

PURCHASING AND INVENTORY CONTROL IN COMMUNITY PHARMACIES IN RIYADH CITY, SAUDI ARABIA

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تهدف هذه الدراسة إلى اختبار الحصيلة المعرفية لصيادلة المجتمع عن طرق مراقبة المخزون وكذلك عن التعليم الذي تلقوه في هذا الشأن ومعرفة الطرق التي يتبعونها في صيدلياتهم، ومدى تفهمهم للطرق المختلفة. ولهذا الغرض فقد تم تصميم وتوزيع استبانة على عينة عشوائية مكونة من 151 صيدلية من صيدليات مدينة الرياض بالمملكة العربية السعودية. وقد أظهرت النتائج أن جميع الصيدالونات كانوا من الذكور وأن متوسط أعمارهم هو 36 ± 6.8 سنة، وأن 99.3% من غير السعوديين ممن تخرجوا من دول عربية مجاورة (70.9%). وقد ادعى 70% من الصيدالونات أنهم أنهوا دراسة مقرر في الإدارة الصيدلية في المرحلة الجامعية وأن لديهم خبرة عملية سابقة في مجال مراقبة المخزون. وقد كان 60.3% من الصيدالونات يعملون في صيدليات مستقلة و 61.6% من هذه الصيدليات تطل على شوارع عامة. وكانت معظم الصيدليات (85.4%) مملوكة لغير الصيدالونات، وأن 59% تقريباً من الصيدليات لديها مستودعات لتخزين الدواء ومراقبة المخزون. ولم يكن من بين الصيدليات إلا 37.1% منها تستخدم أجهزة حاسوبية في أعمالها. وقد بلغ متوسط عمر هذه الصيدليات 11.6 ± 6.2 سنة ومتوسط مساحتها 42.6 ± 67.4 متراً مربعاً. وقد أظهرت هذه الدراسة أن الأدوية المباعة بصفة طبية تبلغ $35.1 \pm 22.7\%$ من المبيعات الكلية. وإضافة إلى ذلك يبلغ متوسط المبيعات اليومية 4602.4 ± 544.3 ريال سعودي، ويعتقد 60% من الصيدالونات أن مبيعات صيدلياتهم متناسبة مع حجمها وموقعها، وقد صرح 62.9% منهم بأن محتويات الصيدلية تسد جميع احتياجات المستهلكين، وأن 70% من دخل الصيدلية يعتمد على مبيعات الأدوية. كما تبين أن 76.2% من الصيدليات تحصل على أدويتها عن طريق الشراء الجماعي وأن 32% من الصيدليات تقوم بتخزين ما يكفي لمدة شهر من الأدوية، بينما 33.8% و 23.2% من الصيدليات تخزن ما يكفي لمدة شهرين ومن ثلاثة إلى أربعة شهور على التوالي، وأن 61% لديهم ميزانية محدودة للشراء، بينما 39.1% لهم ميزانية مفتوحة للشراء. وقد كانت أكثر طرق مراقبة المخزون اتباعاً هي الطريقة المستمرة باستخدام الكمبيوتر (31.2%) كما كانت طريقة "كمية الطلب الاقتصادية" (28%) هي أقل طرق مراقبة المخزون اتباعاً، ويستخلص من هذه الدراسة أن صيدالونات الصيدليات الأهلية بحاجة شديدة إلى التعليم المتواصل فيما يتعلق بمراقبة المخزون تفادياً لتكدس هذه الأدوية وما ينتج عنه من تجميد لرأس المال، كما أن الجمهور بحاجة إلى التعليم الصحي والتثقيف الدوائي فيما يتعلق بالاستخدام الأمثل للدواء.

inventory control methods and their education regarding this issue, to test how they perform inventory control in their community pharmacies and to assess their understanding of different inventory control methods. A questionnaire was developed and administered to a randomly selected 151 community pharmacies in Riyadh city in Saudi Arabia. The mean age of respondents was 36 ± 6.8 years. Almost all of pharmacists working in community pharmacy were expatriates (99.3%) and graduated from neighboring Arab countries (70.9%). Around 70% of pharmacists claimed that they have completed a pharmacy administration course during their university education and have been exposed to a previous experience to inventory control during their work. Among 151 pharmacies, 60.3 % were independent pharmacy and 61.6 % of them located in public streets. The majority (85.4 %) of these pharmacies were owned by non-pharmacists. Approximately, 59 % of the pharmacies have warehouse for storing medications and inventory

