

Improvement of Drug Supply for Women with Climacteric Disorders

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Abstract—The article presents the results of improving the drug supply for women with menopausal disorders at the regional level. A sociological study of women with climacteric disorders as a consumer of pharmaceutical care has been conducted. Marketing analysis of the Russian and regional pharmaceutical markets for the prevention and treatment of menopausal disorders has been carried out; assessment of competitiveness of hormonal, homeopathic drugs and nutritional supplements for the prevention and treatment of menopausal disorders in women; proposals have been developed for pharmacies to formulate an assortment policy in the field of drug procurement for the prevention and treatment of menopausal disorders in women.

Keywords—*pharmaceutical market, climacteric disorders, menopause, medicines, sociological research, consumer preferences, compliance with therapy, marketing research, drug competitiveness*

I. INTRODUCTION

In modern society, there is a growing interest in health problems in women of the older age group due to an increase in life expectancy. The average age of onset of menopause is 49-50 years, therefore, approximately 1/3 of their lives each woman spends in a state of hypoestrogenesis [1,2].

Only 2% -3% of women receive modern therapy in Russia. It is extremely rare that patients with pathological menopause are prescribed individual complex treatment. More than half of practicing doctors are poorly oriented in the treatment of pathological menopause. [3-5].

In this regard, the main problems in the provision of pharmaceutical care for women with climacteric disorders (CD) are: lack of standards for the provision of pharmaceutical care for women with CD; significant offers of the pharmaceutical market of drugs and nutritional supplements; lack of awareness of doctors about drugs used to correct CD; poor knowledge of women in the field of correction of CD, leading to a decrease in the quality of their life; the complexity of the formation of the pharmacy assortment policy in relation to drugs for the prevention and treatment of CD in women [6-10].

The aim of the work is to improve the drug supply for women with menopausal disorders.

Objects of study are "Belgorod Regional Clinical Hospital of St. Joasaph"; "Belgorod Central Regional Hospital"; "Department hospital at Belgorod station of Russian Railways, 100 questionnaires of female counselling centre patients; 100 profiles of consumers of pharmaceutical services, 30 profiles of approved medical experts (physicians); official and reference sources of information on registered and approved drugs for medical use in the Russian Federation.

II. EXPERIMENTAL

In order to provide an integrated approach to solving problems based on system analysis and targeted modeling, a research system aimed at improving the drug supply for women with menopausal disorders has been developed.

The main methods used of the study are: logical, systemic, structural, content analysis; economic and mathematical (comparisons, groupings, variation statistics, ranking, correlation-regression, value); sociological (expert assessments, interactive survey, questionnaires).

The research system to improve the drug provision of women with CD includes 3 stages: a sociological study of women with CD as consumers of pharmaceutical care; marketing analysis of the Russian and regional drug markets used for the prevention and treatment of CD; analysis of the competitiveness of drugs and nutritional supplements used for the prevention and treatment of CD.

III. RESULTS AND DISCUSSION

At the first stage, during a sociological study, a survey of 100 female patient-respondents was conducted. As a result of the analysis of the obtained data, a medical and social portrait of a woman with CD was formed: a woman aged 56-60 years (34%), with secondary specialized education (60%), living in the city (59%). She has a stable marital status - married (67%) with two children (56%) and income up to 30,000 rubles (50%) per family member. The woman assesses her health status as satisfactory (72%) with the timely onset of menopause (67%). When menopausal disorders occur, respondents address for help to a pharmacist (67%). They visit a doctor quite rarely - once a year (52%), mainly by a gynecologist (59%). There were identified the most common cause for reference to doctor:

hot flashes (58%), headache (52%) and irritability (49%). The pharmacotherapeutic complex prescribed usually by the doctor includes homeopathic medicines (43%), hormones (42%) and vitamins (41%). In the anamnesis, 56% of respondents have hypertension.

When assessing consumer preferences, it has been found that when visiting a pharmacy, women are ready to purchase mainly one (37%) or two (41%) drugs and spend up to 500 rubles (44%) on treatment. The main criterion in choosing a drug is efficiency (59%). The most convenient dosage form is tablets (49%), of plant origin (64%), with a frequency of administration of 1 time per day (63%).

