respectively). For expectations of the more clinical attributes, there were also no obvious differences between low and high frequency buyers.

As an extension of the above analysis, results presented earlier indicated that the average number of different OTC medicines taken within the past 30 days was 1.6. Therefore, respondents were arbitrarily divided into those who used more than two different OTC products within this time period and those who used two or fewer different medicines. Table 5.38 shows that statistically significant difference in these two groups was found for expectations about *low prices*. More frequent OTC users expected a *lower price of an OTC product* in pharmacies (mean difference = 1.56) than less frequent OTC users (mean difference = 1.19). For another items, there were no statistically significant differences between low and high frequency users.

Table 5.36 Difference in Public Expectations for OTCs available in Convenience Stores According to Frequency of Purchases Made from Convenience Stores

Item	Expectation Score for Consumers who Made < 2 Purchases N = 356 Mean (SD)	Expectation Score for Consumers who Made ≥ 2 Purchases N = 118 Mean (SD)	Z score [a]
1. I expect a good selection of OTC medicines.	2.88 (1.33)	3.45 (1.59)	-3.34*
2. I expect OTC medicines to be effective.	5.54 (1.08)	5.48 (1.04)	-0.66
3. I expect OTC medicines to be safe.	5.89 (1.16)	5.81 (1.15)	-0.83
4. I expect a lot of information on the packages.	6.01 (1.01)	5.97 (1.04)	-0.35
5. I expect OTC medicines to be potent.	4.43 (1.52)	4.62 (1.48)	-0.95
6. I expect OTC medicines to have very few side effects.	5.08 (1.46)	4.93 (1.51)	-1.03
7. I expect low prices on OTC medicines.	3.85 (1.84)	4.11 (2.02)	-1.26
8. I expect OTC medicines to be less effective than prescription medicines.	4.57 (1.65)	5.00 (1.62)	-2.59*
9. I expect professional help.	2.17 (1.63)	2.77 (2.01)	-2.79*
10. I expect to find good quality products.	4.64 (1.75)	4.75 (1.70)	-0.61

*p < 0.05
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mann-Whitney Test

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Table 5.37 Difference in Public Expectations for OTCs available in Pharmacies
According to Frequency of Purchases Made from Pharmacies

Item	Expectation Scores for Consumers who Made $\leq$ 4 OTC Purchases N = 670 Mean (SD)	Expectation Scores for Consumers who Made > 4 OTC Purchases N = 329 Mean (SD)	Z score [a]
1. I expect a good selection of OTC medicines.	6.55 (0.65)	6.67 (0.53)	-2.50
2. I expect OTC medicines to be effective.	5.82 (0.94)	5.92 (0.96)	-1.86
3. I expect OTC medicines to be safe.	6.09 (1.05)	6.15 (1.07)	-1.32
4. I expect a lot of information on the packages.	6.16 (0.92)	6.21 (1.02)	-1.70
5. I expect OTC medicines to be potent.	4.68 (1.49)	4.72 (1.56)	-0.69
6. I expect OTC medicines to have very few side effects.	5.11 (1.44)	4.97 (1.56)	-1.03
7. I expect low prices on OTC medicines.	5.19 (1.30)	5.27 (1.22)	-0.72
8. I expect OTC medicines to be less effective than prescription medicines.	4.82 (1.67)	4.82 (1.63)	-0.15
9. I expect professional help.	6.34 (0.94)	6.53 (0.69)	-2.97*
10. I expect to find good quality products.	6.40 (0.78)	6.55 (0.67)	-3.17*

*p < 0.05
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mann-Whitney Test

Table 5.38   Difference in Public Expectations According to Frequency in Taking OTC
Medicines

Item	Consumers who Took OTC Medicines ≤ 2 Times N = 980 Mean of Difference [a] (SD)	Consumers who Took OTC Medicines > 2 Times N = 188 Mean of Difference [a] (SD)	Z score [b]
1. I expect a good selection of OTC medicines.	3.60 (1.66)	3.88 (1.45)	-1.87
2. I expect OTC medicines to be effective.	0.42 (0.97)	0.53 (1.09)	-1.12
3. I expect OTC medicines to be safe.	0.31 (0.93)	0.35 (0.99)	-0.29
4. I expect a lot of information on the packages.	0.20 (0.81)	0.21 (0.89)	-0.53
5. I expect OTC medicines to be potent.	0.34 (0.99)	0.39 (1.01)	-0.70
6. I expect OTC medicines to have very few side effects.	0.09 (0.69)	0.13 (0.76)	-0.17
7. I expect low prices on OTC medicines.	1.19 (1.84)	1.56 (1.87)	-2.70*
8. I expect OTC medicines to be less effective than prescription medicines.	0.11 (0.75)	0.11 (0.68)	-0.69
9. I expect professional help.	3.91 (2.12)	4.11 (2.06)	-1.31
10. I expect to find good quality products.	1.81 (1.81)	1.75 (1.81)	-0.52

*$p < 0.05$
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mean of Difference = the expectation score for *Pharmacies* minus the expectation
score for *Convenience Stores*
[b] Mann-Whitney Test

Experiencing an undesirable effect when taking any medicine may change how a person feels about that agent, or even the prescriber of that medicine. If the product was self-selected, as is often the case with OTC medicines, any change in impressions would likely be limited to just the agent. When analyzing product expectations in relation to side effect history, respondents were grouped according to those who had suffered a self-described side effect from an OTC medicine and those who had not had such an experience. Those who had suffered with side effects from taking OTC medicines did not have significantly different expectations on product *safety*, *efficacy*, *potency*, and *potential for side effects* in relation to where products were sold (Table 5.39). However, the two groups did have significantly different expectations for *product package information* and *professional help* if OTC medicines were sold either from pharmacies and convenience stores. Using the expectation for *professional help* as an example, those who had experienced a side effect expected more professional help in comparison to convenience stores (resulting in a mean difference of 4.27 between the two locations), while those who hadn't experienced one showed less separation between pharmacies and convenience stores (3.86). In other words, the side effect history may have created higher expectations for pharmacies because these consumers wanted professional help.

Regarding gender, a significantly different expectation was revealed in *the area of package information* (Table 5.40). When considering the OTC products sold in either location, men had lower expectations for *package information* in relation to retail outlet (pharmacy mean of 6.04 minus the convenience store mean of 5.91 = 0.13) than did women (pharmacy mean of 6.32 minus the convenience store mean of 6.03 = 0.29). Women, therefore, reported a slightly greater discrepancy in what they expected from either location on this attribute. Two other values (of a merchandising nature) were significant, while differences according to gender were not seen for clinical attributes (*efficacy*, *safety*, *potency*, and *potential for side effects*).

Table 5.39 Difference in Public Expectations According to Consumer Side Effect Experience from OTC Use

| Item | Consumer Had Experienced a Side Effect | | Z score [b] |
	YES N = 234 Mean of Difference [a] (SD)	NO N = 874 Mean of Difference [a] (SD)	
1. I expect a good selection of OTC medicines.	3.95 (1.63)	3.52 (1.64)	-3.86**
2. I expect OTC medicines to be effective.	0.34 (0.84)	0.47 (1.02)	-1.49
3. I expect OTC medicines to be safe.	0.24 (0.71)	0.35 (0.97)	-1.47
4. I expect a lot of information on the packages.	0.10 (0.61)	0.23 (0.88)	-2.05*
5. I expect OTC medicines to be potent.	0.37 (0.96)	0.34 (1.01)	-0.63
6. I expect OTC medicines to have very few side effects.	0.04 (0.56)	0.12 (0.77)	-1.17
7. I expect low prices on OTC medicines.	1.48 (1.81)	1.19 (1.87)	-2.12*
8. I expect OTC medicines to be less effective than prescription medicines.	0.05 (0.68)	0.12 (0.79)	-1.89
9. I expect professional help.	4.27 (2.11)	3.86 (2.10)	-3.20*
10. I expect to find good quality products.	1.77 (1.83)	1.76 (1.80)	-0.46

*p < 0.05 ; **p < 0.001
Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] Mean of Difference = the expectation score for *Pharmacies* minus the expectation score for *Convenience Stores*
[b] Mann-Whitney Test

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Table 5.40 Difference in Public Expectations According to Gender

Item	Male N = 613 Mean of Difference [a] (SD)	Female N = 587 Mean of Difference [a] (SD)	Z score [b]
1. I expect a good selection of OTC medicines.	3.50 (1.61)	3.75 (1.67)	-2.94*
2. I expect OTC medicines to be effective.	0.42 (0.95)	0.48 (1.04)	-0.68
3. I expect OTC medicines to be safe.	0.27 (0.81)	0.39 (1.07)	-1.38
4. I expect a lot of information on the packages.	0.13 (0.70)	0.29 (0.95)	-2.78*
5. I expect OTC medicines to be potent.	0.32 (0.93)	0.38 (1.07)	-0.26
6. I expect OTC medicines to have very few side effects.	0.06 (0.54)	0.15 (0.87)	-1.67
7. I expect low prices on OTC medicines.	1.20 (1.78)	1.27 (1.91)	-0.34
8. I expect OTC medicines to be less effective than prescription medicines.	0.07 (0.65)	0.16 (0.89)	-1.98
9. I expect professional help.	3.88 (2.07)	3.95 (2.17)	-1.33
10. I expect to find good quality products.	1.61 (1.70)	1.97 (1.90)	-3.23*

*$p < 0.05$

Scale: 1 (strongly disagree) to 7 (strongly agree)

[a] Mean of Difference: the expectation score in *Pharmacies* minus the expectation score in *Convenience Stores*

[b] Mann-Whitney Test

Several variables were analyzed by the Kruskal-Wallis Test to examine the differences among subgroups because these variables had more than two subgroups. If statistical significance was shown, a post-hoc (LSD) test was employed to determine where the differences existed among the groups.

Analyzing differences for ten expectations across income groups showed that seven of ten attributes had significantly different expectations, based on household income. Details are shown in Table 5.41. As incomes rose, it appeared to impact most on expectations for *a varied product line* and the need for *professional help*. Expectations appeared to widen on these attributes, meaning that more would be expected if purchasing the products in pharmacies than in convenience stores. The opposite appears to happen for the clinical attributes such as *effectiveness*, *safety*, and *package information*.

Regarding education level attained, there were eight attributes in which significantly different expectations appeared across groupings (Table 5.42). There were similar to the results for income. Specifically, expectations (for pharmacies versus convenience stores) widened with increasing education for *product selection* and *professional help*, while they contracted for the clinical attributes of *effectiveness*, *safety*, and *package information*.

Respondent age groups were classified into three age groups (*The Young* = 18-35 years; *Middle Aged* = 36-64 years; *Old Age* = 65 years and over). Significant differences existed for expectations (based on place of sale) for each of these ten attributes (Table 5.43). Although the mean differences between the locations were small for the clinical attributes of *effectiveness*, *safety*, *package information*, *potency*, and *potential for side effects*, expectations widened somewhat with increasing age. Conversely, the expectation of professional help trended towards congruency between locations with increasing age. In other words, moving from 4.33 to 4.12 to 3.18 suggests that increasing age narrows expectations for *professional help* at the two locations. The elderly appear to see less difference in this aspect across the two retail outlets.

