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COMMODITY ANALYSIS OF MEDICAL DEVICES FOR BLOOD PRESSURE MEASUREMENT

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Medical devices for blood pressure measurement are an essential component of the pharmacy assortment and are widely used for screening, diagnosis, and monitoring of cardiovascular diseases. A rational analysis of their assortment is necessary to ensure availability, functional adequacy, and safe use, as well as to optimize the selection of blood pressure monitors according to the needs of different consumer groups.

The aim of the study was to conduct a commodity analysis of the assortment of medical devices for blood pressure measurement available in the pharmacy segment of the pharmaceutical market of Ukraine.

The study was based on data from the Compendium online reference source and the information platform Tabletki.ua. Logical, system-analytical, comparative, statistical, and graphical research methods were applied.

As of November 2025, the pharmacy assortment of blood pressure monitors comprised 272 items. Automatic devices dominated the market, accounting for 75.4% of the assortment, while manual and semi-automatic models were represented to a much lesser extent. Upper-arm blood pressure monitors predominated (239 items), reflecting their higher accuracy and broader applicability. The range of cuff sizes extended from 7 to 46 cm, with a clear predominance of cuffs intended for adult users. Manufacturers increasingly equip devices with additional functions, such as measurement memory, arrhythmia detection, result averaging, and smart features, which enhance measurement accuracy and user convenience. The analysis revealed a concentration of the assortment among several leading international brands, while Ukrainian manufacturers accounted for 9.2%.

The Ukrainian pharmaceutical market of blood pressure monitors is characterized by a diverse and functionally rich assortment, the dominance of automatic devices, and the leading role of international manufacturers alongside a noticeable segment of domestic products. The results may be used to optimize the assortment policy of pharmacy institutions and improve pharmaceutical provision for the population.

Key words: blood pressure monitors, medical devices, commodity analysis, pharmaceutical market.

Лілія Будняк, Вікторія Гуцол, Ірина Білик, Наталя Музика, Світлана Марчишин.
Товарознавчий аналіз медичних виробів для вимірювання артеріального тиску

Медичні вироби для вимірювання артеріального тиску є важливою складовою аптечного асортименту та широко застосовуються для скринінгу, діагностики й моніторингу серцево-судинних захворювань. Раціональний аналіз їх асортименту має суттєве значення для забезпечення доступності, функціональної відповідності та безпеки використання таких виробів, а також для оптимізації вибору тонометрів з урахуванням потреб різних груп споживачів.

Мета дослідження – провести товарознавчий аналіз асортименту медичних виробів для вимірювання артеріального тиску, представлених в аптечному сегменті фармацевтичного ринку України.

Інформаційну базу становили дані довідника Компендіум online та інформаційної платформи Tabletki.ua. У роботі застосовано логічний, системно-аналітичний, порівняльний, статистичний та графічний методи дослідження.

Станом на листопад 2025 року асортимент тонометрів аптечного сегменту налічує 272 найменування. Встановлено домінування автоматичних тонометрів, частка яких становить 75,4 %, тоді як механічні та напівавтоматичні моделі представлені значно менше. Переважають тонометри для вимірювання артеріального тиску на плечі (239 найменувань), що зумовлено їх вищою точністю та універсальністю застосування. Асортимент манжет охоплює широкий діапазон розмірів – від 7 до 46 см, із чітким переважанням манжет для дорослих користувачів. Значна увага виробниками приділяється додатковим функціям, зокрема наявності пам'яті вимірювань, індикаторів аритмії, усереднення результатів та «розумних» функцій, що підвищують інформативність і зручність використання приладів. Аналіз виробників показав концентрацію асортименту серед кількох провідних міжнародних брендів, водночас частка українських виробників становить 9,2 %, що свідчить про їх участь у формуванні вітчизняного ринку медичних виробів.

Проведений аналіз свідчить про різноманітність та функціональну насиченість асортименту тонометрів на фармацевтичному ринку України, домінування автоматичних моделей і провідну роль міжнародних виробників за наявності помітного сегмента вітчизняної продукції. Отримані результати можуть бути використані для оптимізації асортиментної політики аптечних закладів і підвищення якості фармацевтичного забезпечення населення.