The study assessed the compliance of women with menopausal disorders. Adherence to therapy was assessed using a specialized Morisky Green questionnaire, which consists of 4 questions. Each negative answer was rated at 1 point, and a positive answer at 0 points. According to the results of the Morisky Green testing, all patients were divided into 3 groups: the first group - patients with low adherence to treatment (2 points or less); the second group - patients with an average adherence to treatment (3 points); the third group - committed to treatment (4 points). There were significantly more women with a menopausal period with low adherence to therapy - 66%, than with average and high adherence to therapy - 17%.

As a result of determining compliance in different age groups, it was found that women from 56 to 60 years old are most committed to treatment - 2.21 points. An assessment of the influence of marital status on adherence to treatment showed that it is higher in women in marriage - 1.9 points.

The compliance rate for people living in the city is higher - 1.9 points than for people living in rural areas - 1.5 points. The indicator of adherence to treatment of respondents with different income levels has been analyzed also. So, the highest level of compliance is observed in patients with an income of up to 30,000 rubles - 2.24 points.

The study examined the circumstances leading to a decrease in the level of compliance. It has been found that most often respondents fail to comply with the time of drug administration (37%). Over 20% of patients change the duration of the treatment course, 23% do not take all the drugs included in the prescribed therapeutic complex, 11% change the frequency of drug administration and only 9% fully adhere to the course of treatment. The reasons for fail compliance with the drug administration were also identified: forgetfulness (53%), high cost (40%), side effects (26%), state of health improvement (19%), increase in body weight (15%), intensification of hunger (7%), the inconvenience the administration of the dosage form (5%).

At the second stage, an analysis of the Russian and regional drug markets for the prevention and treatment of menopausal disorders in women has been carried out. It has been established that according to the State Register of Medicines, 267 drugs are registered taking into account dosages, dosage forms and packaging, of which 122 are trade names (TN) and 65 are international nonproprietary names (INN). It was revealed that the structure of the

Russian pharmaceutical market for the prevention and treatment of menopausal disorders in women is formed by 6 drug classification groups according to the ATC classification, the group of nutritional supplements, homeopathic medicine and others. The structure of the drug assortment, including the manufacturing countries, composition, dosage forms, has already been studied.

An assortment macro-contour of the market of drugs used for the prevention and treatment of menopausal disorders in women has been formed, which is represented mainly by drugs from group G - the Genito-urinary system and sex hormones according to the ATC classification - (36.07%), with the leading place among which is the group G03C - Estrogens (34.09%). According to the production feature domestic drugs prevails (58.43%), according to the composition monocomponents dominate (76.78%). 59.93% of cases are in solid dosage forms, mainly in the form of tablets - 68.75%. The degree of updating for the analyzed period was 48.00%.

The analysis of the regional pharmaceutical market of drugs used for the prevention and treatment of menopausal disorders in women of the Belgorod region has been hold next. During the content analysis of the price lists of pharmaceutical distributors, an information array of drugs has been formed which includes 155 dosage forms and packaging (94 TN and 39 INN). As a result of the obtained data systematization, an assortment mesocontour of Belgorod Regional pharmaceutical market for the prevention and treatment of CD has been compiled. It has been established that it is mainly formed by the G group - "Genito-urinary system and sex hormones" - 31.61%, the leading place among which is occupied by the G03C "Estrogen" subgroup - 35.90%. According to the production feature domestic drugs prevails - 52.90%, according to the composition monocomponents dominate - 76.77%. In 58.71% of cases, they are presented in solid dosage forms, mainly in the form of tablets - 69.23%. The degree of updating for the analyzed period was 49.00%.

A comparative analysis of the Russian and regional pharmaceutical markets for the prevention and treatment of menopausal disorders in women has been carried out. It has been established that the assortment contour of the regional pharmaceutical market in terms of key indicators falls within the boundaries of the Russian pharmaceutical market, is similar to it in basic parameters and uses the capabilities of the Russian pharmaceutical market by 58.00%.

At the next stage, the analysis of the drug competitiveness has been carried out in accordance with the methodological approach, which includes four stages: the formation of the information array of the drugs for assessing competitiveness; substantiation of the drug competitiveness parameters using a sociological study; expert assessment of the competitiveness of the drugs for the prevention and treatment of CD in women; selection of medicines and the formation of the assortment policy of the pharmacy organization in the field of procurement of drugs used for the prevention and treatment of CD in women (Fig. 1).

So, at the initial stage of the study, an drug informational array was formed to assess competitiveness. Medicines selected for analysis include prescription drugs (groups G - Genito-urinary system and sex hormones - estrogen-

containing, gestagen-containing and combination drugs), as well as over-the-counter drugs (homeopathic medicines and nutritional supplements).