Table 5.41 Difference in Public Expectations According to Household Income

Item	Under $20,000 N = 144 MD [a] (SD)	$20,000 - $39,999 N = 276 MD [a] (SD)	$40,000 - $59,999 N = 265 MD [a] (SD)	Over $60,000 N = 429 MD [a] (SD)	Chi-Square [b]
1. I expect a good selection of OTC medicines.	2.99 (1.97)	3.49 (1.62)	3.84 (1.55)	3.86 (1.47)	30.65**
2. I expect OTC medicines to be effective.	0.64 (1.20)	0.59 (1.15)	0.40 (0.90)	0.33 (0.85)	23.72**
3. I expect OTC medicines to be safe.	0.57 (1.27)	0.39 (1.09)	0.35 (0.93)	0.18 (0.59)	15.61*
4. I expect a lot of information on the packages.	0.43 (1.14)	0.25 (0.99)	0.15 (0.74)	0.12 (0.60)	14.59*
5. I expect OTC medicines to be potent.	0.48 (1.18)	0.40 (1.04)	0.33 (1.03)	0.24 (0.79)	6.78
6. I expect OTC medicines to have very few side effects.	0.31 (0.96)	0.09 (0.86)	0.07 (0.74)	0.05 (0.31)	12.15*
7. I expect low prices on OTC medicines.	1.20 (2.05)	1.07 (1.88)	1.28 (1.73)	1.37 (1.84)	4.87
8. I expect OTC medicines to be less effective than prescription medicines.	0.33 (1.19)	0.18 (0.90)	0.05 (0.70)	0.04 (0.43)	9.74*
9. I expect professional help.	3.08 (2.35)	3.81 (2.15)	3.95 (2.16)	4.33 (1.79)	30.89**
10. I expect to find good quality products.	1.65 (1.97)	1.80 (1.71)	1.89 (1.88)	1.81 (1.74)	1.35

*p < 0.05 ; **p < 0.001   Scale: 1 (strongly disagree) to 7 (strongly agree)
[a] MD = Mean of Difference (the expectation score in *Pharmacy* minus the expectation score in *Convenience Store*)
[b] Kruskal-Wallis Test is reported using Chi-Square.

Table 5.42 Difference in Public Expectations According to Education Level

Item	Less than High School N = 130 MD ^{a} (SD)	High School N = 245 MD ^{a} (SD)	Trade/Technical School N = 237 MD ^{a} (SD)	Some College/ University N = 195 MD ^{a} (SD)	College/ University N = 391 MD ^{a} (SD)	Chi-Square ^{b}
1. I expect a good selection of OTC medicines.	2.90 (1.94)	3.38 (1.68)	3.48 (1.67)	3.90 (1.40)	3.96 (1.50)	48.62**
2. I expect OTC medicines to be effective.	0.76 (1.30)	0.54 (1.06)	0.41 (0.96)	0.39 (0.97)	0.34 (0.85)	25.33**
3. I expect OTC medicines to be safe.	0.66 (1.44)	0.38 (1.12)	0.27 (0.79)	0.36 (1.00)	0.20 (0.60)	14.48*
4. I expect a lot of information on the packages.	0.42 (1.21)	0.27 (1.00)	0.11 (0.80)	0.20 (0.88)	0.15 (0.65)	14.61*
5. I expect OTC medicines to be potent.	0.54 (1.16)	0.45 (1.22)	0.38 (1.02)	0.29 (0.65)	0.23 (0.73)	14.10*
6. I expect OTC medicines to have very few side effects.	0.29 (1.00)	0.15 (0.93)	0.11 (0.61)	0.08 (0.65)	0.02 (0.52)	15.16*
7. I expect low prices on OTC medicines.	1.16 (1.85)	1.35 (1.94)	1.22 (1.87)	1.23 (1.82)	1.21 (1.80)	1.06
8. I expect OTC medicines to be less effective than prescription medicines.	0.27 (1.13)	0.19 (0.98)	0.07 (0.66)	0.07 (0.70)	0.07 (0.56)	4.88
9. I expect professional help.	3.02 (2.24)	3.56 (2.27)	3.68 (2.22)	4.15 (2.00)	4.47 (1.78)	58.81**
10. I expect to find good quality products.	1.36 (1.68)	1.74 (1.82)	1.83 (1.89)	1.76 (1.71)	1.94 (1.83)	10.31*

*p < 0.05 ; **p < 0.001   Scale: 1 (strongly disagree) to 7 (strongly agree)

^{a} MD = Mean of Difference (the expectation score in *Pharmacy* minus the expectation score in *Convenience Store*)

^{b} Kruskal-Wallis Test is reported using Chi-Square.

Table 5.43 Difference in Public Expectations According to Age

Item	The Young N = 169 MD [a] (SD)	Middle Aged N = 719 MD [a] (SD)	Old Age N = 301 MD [a] (SD)	Chi-Square [b]
1. I expect a good selection of OTC medicines.	3.67 (1.47)	3.85 (1.55)	3.07 (1.81)	42.99**
2. I expect OTC medicines to be effective.	0.23 (0.69)	0.36 (0.91)	0.78 (1.25)	61.02**
3. I expect OTC medicines to be safe.	0.22 (0.66)	0.25 (0.84)	0.56 (1.26)	35.65**
4. I expect a lot of information on the packages.	0.14 (0.59)	0.15 (0.72)	0.38 (1.13)	20.01**
5. I expect OTC medicines to be potent.	0.22 (0.74)	0.26 (0.85)	0.61 (1.33)	26.84**
6. I expect OTC medicines to have very few side effects.	0.00 (0.45)	0.08 (0.56)	0.22 (1.07)	13.03*
7. I expect low prices on OTC medicines.	1.62 (1.92)	1.33 (1.84)	0.82 (1.75)	24.81**
8. I expect OTC medicines to be less effective than prescription medicines.	0.04 (0.59)	0.07 (0.58)	0.28 (1.78)	15.28**
9. I expect professional help.	4.33 (1.96)	4.12 (2.04)	3.18 (2.21)	52.42**
10. I expect to find good quality products.	1.98 (1.70)	1.87 (1.87)	1.49 (1.70)	12.14*

*p < 0.05 ; **p < 0.001   Scale: 1 (strongly disagree) to 7 (strongly agree)

The Young = 18 – 34 years; Middle Aged = 35 – 64 years; Old Age = 65 years and over

[a] MD = Mean of Difference (the expectation score in *Pharmacy* minus the expectation score in *Convenience Store*)

[b] Kruskal-Wallis Test is reported using Chi-Square.

5.3 Test – Retest

In order to assess instrument reliability, a test-retest procedure was undertaken. Of the 405 respondents who replied to the main questionnaire within the first week of data recovery, 38 respondents (approximately 10 percent of the group) were randomly selected to complete a second survey. Questionnaires were sent to the re-testing sample one month after their first questionnaire was originally mailed. A total of 25 people completed and returned the second document within a one-month recovery period, for a response rate of 65.8 percent.

Answers on the two copies of the questionnaire from each respondent were compared manually, with attention specifically given to whether responses changed across the two documents. Several questions that were contingent upon a specific time period, such as *purchasing OTC products in the past six months*, were excluded. This was due to the fact the second questionnaire was sent approximately three weeks after receiving responses to the first document, thus any OTC-related behaviours of this nature would not be based on the same period of time.

As hoped, demographic data (age, gender, education, etc) pairings across both documents were exactly the same.

When respondents were asked to indicate their overall health status, 14 (56.0 percent) described themselves by the same status, while 11 (44.0 percent) switched their response by one unit. The majority (n = 9) switched their health status either from *fair* to *good* or from *good* to *fair*. The maximum possible degree of shift was 5 units.

On comparing pairs of responses to each statement regarding impressions of care needed when using OTC medicines (Table 5.44), a high proportion of respondents (over 80 percent) either did not change their answers or shifted only one unit for each statement.

The same comparisons were made for statements in Part V – Impressions of Pharmacists. The results show that a high number of respondents kept the same answer or at most, altered it slightly for each statement (Table 5.45).

Tables 5.46 and 5.47 show the comparisons of answers for the ten expectations of OTC medicines, sold either in convenience stores or in pharmacies. The majority of

respondents did not change their answers, or shifted only one unit within the scale provided for each expectation. A few respondents changed their answers by at least three units along the scale.

Table 5.44   Consistency of Responses for Questions of Part IV – Impressions of Care Needed When Using OTC Medicines (n = 25 pairs)

	Degree of shift*				
Item	None N (%)	One N (%)	Two N (%)	Three N (%)	Four N (%)
1. It is generally safe to take more than one OTC medicine at a time.	17 (68.0%)	4 (16.0%)	4 (16.0%)	0	0
2. When taking an OTC medicine, I should be careful with it.	17 (68.0%)	6 (24.0%)	2 (8.0%)	0	0
3. OTC medicines rarely cause side effects.	16 (64.0%)	8 (32.0%)	1 (4.0%)	0	0
4. OTC medicines are safe to take at higher than recommended doses.	13 (52.0%)	9 (36.0%)	2 (8.0%)	1 (4.0%)	0
5. Taking some prescription medicines with certain OTC medicines can cause problems.	20 (80.0%)	5 (20.0%)	0	0	0
6. It can be dangerous to take certain OTCs if I have other medical conditions.	17 (68.0%)	6 (24.0%)	1 (4.0%)	0	1 (4.0%)
7. Generally, I find prescription medicines to be more effective than OTC medicines.	10 (40.0%)	11 (44.0%)	3 (12.0%)	1 (4.0%)	0

* The maximum possible degree of shift was 4 units

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Table 5.45 Consistency of Responses for Questions of Part V – Impressions of Pharmacists (n = 25 pairs)

Item	Degree of shift*				
	None N (%)	One N (%)	Two N (%)	Three N (%)	Four N (%)
Pharmacists seem to care about my health concerns.	23 (92.0%)	2 (8.0%)	0	0	0
Pharmacists spend as much time as necessary with me.	20 (80.0%)	4 (16.0%)	1 (4.0%)	0	0
Pharmacists are not trustworthy.	19 (76.0%)	5 (20.0%)	1 (4.0%)	0	0
Pharmacists seem unwilling to help.	14 (56.0%)	8 (32.0%)	0	0	3 (12.0%)
Pharmacists are friendly.	18 (72.0%)	6 (24.0%)	0	1 (4.0%)	0
Pharmacists encourage safe and effective OTC medicine use.	17 (68.0%)	7 (28.0%)	0	0	1 (4.0%)
Pharmacists have the knowledge to deal with minor illnesses.	17 (68.0%)	8 (32.0%)	0	0	0
Pharmacists lack the knowledge necessary to help me select an OTC medicine.	17 (68.0%)	6 (24.0%)	2 (8.0%)	0	0
Pharmacists are often too busy to help me.	14 (56.0%)	10 (40.0%)	0	1 (4.0%)	0

* The maximum possible degree of shift was 4 units

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Table 5.46   Consistency of Responses for Questions of Part VI – Expectations of OTC Medicines Sold in Convenience Stores (n = 25 pairs)

Item	Degree of shift*					
	None N (%)	One N (%)	Two N (%)	Three N (%)	Four N (%)	Five N (%)
I expect a good selection of OTC medicines.	12 (48.0%)	10 (40.0%)	2 (8.0%)	1 (4.0%)	0	0
I expect OTC medicines to be effective.	14 (56.0%)	7 (28.0%)	2 (8.0%)	2 (8.0%)	0	0
I expect OTC medicines to be safe.	15 (60.0%)	8 (32.0%)	1 (4.0%)	0	0	1 (4.0%)
I expect a lot of information on the package.	16 (64.0%)	8 (32.0%)	0	1 (4.0%)	0	0
I expect OTC medicines to be potent.	10 (40.0%)	9 (36.0%)	6 (24.0%)	0	0	0
I expect OTC medicines to have very few side effects.	11 (44.0%)	8 (32.0%)	3 (12.0%)	2 (8.0%)	0	1 (4.0%)
I expect low prices on OTC medicines.	11 (44.0%)	8 (32.0%)	4 (16.0%)	1 (4.0%)	1 (4.0%)	0
I expect OTC medicines to be less effective than prescription medicines.	10 (40.0%)	10 (40.0%)	1 (4.0%)	2 (8.0%)	2 (8.0%)	0
I expect professional help.	17 (68.0%)	4 (16.0%)	2 (8.0%)	1 (4.0%)	0	1 (4.0%)
I expect to find good quality products.	8 (32.0%)	9 (36.0%)	5 (20.0%)	1 (4.0%)	1 (4.0%)	1 (4.0%)

