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Consumer preferences for over-the-counter drug retailers in the reregulated Swedish pharmacy market

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ABSTRACT

Following a large regulatory reform in 2009, which ended the state's pharmacy monopoly, non-pharmacy retailers in Sweden today sell certain over-the-counter (OTC) drugs. The aim of this study was to investigate consumer preferences regarding OTC drug retailers and the reasons for choosing a pharmacy versus non-pharmacy retailer. We conducted a web survey aimed at Swedish adults. Out of a stratified sample of 4058 persons, 2594 agreed to take part (48% women; mean age: 50.3 years). Questions related to OTC drug use, retailer choice and factors affecting the participants' preferences for OTC drug retailers. Logistic regression was conducted to analyse OTC drug use and reasons for retailer choice in relation to sex, age and education. Nine in ten participants reported OTC drug use in the 6 months prior to the study. For their last OTC purchase, 76% had gone to a pharmacy, 20% to a grocery shop and 4% to a convenience store, gas station or online. Geographic proximity, opening hours and product range were reported as the most important factors in retailer choice. Counselling by trained staff was important to 57% of participants. The end of the state's pharmacy monopoly and the increase in number of pharmacies seem to have impacted more on Swedish consumers' purchase behaviours compared with the deregulation of OTC drug sales.

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1. Introduction

The Nordic pharmacy markets have traditionally been under strict governmental regulation [1]. Since the mid-1990s, regulatory reforms have resulted in major changes introducing more diverse pharmacy ownership and an increase in the number and types of retail outlets selling

drugs [2–4]. Sweden was the last of the Nordic countries to re-regulate the pharmacy market when the governmental pharmacy monopoly ended in 2009 and private pharmacy enterprises entered the market [5]. At the same time, non-pharmacy retailers were permitted to sell certain over-the-counter (OTC) drugs. The intention was to stimulate price competition for cost control purposes and increase the general availability of OTC drugs [6]. Within 5 years, the number of state-owned pharmacies had decreased from 929 to 370 while 957 private pharmacies had been established [7]. In addition, about 5600 grocery stores, convenience stores and gas stations had received authorisation from the Medical Products Agency to sell

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certain OTC drugs accounting for 18.5% of the OTC market [7,8].

In Sweden a drug may be approved for OTC sale if it does not pose a direct or indirect risk (i.e. if it has low toxicity and low risk of adverse events and does not conceal any underlying serious illness) or present any danger of abuse. Furthermore, it should be suitable for self-medication and the package size must be adapted to the intended treatment length (usually a maximum of 14 days). The mandatory patient information leaflet should give clear instructions so that rational use is achievable. According to Swedish legislation, community pharmacists are obliged to provide drug information and counsel patients about correct drug use on drug dispensing [5]. The sale of OTC drugs is subject to similar information requirements. However, in non-pharmacy retail outlets other rules apply as these retailers are not allowed to provide counselling on choice of treatment or dosing. The patient is instead referred to a pharmacy or the package insert for drug information. In addition, non-pharmacy retailers are limited to a list with a maximum of 1700 drugs, in a limited range of package sizes, which they can sell to individuals 18 years of age and older [9].

Patients often have limited knowledge of the properties of OTC drugs and how to use them appropriately [10–14]. Increased availability of OTC drugs has previously been suggested to lead to more relaxed attitudes towards the use of these drugs [15]. There is evidence that patients are unaware of the adverse risks associated with concurrent use of OTC drugs with other drugs and agents [12,16] and the long-term use of certain OTC drugs in general [10,17,18]. At the same time a Dutch study has shown that people feel confident about their own knowledge about OTC drugs [19]. According to a study from Northern Ireland, people tend to base their choice of treatment firstly on what they perceive as effective, based on previous use, followed by familiarity with the brand name. Also, they know a product is effective because it was initially recommended by a pharmacist [20].