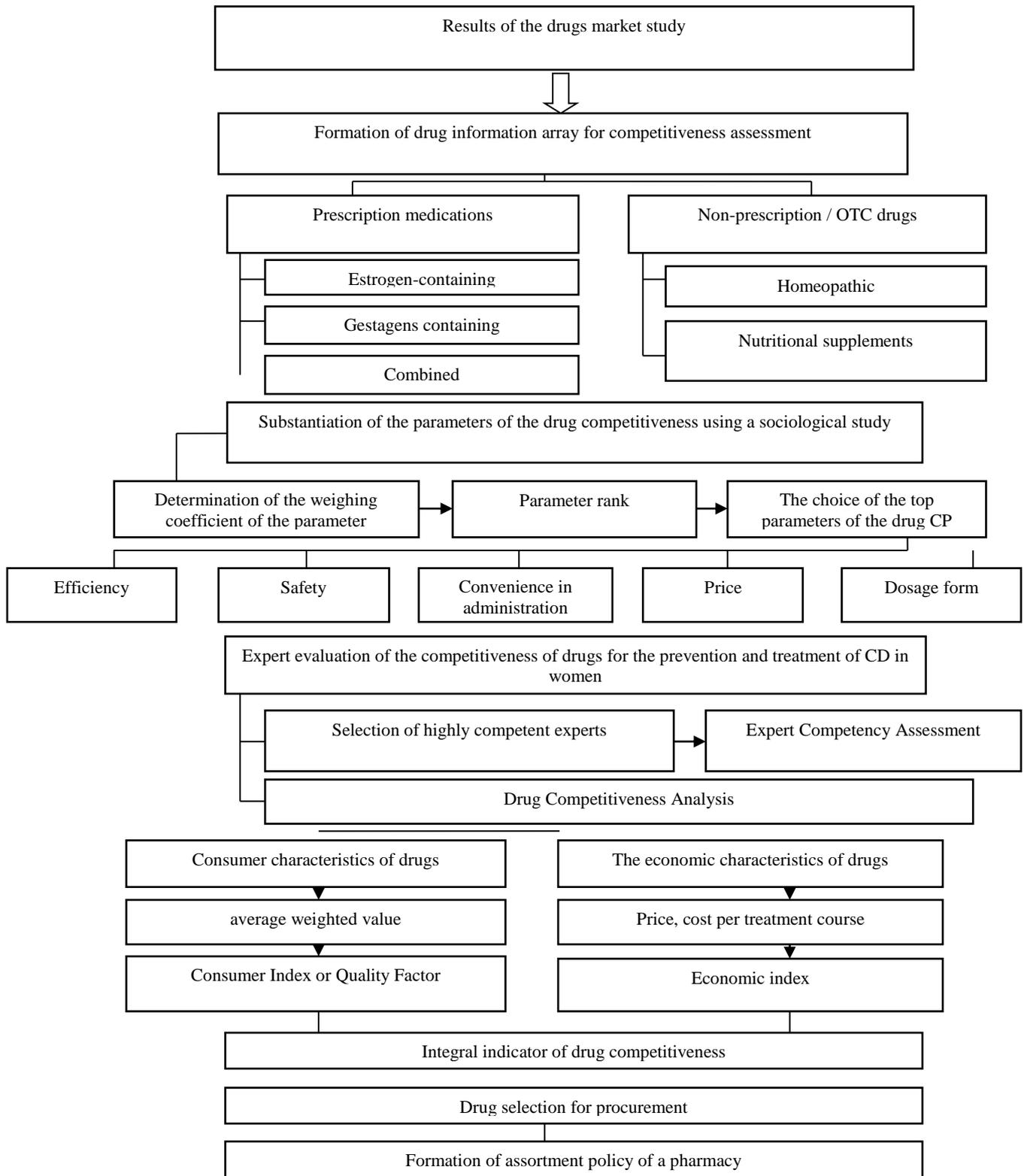


Fig. 1. Methodological approach to assessing the drug competitiveness for the prevention and treatment of CD in women.

Then, with the help of a sociological survey of 100 respondents (doctors, pharmacists and pharmacy customers of Belgorod), the substantiation for the competitiveness parameters (CP) of the medicine was carried out: the weighting coefficients of the parameters, the rank of the CP and the selection of the TOP drug competitive parameters. The leaders in the ranking are: 1) pharmacotherapeutic efficacy of medicine (32.8%); 2) drug safety (28.7%); 3) price (18.8%); 4) convenience of administration (6.1%); 5) dosage form (4.3%).