* The maximum possible degree of shift was 6 units

Table 5.47   Consistency of Responses for Questions of Part VI – Expectations of OTC
Medicines Sold in Pharmacies (n = 25 pairs)

	Degree of shift*					
Item	None N (%)	One N (%)	Two N (%)	Three N (%)	Four N (%)	Five N (%)
I expect a good selection of OTC medicines.	15 (60.0%)	10 (40.0%)	0	0	0	0
I expect OTC medicines to be effective.	18 (72.0%)	6 (24.0%)	1 (4.0%)	0	0	0
I expect OTC medicines to be safe.	17 (68.0%)	7 (28.0%)	1 (4.0%)	0	0	0
I expect a lot of information on the package.	16 (64.0%)	9 (36.0%)	0	0	0	0
I expect OTC medicines to be potent.	8 (32.0%)	11 (44.0%)	6 (24.0%)	0	0	0
I expect OTC medicines to have few side effects.	12 (48.0%)	9 (36.0%)	2 (8.0%)	2 (8.0%)	0	0
I expect low prices on OTC medicines.	12 (48.0%)	7 (28.0%)	5 (20.0%)	0	1 (4.0%)	0
I expect OTC medicines to be less effective than prescription medicines.	10 (40.0%)	12 (48.0%)	0	2 (8.0%)	1 (4.0%)	0
I expect professional help.	15 (60.0%)	9 (36.0%)	1 (4.0%)	0	0	0
I expect to find good quality products.	16 (64.0%)	9 (36.0%)	0	0	0	0

* The maximum possible degree of shift was 6 units

Over all the sections of the questionnaire, there was a strong degree of similarity in responses for the paired questions. While congruency ranged from 32 to 92 percent, depending on the item, an average of 61.6 percent of respondents provided the same answers from the time of the first questionnaire, to the second completed a few weeks later. Furthermore, for respondents who shift one unit on the scale, the resultant shift was usually a matter of degree within their original classification rather than a more brazen change. Specifically, opinions switched from *strongly disagree* to *disagree* (31

percent); from *disagree* to *strongly disagree* (7 percent); and from *strongly agree* to *agree* (28 percent). Conversely, 16 percent made the more significant jump from *agree* to *disagree*. In general then, respondents' opinions did not differ to a great extent between the two tests, even though changes were indeed seen.

5.4 Potential for Non-Response Bias

This assessment was conducted from October 8 to November 8, 2003. One hundred subjects were randomly selected from the 753 subjects who did not respond during the main survey. After a one-month allocation for information recovery, a total of 17 documents were returned, for a response rate of 17.0 percent.

Most non-responders (n = 15; 88.2 percent) were aware that OTC medicines could be purchased in convenience stores; only two did not. When asked about experiences regarding OTC purchases in convenience stores and pharmacies, all respondents had purchased OTC medicines from pharmacies. Nine respondents had purchased OTC products from convenience stores, six had not, while two respondents could not recall.

Demographic data of participants providing non-responder data are shown in Table 5.48. The age range was from 22 to 92 years, with the average being 53.3 years (SD = 19.8).The majority of respondents were in the age groups of 35 to 44 years (n = 6) and 45 to 54 years (n = 5). The number of male participants (n = 11) was nearly twice that of females (n = 6).

Given the very low numbers, the quality of data for non-responders is likely suspect. Differences between responders and non-responders were seen at the lowest and highest income levels, as well as for gender (males made up a bigger percentage of non-responders). Otherwise, a reasonable degree of similarity appeared to exist.

Table 5.48 Comparison of Non-Responder and Responder Demographic Data

Characteristic	Non-respondents N (%)	Respondents N (%)
Age groups:	(N = 17)	(N = 1189)
■ 18 – 24	1 (6.2)	36 (3.0)
■ 25 – 34	0 (0.0)	133 (11.2)
■ 35 – 44	6 (37.5)	226 (19.0)
■ 45 – 54	5 (31.3)	295 (24.8)
■ 55 – 64	0 (0.0)	198 (16.6)
■ 65 – 74	0 (0.0)	155 (13.0)
■ 75 – 84	3 (18.8)	118 (9.9)
■ 85 and over	1 (6.2)	28 (2.4)
Gender:	(N = 17)	(N = 1200)
■ Male	11 (64.7)	613 (51.1)
■ Female	6 (35.3)	587 (48.9)
Education level completed:	(N = 17)	(N = 1198)
■ Less than high School graduate	4 (25.0)	130 (10.9)
■ High school graduate	2 (12.5)	245 (20.5)
■ Trade/Technical school	4 (25.0)	237 (19.8)
■ Some college/University	1 (6.2)	195 (16.3)
■ College or University graduate	5 (31.3)	391 (32.6)
Household income level:	(N = 17)	(N = 1198)
■ Under $20,000	5 (33.3)	144 (12.0)
■ $20,000 to $39,999	3 (20.0)	276 (23.0)
■ $40,000 to $59,000	5 (33.3)	265 (22.1)
■ $60,000 and over	2 (13.4)	429 (35.9)

CHAPTER 6: DISCUSSION

Amidst the rising costs of formalized healthcare in many countries, self-care is being promoted as a way to save limited financial resources. People are being encouraged to monitor their own illnesses, undertake lifestyle changes to prevent diseases and/or maintain their health, and self-treat minor symptoms. Within the broad arena of self-care, over-the-counter medicines play a crucial role and are a critical component of a properly functioning healthcare system. People use OTC products to treat such common minor illnesses as colds, headaches, heartburn, and sore feet. As governments switch more medicines to OTC status, and with the medicines becoming ever more potent, public attitudes that shape usage patterns will also become more important.

Given that consumers can purchase OTC medicines both from pharmacy and non-pharmacy outlets, the role of pharmacists in ensuring their proper use has been under some debate for years within the profession. In Canada, a select number of products are limited to sale from pharmacies in a bid to ensure patient safety. This has led to questions whether location of sale might influence public attitude to such medicines. Is there potential for consumers to feel that OTC products purchased in convenience stores are lesser medicines than ones purchased in a pharmacy? This study was undertaken to examine whether location of sale impacts on public expectations of over-the-counter medicines.

6.1 Reliability and Validity of Results

Validity and reliability are important issues for survey research. In this study, several means were used to improve upon both. A random sample of respondents was procured using the local phone book as the sampling template. The final response rate was 57.2 percent. This return rate is relatively high when compared to other studies of

similar design.[39,141,171-173]

A low response rate is obviously a common concern in mail surveys.[182] Use of the pre-notification letter, several follow-ups, and provision of return envelope/postage appeared to have a positive effect on the response rate in the project. Initially, 33.5 percent of subjects (n = 704) replied to the questionnaire. After subjects received the first reminder, another 15.3 percent (n = 322) was replied. Sending the second follow-up with replacement questionnaires led to a further increase of 8.4 percent replies (n = 176). Outright interest in the subject also cannot be overlooked as a motivating factor in producing the response rate achieved.

When demographic data from this study and 2003 Saskatoon Census data were compared, it was concluded that study responders were reasonably similar to the best data available on the apparent profile of the city's citizens. Several characteristics such as income and education levels were on par. Age groups of both data sets were also similar, except for those aged 18 to 24 years, where only three percent of study respondents fell into this category versus 16 percent in Census data. More male respondents replied to the questionnaire than did females (51.1 percent versus 48.9 percent, respectively). In Census data, however, the breakdown of males (48.1 percent) to females (51.9 percent) was quite similar. It should be noted that females tend to be more frequent users (and purchasers) of OTC products.[9,64-69] This study, however, was not targeted to the most frequent user in society, but rather the population in general.

There was no obvious bias uncovered with non-responder data, although the number of replies was low.

Overall, evidence therefore suggests that the survey sample reflected the *population of Saskatoon residents* in 2003, and by extension, the data potentially reflected their behaviours and attitudes towards OTC medicines. The data may be less useful, however, for depicting the attitudes and behaviours of the average OTC medicine shopper, given that females constitute a larger proportion of that group.

Although steps were taken to develop data collection tools that would garner valid results, the extent to which this was achieved remains unknown (see Limitations below). The results from test-retesting did indicate that participants had similar opinions within a select group of questions, suggesting at least some stability in answers.

6.2 Consumer Expectations of OTC Medicines According to Location of Sale

Although an OTC product becomes available without a prescription due to a favourable safety profile, it is not without risk. During product selection and use, such risks include improper diagnosis, incorrect dosage, occurrence of side effects, and so on. In spite of that, the public seems ready for greater access to medicines. One report, in fact, found that a small number of consumers were willing to accept considerable risk with a medicine in order to gain access to it.[191]

When obtaining an agent to treat a minor illness, consumers choose not only among different medicines, but also between various types of retail outlets. In Canada, people can buy such medicines (depending on the agent) from pharmacies, convenience stores, supermarkets, and department stores. Store image is likely a factor in what a consumer decides.[152,153]

Several studies have attempted to determine patronage motives that are applicable to pharmacies.[49,116,158-160,192] In these, participants usually get asked to indicate their primary reasons for using one pharmacy over another. In one, 44 percent of Americans chose *convenient location* as their primary reason for using their regular pharmacy.[159] Another American survey determined the importance of each of 11 reasons for drug store patronage.[49] Most participants (87 percent) thought *close to home* a very important reason. The importance of *knowledgeable staff*, *competitive prices*, *fast check out/no lines*, *good signage*, and *easy access/parking space* were chosen as important by more than half of respondents.

Consumer patronage motives from the perspective of pharmacies versus non-pharmacy outlets was of interest for the current study. Only one previous report specifically has focused on this direct comparison.[161] In it, the authors chose 16 store attributes and 11 OTC-information-service attributes to determine their importance for patronage motives. They also compared average performances of three types of retail outlets – food stores, mass merchandise stores, and pharmacies. Overall, *reasonable price* was ranked the most important factor by American consumers when they selected between these outlets to purchase OTC medicines. *Access to a pharmacist* came in eleventh place. Pharmacy patrons rated significantly higher importance to the majority

of attributes (15 of 27), especially those relating to OTC information services, than did non-pharmacy patrons. Gore and Thomas, therefore, found that the ability to provide professional services was one of the obvious advantages for pharmacies. However, perceptual differences held by the public as they pertain to the products themselves, between pharmacies and non-pharmacy outlets, was not addressed in that report.

Although pharmacies are the most common place for OTC purchases,[13,48-50] sales from non-pharmacy outlets have been allowed for many years. Nearly 20 percent of our respondents did not realize that such products could be purchased from convenience stores. Of those that were aware, less than half had done so. Thus, the sample could be considered as low in experience with regards to what OTC medicines could even be found within convenience stores. This may have produced an unlevel playing field when asked for expectations of the two locations.

The available information on medicine perceptions appears to indicate that consumers distinguish differences between OTC and prescription medicines. At the same time, a concern appears to exist whereby the public may not consider medicines available without prescription as full-fledged medicines, ones requiring the same level of vigilance during use. Location of sale may be a factor in the development of such perceptions, potentially being a predeterminant of actual behaviour.

In the current study, consumer expectations for OTC medicine *potency*, *safety*, *side effect potential*, *effectiveness*, and *package information* did show statistically significant differences in relation to place of sale. In other words, for all five attributes of a clinical nature, the public of Saskatoon would expect OTC medicines to be stronger, safer, have less potential for side effects, be more effective, and come with more package information when found in a pharmacy versus a convenience store. This suggests some value might be anticipated for shoppers who chose their products in pharmacies. However, for each expectation, the difference between the mean scores for pharmacy and convenience store was small. On the seven-point Likert scale, the range was only 0.1 to 0.4. Thus, while reaching statistical significance, such differences may not be of practical importance.