Ключові слова: тонометри, медичні вироби, товарознавчий аналіз, фармацевтичний ринок.

Introduction. Arterial hypertension ranks among the leading global determinants of premature mortality, underscoring its exceptional significance for healthcare systems [1]. Within the framework of international strategies aimed at combating non-communicable diseases, a target has been established to achieve a 25% reduction in the prevalence of uncontrolled hypertension between 2010 and 2025. According to epidemiological estimates, as of 2024 approximately 1.4 billion individuals aged 30–79 years were living with hypertension, accounting for nearly one-third of the population in this age group. Moreover, nearly two-thirds of these patients reside in low- and middle-income countries, reflecting a substantial global disparity in the distribution of disease burden [2].

Blood pressure is characterized by considerable variability and fluctuates depending on the time of day, season, ambient temperature, emotional state, and level of physical activity [3, 4, 5]. Consequently, a single office-based measurement cannot adequately capture the individual dynamics of this indicator [6]. Contemporary clinical guidelines emphasize that confirming the diagnosis of arterial hypertension requires out-of-office blood pressure measurements, at least prior to the initiation of therapy [6, 7]. This approach enables a more accurate assessment of true blood pressure levels and facili-

tates the identification of cases of white-coat hypertension or masked hypertension [6].

Despite the high prevalence of hypertension, detection rates remain insufficient. More than 600 million individuals (44%) are unaware of their elevated blood pressure, whereas approximately 630 million adults (44%) have been diagnosed and initiated treatment. At the same time, only around 320 million patients (23%) achieve adequate blood pressure control. These findings highlight the need to enhance screening programs, optimize therapeutic management, and implement effective long-term monitoring strategies [2].

Given the high prevalence of arterial hypertension and the suboptimal rates of its timely detection and control, the quality and accessibility of medical devices for blood pressure measurement become particularly important. Effective diagnosis and long-term monitoring of blood pressure are impossible without reliable, clinically validated, and economically accessible sphygmomanometers, which places increased demands on devices used both in clinical settings and in home environments. Therefore, it is essential to evaluate their availability, compliance with contemporary standards, and assortment presented on the national market. In view of this, **the aim of the study** was to conduct a commodity analysis of the assortment of medical devices for blood pressure measurement available

in the pharmacy segment of the pharmaceutical market of Ukraine.

Methods of Research. The object of the study was the assortment of medical devices for blood pressure measurement available on the pharmaceutical market of Ukraine. The information base of the study included the online reference resource Compendium online and information platform Tabletki.ua [8, 9].

To generalize the information, logical and system-analytical methods were applied; the comparative method was used to evaluate classification characteristics, and statistical and graphical methods were employed to process and summarize the obtained results.

Discussion of the Results. As of November 2025, it was determined that the group of pharmacy assortment products used for measuring blood pressure comprises 272 items [8, 9].

The assortment of the pharmacy segment of the domestic pharmaceutical market is represented by the following types of blood pressure monitors: automatic, semi-automatic, and manual (Fig. 1).

According to the results of the study, automatic blood pressure monitors occupy a leading position on the Ukrainian market, accounting for 75.4% of the total assortment (205 items). The share of manual and semi-automatic blood pressure monitors is significantly lower and amounts to 16.9% and 7.7%, respectively.

Depending on the site of application, blood pressure monitors are classified into those intended for upper-arm measurement (239 items) and wrist measurement (33 items).

Among automatic blood pressure monitors, upper-arm models predominate, accounting for 172 items, which corresponds to 80.8% of the total number of automatic blood pressure monitors. The proportion of wrist blood pressure monitors is considerably lower and amounts to 19.2% (33 items).

In blood pressure monitors, cuff size varies within a wide range, which enables their use by different age and anthropometric population groups (Fig. 2).

Figure 2 shows that the assortment of blood pressure monitor cuffs covers a wide range of sizes, from 7 to 46 cm, with a clear predominance of cuffs intended for adult users, which enables proper device selection and increases the reliability of blood pressure measurement results.