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goods. Only 37.1% of community pharmacies surveyed used computerized systems. The average pharmacy age was 11.6 ± 6.2 years with an average area of $67.4 \pm 42.6 \text{ m}^2$. The study also showed that medications sold with prescription accounted for $35.1 \pm 22.7\%$ of the total sales. In addition, the mean value of daily sales was 4602.4 ± 544.3 Saudi riyals (US\$ 1.0 = 3.75 Saudi riyals). Around 60% of respondents reported that the pharmacy sales were appropriate to its size and location. Furthermore, 62.9 % of respondents surveyed reported that items available in the pharmacy are enough to cover all the consumer needs. The study shows, also, that overall, around 70% of pharmacies income depends on medication sales. The majority of respondents (76.2%) get the pharmaceuticals through a group purchasing arrangement. Furthermore, the study showed that about 32% of the respondents stored quantities of medications that cover 1 month-period, whereas, 33.8% and 23.2% of respondents stored medications that cover 2 months and 3 to 4 months, respectively. Almost 61 % of the respondents have had limited budget to buy their medications and goods, whereas, 39.1% of the respondents had an open budget and used it as needed. Moreover, the study showed that perpetual (computer) method is the most one known by the respondents (31.2%) and economic ordering quantity (EOQ) method is the least method (28%) known by the respondents, respectively. Best control and management of inventory through modern techniques and continuing education are essential. The overstock of medicines in the pharmacy may tie up a capital. Health education for public is a prerequisite for proper self-medication.

Key words: Purchasing, inventory control, community pharmacy, turnover rate, stocks, inventory control methods.

Introduction

For the pharmacy business to grow and flourish, inventory management is essential. A pharmacy's inventory is its single, biggest investment. In a typical pharmacy, more than 50% of the asset investment is represented by inventory (1).

The major objectives of an effective inventory-control system are to minimize the total cost of inventory including unit price, acquisition, possession, transaction and other cost inherited in purchase. An inventory is maintained in order to provide higher quality service, and to protect against uncertainty of an unexpected increase in demand. Inventories may also increase if the price of a product is likely to rise sharply or if there is evidence that the future supply of the item will run out (2,3). Currtiss (4) recommended that effects to reduce price per unit increase the use of bid purchasing program and decrease the size and value of investments will be necessary management strategies of the future.

Sophisticated purchasing and inventory control usually require time and experience to flourish and develop. VanDerLinede(5) described substantial system improvement achieved through modest investment and effort. Several studies have been conducted in community pharmacy setting to assess pharmacists' activities (6,7). In one study, it was

found that third of the time of the pharmacist's work was devoted for pharmaceutical task, whereas, 35.9% of his time was devoted to business activities of which largest categories were general communication and stock control (6). In other similar study, smaller amount of time was reported to be spent in stock maintenance, sales and administrative work (7).

Computer could be used in inventory control in pharmacy practice to avoid out-of-stock situation, minimizing total inventory costs and increase efficiency of purchasing power (8). Furthermore, Pharmacist's survey of computer use in US showed that 60.5% of pharmacies with second generation systems had computerized inventory system and only 37.5% were using the system as designed (8). Also a follow-up survey showed that only 26.95% of all computers installed in the pharmacies had complete inventory systems. Only 37.6% of those pharmacies were using the systems at least 75% of the time (2).

Various methods for controlling inventory are described and advantages and disadvantages of each was discussed (9,10). The open-to-buy (OTB) budget method limits purchases to specific medicines and goods during specific period. The emphasis of the OTB method is the financial control of the pharmacy inventory. On the other hand the main objective of the minimum and maximum method (Min-Max) is to determine when and how to order of each item. It also provides limit cost control.

