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SOCIOLOGICAL RESEARCH OF THE MEN'S ANDROGENIC ALOPECIA PROBLEM

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Diseases of the skin and its appendages currently occupy one of the leading places in terms of prevalence. In addition, today the relationship between dermatopathologies and the psychoemotional state of people and vice versa is clearly monitored. Psychodermatology is engaged in the study of exactly this regularity. One of the most common trichological diseases is androgenic alopecia, which is characterized by excessive hair loss under the influence of androgens in individuals with a hereditary predisposition. Androgenic alopecia is often accompanied by secondary mental disorders, which significantly impair the quality of people's life. It is relevant to conduct sociological research of this problem among men of all age groups. Such research will reveal the level of influence of androgenic alopecia on the psychoemotional state of men who may be potential consumers of medicines and dermatocosmetics.

The aim of the work was to conduct a sociological study to establish the impact of androgenic alopecia on the psychoemotional state of men and their readiness for pharmacotherapy.

Materials and methods. Sociological research was conducted from 01.03.2019 to 31.08.2019 by surveying 150 men aged 18 to 66. Respondents were visitors to pharmacies in the Ivano-Frankivsk and Chernivtsi regions of Ukraine, who gave written consent to participate in the survey. Only persons with visible manifestations of androgenic alopecia according to the Norwood scale were included in the survey. All respondents were divided into the following age groups: from 18 to 20 years old, from 21 to 30 years old, from 31 to 40 years old, from 41 to 50 years old, from 51 to 60 years old, from 61 years old and older. The distribution was carried out to segment the target market. The results of the study were displayed as percentages with 95 % confidence intervals. Statistical analysis was performed using R version 4.1.2 (R Core Team (2021)).

The results. According to the results of the sociological study, 48.7 % of interviewed men consider that androgenic alopecia is a problem which can affect the emotional state and, so, the quality of life. As a result, about 90 % of the respondents indicated that they need to expand the assortment of effective remedies to solve this problem on the pharmaceutical market of Ukraine, of which 36.7 % are ready to pay for a course of effective pharmacotherapy from 200 to 500 hryvnias.

Conclusions. The obtained results confirm that androgenic alopecia has a negative effect on the psychoemotional state of men and worsens their quality of life. To solve the problem of androgenic alopecia, men are interested in using effective medicinal or dermatocosmetic products

Keywords: psychodermatology, psychotrichology androgenic alopecia, sociological research, questionnaires, pharmacotherapy, dermatocosmetic products

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1. Introduction

The study of complex somatopsychic and psychosomatic relationships is one of the urgent problems of modern medicine. Diseases of the skin and its appendages are characterized by morphological changes that negatively affect a person's external attractiveness, therefore impairing social adaptation and quality of life [1]. Clinical manifestations of some skin diseases, for example, the symptom of itching, are the cause of negative behavioural changes in patients with dermatoses. As a result, it is dermatopathologies among somatic diseases that are often accompanied by psychological disorders [2]. On the other hand, the functioning of the skin, as the largest organ of the human body, is closely related and regulated by the central nervous system. Accordingly, psychological, or

mental factors can play a leading role in the occurrence of a number of dermatological diseases [3].

Psychodermatology studies the impact of skin pathologies on the patient's mental state, as well as the impact of mental states or diseases on the skin [4, 5]. Psychodermatology is a branch of dermatology started in the 20th century by the Australian psychoanalyst F. Whitlock; considers the etiopathogenesis, prevention and therapy of dermatoses within the framework of the pathophysiologically determined long-term connection between the pathological skin process and the mental state of the patient [3, 6]. Today, there is no unified classification of psychodermatological disorders, but the following are most often distinguished: psychophysiological (syn. psychosomatic) disorders; mental disorders with dermato-

logical symptoms (primary mental disorders); dermatological disorders with psychiatric symptoms (secondary mental disorders) [2]. In the case of diseases that traditionally belong to psychophysiological ones, both components, both psychosomatic and somatopsychic, are mainly expressed, since not only psycho-emotional stress leads to the emergence of pathology, but also the very fact of the presence of dermatosis causes psycho-emotional reactions in the patient. In connection with this, it is appropriate to consider that any psychophysiological disease occurs due to the interaction of both physical and mental factors [3, 6].