Among the features of blood pressure monitors, the availability of two or three cuffs in the set should also be noted.

Additional functions specified in the characteristics of blood pressure monitors can be systematized into functional blocks that reflect their practical purpose and impact on usability and informational value. Taking this into account, all additional functions can be grouped into the following blocks:

- power supply and connectivity. This block includes a battery charge indicator (67 items), automatic power-off (90 items), computer connection (14 items), the presence of a USB port (25 items), and a Type-C interface (20 items), which ensure control of energy consumption and enable device charging or data transfer;
- display and ease of use. These functions include a large display (120 items), display backlight (13 items), touch control (5 items), and compact size (12 items), contributing to improved ergonomics and ease of reading results, especially for elderly users;
- notifications and accessibility. This block is represented by audible alerts (35 items) and voice guidance (12 items), which facilitate the measurement process and provide additional accessibility for users with visual impairments;
- analysis and “smart” functions. These include arrhythmia detection (184 items), a hypertension indicator (10 items), a motion indicator (37 items), result averaging (125 items), and artificial intelligence functions (51 items), which enhance measurement accuracy and allow for a preliminary assessment of the cardiovascular system;
- memory. This block includes measurement memory (197 items) and memory for multiple users (104 items), enabling long-term monitoring of blood pressure dynamics;