Conversely, differences in expectations for *professional help*, *price*, *availability*, and *quality of products* for the two locations were larger. The range was 1.2 to 3.9 on the

seven-point scale. Although no guidelines exist for establishing practical relevance for this issue (and the scale used), a move of one full unit on the scale might seem reasonable. It therefore appears that the public has higher expectations for good quality, a reasonable price, a variety of products, and professional help from pharmacies rather than from convenience stores. The work of Gore and Thomas also provides similar results.[161]

It is of utmost importance to reiterate the scenario that was presented to each respondent, given what might be perceived as a tenuous argument at best for the comparison made during this study. For those respondents who knew a product such as Tylenol[R] could be purchased at either outlet, they may have been dumbfounded to read that the researchers were asking for expectation differences, knowing that this product surely would not change in any way at the retail outlet. In their minds, Tylenol[R] (or Benylin[R], or Sudafed[R], etc) would be Tylenol[R], regardless of location. Given the scores found, it does appear that respondents knew location would not affect any clinical qualities of a product, but that merchandising aspects would indeed be affected. It also appears clear that professional help could be expected in a pharmacy, but not at a convenience store. Yet, it was interesting to have found a value of 2.5 (seven-point scale) within this sample as the expectation for this service in a convenience store. Given that pharmacists are not employed by convenience stores, the lowest level of expectation (a score of 1 as *strongly disagree*) might otherwise have been expected. A score of 2.5 ranges on the verbal anchors somewhere between *Disagree* and *Somewhat Disagree*.

Besides the location of purchase itself, several other factors might influence consumers' expectations. One such factor was consumers' past experiences of purchase. Respondents who had bought OTCs in a convenience store had converging expectations for clinical qualities of products, whether sold in a pharmacy or in a convenience store. In other words, these experienced consumers clearly knew that the OTC product would not change based on where it was sold. The location of sale would not affect their thoughts about OTC product effectiveness and safety. However, if consumers did not have any experience with OTC purchases in a convenience store, they appeared to believe that OTC products which were sold in a convenience store were neither as

effective nor safe as ones sold in a pharmacy. Some inclination that they could get professional help in a convenience store also seemed present.

The results from the present study showed that the two factors – the frequency of OTC purchase in convenience stores and the frequency of actual OTC use – did not influence consumer expectations. High-frequency purchasers (making ≥ 2 purchases within the six-month period) in convenience stores had similar expectations for the clinical qualities of OTC products as did low-frequency OTC purchasers (those making < 2 purchases within the six-month period). High-frequency OTC users (used > 2 OTC medicines within 30 days) and low-frequency OTC users (used ≤ 2 OTC medicines within 30 days) also had similar expectations about clinical qualities of OTCs at either location. Although differences of expectations were not shown between groups, it appeared that these people believed that OTC products were supposed to be effective and safe, as well as have few side effects. It may be plausible that purchasers have different dynamics to consider during the purchase process than what is considered by the actual users of the products.

Impression of the care needed for general OTC product use was considered to be an important factor. In the present study, all respondents were separated into two groups – *Low-care needed* versus *High-care needed*. However, there was no respondent categorized to the low-care group. While this prevents any comparisons, it does suggest our sample felt that due care and attention is needed with these medicines.

When impressions of pharmacists (positive feelings versus negative feelings) was analyzed, there was only one respondent in a group possessing negative feelings compared to 824 respondents in the positive feelings group. Making comparisons was, therefore, not possible, but this result suggests that people felt satisfied with the qualities exhibited by pharmacists and their role in OTC medicines.

6.3 Minor Illness and Use of OTC Medicines

Two different time periods (six months and 30 days) were used as the context periods towards obtaining behavioural information relating to OTC medicines and minor illnesses. Questions concerning frequency of minor illnesses, for example, utilized the

six-month period (January to June, 2003), while a 30-day period (June, 2003) was used to determine recent experiences with OTC purchases and use. Therefore, when the results of this study are compared with those of other studies, seasonal effects should be taken into consideration.

Minor illnesses were found to be a common occurrence in Saskatoon. From January to June 2003, almost every participant had suffered with at least one. On average, respondents reported they had suffered 3.6 different symptoms during this period. Pain (headaches, muscle aches, sore backs), cold/flu, and allergies were among the top in this regard. These results do not differ from other national studies.[9,37] Women were more likely to experience symptoms such as headache, dry skin, and constipation than men. A previous study also had similar findings.[193] Several symptoms such as headache, constipation, and insomnia were found to be associated with age in the current study. Verbrugge has also identified that select symptoms are related to age.[194]

Use of an OTC or prescription medicine at least once in a person's life can almost be considered a "given" in North American culture. According to usage data,[41,42] OTC medicines are more commonly used by the public (when compared to prescription medicines). Nation-wide studies done in Canada and the United States provide similar evidence.[55,56] Americans reported rates of 2.2 for OTC medicines and 3.0 for prescription medicines used within 30 days.[55] For elderly citizens living in Ontario, a quarter of respondents reported using no medicines, while the use of OTC medicines (56 percent) was more prevalent than use of prescription medicines (48 percent).[195] Findings of the present study tend to support that OTC usage is on par with prescription usage. On average, respondents reported using 1.6 different kinds of OTC medicines and 1.6 different kinds of prescription medicines during a period of one month. These numbers were slightly higher than national data provided by the 2002 Ontario Drug Information Resource Center (DIRC) survey, where 1.4 agents were reported for each type of medicines in a one-month period.[10] The DIRC survey was conducted in winter, while the current study would lead to data generated for the summer months. Dry skin products were ranked high in popularity by Saskatoon residents. This might be caused by the climate in Saskatoon and the seasons the study was conducted.

Various studies show that females [9,64-69] and young adults [64,65,68,70] are major OTC users. People with high levels of education and high household incomes also tend to use more OTC medicines. The results of the present study revealed that women indeed used more OTC medicines than did men, but the characteristics of age, education, and household income did not seem to influence OTC usage.

The maximum number of different medicines taken by any one person was 12 for OTC products and 20 for prescription medicines over a 30-day period. If, in fact, these numbers are accurated, this would be of concern. But, this could also be explained by respondents not recognizing (or responding incorrectly) to the term "different" in the question. Others may not have remembered how many types of OTC medicines they actually had used. If the responses are reflective of the true situation, these respondents could be subject to risk of adverse drug reactions. Within the six-month period for OTC product purchases, the maximum number from convenience stores was 10, versus 20 times from pharmacies. However, purchases could have been for someone else as well as for themselves.

In a related area, about one-quarter (29.0 percent) of participants either *Agreed* or *Strongly Agreed* with the following statement*: It is generally safe to take more than one OTC medicine at a time.* While included in the battery of items to determine an overall measure of care needed when taking such agents, the results above do not necessarily suggest inappropriate use. While adding negative influence onto their measure of care value, it is quite reasonable at times to take more than one OTC product. For example, a person might be taking ASA 81mg for heart risk reduction, an artificial tear for dry eyes, and loratadine for summer allergies. Results from the Canadian survey also show that one-third of adults (about 5 million adults) are willing to take more than one OTC medicine at the same time if they have more than one symptom.[10] While more agents being taken at the same time can increase risk, it is not a forgone conclusion.

Overall in the section directed as measuring care needed, the majority of our respondents opted for responses that indicated due care was indeed in order. Most thought, for example, that OTC medicines were not safe to take at higher than recommended doses, that taking some prescription medicines with certain OTC medicines could cause problems, and that it can be dangerous to take certain OTC

medicines if they also have other medical conditions. Two studies conducted in the United Sates and United Kingdom had similar findings.[55,176]

What people say they do versus actual behaviour, though, may not be consistently the same. For example, according to the present study, most people knew that it was not safe to take OTC medicines at higher than recommended doses. However, based on the results of the national survey, 16 percent of Canadian adults had taken more than the recommended number of pills at a single time.[10] This situation was more commonly seen in adults aged 18 to 24 (31 percent). It also may be of more concern in the United States, where 33 percent of Americans admitted to having taken more than the recommended dose of OTC medicines.[55]

In general, users in the current study felt satisfied with the products they had used. An industry-sponsored study supports this finding[60] as does a report of Health Canada in 1990.[83] Health Canada's report only listed seven types of OTC medicines; of those, six can be matched to types of medicines in the current study. Results of both Health Canada report and this current study showed over 90 percent of people thought *pain relieves* were effective, followed by *upset stomach remedies* (around 84 percent), and *antihistamines* (about 80 percent). More respondents in Saskatoon (around 25 percent) had doubts about the effectiveness of *cold/cough remedies*, compared with respondents in Canada (16 percent). More Saskatoon respondents (88 percent) thought *laxatives* were effective than other Canadians (79 percent).

While sleep aids and stop-smoking products are popular in the marketplace,[53] only a few participants in the current study had used them and of these, a high percentage were not sure whether they were in fact useful.

6.4 Information-Seeking Behaviour

OTC medicine packaging provides information and instructions on how to safely select, and then use, an agent. It is a very common source of information. A vast majority of people in Northern Ireland, for example, stated they would always or often follow the directions on an OTC package.[196] Results of the current study find that most Saskatoon residents claim they would also read such information. Compared with

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Canadian data circa 1990,[83] fewer respondents said that they *never* read the package information. This is a positive outcome if it means that, over the past decade, the public have in fact taken up the challenge of being better healthcare consumers and are taking more responsibility to care for their own health by reading OTC package instructions.

Findings specific to certain information sections on the packaging points to the fact that a much higher portion of Saskatoon residents claimed they would read information than would other Canadians[10] or Americans.[55] Saskatoonians felt *direction of use* was the most important information and almost everyone would read this section, regardless whether buying or using/giving the medicine for the first time. Information about *active ingredients* did not attract the same attention. However, in the national study, Canadians thought that reading about *active ingredients* was more important than reading other sections when they purchased OTC medicines.[10]

Different information might be needed if the occasion is the first time for the purchase versus using/giving the medicine. The current work and data from the USA[55] indeed supported this notion. When people use/give an OTC medicine for the first time, they gravitate more to information on *direction of use*, which may be less important during the actual purchase.

Doctors and pharmacists were common sources for the public in the current study when seeking information on OTC medicines, with some preference shown for pharmacists. Two Canadian reports provide similar results.[130,131] Conversely, the reasons pharmacists might not be called upon for advice was also addressed by the questionnaire. Of those respondents for where it was applicable to provide this information and who went on to provide it (n = 800), the vast majority (n = 569) felt they had no difficulty in selecting a product without pharmacists' advice, even within the context of a first purchase. It was somewhat disconcerting that 122 people felt *pharmacists were too busy* for such interaction and that *being too busy to stop/forgetting to ask* accounted for 180 of such reasons. This data suggests that there may be more demand for information than what generally takes place in pharmacies. Reasons were also obtained in a study by Taylor,[106] but for that work, responses were not geared toward an initial purchase (as was the case in the current study), making comparisons difficult. That report, though, did raise the spectre of consumer hesitation in asking for assistance.

6.5 Consumer Impressions of Pharmacists

Pharmacists are a key resource when dealing with OTC products. Overall, most respondents had very good impressions of pharmacists. Most (over 90 percent) appeared to trust pharmacists and believed they had the applicable knowledge to help in selecting OTC products. Slightly fewer respondents (85 percent) were convinced that pharmacists encourage safe and effective use of OTC medicines.