Several studies report that many people prefer pharmacies for buying OTC drugs [19–21]. In the Northern Irish study, about two-thirds preferred using a community pharmacy for their OTC drug purchases. Persons who regularly used prescription drugs were more likely to choose a pharmacy compared with those who did not [20]. In the Dutch study it was even reported that most of the respondents preferred commonly used painkillers (e.g. paracetamol and ibuprofen) to be sold in pharmacies exclusively [19]. Similar opinions were revealed among Flemish patients when asked about their preferred retail outlets for OTC drugs. Moreover, 78% agreed that a record of their personal OTC drug use should be kept in the pharmacy [21]. There are no similar studies looking into the preferences of Swedes, or other Nordic citizens, since the re-regulation of the pharmacy markets.

The aim of the present study was to investigate Swedish consumers' preferences for OTC drug retailers since the re-regulation, and their reasons for choosing a pharmacy or a non-pharmacy retailer.

2. Methods

2.1. Setting and design

A web survey aimed at the Swedish adult population was conducted. The survey was organised by the Laboratory of Opinion Research (LORE) at the University of Gothenburg through their web panel, the Citizen's Panel. During the year of this data collection the entire panel consisted of approximately 21,000 registered respondents, slightly more than 14,000 of whom were considered active participants [22].

2.2. Study population

A sample of 4200 persons were randomly selected from the Citizen's Panel to be invited to take part in the survey. This sample was stratified by sex, age and education to be representative of the Swedish adult population (aged ≥ 20 years). About 3% of the gross sample turned out to have invalid or undeliverable e-mail addresses, which gave us a net sample size of 4058 people who received the e-mail with the survey invitation. Of these, 2594 agreed to take part in the survey, which gave a net response rate of 64% [23].

2.3. Data collection

The survey was conducted from 12 June to 8 July 2013. Two reminders were sent, 6 and 14 days, respectively, after the survey was first dispatched to the respondents. The full questionnaire consisted of 115 questions, 15 of which concerned OTC drugs (representing questions 22–36 in the full questionnaire). The questions included OTC drug use during the last 6 months, type of OTC drug(s) commonly used, choice of retailer, and reasons for choosing this retailer. Five-point Likert scales were used to measure the importance of certain factors related to the participants' preferences of OTC drug retailer (Q: "When you buy OTC drugs, how important are the following factors for your choice of retailer?"), where 1 = very important, 2 = quite important, 3 = neither important nor unimportant, 4 = not very important, and 5 = not at all important. In addition, information on sex, age and education was collected at the end of the survey. Three age groups were constructed: 20–39 years, 40–59 years and 60–79 years. Education was categorised as "lower than high school exam" (ranging from no education to high school without the final exam), "high school exam/post-high school" (including post-high school education without an exam) and "university degree/postgraduate studies".

2.4. Statistical analysis

All responses were coded and entered into SPSS Statistics, version 22 (SPSS Inc., Chicago, IL, USA).

Logistic regression was performed to analyse possible associations between background variables (sex, age and education) and OTC drug use, and reasons for choosing either a community pharmacy or a non-pharmacy retailer.

In the first analysis the frequency of OTC drug use was categorised as “>once a month”, =1 if used at least once a month, and =0 if used less often than once a month. When asked about their reasons for purchasing OTC drugs in a community pharmacy or a non-pharmacy retailer, respondents had the possibility to choose from six response categories: geographical proximity, opening hours, availability of trained staff, product range, other, and have not purchased OTC drugs in a community pharmacy or at a non-pharmacy retailer, respectively. The first four categories were included in the analyses and the following dummy variables were created: “Geographical proximity” = 1 if geographical proximity was stated as the most important category, and 0 if otherwise; “Opening hours” = 1 if opening hours was stated as the most important factor, and 0 if otherwise; “Availability of trained staff” = 1 if availability of trained staff was stated as the most important factor, and 0 if otherwise; and “Product range” = 1 if product range was stated as the most important category, and 0 if otherwise. Hence, four separate binary logistic regression analyses were performed using the forced entry method of reasons for choosing a community pharmacy (i.e. excluding online pharmacies). A similar procedure was followed for analysis of the reasons for choosing a non-pharmacy retailer (i.e. grocery shop, convenience store or gas station), except that only two dummy dependent variables were created for each analysis since these were the only responses given by more than 5% of the participants. These were: “Geographical proximity” = 1 if geographical proximity was stated as the most important category, and 0 if otherwise; “Opening hours” = 1 if opening hours was stated as the most important factor, and 0 if otherwise. Male sex, age 20–39 years and education lower than high school exam were chosen as reference categories for the background variables in the analyses. The results are presented as odds ratios (ORs) with 95% confidence intervals (CI).