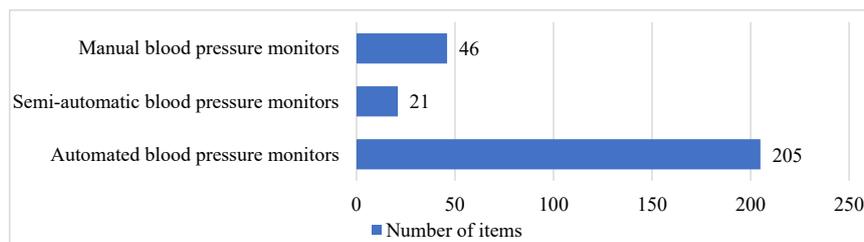


Fig. 1. Diagram of the distribution of blood pressure monitors by type

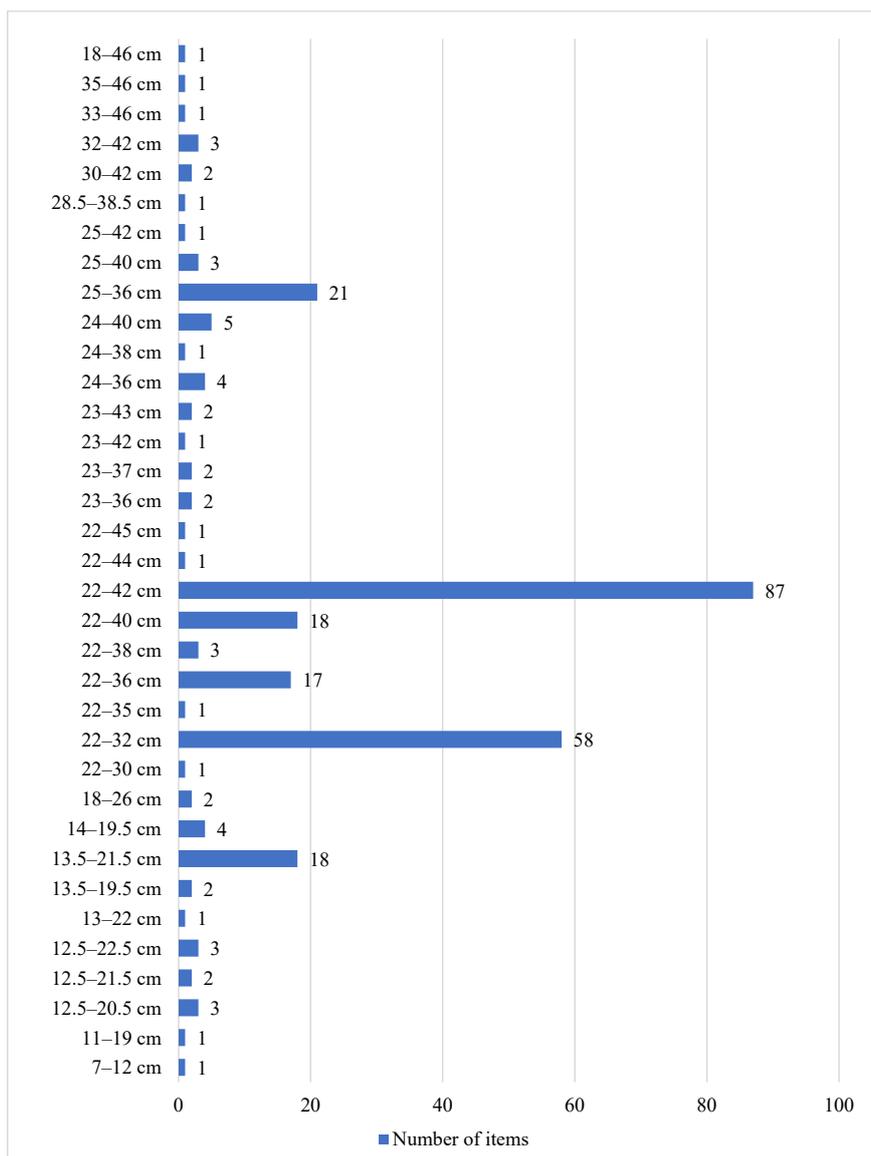


Fig. 2. Diagram of the distribution of blood pressure monitor cuffs by size

Table 1

Share of manufacturers in the structure of the blood pressure monitor assortment

Manufacturers of blood pressure monitors	Share, %	Manufacturers of blood pressure monitors	Share, %
Alicn Medical Shenzhen	0.37	B.Well Swiss AG	7.72
Guangdong Genial Technology	0.37	Medxus Swiss GmbH	10.66
Shenzhen Aoj Medical Technology	0.74	Wuxi Exanovo Medical Instrument	0.74
Shenzhen Homed Medical Device	0.37	Little Doctor International Pte. Ltd.	9.93
Shenzhen Combei Technology	1.47	Vega Ukraine. TD	3.68
Shenzhen Urion Technology	3.68	Dolphi Ukraine. LLC	2.94
Microlife	4.04	Dopomoha-1. LLC	0.37
Wuxi Medical Instrument Factory	1.47	Igar. LLC	0.37
Xiamen Ants-Bro Technology	1.47	Tetapharm. LLC	1.84
Wenzhou Bokang Instruments	2.21	Longevita	6.25
H & L Company Limited	6.62	Geratherm Medical AG	0.74
Rossmax International Ltd.	3.31	Beurer GmbH	4.04
Heco Medical Technology	1.10	Oromed	4.41
Nihon Seimitsu Sokki	4.04	Medel	1.47
Omron Healthcare	13.24	Arm Style	0.37

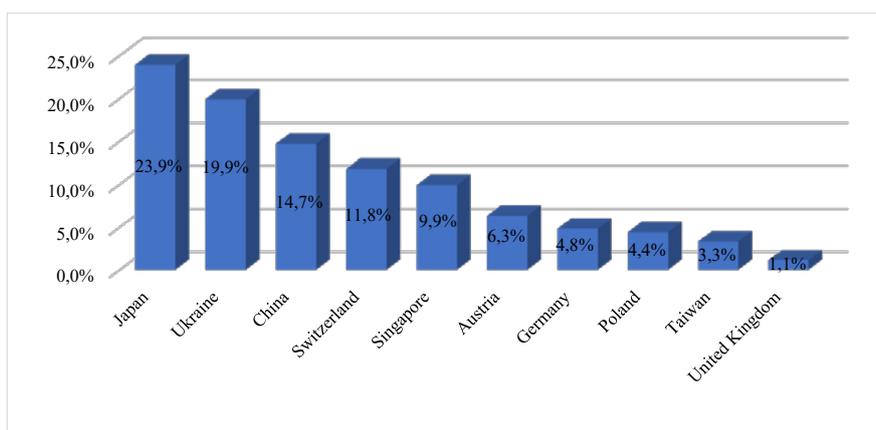


Fig. 3. Diagram of the distribution of blood pressure monitors by country of brand origin

- wireless capabilities. These include the presence of Bluetooth (7 items),

- which allows synchronization of measurement results with mobile devices and maintenance of an electronic log of readings.