Most respondents also felt satisfied with pharmacists' personal traits. They agreed that pharmacists are friendly, are willing to help and seem to care about their health concerns. An American study provided similar results; 90 percent of respondents felt their pharmacists were concerned about their health.[138]

Lack of time has been identified as the major barrier for pharmacist-consumer interaction.[94,100-102] Over 60 percent of consumers in one report said they would not use pharmacy services related to OTC selection (and minor illness treatment) because of this reason.[94] For people in Saskatoon at this time, it appeared that lack of time was not a big concern. Only a small proportion of people (15.9 percent) said *pharmacists were often too busy to help* them and most (83.4 percent) said *pharmacists usually spend as much time as necessary with them*. The diverging results for these two statements suggest that participants of this study responded reasonably consistently.

6.6 Limitations

All the weaknesses of survey research using a mailed questionnaire apply to this study.

Given that the sampling frame for this study was the Saskatoon phone book, several coverage errors could have occurred. For instance, residencies without home phone numbers, or those who only use cell phones, would be excluded from the sample. Residences that have unlisted numbers would also not be captured by this method. If residents moved after the last phone book was published, addresses appearing in the phone book would be incorrect. In this survey, 411 questionnaires (16 percent; 411 of 2547) went undelivered for this reason.

The gender bias of this sampling frame may have altered the proportion of Saskatoon residents replying with their opinions. Often, a male name appears in the phone book to represent the household phone number, especially for families. In order to attenuate this bias, any adults who lived at that address were allowed to answer the questionnaire, not just the person whose name appeared on the letter. This point was also emphasized on the cover letter sent with the questionnaire. While an overly strong response from females (at the expense of males) was anticipated, a reasonably equal distribution from both genders was realized.

Social desirability could have affected the accuracy of the results. During study correspondence, the University of Saskatchewan's letterhead was utilized and participants would also have noted the researchers were pharmacy professionals. They were then asked questions related to pharmacy, especially questions associated with impressions of pharmacists and the care needed when using medicines. Respondents may have provided answers with a bias towards what they felt the researchers wanted and/or to place themselves in the best possible light.

Inconsistent use of standard time periods is another possible limitation. In this survey, several different periods of time were used, often based on usage in other surveys. Participants at times were asked questions about their past experiences *during a month*, while others were to cover a *six-month* period. This may have lead to confusion for respondents. By way of extension, memory decay also would be a potential risk. Answers often relied on respondent memory and the six-month period may have been too long for accurate recall, especially for the elderly. Frequency of OTC use/purchase and shopping, for example, would be particularly susceptible to lack of accurate recall.

In this study, several questions asked participants to think what they would do during the first use/purchase of an OTC product. As could be expected, it might not be easy for some responders to enter that mindset, or recall their first use or purchase of a product that took place some time ago. Thus, when answering such questions, they might provide answers in general, rather than with specific details that might emerge when they faced the given situations for the first time.

The fifth question in part II of the questionnaire (Appendix C) may also have been a difficult one to answer, given that participants were asked to select *the two most*

important reasons (from a list of nine) for why they did not always ask for a pharmacist's advice. According to the results, choosing the most important two reasons may not have been an effective approach. A very high proportion of participants (n = 121/921; 13 percent) did not answer this question and, for those who did answer it (n = 800/921), nearly half (n = 371/800; 46.3 percent) did not go on to select two items. It may have been wiser to ask participants to check "all that apply" or simply ask them to select the most important one from the reason pool.

Choice of wording for scales or in sentences may have been problematic. Although five- and seven-point Likert scales and the option of *neutral* are commonly used to determine agreement on various statements in similar studies, wording for the middle point is controversial. The term – *neutral* – could have meant a respondent did not have any opinion on the issue, had an opinion but felt it lay between agreement and disagreement, or they did not understand the meaning of the statement.

While it did not appear to be an issue during pre-testing, the term *potency* seemed to confuse some in the formal study. Around three in ten respondents selected *neutral* for this statement for both pharmacy and convenience store. For those who selected this option, 14 respondents commented that they did not understand the exact meaning of *potency* in the context given.

Adjectives such as "*good* selection", "*very few* side effects", "*low* prices", "*good* quality" are especially open to interpretation by consumers during questionnaire completion and may have affected our results. Other terminology open for interpretation was use of the phrase "for any reason" within the context of visits to a convenience store. Respondents may not have included the simple act of paying for gasoline as constituting a visit (under the terms of the questionnaire), thinking that a more formal act of entering the location for a product purchase would be required. If so, figures on numbers of visits may have been artificially low.

Given the blurring of lines within the retail environment as to what is truly a pharmacy or a grocery store, it may be difficult for some to distinguish between the two. Although results of the pre-test did not reveal any apparent difficulty, it could exist. This may have affected results that called for comparisons of pharmacies to convenience stores.

Respondents were directed to disregard herbal products and vitamins for this survey. While it was hoped this would streamline data towards what was considered to be typical OTC medicines, it may have added confusion for the reader and it is unclear whether responders were able to disregard out impressions of herbals and vitamins during completion.

An important limitation was a lack of standard criteria to determine practical significance in relation to statistical significance. To the best of our knowledge, there is no study providing guidance on this issue.

6.7 Future Research

Findings from this present study provide initial impressions of how consumers treat OTC medicines sold in pharmacies and in non-pharmacy outlets, but further research may be warranted. The study of consumer expectations in relation to place of sale could be conducted again in a nation-wide survey in Canada. Deregulation of medicines is of national importance and, therefore, understanding the opinions of consumers across this country is probably necessary. Moreover, if a similar study can be conducted again, it may provide useful data to help researchers set up criteria to determine the practical significance of this issue.

Most studies in this area of pharmacy practice, including the one presented here, provide a pre-determined list of potential patronage motives, and then ask respondents to rank them on importance. It is suggested that a format allowing consumers to more openly and freely identify factors important to them (as they purchase OTC medicines) be considered.

Further research in this area can focus on special groups of consumers. According to findings of the present study, past shopping experiences may somewhat influence consumer attitudes toward OTC medicines. Once an OTC product is classified into Unscheduled status, it can be sold in a non-pharmacy outlet. Since it can be expected that the number of drugs of this category will increase in the future, it may be valuable to conduct more research on the group of consumers who purchase OTC medicines largely from non-pharmacy outlets.

CHAPTER 7: CONCLUSION

If a prescription medicine in Canada is deemed safe enough for non-prescription status, it will generally move through a cascade of drug schedules of lessening restrictions based on location of sale. From the most to least restrictive, the entity will start as Schedule II status (pharmacist-only; behind-the-counter), move down to Schedule III (pharmacy-only), then finally on to Unscheduled status, upon which it can be sold in any retail outlet. With respect to Schedule II and III, products are limited to sale in pharmacies under the assumption that doing so helps to ensure patient safety. As more and more agents attain OTC status and move to the least restrictive legal category, concern grows amongst pharmacists and legislators for the vigilance shown by the public during their use. While it does appear the public perceives non-prescription medicines to be different than those on prescription, a question was raised as to whether location of sale imparts any effect on consumer expectations.

On the important clinical aspects applicable to typical OTC agents, this does not appear to be the case. It seems that a phenomenon coined as the *de-medicinization of OTC products* is not in play in Saskatoon; location of sale does not appear to influence consumers' expectations of OTC medicines along clinical attributes. This finding may prove useful to legislators involved in the deregulation of medicines. Specifically, it appears a concern that people will treat these medicines differently just because they are sold from non-pharmacy locations may be unfounded.

In Saskatoon, most residents were aware that OTC medicines could be purchased in convenience stores, although most still showed preference for making purchases in pharmacies. This may be due to different expectations for this outlet – the public may expect that pharmacies can provide professional help, as well as offer good quality, lower prices, and a greater variety of products. Furthermore, Saskatoon residents appear to have healthy attitudes for OTC medicines and realize care is needed when they use such

products. While generally safe, the public also appears ready to ask pharmacists for assistance if the need so arises.

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APPENDICES

Appendix A: Wording Trial Document

Pre-Testing the Expectations When Buying Over-the-Counter (OTC) Medicines Survey

March 2003

Dear Family and Friends of our Pharmacy Students:

We have asked the pharmacy students of our College for help. Before commencing with a project to uncover information about over-the-counter medicines (like Tylenol, Advil, Robitussin, and Gravol), we need to know if the terms we plan to use are appropriate for a general audience.

This is where you come in. Your friend or family member in Pharmacy was kind enough to pass this pre-test on to you on our behalf.

The purpose of this test is to help prepare the final wording of a questionnaire we will mail out to Saskatoonians this spring. The questions are about experiences with purchasing over-the-counter medicines. We are going to ask you about your understanding of words and phrases we hope to use. It should take about 5 minutes to complete this short questionnaire.

Thank you! Your response will be very helpful in revising the final questionnaire.

Part I.   Our question: Will the public know the difference between our retail outlets of interest -- *Convenience Stores vs Pharmacies* -- during our survey?

There are a lot of pharmacies (drug stores) and convenience stores in Saskatoon. Over-the-counter medicines can be purchased at either (to varying degrees). We wonder if the public perceives any differences between convenience stores and pharmacies or whether they come across as quite similar in products or services? The following questions will ask you to identify convenience stores from other kinds of retail outlets.

1. First, do you feel there is a clear difference between convenience stores and pharmacies with regard to products or services?

☐ YES   ☐ NO   ☐ NOT SURE

2. The following is a list of retail outlets in Saskatoon. Please answer (by circling YES or NO) to which you feel are so-called convenience stores AND whether you have ever shopped at the store in question.

Store Names	Is this a "Convenience Store"?	Have you shopped there?
Circle Centre Pharmacy	YES NO	YES NO
Extra Foods	YES NO	YES NO
Husky Gas and Food	YES NO	YES NO
IGA Grocery	YES NO	YES NO
Lakeview Pharmacy	YES NO	YES NO
Mac's Stores	YES NO	YES NO
PharmaSave	YES NO	YES NO
7- Eleven	YES NO	YES NO
Safeway Food and Drug	YES NO	YES NO
Sears Department Store	YES NO	YES NO
Shell Gas and Food Store	YES NO	YES NO
Shoppers Drug Mart	YES NO	YES NO
Stop'N'Go Confectionary	YES NO	YES NO

Part II. Our question: Will the public be comfortable with the medicine-related terms we are planning to use?

3. In this part, please consider the meanings of the following pairs of words that can be associated with medicines. In the left column below are the word pairings. To you, are the terms in each pair SIMILAR or DIFFERENT? Please circle your response in the column on the right.

Terms	**Are the meanings similar or different?**
i) Cost and Price	SIMILAR DIFFERENT
ii) Safety and Effectiveness	SIMILAR DIFFERENT
iii) Price and Safety	SIMILAR DIFFERENT
iv) Effectiveness and Potency	SIMILAR DIFFERENT

If you can, could you tell us why you chose the response you did for *effectiveness* and *potency*?

_____

_____

_____

v) Side Effect and Potency	SIMILAR DIFFERENT
vi) Price and Effectiveness	SIMILAR DIFFERENT
vii) Safety and Side Effect	SIMILAR DIFFERENT

If you can, could you tell us why you chose the response you did for *safety* and *side effect*?

_____

_____

_____

Terms	Are the meanings similar or different?
viii) Side Effect and Price	SIMILAR DIFFERENT
ix) Effectiveness and Side Effect	SIMILAR DIFFERENT
x) Price and Potency	SIMILAR DIFFERENT

Part III. Now, a few questions of a personal nature to help us prepare for the survey this spring.

4. Have you ever purchased an over-the-counter medicine in a pharmacy? Check one box.

☐ YES

☐   NO

5. Have you ever purchased an over-the-counter medicine in a convenience store? Check one box.

☐ YES

☐ NO

6. The year in which you were born was _____

7. Your gender: ☐ Male

☐ Female

8. Would you be interested in participating in a 5-minute telephone interview in the next 3 weeks to discuss shopping experiences involving such medicines?