2.5. Ethical approval

The study was based on a large data collection which was approved by the Regional Ethical Review Board in Gothenburg (Dnr:189-14).

3. Results

3.1. Use of over-the-counter drugs in the study population

The study population consisted of 1357 men and 1237 women aged 21–76 years (mean age: 50.3 years). Twenty per cent of the participants had a university/postgraduate degree while 67% had graduated from high school and 13% had not completed high school.

The majority (87%) of the study population reported use of OTC drugs in the 6 months prior to the study. Of these, 24% had used OTC drugs about every week (>20 times/6 months), 30% at least monthly but not weekly (6–20 times/6 months) and 46% less than once a month (1–5 times/6 months). As shown in Table 1, female participants and those in the age range 20–39 years reported

more frequent use of OTC drugs compared with men and the other age groups. No differences by educational level were observed.

Analgesics and antipyretics represented 76% of the OTC drugs used, followed by nasal sprays for cold relief (35%), antacids and anti-reflux drugs (18%), anti-allergics/antihistamines (17%), fluoride products (15%), antitussives and expectorants (12%) and nicotine replacement products (3%).

3.2. Consumer preferences for over-the-counter drug retailers

Table 2 shows that 76% of participants had been to a community pharmacy the last time they had bought any of the listed OTC drugs. Twenty per cent reported being at a grocery shop while <4% gave convenience stores, gas stations, the Internet or other for source of last OTC drug purchase. Seventy-one per cent had at least once bought OTC drugs from a non-pharmacy retailer (data not shown). This was reported by a higher proportion of participants from the two younger age groups (79% and 76%, respectively) compared with those aged 60 years or more (56%). Ten per cent of participants had bought OTC drugs at online pharmacies at least once, a proportion that was higher among the participants in the age group 40–59 years (12%) compared with those who were younger (9%) or older (8%).

Geographic proximity was reported as the overarching factor in the choice of retailer for any OTC drug (considered as quite important or very important by 80% of participants) (Table 3). This was followed by opening hours (78%) and the range of available products (76%). Access to counselling by trained staff was considered important or very important by 57% of participants (Table 3).

3.3. Reasons for choosing a community pharmacy for over-the-counter (OTC) drug purchases

Geographical proximity was the main reason given by the participants for choosing a pharmacy when buying OTC drugs (given by 35%), followed by product range (29%), availability of trained staff (21%), and opening hours (5%) (Table 4). Nine per cent stated other reasons such as preference for a state-owned retailer (Apoteket AB) that did not make profit on their drug sales, and the availability of more products, including less expensive generics. As shown in Table 4, male participants and those in the two youngest age groups (20–39 and 40–59 years) were more likely to consider geographic proximity to be important compared with female and the oldest age group. Product range was reported to a larger extent by participants who were female, in the youngest age group or had at least a high school exam compared to those who were male, older and less educated. Female participants, those in the age group 60–79 years and those without a university degree were more likely to report the availability of trained staff in the pharmacy as important compared with men, those in the younger age groups and those who were more educated. Regarding opening hours, there was a smaller proportion in the oldest age group who considered this important

Table 1

Adjusted odds ratios (ORs) for at least monthly use (compared with less than monthly use) of over-the-counter (OTC) drugs in relation to sex, age and educational level (n = 2594).