Psychotrichology is a part of psychodermatology and is based on the study of psychosomatic/somatopsychic aspects in diseases of hair and skin of the scalp [5, 7]. Examples of such trichodermatoses are psychogenic telogen effluvium – a psychophysiological disease; trichotillomania – a mental illness with a dermatological symptom (a primary mental disorder that primarily requires psychiatric therapy); seborrhea of the skin of the hairy part of the head, androgenic alopecia – trichopathologies with the presence of psycho-emotional stress (secondary mental disorders) [7–9].

Alopecia or baldness is the most common trichological disease, which is characterized by excessive hair loss, which reduces its density and worsens its condition. Alopecia does not pose a threat to a person's physiological health and is a cosmetic defect. However, this disease is often accompanied by secondary mental disorders, such as adaptation disorders, depression, anxiety states, which significantly worsen the quality of life of people, especially young people, and women [2, 7, 10].

Depending on the etiopathogenetic factors, different types of alopecia are distinguished, among which the most common is androgenic alopecia (AA), which is caused by the action of androgens on the hair follicle in men and women with a hereditary predisposition. AA significantly affects the psycho-emotional state of people, however, the specificity and intensity of perception of AA differs between men and women [11–14]. Several findings suggest that men tend to view AA as part of the natural aging process; admit that AA reduces physical attractiveness and can cause stress, but without a critical impact on mental health [15, 16]. AA in women, regardless of age, always causes psychological stress, which is often much stronger than in men. On the other hand, every woman with AA experiences stress to a different degree, since the severity of the psychological state depends on the progression and stage of AA [10, 17–19]. Considering the above, it is obvious that AA is a serious psychotrichological problem for women. Therefore, it is relevant to conduct sociologi-

cal studies of the problem of AA among persons of the male category. This will allow us to find out how negative men are towards the manifestations of AA and whether they are ready for pharmacotherapy. Such surveys can become the basis for the development of new effective medicinal and dermatocosmetic products indicated for use in men with AA.

The aim of the work was to conduct a sociological study to establish the impact of androgenic alopecia on the psycho-emotional state of men and their readiness for pharmacotherapy.

2. Research planning (methodology)

To achieve the goal, we have developed a research algorithm consisting of 6 stages (Fig. 1). At the first stage, data on the impact of skin pathologies on the patient's mental state, types of psychodermatological disorders and androgenic alopecia itself, as the most common psychotrichological disease, were analyzed and systematized, which allowed to choose the implementation method at the next stage. The next stage of the research involves the planning of a sociological study with the development of a questionnaire, which will include questions about the course of the disease, the respondent's attitude to the disease and the features of pharmacotherapy. Accordingly, after the formation of the questionnaire, the next stage was conducting a survey and analyzing the received data.