The major disadvantage of this method is the time consumed in establishing the minimum and maximum levels and to update them regularly to reflect changes in demand. The economic order quantity method (EOQ) is used to determine the optimum quantity to order, in terms of many wise or physical and the optimum turnover rate. The ABC method is an inventory management method where each inventory line is ranked A, B, or C, according to annual usage value (unit price times annual usage). Category A items represent high usage, B items represent average, and C items represent low usage. Perpetual methods can also be used to monitor inventory levels and facilitate order initiation. The most effective system of inventory control is one employing a combination of these methods tailored to meet the pharmacy needs and available resources.

By the end of 1970's there were four types of outlets in Saudi Arabia (S.A.) allowed to sell medications. They are as follow: pharmacies, wholesaler drug stores, retail drug stores, and herbal shops. Later on only pharmacies and retail drug stores have been licensed to supply medications in the country (11,12,13). In 1978 a new pharmacy law was passed. The law requested the change of all retail drug stores to pharmacies and restricted the importation of pharmaceuticals to the wholesaler drug stores (11). The wholesaler drug store acts as an agent for manufacturers and as wholesalers supplying pharmacies. Recently, a new law was passed where the community pharmacy should be either owned by a pharmacist or the pharmacists should be a partner or shared owner.

Community pharmacy is considered one of the cornerstones of practice of pharmacy in Saudi Arabia. There are more than 3000 community pharmacies in Saudi Arabia, of these about 700 pharmacies were located in Riyadh city. Several studies were published that describe the potential of drug misuse, prescribing patterns, and administrative and financial issues at community pharmacies (14-16). Unfortunately, none of these studies described the purchasing and inventory control in this setting. Therefore, the aims of the present study were to examine pharmacists' knowledge of inventory control methods and their education regarding this issue, to test how they perform inventory control in their community pharmacies and to assess the use of different inventory control methods.

Methodology

Study sites and data collection:

The registry of the Health Affairs Directorate of Riyadh region of the year 2000 listed 730 community pharmacies in Riyadh City. One hundred fifty seven pharmacies (a 22 percent sample) were randomly selected from the register list and contacted. These one hundred and fifty-seven community pharmacies were randomly selected from different geographical area of Riyadh city approximately equably. The rationale of the study was precisely explained to the community pharmacy staff. In addition, an assurance to each community pharmacy staff was given regarding to the confidentiality of the data obtained, and it will be used for the sake of the study only. This sample size should give a power of more than eighty per cent.

Data were collected over ten-month period starting in March 2000. The author himself visited the community pharmacy to supervise the administration of the questionnaire by the staff pharmacist.

Questionnaire design:

A seven-page self-administered original questionnaire was developed by the author. No similar questionnaire with the same objective was executed in the literature. The questionnaire was tested in eight community pharmacies staff to test the validity of survey form, to revise and finalize the questionnaire, and to ascertain the best time and method to collect data. As a result of the pilot testing, some questions were either rewarded or clarified, and the optimum time for data collection was decided. The reliability of the instrument was assessed using Cronbach's coefficient alpha on 10 selected variables. The internal consistency of the instrument was 0.56.

The self-administered questionnaire consisted of three sections that contained more than 50 questions. Feedback for most questions was measured by a check list, and open- and closed-ended questions. The first section was intended to determine the demographic data pertaining to pharmacists (including age, nationality, and education and knowledge about purchasing and inventory control and year of experience) and pharmacy premises (including location, type, size and working hours). The second section of the questionnaire gathered data on variables such as the size of daily sales,

percentage of medications sold with prescription, percentage of medications sold without prescription, percentage of health goods sold and percentage of cosmetic and perfume sold. The respondents were also questioned about the following issues: (1) did the pharmacy sales are appropriate to the size and location. (2) did the presence of other pharmacy near their pharmacy will affect their sales (3) are they satisfied with their current sales (4) did they think that medicines and goods available in their pharmacies are enough and cover all consumer needs (5) did the pharmacy mainly depend on medication sales (6) number of prescriptions dispensed per day. Other aspects of stocks and sales of medicines and goods among the surveyed pharmacists were also investigated: (1) did they think that customers buy some items on impulse (because they saw it not because they intended to buy it) (2) did they advice the consumers to take an alternative, if medications prescribed is not available.

