

Analysis of Customized Drug Products

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Abstract

The article presents the analysis and systematization of prescriptions for customized drugs that entered the Prescription and Production Department of the Moscow Retail Pharmacy Organization from March 2017 to February 2018. The prescriptions for customized drug products have been analyzed on the basis of the data obtained by content analysis, as well as system, logical, sociological, situational and statistical analysis. According to the obtained data, the customized manufacture of drugs on prescriptions in a Moscow pharmacy tends to grow throughout the analyzed period, increasing in seasons of morbidity.

Keywords: customized drug products, marketing research.

INTRODUCTION

The relevance of the problems of the drugs provision to the population is determined by the medical, social and economic role of pharmacies in the social life. The pharmacy actively participates in the implementation of the supreme goal of the country's economic strategy - preserving the health of the nation and raising its cultural level [1, 2].

Despite the diversity of drug products (DP) in different pharmaceutical forms on the pharmaceutical market, being produced by industrial enterprises, pharmacy organizations continue to prepare customized DP. This is facilitated not so much by economic factors as by the need to improve the quality of drug assistance, the variety of dosage forms (DF), and dosages for different groups of patients [3].

Drugs manufactured in a pharmacy are:

- Effective, since they were prescribed by a doctor and produced by a pharmaceutical worker taking into account the individual characteristics of patients;
- Are of high quality, since it can be determined by whom, when and how each drug and each dosage form was made;
- Safe, since the level of training and responsibility of pharmaceutical workers is high as they have direct contact with both the doctor and the patient [4].
- Physicians prefer customized drugs, if:
 - There is no necessary dosage form and/or dosage of the finished industrial drug;
 - Treatment with finished drugs is less effective;
 - There is patient's desire for customized medical treatment [5].

Based on the above assumptions, we decided to undertake a study of prescriptions for customized drugs on the basis of the Moscow Retail Pharmacy having the Prescription and Production Department (hereinafter referred to as the pharmacy).

METHODS

During the research, the methods of content analysis, as well as system, logical, sociological, situational, and statistical analysis were used.

RESULTS AND DISCUSSION

The prescriptions received at the pharmacy were analyzed and systematized for the period from March 2017 to February 2018.

The pharmacy produces nonsterile DF: solutions for internal use (medicines, drops), solutions for external use, powders, ointments and suppositories. It also produces sterile DF: solutions (for inhalations) and (eye) drops.

The total number of accepted prescriptions for customized production for the analyzed period was 5,118. Within

the framework of the analysis of the individual formulation, the prescriptions obtained were systematized:

- by the nature of the dispersion medium;
- by the ratio of the number of DF to the total number of prescriptions in the group;
- by the dosage nature;
- by the number of prescriptions in relation to each other by the seasons.

1. Systematization by the nature of the dispersion medium

Solid DF - powders; soft DF - ointments, pastes, liniments, suppositories; liquid DF - solutions, suspensions, emulsions, mixtures, and eye drops, are manufactured in this pharmacy.

The main medicinal forms produced in the pharmacy are liquid DF - 68.58%, most of which are solutions for electrophoresis, and this amount is associated with the ill-health prevention. Further, based on the receipt of prescriptions for manufacturing, soft DF follow with 18.78%. A relatively large number of these forms are due to the joining of the dermatovenerologic dispensary (DVD) to the pharmacy. In the general formulation of the pharmacy, powders account for 12.6% (Figure 1).

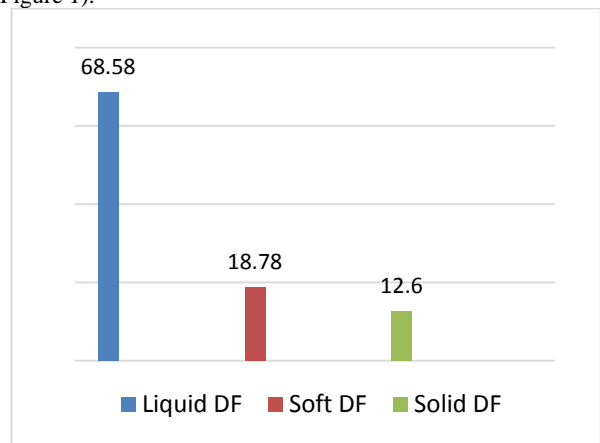


Figure 1 – DF manufactured in the pharmacy for the period from March 2017 to February 2018

2. Systematization by the ratio of the number of DF to the total number of prescriptions in the group

Aqueous solutions (69.8%) have a significant proportion of prescriptions in the group of liquid DF. The rest of the prescriptions are represented by eye drops (22.35%) and mixtures (7.83%) (Figure 2).