	OTC drug use at least once a month		OR	95% CI
	n	%		
Sex				
Male	532	47.3	1.0	
Female	652	60.4	1.7	1.42–2.00
Age group				
20–39 years	382	60.4	1.0	
40–59 years	474	51.6	0.7	0.57–0.86
60–79 years	328	50.1	0.7	0.52–0.82
Education				
<High school exam	137	52.5	1.0	
High school exam/post-high school	745	52.7	0.9	0.70–1.21
University degree/postgraduate	302	57.0	1.0	0.75–1.39

Table 2

Participants' last place of over-the-counter (OTC) drug purchase in per cent of the total purchase per drug category.

	Community pharmacy	Grocery store	Convenience store	Gas station	Internet	Other
Analgesics and antipyretics (n = 1975)	71.4	24.5	1.4	1.0	0.7	1.1
Nasal sprays for cold relief (n = 916)	72.7	23.7	1.3	1.2	0.3	0.8
Antacids and anti-reflux drugs (n = 459)	83.0	15.3	0.2	0.2	0.7	0.7
Anti-allergics/antihistamines (n = 435)	88.9	9.2	0.2	0.2	0.7	0.7
Fluoride products (n = 400)	79.3	14.9	0.8	–	1.0	4.0
Antitussives and expectorants (n = 300)	84.5	13.1	0.7	0.3	0.3	1.0
Nicotine replacement products (n = 71)	73.2	19.7	1.4	4.2	–	1.4
Total purchasing occasions (n = 4556)	76.1	20.3	1.0	0.8	0.6	1.2

Table 3

Importance of certain factors related to the preference for type of over-the-counter (OTC) drug retailer (n = 2580).

	Very important n (valid %)	Quite important n (valid %)	Neither important nor unimportant n (valid %)	Quite unimportant n (valid %)	Not important at all n (valid %)
Geographic proximity	1049 (40.7)	1007 (39.1)	312 (12.1)	135 (5.2)	73 (2.8)
Opening hours	978 (38.1)	1023 (39.9)	350 (13.6)	141 (5.5)	74 (2.9)
Product range	701 (27.4)	1251 (48.8)	405 (15.8)	148 (5.8)	57 (2.2)
Availability of trained staff	676 (26.2)	799 (31.0)	523 (20.3)	386 (15.0)	196 (7.6)
Other	151 (29.0)	59 (11.3)	127 (24.4)	18 (3.5)	166 (31.9)

compared to the younger; otherwise there was no significant difference between the groups.

3.4. Reasons for choosing a non-pharmacy retailer for over-the-counter drug purchases

Participants had mainly purchased their OTC drugs from retailers such as grocery shops, convenience stores and gas stations because of geographical proximity and long opening hours. Table 4 shows that geographic proximity was less likely to be important to the oldest age group (60–79 years) compared with younger respondents. Opening hours were rated most important by female participants and those in the younger age groups (20–39 and 40–59 years). Another reason for choosing a non-pharmacy retailer was the convenience of shopping for OTC drugs together with groceries.

The main reasons for shopping online were easy accessibility (given by 39% of those who had purchased OTC drugs online) and the range of products (given by 33%). Other

reasons included convenience and more favourable prices (given by a total of 22%).

4. Discussion

Following the regulatory reform in 2009, a broad selection of OTC drugs in Sweden can now be sold in grocery stores, convenience stores and gas stations. Still, this study shows that community pharmacies are the preferred retailer for OTC drugs among Swedish adults. This is consistent with studies from other countries, by Brabers et al. and Hanna and Hughes [19,20], but contrary to a more recent study by Koffeman et al. where users of OTC non-steroidal anti-inflammatory drugs (NSAIDs) were most likely to purchase these drugs at drugstores without pharmacists present [24]. Geographic proximity, opening hours and product range were reported to be the most important factors for the choice of OTC drug retailer, followed by access to counselling by trained staff, which was considered important to just over half of the participants. These findings may indicate that the end of the state's

Table 4
Adjusted odds ratios (ORs) for the participants' main reasons for purchasing over-the-counter (OTC) drugs in a community pharmacy and a grocery shop, convenience store or gas station, in relation to sex, age and educational level.