The third section of the survey addressed, with respect to purchasing and inventory control, the ways the respondents follow in ordering and buying medicines and goods, their satisfaction with the methods of buying, the availability of warehouse for stocking medication and goods, the sources from which they buy their medications and goods, the budget maintained for buying medicines and goods. The respondents were also asked to estimate the inventory turn-over rates for medicines and goods, when they initiate new order for medications and goods and if they stored medications and goods beyond their pharmacies needs. Finally, the respondents were asked about their familiarity with different set of methods used in inventory control.

Data analysis:

The questionnaires were manually checked for accuracy of the data, and then analyzed using the Statistical Package for Social Sciences (SPSS) version 10.0 for Windows (SPSS, Chicago, Illinois). The analysis included frequencies of discrete variables and condescriptives.

Results

Sample characteristics Respondents:

Of 157 questionnaires distributed, 151 completed questionnaires were returned yielding a response rate of 96%.

Table 1 shows the demographic data of pharmacists. All respondents were male with a

mean age of 36 ± 6.8 years. Almost all of pharmacists working in community pharmacy were expatriates (99.3%) and graduated from neighboring Arab countries (70.9%). Around 70% of pharmacists claimed that they have completed a pharmacy administration course during their university education and have been exposed to a previous experience to inventory control during their work.

Premises:

Table 2 shows the demographic characteristic pertaining to premises. Among 151 pharmacies, 60.3 % were independent pharmacy and 61.6 % of them located in public street. The majority (85.4 %) of these pharmacies were owned by non-pharmacists. Approximately, 59 % of the pharmacies have warehouse for storing medications and inventory goods. Only 37.1% of community pharmacies surveyed used computerized systems. The average pharmacy age was 11.6 ± 6.2 years with an average area of 67.4 ± 42.6 m² (Table 3).

Sales and stocks:

Table 3 shows that medications sold with prescription accounted for $35.1 \% \pm 22.7\%$ of the total sales. In addition, the mean value of daily sales was 4602.4 ± 544.3 Saudi riyals (US\$ 1.0 = 3.75 Saudi riyals). Table 4 shows that around 60% of respondents reported that the pharmacy sales were appropriate to its size and location. Further more, 62.9 % of respondents surveyed think that items available in the pharmacy are enough to cover all the consumer needs. The study shows, also, that overall, around 70% of pharmacies income depends on medication sales.

Purchasing and Inventory Turnover Rate:

The majority of respondents (76.2%) get the pharmaceuticals through a group purchasing arrangement to save time and reduce cost (Table 5). Furthermore, the study shows that about 32% of the respondents stored quantities of medications that cover 1 month-period, whereas, 33.8% and 23.2% of respondents stored medications that cover 2 months and 3 to 4 months, respectively. Almost 61 % of the respondents have had limited budget to buy their medications and goods, whereas, 39.1% of the respondents had an open budget and used it as needed (Table 5).

The results show that small percentage of the surveyed pharmacies (17.9%) always stored additional quantities of medications more than the

pharmacy needs (Table 6). Furthermore, almost one-third (30.5%) of the surveyed pharmacies decide to have new order two weeks or less before their items come to an end. In addition, 66.2% of the respondents were unable to calculate turn-over rates for their medications and goods (Table 6). Moreover, the study shows that perpetual (computer) method is the most one known by the respondents (31.2%) and economic ordering quantity (EOQ) method is the least method (2.8%) known by the respondents, respectively.

Discussion

The present study is considered the first study exploring the community pharmacist's awareness towards inventory and purchasing control in Saudi Arabia. Several factors may have contributed to the high response rate, including the relatively short time required to complete the questionnaire, explaining the purpose of the research to the owner of pharmacies, direct contact and mentoring by the author himself.