Aqueous solutions, or rather solutions for electrophoresis, occupy a significant part in the group of liquid DF, which is due to the extensive ill-health prevention.

An insignificant part belongs to eye drops, which is explained by the selection of individual drug concentrations for patients not produced on an industrial scale. The smallest part is represented by mixtures. This is due to individual dosages, as a rule, for children of the first year of life.

In the group of soft DF, the main part was represented by ointments (97.4%) due to the attachment of the DVD to the pharmacy. A small number of prescriptions (2.59%) are attributed to suppositories. They are not very popular since in the industry there are a large number of suppositories in the finished form (Figure 3).

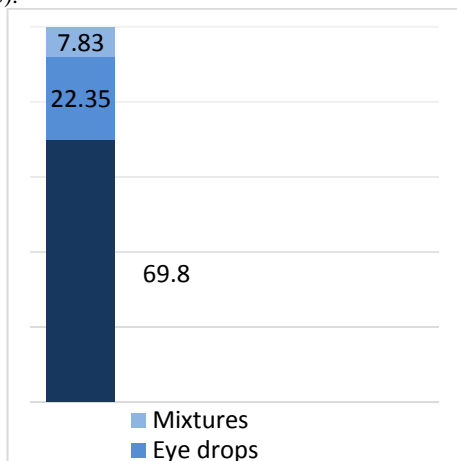


Figure 2 – Ratio of liquid DF

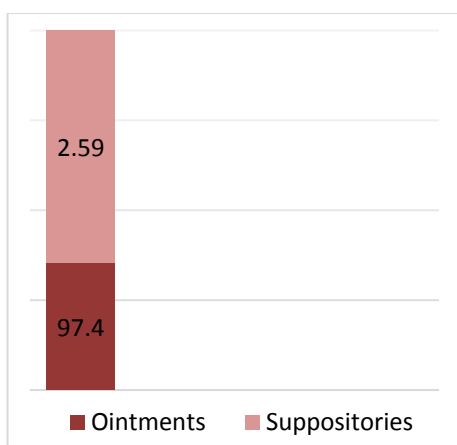


Figure 3 – Ratio of soft DF

3. Systematization by the dosage nature

The proportion of pharmaceutical DF (powders, suppositories) for the analyzed period was 13.09%; of non-DF (eye drops, medicines, ointments) - 86.9% (Figure 4).

4. Systematization of the number of prescriptions by season

Over the winter, 1,418 prescriptions, which represented 27.71% of their total number, were processed. Over the spring -

1,188 prescriptions (23.21%), over the summer - 1,079 (21.08%); and over the autumn - 1,433 (28%) were processed (Figure 5).

The highest percentage of incoming prescriptions falls on autumn and winter, which is associated with seasonal diseases.

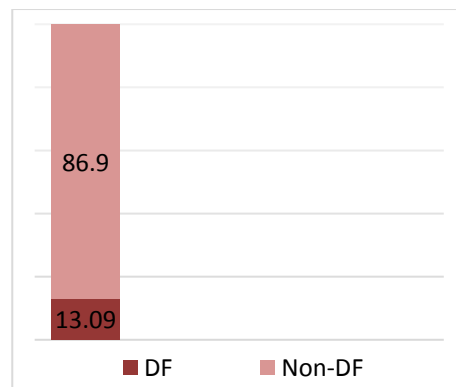


Figure 4 – The ratio of DF and non-DF

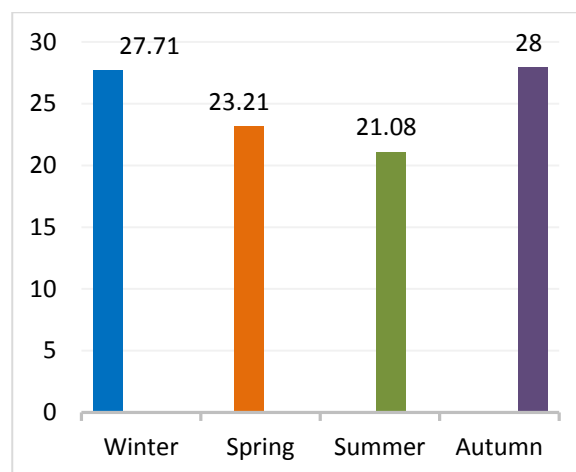


Figure 5 – The number of the prescriptions in the pharmacy for the period from March 2017 to February 2018

