

## THE PSYCHOSOCIAL CONSEQUENCES OF ANDROGENETIC ALOPECIA IN WOMEN AND POSSIBLE RISK FACTORS

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### Abstract

**Background.** Female pattern hair loss is a common dermatological condition, with potentially adverse psychosocial consequences. The effects of androgenetic alopecia in women and the risk factors have not yet been studied in detail.

**The aim** of the study was to evaluate the impact of androgenetic alopecia on women using a new and specific questionnaire for hair diseases and assessing the degree of its acceptability by the patients.

**Patients and methods.** A total of 28 female patients (21 to 48 year old) with androgenetic alopecia were included in this study. Patients' age, education, the duration of hair loss, the severity of alopecia, possible risk factors and the impact on the life quality were included in the 22 questions of the test. The female patients signed the informed consent, completed the questionnaire and were investigated by the study team.

**Results** showed a negative correlation with age. 67.8% were females between 21-30 years and at this age the interest in treating alopecia was higher. 75% of the females who came for treatment had visible scalp. 67.8% of the females presented another physical condition considered a risk factor for the disease. 57.1% of the females had a family relative suffering from androgenetic alopecia. 89% of the women said they were suffering of depression because of alopecia. 57% said that their self-esteem was decreased because of the disease. 71.4% of the women complained about their appearance considering that loosing the hair was affecting their social and family life.

**In conclusion**, androgenetic alopecia has a negative impact on the quality of women's life. The questionnaire was accepted by the women and considered useful by the doctor. The test has shown interesting risk factors and should be applied to more patients in further studies.

**Keywords:** psychosocial, consequences, androgenetic alopecia, women, risk factors.

### Introduction

One of the best definitions of Androgenetic alopecia (AGA) is given by the German scientist Trueb, in his work "Diffuse Hair Loss in Women", published in The Umsch, in May 2002. He says: "AGA is due to androgen-induced, non-synchronized, progressive shortening of the hair growth cycle and gradually leads to the thinning of the central scalp area" [1].

He also explains that the complaint "Doctor, I am losing my hair" represents a particular challenge to

the physician and involves making a specific diagnosis, selecting an appropriate therapy and expressing empathy for the patient's anxiety" [1].

Cash TF and his research colleagues assessed the psychological effects of AGA on women by making a "Comparison with balding men and with female control subjects" in October 1993. They reported that "Androgenetic Alopecia is a common dermatological condition with potentially adverse psychosocial sequelae" [2].

Making a review on the literature they stated that "several studies have examined the psychological impact

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of androgenetic alopecia on men but scientific evidence is absent regarding its effects on women” [2].

Considering how seriously lifestyle factors influence hormonal levels, it could be presumed that lifestyle and behavioral patterns may contribute to the occurrence and severity of AGA. This view is supported by a study done by Alfonso et al. in 2005 [3], on male subjects with AGA, where a majority of them reported that hair loss affected their personal attractiveness and social life.

Sawant N and his research colleagues assessed the “Quality of Life and Associated Lifestyle Patterns of AGA” [4] and used as tools: lifestyle indices, Hairdex, Symptom check list 90 R and an outpatient psychiatric rating scale. They also prepared a stressful life event scale. The above questionnaires contained more than 120 questions. To fill them the patient needed more than one hour which meant the whole process was extremely time consuming for both the patient and doctor.

This is the reason why we thought of and then tried to develop a new questionnaire, more concise, time effective and full of relevant information for the patients’ case and for the doctor’s view upon the hair disease the patient was suffering from.

By using this new questionnaire we could collect information on the age of the onset, duration, demographic variables, details of family history as well as life quality indices, previous medical and nonmedical care of hair loss, psychological impact of the disease.

### Objective

Our study aimed a double purpose. The first was to evaluate the impact of AGA on women patients by using a new developed questionnaire, specific for hair loss

problems. The second purpose was to see if the questionnaire was well accepted by the patients and if it was considered useful by the doctor.

### Material and method

The study was approved by the ethics committee of the University of Medicine and Pharmacy Iuliu Hațieganu Cluj-Napoca. After obtaining permission from the institutional ethics committee, we started recruiting the female subjects who satisfied the inclusion criteria of the study.

The inclusion criteria were: females, full age (>18 years) and under 50 years old, having AGA grade I-2 to III or frontal pattern according to Ludwig Scale and willingness to participate.

The exclusion criteria included: patients under 18 and over 50 years old, having advanced AGA, alopecic disease except for androgenetic alopecia and scalp disorders (scalp disorders, infections, severe seborrheic dermatitis) or patients with therapy that can cause alopecia, women with existing psychopathology (chronic nervous or emotional problems) or any associated pre-existing medical illness such as: cancer, diabetes, stroke, liver insufficiency, hepatitis, HIV/AIDS.

### Study subjects

The majority of patients (30 women) were recruited from a Private Office of Dermato-Venerology Care, located in Cluj-Napoca. 5 additional subjects were entered by the dermatologists working in the Clinic of Dermatology of the Emergency County Hospital Cluj.