☐ NO

☐ YES   If yes, please leave your name (Print) _____

And telephone number _____

Thank you for completing this questionnaire. Please seal it in the envelope provided and have the pharmacy student drop it off at the General Office of the College of Pharmacy and Nutrition. If you have any questions, please feel free to contact Helen Lo (M.Sc. student) at 966-6346. I am working under the supervision of Jeff Taylor at 966-5328.

Appendix B: a Working Version of the Questionnaire

Your Expectations when Buying Over-The-Counter Medicines:

A Survey of Saskatoon Residents

Thank you for agreeing to complete this survey. Our goal is to improve upon the care people receive when using over-the-counter (OTC) medicines.

Part I — In Saskatchewan, people can buy OTC medicines in places such as pharmacies and convenience stores (like *7-11* and *Mac's*). We would now like to ask a few general questions about these medicines. There are no right or wrong responses; we are just interested in *your experiences*.

1. Were you aware that such products could be purchased in convenience stores? Check one box.

☐ Yes
☐ No

2. Have you ever purchased an OTC product in a convenience store? Check one box.

☐ Yes ──────►
☐ No
☐ Can't recall

> If yes, how many times did you buy OTC medicines from convenience stores in the past six months? Check one box.
> ☐ None
> ☐ 1 time
> ☐ 2 times
> ☐ More than 2 times→ Please indicate how
> many times:____
> ☐ Can't recall

3. Have you ever purchased an OTC product in a pharmacy? Check one box.

☐ Yes ──────►
☐ No
☐ Can't recall

> If yes, how many times did you buy OTC medicines from pharmacies in the past six months? Check one box.
> ☐ None
> ☐ 1 time
> ☐ 2 times
> ☐ More than 2 times→ Please indicate how
> many times:_____
> ☐ Can't recall

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4. How many times did you visit a pharmacy FOR ANY REASON in the past 30 days? Check one box.

☐ None

☐ 1 time

☐ 2 times

☐ More than 2 times → Please indicate how many times:_____

☐ Can't recall

5. How many times did you visit a convenience store FOR ANY REASON in the past 30 days? Check one box.

☐ None

☐ 1 time

☐ 2 times

☐ More than 2 times → Please indicate how many times:_____

☐ Can't recall

6. In the past 30 days, how many different OTC medicines have you taken? Check one box.

☐ None

☐ One

☐ Two

☐ More than two → Please indicate how many different OTC medicines:_____

☐ Can't recall

7. In the past 30 days, how many different prescription medicines have you taken? Check one box.

☐ None

☐ One

☐ Two

☐ More than two → Please indicate how many different prescription medicines: __

☐ Can't recall

8. Have you ever experienced a negative reaction or side effect from taking an OTC medicine? Check one box.

- ☐ Yes
- ☐ No
- ☐ Can't recall

Part II — The next few questions relate to where and how you might seek information regarding OTC medicines.

9. Do you read the information on an OTC medicine's package when BUYING a product *for the first time*?

- ☐ No
- ☐ Yes ⟶

> If yes, when you look at the package, including the front, back, and sides, what information do you read?
>
> - ☐ Directions for use
> - ☐ The symptoms it treats
> - ☐ Active ingredient(s)
> - ☐ Warnings (about using it with other drugs or conditions)
> - ☐ Possible side effects
> - ☐ Other_____

10. Do you read the information on an OTC medicine's package when USING a product *for the first time*?

- ☐ No
- ☐ Yes ⟶

> If yes, when you look at the package, including the front, back, and sides, what information do you read?
>
> - ☐ Directions for use
> - ☐ The symptoms it treats
> - ☐ Active ingredient(s)
> - ☐ Warnings (about using it with other drugs or conditions)
> - ☐ Possible side effects
> - ☐ Other_____

11. In general, do you ASK a medical doctor for advice when you need an OTC medicine? Check one box.

- ☐ Always
- ☐ Usually
- ☐ Sometimes
- ☐ Occasionally
- ☐ Never

12. Have you ever RECEIVED advice from a pharmacist regarding an OTC medicine? Check one box.

- ☐ Yes
- ☐ No
- ☐ Can't recall

13. Do you generally ASK a pharmacist for advice when buying an OTC medicine? Check one box.

- ☐ Always
- ☐ Usually
- ☐ Sometimes
- ☐ Occasionally
- ☐ Never ⟶

If you have NOT asked a pharmacist for advice when buying an OTC product, why not? Please check the two most important reasons to you.

___ I usually forget to ask

___ I do not have difficulty in selecting products

___ I am generally buying the product for someone else

___ I have used the medicines before with good results

___ I generally receive advice from a doctor

___ I am usually too busy to stop

___ Pharmacists are too busy to talk to me

___ I never buy such products

___ I do not trust pharmacists

___ I generally buy OTCs in places other than pharmacies

___ Other:_____

_____

_____

Part III — The next few questions deal with common symptoms and product effectiveness.

14. Over the past SIX months, have you *personally* experienced any of the following symptoms? Check all that apply.

☐ A cold or flu   ☐ Dry skin

☐ A headache   ☐ Constipation

☐ Muscle aches   ☐ Heartburn

☐ Allergies of the nose and/or eyes   ☐ A sore back

☐ Difficulty getting to sleep

15. Please indicate whether or not you have used any of the following types of OTC products over the past SIX months? If yes, please go to the column on the right to circle the number for how effective you found the medicine (based on your experiences).

Types	Please indicate which you have used		I found that the medicine works for me				
	NO	YES	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
(1) Cold remedies	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(2) Cough remedies	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(3) Pain relievers	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(4) Antihistamines	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(5) Sleeping aids	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(6) Stop-smoking patch	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(7) Upset stomach remedies	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(8) Laxatives	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(9) Dry skin lotions	☐ ↓	☐ ⇒⇒	1	2	3	4	5
(10) Sore muscle rubs	☐	☐ ⇒⇒	1	2	3	4	5

16. Overall, how would you rate your current health?

☐ Excellent   ☐ Fair

☐ Very good   ☐ Poor

☐ Good   ☐ Not sure

Part IV — OTC medicines are quite popular. We are interested in your impressions of these medicines. For this section, there are 8 statements below. For each one, please circle the number at the right that best describes your opinion. The scales range from 1 (strongly disagree) to 5 (strongly agree).

Statements	**In your opinion**				
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. It is generally safe to take several OTC medicines at a time.	1	2	3	4	5
2. When using an OTC medicine, you should be careful with it.	1	2	3	4	5
3. OTC medicines rarely cause side effects.	1	2	3	4	5
4. I read the instructions carefully before taking an OTC medicine for the first time.	1	2	3	4	5
5. Generally, I find OTC medicines to be less effective than prescription medicines.	1	2	3	4	5
6. If I can buy medicines without a prescription, that means they are safe to use beyond recommended doses.	1	2	3	4	5
7. Use of some prescription medicines with certain OTC medicines can cause problems.	1	2	3	4	5
8. It can be dangerous to use certain OTC medicines if you also have certain medical conditions.	1	2	3	4	5

Part V — In this part, we are interested in your impressions of pharmacists. For this section, there are 9 statements below. For each one, please circle the number at the right that best describes your opinion. The scales range from 1 (strongly disagree) to 5 (strongly agree).

Statements

	In your opinion				
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. Pharmacists seem to care about my concerns.	1	2	3	4	5
2. Pharmacists usually spend as much time as necessary with me.	1	2	3	4	5
3. I am not sure if pharmacists are trustworthy.	1	2	3	4	5
4. Pharmacists seem unwilling to help.	1	2	3	4	5
5. Pharmacists are friendly.	1	2	3	4	5
6. Pharmacists encourage safe and effective OTC medicine use.	1	2	3	4	5
7. Pharmacists have the knowledge to deal with my minor symptoms.	1	2	3	4	5
8. Pharmacists lack the knowledgeable necessary for helping me select an OTC product.	1	2	3	4	5
9. Pharmacists are often too busy to help me.	1	2	3	4	5

Part VI — In Canada, people can buy OTC medicines in many places. We are interested in two such places – *pharmacies* and *convenience stores* (like 7-11^R and Mac's^R) and your expectations of each. We will be asking you to compare these two locations.

If you have purchased OTC medicines from both locations, or even just one, please continue with the survey. If you have *never* purchased an OTC product from either, we would still like to know what you might expect and also ask that you continue with the survey.

On the next page, there will be two columns on the right – one for OTC medicines sold in a *convenience store* and one for OTC medicines sold in *pharmacies*. For each question, please circle a number from each column, regarding what you would expect as a customer at each location. The scales range from 1 (strongly disagree) to 7 (strongly agree).

AS AN EXAMPLE, if you feel strongly that short line-ups at the check-out would be desirable at both locations, you would select a high number under both columns ...

Item	In a convenience store	In a pharmacy

	Strongly Disagree	Neutral	Strongly Agree	Strongly Disagree	Neutral	Strongly Agree
I expect no line-ups at the check-out area	1 2 3 4 5 (6) 7			1 2 3 4 5 (6) 7		

FOR THIS SAME EXAMPLE, if what you expect differs at each location, you might have done something like this …

	In a convenience store	In a pharmacy

	Strongly Disagree	Neutral	Strongly Agree	Strongly Disagree	Neutral	Strongly Agree
I expect no line-ups at the check-out area	1 2 3 4 5 (6) 7			1 2 (3) 4 5 6 7		

Please proceed …

Now, here are the items to consider:

Please select a number in EACH column

Items	In a convenience store	In a pharmacy
	Strongly Disagree Neutral Strongly Agree	Strongly Disagree Neutral Strongly Agree
1. I expect a good selection of OTC medicines.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
2. I expect OTC medicines to be effective.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
3. I expect OTC medicines to be safe.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4. I expect extensive information on the package.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
5. I expect OTC medicines to be potent.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
6. I expect OTC medicines to have very few side effects.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7. I expect to find OTC medicines I have used before.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
8. I expect low prices on OTC medicines.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
9. I expect OTC medicines to be less effective than prescription medicines.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
10. I expect professional help.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
11. I expect to find good quality products.	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Part VI– Demographics

The next few questions are of a personal nature, but that is not our intent. We only ask these questions to help determine if responders such as yourself are similar to the Saskatoon average. This helps us understand the data. Your answers are not made public in any way.

1. The year in which you were born: _____

2. Your gender:　　☐ Male

　　　　　　　　　　☐ Female

3. Education completed:　　☐ Less than high school graduate

　　　　　　　　　　　　　☐ High school graduate

　　　　　　　　　　　　　☐ Trade/ Technical school

　　　　　　　　　　　　　☐ Some College/University

　　　　　　　　　　　　　☐ University or College graduate

4. Income level:　　☐ Under $20,000

　　　　　　　　　☐ $20,000 to $39,999

　　　　　　　　　☐ $40,000 to $59,999

　　　　　　　　　☐ $60,000 and over

5. Are you a parent or guardian of children under 16 at home?　☐ Yes

　　　　　　　　　　　　　　　　　　　　　　　　　　　　☐ No

6. Please check this box if you would like a copy of the study summary when available ☐

If you have any *comments* at this time, please feel free to add them below.

Thank you for completing this survey! Please return it in the envelope provided.

Appendix C: The Final Version of the Questionnaire

Your Expectations when Buying Over-The-Counter Medicines:

A Survey of Saskatoon Residents

Thank you for agreeing to complete this survey. Our goal is to improve upon the care people receive when using over-the-counter (OTC) medicines.

Part I — In Saskatchewan, people can buy OTC medicines in places such as pharmacies (like *Shoppers Drug Mart, Safeway Pharmacy, The Medicine Shoppe*, *PharmaSave etc.*) and convenience stores (like *7-11* and *Mac's*). We would now like to ask a few general questions about these medicines. There are no right or wrong responses; we are just interested in *your experiences*. Note: OTC medicines in this case do not include vitamins and herbals.