For the study period from March 2017 to February 2018, the number of the accomplished prescriptions was 5,118. For the convenience of counting and identifying various factors affecting the formulation, all the prescriptions were divided into seasons: winter, spring, summer, and autumn (Table 1).

As can be seen from Table 1, the largest share in the production is represented by aqueous solutions in the autumn period, in particular, solutions for electrophoresis, due to the ill-health prevention program. Ointments are the second ones on the frequency of manufacturing. A sufficiently large number of ointments are made under the prescriptions coming from the DVD joined to the pharmacy.

Table 1 – Distribution of the prescriptions accomplished by DF depending on the season

No.	Name of DF	Winter		Spring		Summer		Autumn	
		Number of prescriptions, pcs.	Specific weight, %	Number of prescriptions, pcs.	Specific weight, %	Number of prescriptions, pcs.	Specific weight, %	Number of prescriptions, pcs.	Specific weight, %
1	Solutions	642	12.55	562	10.98	486	9.49	761	14.87
2	Powders	197	3.85	134	2.62	150	2.94	164	3.21
3	Eye drops	244	4.76	168	3.28	156	3.05	217	4.23
4	Mixtures	69	1.35	82	1.61	63	1.23	61	1.19
5	Suppositories	8	0.15	3	0.05	5	0.09	9	0.17
6	Ointments	258	18	239	4.67	219	4.28	221	4.32

The third place in the customized manufacture belongs to eye drops, which is explained by the selection of individual drug concentrations for patients not produced on an industrial scale.

The prescription of powders is on the fourth place. As a rule, these are prescriptions for children with cardiovascular diseases, with individual dosages not produced by industry.

Mixtures are on the fifth place due to individual dosages, as a rule, for children of the first year of life.

The last place in the customized manufacture belongs to suppositories. This DF exists in the customized manufacture, but it is not very popular since there is a large amount of this DF in different dosages in the finished products.

CONCLUSION

Thus, the analysis and systematization of the prescriptions for customized drugs received by the Prescription and Production Department of the Moscow Retail Pharmacy Organization has shown that the customized manufacture has an upward trend, and this is despite the fact that a huge share of the pharmaceutical market belongs to the ready-made drugs of industrial production. The demand for customized drugs depends

on the patient's age and varies from the season. In addition, despite the slight need for certain customized DF, they should not be excluded from circulation, as they are necessary in pediatric practice and in the treatment of certain pathologies. Further cooperation between physicians and pharmacists will ensure the satisfaction of the patients' needs in the manufacture of individual prescription drugs and will remain an essential component of quality pharmaceutical care.

REFERENCES

1. Levin, M.B., Solonina A.V., Proizvodstvennaya deyatel'nost' aptek: Problemy i perspektivy [Production activities of pharmacies: Problems and prospects], *Novaya apteka* 2002, 1, 13-16.
2. Suslov, N.I., Dobrusina, M.E., Churin, A.A., Losev, E.A., *Farmatsevticheskiy marketing* [Pharmaceutical marketing], Yurait, Moscow 2017.
3. Tyurenkov, I.N., Ganicheva, L.M., Naumov, N.A., Proizvodstvennaya apteka: Proshloye, nastoyashcheye, budushcheye [Production pharmacy: Past, present, future], *Economic Bulletin of Pharmacy and Medicine* 2002, 2, 37-42.
4. Abrikosova, Yu. E., *Retsepturno-proizvodstvennyye otdely aptek: Aktual'nost', problemy, perspektivy razvitiya* [Prescription and production departments of pharmacies: Relevance, problems, development prospects], *Moskovskie apteki* 2006, 10(154), 5.
5. Gladysheva, Yu.P., Izgotovleniye lekarstv po individual'nym retseptam [Manufacture of customized drugs], *Uchet v aptekakh* 2009, 6, 15-18.