The study shows that almost all (99.3%) pharmacists working in community pharmacies are expatriates graduated from neighboring countries. This is not surprising because there is only one college of pharmacy in the whole country and this college is graduating just enough pharmacists to cover the governmental sectors needs. This severe shortage of Saudi pharmacists have lead the Ministry of Higher Education to establish three colleges of pharmacy at different regions of the country.

The majority of the respondent indicated that they have been enrolled in pharmacy administration and purchasing and inventory control courses during their study in the university. Despite this fact, however, the majority have poor knowledge about the different methods of inventory control such as ABC, Min-Max, EOQ, value discount evaluation (VDE) and OTB budget methods. Only the perpetual method was known by approximately one third of the respondents. This poor knowledge may indicate that those respondents do their inventory control using previous experience of inventory control, which they gain through their long work experience. This finding however, may be reflected on the low small number of respondents who have turnover rates of less than 4, which has been observed in some pharmacies. In turn, this may

indicate that items remained unsold on their stocks for a long period (more than 90 days) which may be considered entirely a long period of time to have money tied up unproductively. On the other hand, the inventory turnover rate calculated by 32.7% of the respondents falls within the range reported by average retail pharmacies to the Lilly Digest, (between four and five inventory turnovers per year)(1). This means that the inventory remained unsold on shelves for a period of 72 to 90 days. Calculating the turn over rate is one of the important factors in the management of community pharmacy inventory because it let you re-allocate capital for other profit-making ventures and increases return on investment in inventory. This study shows that 66 % are not calculating the turn over rate in their pharmacy. Thus, a poor management is expected. The study shows that about 32% of respondents indicated that their pharmacies do not stock enough items to cover all the consumer needs. This finding may reflect a poor management of these pharmacies and highlighted poor consumer services.

Although, such high rate of inventory turnover is certainly one of the important objectives of inventory management; it is not the only important objective. Therefore, to reach an effective inventory control, it should be combined with high quality professional services and large gross margin (1). Furthermore, this is an indication that pharmacy colleges should emphasizes more on community pharmacy subjects such as pharmacy administration and inventory control and purchasing in their curricula to increase the knowledge of pharmacists in this area of practice. Moreover, for those pharmacists who are already in the practice of community pharmacy, a pharmacy administration and inventory control and purchasing course might be required as a part of their continuing education requirement for re-licensure.

This study shows that the community pharmacies in Riyadh city are mainly present in public street with an average area of 67.4 m² and managed by an average of 1.8 qualified pharmacists. This finding is close to what have been reported by Najjar (16).

In addition, the majority of the owners of the community pharmacies were non-pharmacist. This can be explained because the current law is not restricting ownership of a pharmacies to pharmacist. However, the new passed law stated that "a new community pharmacy should be either owned by a pharmacist or the pharmacist should be a co-owner".

Thirty seven percent of respondents reported that their business will be affected by the presence of a new pharmacy near to their pharmacy. This emphasizes the importance of restricting the establishment of new pharmacy in the area where enough pharmacies are available. Number of community pharmacies should be regulated by distance and size of population served. In other countries, such as United Kingdom (17), Canada (18), France (19) the health care authority regulate the approval of establish a new pharmacy by the number of inhabitants in that area.

Twenty-five percent of pharmacists indicated that sales of their pharmacies are not appropriate to its size and location. Such findings could be due to several factors including, heavy competition, poor management and poor consumer loyalty. Moreover, 32% of pharmacists do not keep records of their sold items. This finding further emphasizes the poor financial management of the surveyed pharmacists. Information on sold items are important for maintaining proper inventory and estimated pharmacy budget.

Although computer is widely used in pharmacy for inventory control to avoid out-of-stock situation, minimizing total inventory costs and increase efficiency of purchasing power (8), it is only used by 37.1% of the pharmacies surveyed in this study and mainly utilized for financial control and prescription dispensing. The reasons for this include: computers were not available in the pharmacy; owner of the pharmacy had no intention to introduce computers, and lacking the knowledge of using computer in inventory control by the pharmacist.