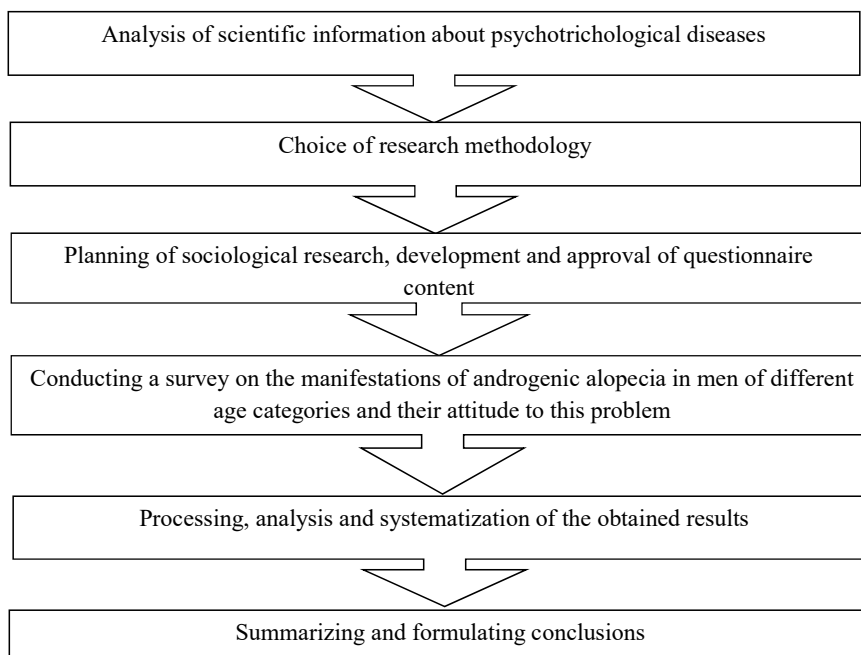


Fig. 1. Research algorithm

After processing the received data, we summed up, confirmed that this disease has an impact on the psycho-emotional state of men, and established the need to expand the range of economically available dermatocosmetic products.

3. Materials and methods

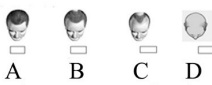
Sociological research was conducted in the period from 01.03.2019 to 31.08.2019 by surveying visitors to

pharmacies in the Ivano-Frankivsk and Chernivtsi regions of Ukraine. The respondents were men who gave written consent to participate in the survey in accordance with the principles of bioethics set forth in the Declaration of Helsinki “Ethical Principles of Medical Research Involving Human Subjects” and the “Universal Declaration of Bioethics and Human Rights (UNESCO)”. The study was approved by the Bioethics Commission of the Ivano-Frankivsk National Medical University (excerpt from the minutes of the meeting No. 113/20 dated 12.03.20). Only persons with visible manifestations of AA were included in the survey. The total number of respondents was 150 men aged 18 to 66.

The questionnaire is an author's development, which included seven questions related to the manifestations of AA depending on age, the need for its treatment, and the amount of money the interviewees are willing to spend to purchase means for its treatment (Fig. 2). The questionnaire shows AA stages according to the Norwood scale [20]. All respondents were divided into the following age groups: from 18 to 20 years old, from 21 to 30 years old, from 31 to 40 years old, from 41 to 50 years old, from 51 to 60 years old, from 61 years old and older. The distribution was carried out with the aim of further segmentation of the target group of users of medicines and dermatological products for the treatment of AA.

Statistical analysis. The results of the study were displayed as percentages with 95 % confidence intervals. In Fig. 3–8 represented frequency bars (in percentages), as well as by vertical segments, corresponding reliable intervals. Statistical analysis was performed using the software environment for statistical calculations R version 4.1.2 (R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>). In its standard package ‘stats’, the function `binom.test()` is implemented, which calculates the estimate of the probability (frequency) of the occurrence of a certain event and the reliable intervals of this probability. This statistical technique allows us to study the probabilities with which this or that opinion of men with AA can be found in the general population. An estimate of such probability is the relative frequency with which the corresponding opinion occurs in the sample. The accuracy of estimating this probability depends on the sample size, so confidence intervals are given. The level of reliability chosen is standard for such studies, i.e. 95 %. The mentioned probability lies within the reliable interval, and only in 5 % of such studies can you get an interval that does not contain the correct probability value [21].