	Community pharmacy ^a						Grocery shop, convenience store or gas station ^b					
	Geographic proximity (n = 766; 34.7%)		Product range (n = 643; 29.1%)		Trained staff (n = 468; 21.2%)		Opening hours (n = 113; 5.1%)		Geographic proximity (n = 763; 48.9%)		Opening hours (n = 669; 42.9%)	
	n (%)	OR	95% CI	n (%)	OR	95% CI	n (%)	OR	95% CI	n (%)	OR	95% CI
Sex												
Male	434 (32.0)	1.0		306 (22.5)	1.0		214 (15.8)	1.0		422 (31.1)	1.0	
Female	332 (26.8)	0.8	0.65–0.92	337 (27.2)	1.3	1.06–1.52	254 (20.5)	1.4	1.15–1.73	341 (27.6)	1.3	1.06–1.52
Age group												
20–39 years	226 (32.4)	1.0		201 (28.8)	1.0		107 (15.4)	1.0		245 (35.2)	1.0	
40–59 years	337 (31.7)	1.0	0.79–1.19	264 (24.8)	0.8	0.67–1.04	178 (16.7)	0.9	0.83–1.40	335 (31.5)	0.8	0.68–1.02
60–79 years	203 (24.4)	0.7	0.54–0.85	178 (21.4)	0.7	0.57–0.91	183 (22.0)	0.5	1.11–1.91	183 (22.0)	0.5	0.40–0.63
Education												
<High school exam	89 (27.5)	1.0		57 (17.6)	1.0		74 (22.8)	1.0		96 (29.6)	1.0	
High school exam/post-school	488 (29.4)	1.0	0.76–1.32	415 (25.0)	1.4	1.06–1.98	305 (18.4)	0.8	0.62–1.11	496 (29.9)	0.9	0.66–1.13
University degree/post-graduate	189 (31.0)	0.9	0.81–1.49	171 (28.1)	1.6	1.16–2.31	89 (14.6)	0.6	0.44–0.88	171 (28.1)	0.8	0.57–1.06

^a Based on the valid sample (387 missing values).

^b Based on the valid sample (390 missing values).

pharmacy monopoly, which led to an increase in the number of pharmacies and longer opening hours, were at least as important, with regard to the consumer preferences, as the availability of OTC drugs outside pharmacies.

We found a slight difference in retailer preferences based on the type of OTC drug. The most commonly used OTC drugs in question (analgesics/antipyretics and nasal sprays for cold relief) were more often bought in non-pharmacy outlets compared with the other types of OTC drugs. According to a study by Droege et al., it seems that the more well-known an OTC drug is to people, the less risky it is perceived as [25]. This may explain why these drugs are more frequently bought in regular shops while for treatment of ailments where symptoms are more diverse and the treatment is unclear, more consumers seem to seek advice in a pharmacy.