Then we continued with an expert assessment of the drug competitiveness for the prevention and treatment of CD in women. As experts there were involved 30 highly qualified physicians. The average value of competency was 4.3 points.

During the competitiveness assessment, the consumer and economic characteristics of the medicine have been evaluated. We calculated the weighted average estimates for each parameter for each drug are calculated during the analysis of consumer characteristics. Based on them, the consumer index has been determined, which identifies the quality characteristics and represents the drug quality factor.

To determine the economic characteristics of the medicine, the price and cost of the treatment course were evaluated, and the economic index was calculated. At the last stage, the integral indicator was calculated as the ratio of the quality factor to the economic index.

Thus, the analysis of the CP hormonal drug shows that the best consumer properties among estrogen-containing drugs are belong to “Proginova” (dragees) - a quality factor of 3.74 and “Ledibon” (tablets) - 3.43; among gestagen-containing drugs - “Utrozhestan” (tablets) - 3.78 and “Dufaston” (tablets) - 3.77, respectively; in the group of combined preparations - to “Femoston” (tablets) - 3.72 and “Divina” (tablets) - 3.62.

To assess the economic characteristics of the medicines, the cost of each hormonal medicine per treatment course was calculated. Low values of the economic index, and, consequently, high rating indicators in the group of estrogen-containing drugs were received to “Proginova” (tablets) - 348.5 and “Ledibon” (tablets) - 910.2; in the group of gestagen-containing drugs - Iprogin (tablets) - 295.2; Pragisan (tablets) - 318.16; in the combined group (estrogens + progestogens) - Divina (tablets) - 511.68 and Femoston (tablets) - 713.40.

At the ending stage, an integrated indicator of competitiveness was calculated. The leading position among estrogen-containing medicines belong to “Proginova” (dragee) - 0.01073; among gestagen-containing drugs to “Iprogin” (tablets) - 0.011822; among the combined hormonal medicines to “Divina” (tablets) (tablets) - 0.007075 (table I).

Then we studied the competitiveness of homeopathic medicines and nutritional supplements used for the prevention and treatment of CD in women. The sales leaders of the regional pharmaceutical market were selected for research. The best consumer properties belongs to Climaxan

TABLE I. RESULTS OF INTEGRAL INDICATORS OF COMPETITIVENESS OF PRESCRIPTION MEDICINES USED FOR PREVENTION AND TREATMENT OF CD IN WOMEN

№	The name of the drug	Quality factor	Economic index	Integral indicator	Rating
Estrogen-containing medicines					
1	Ladybon	3,43	910,2	0,00377	2
2	Livial	3,25	2139,4	0,00151	4
3	Proginova	3,74	348,5	0,01073	1
4	Ovestin	2,95	1833,5	0,00161	3
Gestagen-containing medicines					
1	Duphaston	3,77	449,36	0,008389	4
2	Pragisan	3,28	318,16	0,009411	3
3	Utrozhestan	3,78	331,28	0,011410	2
4	Iprogin	3,49	295,20	0,011822	1
Combined medicines (estrogens + progestogens)					
1	Angeliq	3,47	1093,06	0,003175	4
2	Divina	3,62	511,68	0,007075	1
3	Femoston	3,72	713,40	0,005214	2
4	Femoston 1/5	3,60	852,80	0,004221	3

(tablets) with a quality factor of 4.06 and Klimact-Heel (tablets) with a quality factor of 3.82 among homeopathic medicines; Doppelherz active Menopause (tablets) 3.93 and Feminal (tablets) among nutritional supplements.

The lowest values of the economic index among homeopathic medicines were identified for Climaxan (tablets) - 533.00, and Klimact-Heel (tablets) - 770.80. Among nutritional supplements, a low economic index was received for Bonisan (tablets) with an economic indicator of 302.60, Doppelherz active Menopause (tablets) - 349.30.

The calculated integral indicator of medicine competitiveness is presented in table II.

In the competitiveness rating, the first position among homeopathic medicines is taken by Climaxan (tablets), among nutritional supplements - by Bonisan (tablets), which are characterized by average effectiveness, minimal side effects and a fairly low cost.