QUESTIONNAIRE

1. Your age is _____ years.
2. Noticeable hair loss began at age _____.
3. At which stage of baldness are you now?
(Put a checkmark next to the corresponding picture):


A – the presence of only M-shaped bald spots on the forehead;
 B – progression of baldness on the forehead, crown/top of the head;
 C – the formation of a fused focus of baldness on the forehead and crown;
 D – symmetrical baldness of the frontal-parietal zone, a narrow strip of hair remains only on the temples and back of the head.
4. How important is the solution to the problem of baldness for you?
(emphasize the choice):
 A) I do not care.
 B) It is important to me.
 C) It is very important to me.
 D) I can put up with that.
5. Have you ever used medicinal or cosmetic products for baldness?
(emphasize the choice):
 A) No.
 B) Yes, these were the following means: _____
6. Is there a need for effective medicines for baldness on the pharmaceutical market (emphasize the choice):
 A) Yes, they are needed because baldness requires professional treatment.
 B) They are very needed, especially domestic ones, which is why it is economically beneficial.
 C) Not needed because there is no effective therapy.
 D) It is not needed because baldness is not a disease.
7. How much money are you ready to spend on a course of effective therapy with a medicinal preparation for baldness? (emphasize the choice):
 A) up to 200 UAH;
 B) 200–500 UAH;
 C) 500–800 UAH;
 D) 800–1000 UAH;
 E) For me, the price is not important; the main thing is the medicine's effectiveness;
 F) It is not reasonable to spend money on it.

Fig. 2. Content of the questionnaire for sociological research

4. Research results

The results of the survey showed that the respondents with visible manifestations of AA are representatives of different age groups (Fig. 3).

In particular, the fewest respondents were in the age group from 18 to 20 (2.7 %), which is naturally due to the peculiarities of the course of the disease, the intensity of whose clinical manifestations increases with age. The number of respondents in the following three age groups (from 20 to 50 years old) was practically equal and ranged from 25 to 28 %. In the group aged 51 to 60, the number of participants was two times smaller (13.3 %) compared to the results of the previous groups, while in the group 61 and older it was only 4 %.

First, when surveying respondents, the age at which clinical manifestations of AA appeared was determined (Fig. 4). According to the obtained data, the

largest percentage of survey participants (23.3 %) observed the onset of the disease at the age of 26 to 30 years, followed by the age group from 30 to 55 years (19.3 %). In turn, the percentage of respondents who observed the first signs of baldness between the ages of 21 and 25 was 17 %, and 16 % of the respondents claimed the appearance of baldness before the age of 20. The smallest number of sociological research participants – 4 %, first encountered AA after the age of 46. The established results fully correspond to the data of literature sources concerning the dependence of AA manifestations in men on age [5].

The next question of the questionnaire was aimed at determining the stage of AA at the moment of life, which was manifested visually. Among the listed stages of AA, the surveyed respondents most often observed the progression of baldness on the forehead, crown / top of the head (stage B), which was 44 %, also, a significant number of men (26.7 %) had progressive stage C. On the other hand, according to evidence results, the least number of men complained about the presence of stage D, only 4 % (Fig. 5).