Increased availability of OTC drugs is supposed to enhance self-care of minor ailments and increases people's possibility to take responsibility for their own health. On the other hand, persons with an already high consumption of such drugs tend to be more inclined to use even more OTC drugs as a result of increased availability, compared with less frequent users [26]. As argued by Francis et al., self-care with OTC drugs may also mask diagnosis requiring other medical treatment or result in a delay in patients consulting the GP for potentially serious diseases [27]. Since OTC drug use may be initiated or continued by patients without seeing a physician, counselling by trained staff in a pharmacy may be at least as crucial for OTC drugs as for prescription drugs. A study from the UK showed that more of the pharmacists' time was spent on counselling about OTC drugs compared with prescription drugs [28]. One can still question the extent to which the obligation to give counselling is being followed [28–32]. As an example, a study conducted in Finland 1 year after the pharmacy deregulation in 2006 showed that 30% of pharmacy owners and 17% of staff pharmacists had lost most of their motivation to provide OTC drug counselling after the sale of nicotine replacement products outside pharmacies had been legalised [29]. Furthermore, Swedish investigators sent mystery shoppers to buy OTC drugs to explore the counselling given in pharmacies and general sales stores [32]. They highlighted a need for improvement in the counselling provided in the pharmacies based on the finding that the personnel in many cases gave inappropriate advice or no advice at all. It was also found that 68% of the shoppers were recommended specific products when asking for drugs in the non-pharmacy outlets, despite the ban on counselling [32].

Increased competition and reduced drug prices have been a common aim of the re-regulation of the Nordic pharmacy markets [2,3]. Most OTC drugs are excluded from public financing schemes and paid out of pocket by the patients. They are also subject to free pricing, which in theory should encourage price competition [33]. According to an evaluation conducted by the Swedish Agency for Public Management on assignment from the government, new, lower-priced brands of OTC drugs have entered the market since 2009. For the top selling substances (paracetamol, ibuprofen, loratadin and nicotine replacement therapy), between one and four new brands have been introduced

per substance—all with a lower price compared with the previously established brands [34]. Based on analyses by Vogler et al. of the consequences of pharmacy market regulation/deregulation, it is, however, doubtful that this initial change will result in reduced prices over time [33]. Rather, the pharmacy enterprises tend to focus their competitive measures on increased geographic accessibility and longer opening hours [3,33], which is reasonable based on the current results.

Some methodological considerations should be addressed regarding the web survey this study is based on. The participants were asked to report any use of OTC drugs in the 6 months prior to the study. Since people's recollection of medicine taking is accurate for up to 2 weeks, but then becomes gradually less accurate, this figure is of uncertain quality. However, this was not a question about adherence and we believe our results to be a useful indication of the OTC drug use in the Swedish population. Our study confirms previously documented trends in OTC drug use [27]: women in our population used OTC drugs more frequently compared with men, and younger persons compared with elderly people, which can be explained by the fact that elderly persons are more likely to get these substances prescribed (in larger quantities) by the physician. There is also potential bias associated with the term "OTC drug". In Swedish this translates to "non-prescription drug". These drugs are not sold behind counter in most pharmacies, but they are in non-pharmacy retail outlets. What people understand as "non-prescription drugs" or "OTC drugs" may vary and the respondents were not given a definition of the term; yet, examples were provided for several of the questions. Major strengths of the study were the sample of participants, which was considered representative of Swedish adults, and a satisfactory response rate. As we were interested in analysing one factor at a time rather than analyse between factors binary logistic regression was applied.

In the end it is worth mentioning that the importance of widespread availability of OTC drugs depends on a population's general access to health care. In countries reported to have a shortage of primary care physicians (e.g. the UK, the USA and New Zealand) [35,36], increased access to care has been used as an argument for allowing non-pharmacy retailers to sell OTC drugs and switching drugs from prescription to non-prescription status [35]. This should be kept in mind when interpreting the current results, which are based on data collected in a country where access to primary care physicians and emergency rooms is very good [37].

5. Conclusion

This study among Swedish adults shows that consumer preferences for OTC drug retailers are based on increased availability in terms of geographic proximity and long opening hours, which is in line with parts of the intention of the regulatory reform. Community pharmacies are still the preferred retailer for OTC drugs for the majority of consumers while grocery stores, gas stations and the Internet are used to a lesser extent. The end of the state's pharmacy monopoly and an increase in the number of

pharmacies seem to have had a greater impact on Swedish consumers' purchase behaviours compared with the deregulation of the OTC drug sales.

Conflict of interest statement

All authors report no conflict of interest.

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