1. Before reading the attached letter, were you aware that OTC products could be purchased in convenience stores? Check one box.

    ☐ Yes
    ☐ No

2. Have you ever purchased (for yourself or for someone else) an OTC product in a convenience store? Check one box.

☐ Yes   ⟶

☐ No

☐ Can't recall

> If yes, how many times did you buy OTC medicines from convenience stores in the PAST SIX MONTHS? Check one box.
> ☐ None
> ☐ 1 time
> ☐ 2 times
> ☐ More than 2 times→ Please indicate how many times:____
> ☐ Can't recall

3. Have you ever purchased (for yourself or for someone else) an OTC product in a pharmacy? Check one box.

☐ Yes   ⟶

☐ No

☐ Can't recall

> If yes, how many times did you buy OTC medicines from pharmacies in the PAST SIX MONTHS? Check one box.
> ☐ None
> ☐ 1 time
> ☐ 2 times
> ☐ More than 2 times→ Please indicate how many times:____
> ☐ Can't recall

4. How many times did you visit a pharmacy FOR ANY REASON in the past 30 days? Check one box.

☐ None

☐ 1 time

☐ 2 times

☐ More than 2 times → Please indicate how many times:_____

☐ Can't recall

5. How many times did you visit a convenience store FOR ANY REASON in the past 30 days? Check one box.

☐ None

☐ 1 time

☐ 2 times

☐ More than 2 times → Please indicate how many times:_____

☐ Can't recall

6. In the past 30 days, how many DIFFERENT OTC medicines have you personally taken (or used)? Check one box.

☐ None

☐ One

☐ Two

☐ More than two → Please indicate how many different OTC medicines:_____

☐ Can't recall

7. In the past 30 days, how many DIFFERENT prescription medicines have you personally taken (or used)? Check one box.

☐ None

☐ One

☐ Two

☐ More than two → Please indicate how many different prescription

medicines:_____

☐ Can't recall

8. Have you ever experienced a side effect from taking an OTC medicine? Check one box.

- ☐ Yes
- ☐ No
- ☐ Can't recall

Part II — The next few questions relate to where and how you might seek information regarding OTC medicines.

1. Do you read the information on an OTC medicine's package when BUYING a product *for the FIRST TIME* **(whether for yourself or another person)?**

- ☐ No
- ☐ Sometimes
- ☐ Always

If so, when you look at the package, including the front, back, and sides, what information do you read? Check all that apply.

- ☐ Directions for use
- ☐ The symptoms it treats
- ☐ Active ingredient(s)
- ☐ Warnings (about using it with other drugs or conditions)
- ☐ Possible side effects
- ☐ Other_____

2. Do you read the information on an OTC medicine's package when USING or GIVING a product *for the FIRST TIME***?**

- ☐ No
- ☐ Sometimes
- ☐ Always

If so, when you look at the package, including the front, back, and sides, what information do you read? Check all that apply.

- ☐ Directions for use
- ☐ The symptoms it treats
- ☐ Active ingredient(s)
- ☐ Warnings (about using it with other drugs or conditions)
- ☐ Possible side effects
- ☐ Other_____

3. In general, do you ASK a medical doctor for advice (whether for yourself or another person) when you need an OTC medicine?   Check one box.

☐ Always
☐ Usually
☐ Sometimes
☐ Occasionally
☐ Never

4. Have you ever RECEIVED advice from a pharmacist (whether for yourself or another person) regarding an OTC medicine? Check one box.

☐ Yes
☐ No
☐ Can't recall

5. Do you generally ASK a pharmacist for advice (whether for yourself or another person) when buying an OTC medicine *for the FIRST TIME*? Check one box.

☐ Always
☐ Usually
☐ Sometimes
☐ Occasionally
☐ Never

If you do NOT always ask a pharmacist for advice when buying an OTC product, why not? Please check the TWO reasons most important to you.

___ I usually forget to ask

___ I do not have difficulty in selecting products

___ I am generally buying the product for someone else

___ I generally receive advice from a doctor

___ I am usually too busy to stop

___ Pharmacists are too busy to talk to me

___ I never buy such products

___ I do not trust pharmacists

___ I generally buy OTCs in places other than
       pharmacies

___ Other:_____

Part III — The next few questions deal with common symptoms and product effectiveness.

1. Over the past SIX months, have you *personally* experienced any of the following symptoms? Check all that apply.

☐ A cold or flu   ☐ Dry skin   ☐ A sore back
☐ A headache   ☐ Constipation   ☐ Allergies of the nose and/or eyes
☐ Muscle aches   ☐ Heartburn   ☐ Difficulty getting to sleep

2. Please indicate whether or not you have personally used any of the following types of OTC products over the past SIX months? If yes, please go to the columns on the right to circle the number for how effective you found the medicine (based on your experiences).

			I found that the medicine worked for me				
Types	Please indicate which you have used		Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
	NO	YES					
(1) Cold remedies	☐	☐ ⇒⇒	1	2	3	4	5
(2) Cough remedies	☐	☐ ⇒⇒	1	2	3	4	5
(3) Pain relievers	☐	☐ ⇒⇒	1	2	3	4	5
(4) Antihistamines	☐	☐ ⇒⇒	1	2	3	4	5
(5) Sleeping aids	☐	☐ ⇒⇒	1	2	3	4	5
(6) Stop-smoking products	☐	☐ ⇒⇒	1	2	3	4	5
(7) Upset stomach remedies	☐	☐ ⇒⇒	1	2	3	4	5
(8) Laxatives	☐	☐ ⇒⇒	1	2	3	4	5
(9) Dry skin products	☐	☐ ⇒⇒	1	2	3	4	5
(10) Sore muscle rubs	☐	☐ ⇒⇒	1	2	3	4	5

3. Overall, how would you rate your current health? Check one box.

☐ Excellent   ☐ Fair
☐ Very good   ☐ Poor
☐ Good   ☐ Not sure

Part IV — We are interested in your impressions of OTC medicines. For this section, there are 7 statements below. For each one, please circle the number at the right that best describes your opinion. The scales range from 1 (strongly disagree) to 5 (strongly agree).
As stated before, OTC medicines in this case do not include vitamins and herbals.

Statements	**In your opinion**				
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. It is generally safe to take more than one OTC medicine at a time.	1	2	3	4	5
2. When taking an OTC medicine, I should be careful with it.	1	2	3	4	5
3. OTC medicines rarely cause side effects.	1	2	3	4	5
4. OTC medicines are safe to take at higher than recommended doses.	1	2	3	4	5
5. Taking some prescription medicines with certain OTC medicines can cause problems.	1	2	3	4	5
6. It can be dangerous to take certain OTC medicines if I also have other medical conditions.	1	2	3	4	5
7. Generally, I find prescription medicines to be more effective than OTC medicines.	1	2	3	4	5

Part V — In this part, we are interested in your impressions of pharmacists. For this section, there are 9 statements below. For each one, please circle the number at the right that best describes your opinion. The scales range from 1 (strongly disagree) to 5 (strongly agree).

<u>**Statements**</u>

In your opinion

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. Pharmacists seem to care about my health concerns.	1	2	3	4	5
2. Pharmacists usually spend as much time as necessary with me.	1	2	3	4	5
3. Pharmacists are not trustworthy.	1	2	3	4	5
4. Pharmacists seem unwilling to help.	1	2	3	4	5
5. Pharmacists are friendly.	1	2	3	4	5
6. Pharmacists encourage safe and effective OTC medicine use.	1	2	3	4	5
7. Pharmacists have the knowledge to deal with my minor symptoms (eg. colds, allergies, headaches, etc).	1	2	3	4	5
8. Pharmacists lack the knowledge necessary to help me select an OTC product.	1	2	3	4	5
9. Pharmacists are often too busy to help me.	1	2	3	4	5

Part VI — In Canada, people can buy OTC medicines in many places. We are interested in two such places – *pharmacies* and *convenience stores* (like 7-11^R and Mac's^R) and your expectations of each. We will be asking you to compare these two locations.

If you have purchased OTC medicines from both locations, or even just one, please continue with the survey. If you have *never* purchased an OTC product from either, we would still like to know what you might expect and also ask that you continue with the survey.

On the next page, there will be two columns on the right – one for OTC medicines sold in a *convenience store* and one for OTC medicines sold in *pharmacies*. For each question, please circle a number from each column, regarding what you would expect as a customer at each location. The scales range from 1 (strongly disagree) to 7 (strongly agree).

AS AN EXAMPLE, if you feel strongly that short line-ups at the check-out would be desirable at both locations, you would select a high number under both columns ...

Item	In a convenience store	In a pharmacy
	Strongly Disagree Neutral Strongly Agree	Strongly Disagree Neutral Strongly Agree
I expect no line-ups at the check-out area	1 2 3 4 5 (6) 7	1 2 3 4 5 (6) 7

FOR THIS SAME EXAMPLE, if what you expect differs at each location, you might have done something like this …

	In a convenience store	In a pharmacy
	Strongly Disagree Neutral Strongly Agree	Strongly Disagree Neutral Strongly Agree
I expect no line-ups at the check-out area	1 2 3 4 5 (6) 7	1 2 (3) 4 5 6 7

Now, here are the items to consider (please think about OTC medicines in general, not any specific one) :

Please select a number in EACH column

Items	In a convenience store	In a pharmacy
	Strongly Disagree　　Neutral　　Strongly Agree	Strongly Disagree　　Neutral　　Strongly Agree
1. I expect a good selection of OTC medicines.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
2. I expect OTC medicines to be effective.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
3. I expect OTC medicines to be safe.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
4. I expect a lot of information on the package.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
5. I expect OTC medicines to be potent.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
6. I expect OTC medicines to have very few side effects.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
7. I expect low prices on OTC medicines.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
8. I expect OTC medicines to be less effective than prescription medicines.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
9. I expect professional help.	1　2　3　4　5　6　7	1　2　3　4　5　6　7
10. I expect to find good quality products.	1　2　3　4　5　6　7	1　2　3　4　5　6　7

Part VII– Demographics

The next few questions are of a personal nature, but we do not mean to pry into personal matters. We only ask these questions to help determine if responders such as yourself are similar to the Saskatoon average. This may help us to understand the data. Your answers are not made public in any way.

1. The year in which you were born: _____

2. Your gender: ☐ Male

                        ☐ Female

3. Education completed (check one box):   ☐ Less than high school graduate

                                                ☐ High school graduate

                                                ☐ Trade/ Technical school

                                                ☐ Some College/University

                                                ☐ University or College graduate

4. Household income level (check one box):   ☐ Under $20,000

                                                   ☐ $20,000 to $39,999

                                                   ☐ $40,000 to $59,999

                                                   ☐ $60,000 and over

5. Are you a parent or guardian of children under 16 at home?   ☐ Yes

                                                                     ☐ No

Please check this box if you would like a copy of the study summary when available ☐

If you have any *comments* at this time, please feel free to add them to the back cover.

Thank you for completing this survey! Please return it in the envelope provided.

Appendix D: The Advance Letter

[First Name] [Last Name]
[Address] Saskatoon SK [Postal Code]

Dear Sir or Madam:

Please allow me to introduce myself. My name is Helen Lo and I am a student at the University of Saskatchewan, College of Pharmacy and Nutrition. I am writing to you for your *future help* in a project involving medicines.

The purpose of my study is to determine whether citizens of our city have different expectations of non-prescription medicines, the ones you can buy without seeing your doctor (like Tylenol^R, Benylin^R, Gravol^R, and Rolaids^R). These are also called over-the-counter (OTC) medicines and are used for common ailments like colds, heartburn, and headaches. My specific interest lies in where these products are purchased in Saskatoon and whether location of sale is an issue.