Purchasing groups are experienced by 24% of pharmacies, whereas the majority buys their own needs by themselves. Those who choose purchasing group considered it for both saving time and money. This finding is in agreement with reported studies on saving through group purchasing (20). Additionally, group purchasing use may provide chance for sharing information through collection and dissemination of drug product information and provision of management and education services. Furthermore, group purchasing can cause labor saving through reduced time devoted to contract administration matters. Group purchasing can also help to enhance purchasing operation by providing counseling serves as well as providing assistant and expertise to the members in managing pharmaceutical inventories (21, 22).

The findings indicated that 39% of pharmacies sales resulted from non-medical items, while 61% of sales were medications sold with prescription and over the counter. The primary goal of pharmacies is to supply the society with their needs of medicine. This goal may not be achieved if a good percentage of pharmacies profit obtained from sales of non-medicinal items. The pharmacy regulation should address the problems of selling items in the pharmacies that did not contribute to the patient care.

It is surprising to notice that about half of respondents stock more items in their pharmacies than their needs. This may be due to the purchasing of large quantities of drugs by expatriates when departing to their countries. In addition, this practice, however, may lead to the stock of items that has a low demand as well as the possibility of increasing the percentage of expiry drugs. It is obvious that increase in the stock of such items can tie up an appropriate capital for undetermined period of time.

This study is considered the baseline for a great deal of information regarding inventory and purchasing control and the knowledge of pharmacists regarding this issue in community pharmacy and no data or other studies in Saudi Arabia to compare to. Thus, it might be consider one of the limitations of this study. In addition, a future similar research should be conducted either in other areas of Saudi Arabia and compared to Riyadh city study or on the level of the whole Kingdom of Saudi Arabia and compared to other countries.

Among the many problems facing community pharmacy today, is the challenge of maintaining the appropriate inventory investment and providing superior pharmaceutical services. Insufficient use of budget in inventory can lead to many problems in the community pharmacy. The overstock of unwanted or unsold medicines in the pharmacies is not only an economic burden, but also can tie up a capital that can be used to buy high demanded items. One recommendation is to utilize this budget more effectively; especially better control of inventory through more efficient modern control techniques such as using computerized systems and software.

Finally, continuing education of community pharmacists on purchasing and inventory control can be of great value to pharmacists and the business.

Table 1. Pharmacists, demographic data

Variables	n	(%)
Gender		
Male	151	100 %
Nationality		
Saudi	1	0.7%
Non-Saudi	150	99.3%
Qualification		
Bachelor (BP)	135	89.4%

Variables	n	(%)
Pharmacy location		
Public street	93	61.6%
Shopping Centers	15	9.9%
Residential area	18	11.9%
Industrial region	3	2.0%
Hospital	5	3.3%
Private and poly clinic	17	11.2 %
Work hours of the pharmacy per day		
8 hours	7	4.6%
10-12 hours	48	31.8%
16-18 hours	61	40.4%
24 hours	35	23.2%
Off days in the pharmacy		
Yes	20	13.2%
No	131	86.7%
Pharmacy description		
Independent pharmacy	91	60.3%
Chain pharmacy	60	39.7%
Pharmacy owner		
Pharmacist	22	14.6%
Non-pharmacist	129	85.4%
Owner of other pharmacies		
Yes	70	46.4%
No	81	53.6%
Warehouse for storing medications and goods		
Yes	89	58.9%
No	62	41.1%
Computer use		
Yes	56	37.1%
No	95	62.9%

Table 2. Premises demographic data

Table 3. The mean \pm SD and range of items related to pharmacy sales

Variable	Response	Mean \pm SD	Range
Pharmacy age	145 (96%)	11.6 \pm 6.2	1-40
Number of pharmacists working in the pharmacy	145 (96%)	1.8 \pm 0.8	1-5
Pharmacy area	144 (95.4%)	67.4 \pm 42.6	20-400
value of daily sales in SR	104 (68.9%)	4602.4 \pm 544.3	500-35000
Percentage of medications sold with prescription	137 (90.7%)	35.1 \pm 22.7	3-98
Percentage of medications sold over the counter	135 (89.4%)	25.8 \pm 14.6	2-60
Percentage of health goods sold	132 (87.4%)	11.2 \pm 6.1	1-30
Percentage of cosmetics and perfume sold	128 (84.8%)	117 \pm 10.6	2-70
Percentage of other goods sold	125 (82.8%)	14.7 \pm 6.8	1-75
What is the daily average of dispensed prescription?	110 (72.9%)	29 \pm 40.4	4-300
How many prescriptions did not dispensed due to unavailable medications	97 (64.2%)	6.1 \pm 7.8	1-50