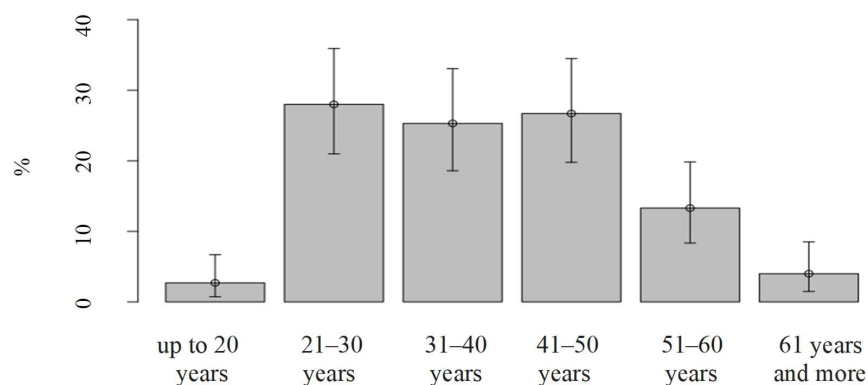


Fig. 3. Distribution of respondents by age groups

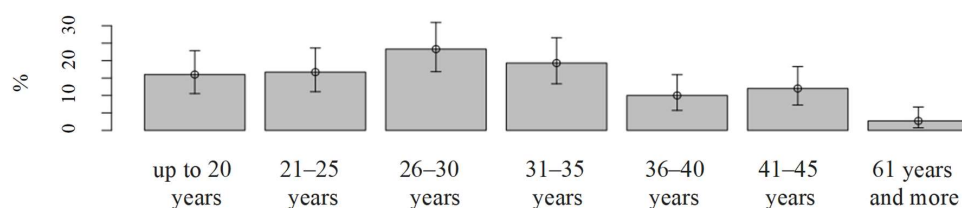


Fig. 4. Distribution of respondents by age, during which visible manifestations of AA appeared

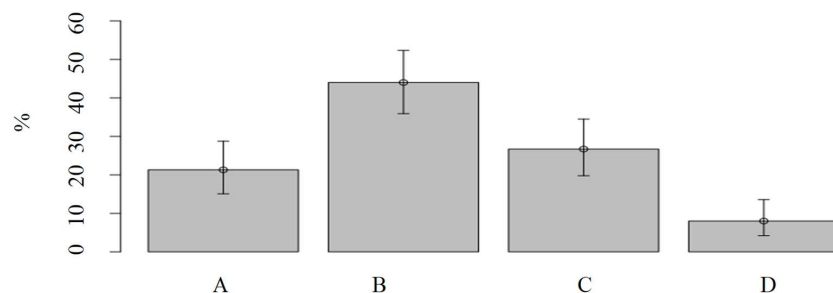


Fig. 5. Distribution of respondents depending on stage AA: A – presence of only M-shaped bald spots on the forehead; B – progression of baldness on the forehead, crown/top of the head; C – formation of a fused foci of baldness on the forehead and crown; D – symmetrical baldness frontal-parietal zone, a narrow strip of hair remains only on the temples and the back of the head

The fourth question concerned how important it was for the respondents to solve the AA problem (Fig. 6). According to sociological research data, 33.4 and 15.3 % of men answered that solving the problem of AA is important or extremely important for them, respectively. While 43.3 % of survey participants claimed that they could put up with AA. And only 8 % said that they do not care, and they calmly react to the manifestations of AA. Therefore, about 50 % of the respondents recognized AA as a problem that primarily affects their emotional state and, as a result, expressed a desire to cure it.

The next question of the questionnaire was related to the prevention and treatment of AA, namely, whether the participants of the survey used medicines and/or cosmetics. Also, when answering this question positively, the respondent had to indicate the name of the tool/tools. Among all participants, only 27.3 % gave a positive answer, and among the list of used drugs there were drugs with minoxidil in the form of skin solutions, placenta preparations, drugs with tincture of capsicum, extract of horse chestnut seeds, cosmetic shampoos, and balms with Sabal palm extract, etc.

The sixth question of the survey concerned the need for effective drugs for the treatment of AA on the pharmaceutical market. According to the processed data, the greater half of the respondents, namely 52.7 %, gave a positive answer (answer A), while 36.7 % of the respondents answered that domestically produced pharmaceuticals are needed in particular, which is due to their economic availability (Fig. 7). The smallest percentage of men – 10.6 % – chose answer C, that is, they answered that there is no need for such drugs, since they are not effective, and baldness is not a disease.

Thus, the answer of 89.4 % of respondents indicates the need for effective drugs for the treatment of baldness, in particular in the form of alternative domestic remedies. It is worth noting that a significant part of men who answered that they can put up with baldness, as well as some individuals from the “indifferent” group, also considered it necessary to replenish the nomenclature of the domestic pharmaceutical market with means for the effective treatment of AA.

An extremely important issue when studying the problem of baldness was the assessment of the possibility of purchasing means for its treatment among the interviewed men and their corresponding distribution into groups.