How did I get your name and why have you been selected? We are all concerned about our privacy these days (as we should be). For this project, I simply went to the Saskatoon phone book and chose each name (and address) in a strictly random basis. This method is used by scientists for this type of research to get a good cross-section of opinions within a city.

My letter today is just to inform you of my intentions. The actual questionnaire is being sent next week. I am interested in what you feel about this issue and hope you see some value in completing it. If you have the time and would like to help out, it will take about 10 minutes. It asks about some of your past experiences buying medicines, what you might expect in general, then asks some questions about yourself to help me understand the findings. Even if you rarely or never use such products, we would still like your feedback.

Thank you for your time. I will be writing again in a week.

Sincerely,

Helen Lo, BSP
Masters Student
College of Pharmacy and Nutrition
University of Saskatchewan

Appendix E: The Cover Letter

[Date]

[First Name] [Last Name]
[Address]
Saskatoon SK [Postal Code]

Dear [Title] [Name]:

About a week ago, you should have received a letter from me asking for your help with a University project regarding common medicines. Thank you for taking the time to read on. We know you are busy with your *own responsibilities* let alone attending to a request from someone you do not know!

We will mention again that your household was randomly chosen from names in the phone book. This method is used to get a good cross-section of opinions from Saskatoonians. Anyone over 18 years of age at your residence can complete this survey.

The purpose of our study is to determine whether citizens of our city have different expectations of non-prescription medicines, the ones you can buy without seeing your doctor (like Tylenol^R, Benylin^R, Gravol^R, and Rolaids^R). These are also called over-the-counter (OTC) medicines. Such medicines are used to relieve symptoms of minor illnesses like colds, allergies, headaches, heartburn, skin rashes, sore feet, etc. Our specific interest lies in where these products are purchased in Saskatoon and whether location of sale is an issue. Even if you rarely or never use such products, we would still like your feedback.

Our letter today contains the questionnaire we mentioned. If you have the time and would like to help out, please continue. It takes about 10 minutes to fill out. It asks about some of your past experiences buying medicines, what you might expect in general, asks you to make several comparisons, then asks some questions about yourself simply to help us understand the findings.

Once completed, please return the questionnaire in the stamped reply envelope provided. It would be great to receive your reply by ***July 16, 2003.***

Participating in this study is strictly voluntary. We wished we could say the benefits to you will be great, but that is not the case. You will, however, be helping with a project we feel is important to understand the sale of medicines that are used for a lot of common conditions. Any information you do provide will be kept confidential. There is a code on your questionnaire – it is used to help identify those who have responded. We hope to also send a gentle reminder in a few weeks to those who might still consider completing one. Please note – your name *never* appears on the questionnaire.

As is University policy for the protection of survey respondents, all returned documents are stored by the researcher at the University of Saskatchewan under lock and key for five years. Mailing lists with any personal addresses are destroyed at the end of the mailing period. Information collected will be used to produce a Master's thesis and will be described in what is called *anonymous and aggregate form.* What this means is that personal information such as names never get used in any way.

If you have any questions concerning the study, please feel free to ask at any point. This study has been approved on ethical grounds by the University of Saskatchewan Behavioural Sciences Research Ethics Board on April 3, 2003. Any questions regarding your rights as a participant may be addressed to that committee through the Office of Research Services (966-2084).

Again, thanks for your consideration and time.

Sincerely,

Helen Lo, BSP   Jeff Taylor, Ph.D.
M.Sc. Student   Supervisor
College of Pharmacy and Nutrition   College of Pharmacy and Nutrition
University of Saskatchewan   University of Saskatchewan
966-6346   966-5328

Appendix F: The First Follow-Up Letter

[Date]

[First Name] [Last Name]
[Address]
Saskatoon SK [Postal Code]

Dear Sir or Madam:

About two week ago, a questionnaire concerning the location of over-the-counter (OTC) product sale in Saskatoon was mailed to your household. We hope you found the topic was interesting and important.

If you have already returned the questionnaire, thank you very much for your time; we know you are busy! Information that you and others provide will be used to help develop solutions for problems identified. If not yet filled out, it is hoped you find a few minutes over the next few days for this. Once again, anyone over 18 years of age at your residence can complete the questionnaire. Your participation is entirely voluntary but we feel it is essential to the quality of the study. Please note that all information will be kept confidential.

If you did not receive a letter containing the questionnaire or have misplaced it, please contact Helen Lo at 966-6346 and another will be sent out right away.

Again, thanks for your assistance.

Sincerely,

Helen Lo, BSP   Jeff Taylor, Ph.D.
M.Sc. Student   Supervisor
College of Pharmacy and Nutrition   College of Pharmacy and Nutrition
University of Saskatchewan   University of Saskatchewan

Appendix G: The Second Follow-Up Letter

[Date]

[First Name] [Last Name]
[Address]
Saskatoon SK [Postal Code]

Dear [Title] [Name]:

Recently a questionnaire concerning what we fell to be an important issue was sent to you. The topic involved your expectations of over-the-counter (OTC) medicines. Unfortunately, we have not yet received your response. However, if it was just mailed, we thank you and please disregard this letter.

Since the size of this study is limited, your input is very *important* to its success. We understand that your time is valuable, but once again ask if you or anyone over 18 years of age at your residence could take a few minutes over the next few days to complete the enclosed questionnaire. The extra copy of the questionnaire is included in the event you did not receive it or it has been misplaced. Please note that all information will be kept confidential.

If you have any questions regarding this matter, please contact Helen Lo at 966-6346.

Again, thanks for your assistance.

Sincerely,

Helen Lo, BSP   Jeff Taylor, Ph.D.
M.Sc. Student   Supervisor
College of Pharmacy and Nutrition   College of Pharmacy and Nutrition
University of Saskatchewan   University of Saskatchewan

Appendix H: The Non-Response Card

[Date]

Dear [Title] [Name]:

Please accept *our apology* for this final letter. We totally understand your wish not to participate in our OTC medicine project. Mail surveys are not for everyone and can be a real bother!

IF you could find a minute to provide the following information, however, that would even help. If you do so, please make sure to **tear off your name and address and just send back the bottom portion**. We have no need to know who the return letter was sent by. Thanks for your consideration.

Sincerely,

Helen Lo, BSP   Jeff Taylor, Ph.D.

M.Sc. Student   Supervisor

✂--

Over-the-counter (OTC) Medicine Study

1. Are you aware that OTC products can be purchased in convenience stores?

   ☐ Yes

   ☐ No

2. Have you ever purchased (for yourself or for someone else) an OTC product in a **convenience store**?

   ☐ Yes

   ☐ No

   ☐ Can't recall

3. Have you ever purchased (for yourself or for someone else) an OTC product in a **pharmacy**?

   ☐ Yes

   ☐ No

   ☐ Can't recall

4. Birth year: 19_____

5. Gender: ☐ Female

   ☐ Male

6. Education: ☐ Some high school

   ☐ High school diploma

   ☐ Trade/Technical school

   ☐ Some university

   ☐ University/College degree

7. Income level: ☐ Under $20,000

   ☐ $20,000 to $ 39,999

   ☐ $ 40,000 to 59,999

   ☐ $60,000 and over

Appendix I: Comments Section of the Word Trial Document

1. The reasons why respondents thought the meanings of these two words (*Effectiveness* versus *Potency*) were different (N = 49).

Number	Reasons
27	Potency means how strong a medicine is. (Strength) Effectiveness means how well a medicine works.
9	Higher the potency does not mean higher effectiveness. The strength of medication doesn't necessarily make it effect. Products do not need to be potent to be effect.
1	Prior education
1	Potency has to do with drug concentration; effectiveness has to do with the degree to which the aliment is improved.
1	Effectiveness may indicate appropriateness whereas potency indicates only the strength of the drug.
1	Effectiveness depends on health conditions. It is not necessary to be related with potency.
1	Potency is not always giving effectiveness, it is only indicates likelihood of something.
1	Effectiveness- how well it works; potency- how toxic it might be.
1	Something can be effective with a low potency.
1	Effectiveness- how well it works; potency- how much is in the drug.
1	Potency implies effectiveness is a short period of time; effectiveness can be achieved by different means and consists of a result from an action.
1	Potency refers to the amount of drug that has an effect of the dose administered. Effectiveness is the level of the therapeutic response.
1	Effectiveness is how well a drug works. Potency is the concentration before which it becomes toxic.
1	It depends on weight/age for how potent a drug is.
1	Because a drug can be potent without being effective.

2. The reasons why respondents thought the meanings of these two words (*Effectiveness* versus *Potency*) were similar (N = 18).

Number	Reasons
7	How potent something is will affect how effective it is.
3	The more potent the drug the more effective it will be.
1	If something is effective, you may also say that it is potent.
1	Potency refers to how strong something is (ie. how "effective" it is) on an external entity.
1	The potency has a lot to do with effectiveness.
1	One would assume that the potency will directly affect the effectiveness.
1	If a drug is not potent enough to do the job expected, then it is not effective.
1	Effectiveness is how well a drug works; potency is how much is needed for it to be effective.
1	Because of something to work, depending on what it is, it needs to be strong.
1	Effectiveness means how quickly and how well it will work. Potency will have direct effect and effectiveness.

3. The reasons why respondents thought the meanings of these two words (*Safety* versus *Side Effect*) were different (N = 34).

Number	Reasons
6	Safety is whether or not it is health for a particular patient to be taken. Side effect is certain risk or effect that you can experience when taking the drug.
7	Drug can be safe but still have side effect. Side effects are not necessarily unsafe.
2	There are expected side effects of medicines that do not necessarily correlate with safety of medicines.
1	Safety is how dangerous it is, side effects can be safe or dangerous.
3	Side effects are not always a safety issue.
1	Safety means no danger; side effect – what can happen, not necessarily dangerous.
1	Side effects indicate effects aside from the medicinal effect of the drug; safety can also be compromised by the medicinal effect itself.
1	Safety is whether the product is harmful or not; side effect is possible reactions of the drug.
2	Safety is positive and side effect could mean negative.
4	These terms are opposites. If something is safe, it should have few side effects.
1	Safety refers to national standards, toxic dose, quality control, substance, and preparation purity. Side effect is a consequence that may or may not occur in people taking a drug which is a complication of the systemic or local mechanisms of action but not a complication of a "toxic" amount.
2	Side effects are the undesired responses a drug has; safety refers to the proper way a drug should be taken.
2	Safety- how safe is the medicine; side effect- what the medication will do or effect the body eg. drowsiness.
1	Safety has to do with whether something will harm you; Side effects can be harmful but don't have to be.

4. The reasons why respondents thought the meanings of these two words (*Safety* versus *Side Effect*) were similar (N = 26).

Number	Reasons
1	Side effects can cause health concerns for some people.
1	Side effects can tell you how safe the product is, whether it react with other products.
4	A drug with too many side effects is not safe (or the safety of it decreases).
2	Safety –is it safe; side effect- what could happen.
1	Safety is how your body reacts to something.
1	Some side effects are non-life threatening, so those drugs would be safe even with side effects.
1	Because you want to be safe, at the same time you want to know the side effects.
1	If a product is not safe, the side effects could be deadly! Must be considerate at all times.
1	Safety refers to any risks that may occur.
1	I think something with no side effects could be considered safe.
1	Side effects might affect your health.
1	Depending upon the side effects, it could have a lot to do with its safety.
1	Both terms are that what you can expect from drug.
1	Safety and side effect- precautions for taking drugs.
2	Depending on a drug, the more side effects the drug has, the more unsafe it may be.
2	Side effects are the risks associated with a drug.
1	Safety refers to if it will harm you or harm a particular age group (ie. children). Side effects refer to symptoms caused negatively to an individual taking the medicine.
3	Side effect may have a lot to do with the safety of the drug.