Table 4. Sales and stocks

Variables	n	(%)
Do you think that pharmacy sales are appropriate to its size and location?		
Yes	90	59.6%
No	38	25.2%
I can't judge	23	15.2%
Are you satisfied with the current sale size?		
Yes	82	54.3%
No	69	45.7%
Do you think that the presence of other pharmacy near to your pharmacy will affect your sales?		
Yes, too much	56	37.1%
Yes, but very little	52	34.4%
No not at all	33	21.9%
I can't judge	10	6.6%
Do you think that items available your pharmacy is enough to cover all consumers needs?		
Yes	95	62.9%
No	48	31.8%
I don't know	8	5.3%
If the medication is unavailable, Do you advise the consumer to take the alternative?		
Usually	51	33.8%
Sometimes	64	42.4%
Rarely	19	12.5%
No	17	11.3%
Does the pharmacy mainly depend on medication sales?		
Yes	105	69.5%
No	46	30.5%
Do you think that the consumer buys some items because he saw it not because intended to buy it?		
Usually	39	25.8%
Sometimes	77	51%
Rarely	27	17.9%
No	8	5.3%

Table 5. Purchasing and inventory turnover rates

Variables	n	(%)
Do you buy your medications through purchasing groups?		
We only buy our needs	115	76.2%
Yes we buy our needs with other pharmacies	36	23.8%
Why group purchasing?		
Save time	6	16.67%
Reduce cost	13	37.10%
For both reasons	17	47.20%
Are you ordering your medicines and goods by yourself		
I do it myself	95	63.0%
There is specialized person for that	56	37.0%
Are you satisfied with method of buying medicines and goods?		
Yes	108	71.5%
No	43	28.5%
What is the source from which you buy your medications and goods?		
Directly from company's agent	105	69.5%
Directly from wholesalers (subagent)	116	76.8%
Why you chose to buy from the wholesaler?*		
I can buy quantities lesser than those from company's agent	61	40.4%
I can get a low price	49	32.5%
I can pay over long period	44	49.1%
I can get all medications from one source	66	43.7%
Quantities of medication of stored medications always covers		
One month	48	31.8%
Two months	51	33.8%
Three to four months	35	23.2%
Five to eight months	12	8%
Nine to twelve months	5	3.3%
Do you have a determined budget for medications and goods to be bought?		
Yes, and I am committed with it	92	60.9%
No, it is an open budget according to the need	59	39.1%
Do you keep any record for the sold quantities?		
Yes	102	67.5%
No	49	32.5%

- Numbers exceeded 100% because the respondents selected more than one answer.

Table 6. Inventory turnover rates and frequency of pharmacists familiar with different inventory control methods (total respondents 141 Pharmacists).

Variables	n	(%)
Are you storing additional quantities of medications more than the pharmacy needs		
Yes, always	27	17.9
Sometimes	75	49.7
No	49	32.5
When you ask for new order of medications and goods?		
One month before items come to an end	34	22.5%
Two weeks or less month before items come to an end	46	30.5%
No determined time for buying	71	47%
Are you calculating turn-over rate in your pharmacy?		
Yes	51	33.8%
No	100	66.2%
What is the value of turn-over according to the last percentage?		
Less than 3	11	22.5%
Between 3-3.9	15	30.6%
Between 4-5	16	32.7%
More than 5	7	14.3%
What Inventory control method you used in calculating your inventory		
Perpetual Method (computer)	44	31.2
ABC	28	19.9
Min-max	21	14.9
Value Discount Evaluation (VDE)	7	5.0
Economic Order Value (EOV)	6	4.3
Open-to-Buy (OTB) budget	5	3.5
Economic Order Quantity (EOQ)	4	2.8

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