The assortment of blood pressure monitors in the pharmacy segment of the domestic pharmaceutical market is characterized by a significant amount of products of foreign and Ukrainian origin. In particular, blood pressure monitors from manufacturers listed in Table 1 are marketed.

According to the results presented in Table 1, it was established that the largest share of the assortment is formed by blood pressure monitors manufactured by Omron Healthcare (13.24%), Medxus Swiss GmbH (10.66%), and Little Doctor International Pte. Ltd. (9.93%). The cumulative share of manufacturers with more than 15 items accounts for over one third of the total assortment, indicating a concentration of supply among leading brands.

At the same time, a significant number of manufacturers are represented by a limited number of models, whose share does not exceed 2%, which indicates market fragmentation and the orientation of certain companies toward niche segments. The presence of both international and domestic manufacturers within the assortment structure ensures diversity in terms of price categories, functional capabilities, and the level of technological sophistication of blood pressure monitors. The resulting assortment structure contributes to a wider range of choices for consumers while simultaneously reflecting the dominance of brands with a high level of trust and well-established market positions.

Among the manufacturers of blood pressure monitors represented on the domestic market, there are also Ukrainian companies, in particular Vega Ukraine, TD, Dolphi Ukraine, LLC, Dopomoha-1, LLC, Igar, LLC, and Tetapharm, LLC, whose cumu-

lative share in the assortment structure amounts to 9.2%. This indicates the participation of national manufacturers in shaping the blood pressure monitor market; however, their positions remain less competitive compared to leading international brands, which are characterized by a broader model range and higher market recognition.

An analysis of blood pressure monitors by country of brand origin was also conducted. The results of the study are presented in Figure 3.

An analysis of data based on the criterion of brand country of origin indicates the dominance of foreign brands in the domestic pharmaceutical market of blood pressure monitors. The largest number of items is attributed to brands from Japan (65 items), Ukraine (54 items), and Switzerland (32 items), which points to their leading positions in the assortment structure of the market (Fig. 3).

A substantial presence is also observed for brands from the People's Republic of China, totaling 40 items, as well as from Singapore (27 items), reflecting the active participation of Asian companies in shaping the supply of blood pressure monitors. To a lesser extent, the assortment is represented by brands from Austria (17 items), Germany (13 items), Poland (12 items), and Taiwan (9 items). The smallest share of the assortment is accounted for by brands from the United Kingdom (3 items).

The resulting assortment structure by brand country of origin demonstrates a wide geographical diversity of represented brands, the dominance of international manufacturers, and at the same time the presence of a notable segment of domestic brands, which ensures diversity of blood pressure monitors in terms of quality, functional characteristics, and price categories.

Conclusions.

1. As of November 2025, the assortment of blood pressure monitors in the pharmacy segment

of the Ukrainian pharmaceutical market comprises 272 items, indicating a high level of market saturation and diversity of supply.

2. Automatic blood pressure monitors occupy a dominant position in the market (75.4%), with upper-arm models prevailing due to their higher measurement accuracy and broader scope of application.

3. The assortment of cuffs covers a wide size range (7–46 cm) and is mainly oriented toward adult users, ensuring proper device selection and increased reliability of blood pressure measurements.

4. Blood pressure monitors are characterized by a wide range of additional functions, with heart

rhythm analysis, result averaging, and data storage being the most common.

5. The market structure is dominated by international manufacturers, while domestic companies account for 9.2% of the assortment, indicating their presence but comparatively lower competitiveness.

6. Analysis by brand country of origin confirms a broad geographical distribution of manufacturers, with leading positions held by brands from Japan, Ukraine, and Switzerland, as well as a substantial presence of companies from the People's Republic of China and Singapore.

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