Therefore, at the final stage of the survey, respondents were asked about their willingness to pay the appropriate amount of money to receive an effective course of AA pharmacotherapy (Fig. 8). For this purpose, the price ranges of the cost of pharmacotherapy were included in the questions of the questionnaire in accordance with the average retail prices of medicines and cosmetics for the treatment of AA in the market of Ukraine.

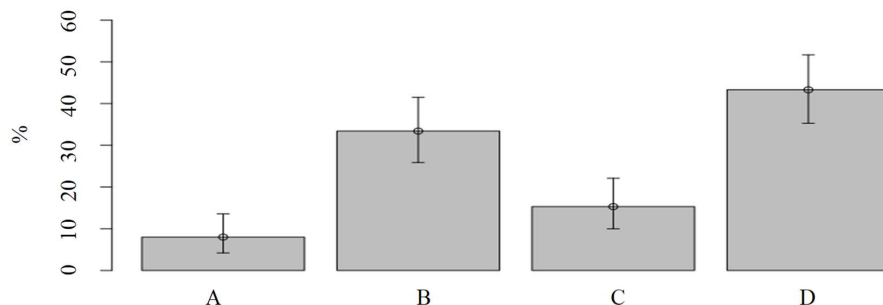


Fig. 6. Distribution of respondents' answers to the question "How important is solving the problem of baldness to you?": A – I do not care; B – it is important to me; C – it is extremely important to me; D – I can put up with it

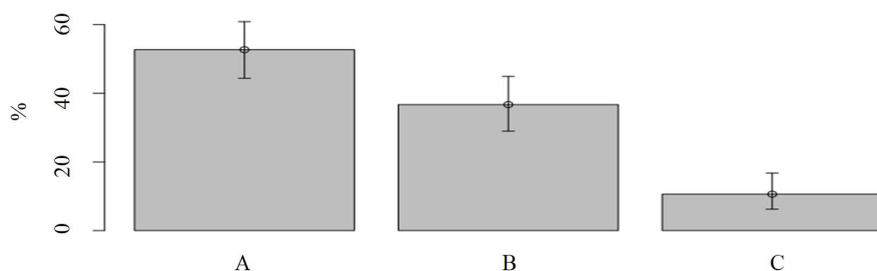


Fig. 7. Distribution of respondents' answers to the question "Are there effective medicines against baldness needed on the pharmaceutical market?": A – yes, they are needed, because baldness requires professional treatment, B – they are needed, especially domestic ones, so it is economically beneficial, C – they are not needed, because there is no effective therapy

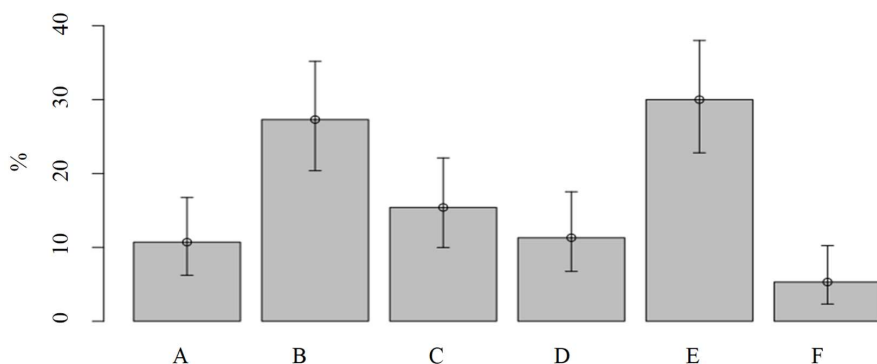


Fig. 8. Distribution of respondents' answers to the question "How much money are you ready to spend on a course of effective therapy with a drug for baldness?": A – up to 200 UAH; B – 200–500 UAH; C – 500–800 UAH; D – 800–1000 UAH; E – the price is not important, the main thing is that the tool is effective; F – there is no sense spending money on it