Proposals for pharmacies in the field of drug procurement for both prescription and over-the-counter medicines as well as nutritional supplements used for the prevention and treatment of CD in women have been developed based on the results of the study. The propositions were implemented in the activities of 12 pharmacy organizations in the Belgorod region.

TABLE II. RESULTS OF INTEGRAL INDICATORS OF COMPETITIVENESS OF OTC MEDICINES USED FOR PREVENTION AND TREATMENT OF CD IN WOMEN

№	The name of the drug	Quality factor	Economic index	Integral indicator	Rating
Homeopathic medicines					
1	Klimact-Hee	3,82	770,80	0,004956	2
2	Climaxan	4,06	533,00	0,007342	1
3	Klimaktopl an N	3,67	1820,40	0,002016	3
4	Neoklimsal	3,37	2952,00	0,001142	4
5	Remens	3,52	7257,00	0,000485	5
Nutritional supplements					
1	Feminal	3,81	381,3	0,00999	3
2	Inoklim	3,71	2368,9	0,00157	8
3	Bonisan	3,75	302,6	0,01239	1
4	Doppelherz active Menopause	3,93	349,3	0,01125	2
5	Menoril	3,56	580,6	0,00613	6
6	Lady's formula Menopause	3,78	574,0	0,00658	5
7	Ovariamine	3,61	508,4	0,00710	4

IV. CONCLUSION

1. During a sociological study, the medical and social characteristics of women with menopausal disorders have been studied as well as consumer preferences in the choice of drugs analyzed and assessment of women's adherence to treatment.

2. Marketing analysis of the Russian and regional pharmaceutical markets used for the prevention and treatment of menopausal disorders in women has been conducted. It has been established that the assortment contour of the regional pharmaceutical market in terms of key indicators falls within the boundaries of the Russian

pharmaceutical market, is similar to it in basic parameters and uses the capabilities of the Russian pharmaceutical market by 58.00%.

3. The analysis of the drug competitiveness used in the prevention and treatment of CD was carried out, the weighted average estimates for each drug and for each parameter were calculated, as well as the consumer, economic indices and the integral indicator of competitiveness for each drug. Proposals have been developed for pharmacies in the field of drug procurement for both prescription and over-the-counter medicines and nutritional supplements used for the prevention and treatment of CD in women.

REFERENCES

- [1] E.A. Kolbasova, N.I. Kiseleva, I.M. Arestova, "Comparative clinical and hormonal characteristics of the state of health and the quality of life of women with surgical and natural menopause", *Vestnik VGMU*, vol.13(2), pp.78-86, 2014.
- [2] O.V. Armashevskaya, L.Yu. Chuchalina, "Features of the state of health of women of mature age", *Modern problems of science and education*, vol. 1, pp.57, 2017.
- [3] E.V. Doskina, "Treatment of pathological menopause in women", *Lechashchiy vrach*, vol. 5, pp.11-14, 2005.
- [4] M.A. Gevorkyan, I.B. Manukhin, K.Z. Fatalieva, E.I. Manukhina, "A modern approach to the treatment of women with pathological menopause", *Medical Council*, vol. 3-4, pp. 21-26, 2010.
- [5] M.K. Merzakhmedova, G.V. Khamitova, R.Kh. Khafizyanova, "The quality of life of women suffering from menopausal syndrome in the postmenopausal period" *Zdorov'ye – osnova chelovecheskogo potentsiala: problemy i puti ikh resheniya*, vol. 7(2), pp. 851-852, 2012.
- [6] I.V. Kuznetsova, Yu.B. Uspensky "The use of phytoestrogens in women during the menopausal transition and postmenopause", *Effektivnaya farmakoterapiya*, vol. 52, pp. 44-51, 2013.
- [7] V.E. Radzinsky "Menopausal Syndrome - Therapy and Prevention: Proven Potential of Phytoestrogens", *Doctor. RU*, vol. 14, pp. 32–37, 2015.
- [8] O.V. Chulkova, E.A. Chulkova, "Imacteric syndrome: treatment options" *Consilium medicum*, vol.16(6), pp.66-69, 2014.
- [9] P.M. Maki, "Menopause and anxiety: immediate and long-term effects", *Climacteric*, vol. 2, pp. 67–78, 2010.
- [10] Khafizyanova R.Kh., "Therapeutic efficacy of estradiol with drospirinone in postmenopausal women with menopausal syndrome and pharmacoeconomic determinants", *Fundamental Research*, vol. 1–8, pp. 1694–1699, 2015.