According to the obtained data presented in Fig. 8, 30 % of men answered that the price is not important for them, and the key is the effectiveness of the tool, while 27 % of respondents agree to spend on treatment in the range of UAH 200–500, which belongs to the average

price category of the cost of AA pharmacotherapy. In turn, 16 % of surveyed men agree to spend within 200 UAH, which is the lowest price category, and 15.4 and 11 % of respondents chose price categories above the average and high, namely 500–800 UAH and 800–1000 UAH, respectively. The smallest number of participants – 5 % answered that they do not consider it reasonable to spend money on baldness treatment. Thus,

summing up the above, it can be stated that most men are ready to spend money on AA treatment. However, it is worth noting the probability of low demand for products in the low-price category due to the formed price stereotypes about cosmetic products in general. However, at the same time, mid-priced products have the potential to create greater demand among consumers who need effective AA therapy.

5. Discussion of research results

As the results of the conducted sociological research showed, 48.7 % of Ukrainian men consider AA a problem that can affect the emotional state and, as a result, the quality of life. As a result, about 90 % of respondents indicated that they need to expand the range of effective means to solve this problem on the pharmaceutical market of Ukraine, of which 36.7 % insist on the need for economically available domestic means in the middle price category.

It is worth noting that several problems arose during the survey process. First of all, there were difficulties with communication, as men were reluctant to participate in the sociological survey. In addition, even before the data was calculated, a trend was observed: the older the respondents were, the more negative their reaction to the questionnaire was, in particular, some of the respondents refused to participate in the survey at all. The processed results confirmed this observation, since, regardless of the pathogenesis of baldness, namely the probability of its increase with increasing age, the number of participants over 50 years of age was insignificant. Young men were more open to discussing this problem.

Thus, the results of the study confirm that AA has an impact on the psycho-emotional state of men, that is,

it is a psychotrichological problem that needs to be solved by means of economically available pharmacotherapy. Considering this, the results of the work are the basis for the development of effective dermatocosmetic products of domestic production.

Study limitations. The survey was conducted live only in two regions of Ukraine, where men were involved – visitors to pharmacies with visible manifestations of alopecia, who gave written consent to participate in the study.

Effect of martial law (if applicable). It is not applicable.

Prospects for further research. It is planned to conduct an extended study in different regions of Ukraine in an online format, involving in the questionnaire both pharmacy visitors of both sexes and pharmaceutical workers, to study questions about the pharmaceutical care of people with various forms of alopecia.

6. Conclusions

1. The conducted sociological research on the problem of androgenic alopecia in men aged 18 to 66 years showed that about 50 % of respondents considered solving this problem important or even extremely important, while only 8 % of respondents were indifferent to baldness and its manifestations. In order to establish the demand-need ratio, it was investigated that the lion's share, namely 89 % of the survey participants, believed that there is a need to expand this segment of the pharmaceutical market of Ukraine at the expense of effective drugs for the treatment of androgenetic alopecia, of which 37 % emphasized the need to expand the assortment actually domestic means that are more economically available for the population.

2. To establish a potential group of consumers and their willingness to pay for pharmacotherapy of androgenic alopecia, it was determined that about 30 % of men considered the effectiveness of medicinal products more important than its price. 26 % of respondents expressed their willingness to pay a high or above average (800–1000 UAH and 500–800 UAH, respectively) cost of a course of AA pharmacotherapy, 40 % – an average or low (200–500 UAH and up to 200 UAH, respectively) cost for a course of effective pharmacotherapy of androgenic alopecia, and only 5 % do not consider it appropriate to spend money on baldness treatment.

3. The obtained results confirm that androgenic alopecia has a negative effect on the psycho-emotional state of men and worsens their quality of life. To solve the problem of androgenic alopecia, men are interested in using effective medicinal or dermatocosmetic products.

Conflict of interests

The authors declare that they have no conflicts of interest regarding this study, including financial, personal, copyright, or any other that could affect the study and its results presented in this article.

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Data availability

Data will be provided upon reasonable request.

Use of artificial intelligence

The authors confirm that they did not use artificial intelligence technologies when creating the presented work.

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