All the subjects selected for the study had been diagnosed as suffering from AGA, on the basis of clinical criteria, including pattern of hair loss and trichoscopy

**TABLE I.** The topics and the questions.

Number of questions	Topic	Question regarding:
4	Demographic items	Race
		Age
		Level of education
		Urban/country environment
5	Illness-specific data	Hair loss/hair thinning complaints
		Status of scalp visibility
		Severity of AGA
		Duration of hair loss
5	Risk factors	The type of hair
		Relative with alopecia in the family
		Scalp disease of the patient (seborrhea), allergy or psoriasis
		Opinion regarding cause of hair fall (other patient’s diseases related to alopecia)
		Cosmetic products and devices used on hair (masque & balm; hair curling wand & hair straightener; decolorizer, hair colour & back combing/volumizing)
4	Psychosocial consequences	Covering of the hair with products or items
		Affected self-confidence
		Affected mood (depression)
		How often they think of hair loss
4	Treatment	What aspects of life are disturbed by alopecia
		Addressed to a doctor or pharmacist for treatment
		Therapies already tried
		The type of therapy the patient would accept to stop the hair fall
1	Evaluation of questionnaire	The main objective/purpose of the treatment for hair grow in the patient’s opinion
		If the patient found the questionnaire useful and easy to complete

assessment.

In total, 35 patients were selected, out of which four refused to give consent and three females were excluded as they were not fulfilling all the inclusion criteria.

### Study design

The survey period was April 2012 to December 2012. The study was conceived to be prospective.

After being informed of the aims and procedures of the study, participants provided a written informed consent. Every patient received the questionnaire and started to fill it out (table I).

Last but not least, at the end of the study, the doctor was asked to assess the questionnaire himself.

## Results

### I. Regarding the demographic items:

The race was White/Caucasian for all the women patients.

Out of 28 patients who were recruited, 19 women (68%) were between the age of 18-30 (group I), 7 patients (25%) between 31-40 years (group II), and 2 patients (7%) between 41 and 50 years (group III). Mean age: 29 years old (figure 1).

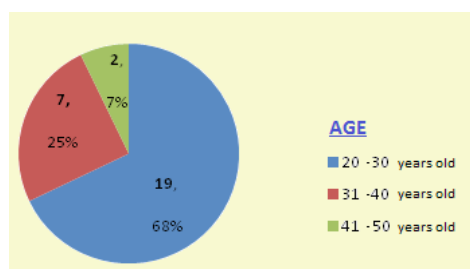


Figure 1. Age distribution of the patients.

All participants had reached secondary education level. The following levels of education were found within the sample: higher secondary education (equivalent to school graduates (12 grades) (n=7.25%), post-secondary education (equivalent to qualification for university entrance) (n=21.75%) (figure 2).

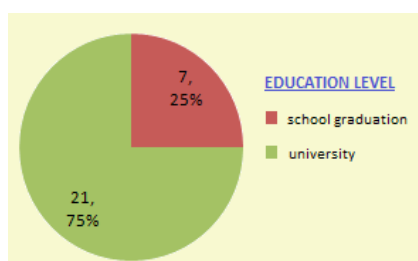


Figure 2. Education level distribution of the patients.

The participants in the study were from both the country (18%) and urban community (82%) as following (figure 3):

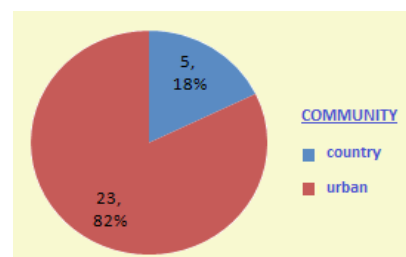


Figure 3. Community distribution of the patients.

### II. Regarding illness – specific data:

The patients major complaint was the combination of hair loss and hair thinning in 42.8% of the cases. A regression line has been noticed in 14.2% of the women.

The duration of AGA (time since the onset) ranged from less than 6 months to 15 years, with mean age of 5 years.

The scalp was visible in 75% of the women, while only 25% had no visible scalp skin.

Three groups were defined (using Ludwig Classification of AGA) by the status of the disease: 64% of the patients were classified as having first degree illness, 32% second degree, 4% third degree.

Thin hair was noticed in 39% of the patients, being a characteristic of the disease. 17.8 % of the patients reported the hair was friable. An equal number of patients reported having soft and oily hair (14.2%) (table II).

Table II. Illness - specific data.

Characteristic	Value	Percentage
<u>Patient complaints</u>		
Hair loss	10	(35.7)
Hair thinning	2	(7.14)
Both loss and thinning	12	(42.8)
Regression line	4	(14.2)
<u>Duration</u>		
< 6 months	2	(7.14)
> 6 months	3	(10.7)
1-3 years	8	(28.5)
3-7 years	9	(32.1)
7-15 years	6	(21.4)
<u>Status of scalp visibility</u>		
Visible scalp	21	(75)
No visible scalp	7	(25)
<u>Type of hair</u>		
Thin	11	(39.3)
Soft	4	(14.2)
Oily	4	(14.2)
Dry	3	(10.7)
Friable	5	(17.8)
Thick	1	(3.6)
<u>Severity of AGA</u>		
Grade I	18	(64)
Grade II	9	(32)
Grade III	1	(4)



Values are presented in number (%) or mean  $\pm$  standard deviation.

### III. Regarding the risk factors:

Seborrhea is a scalp disease found quite often in patients with androgenetic alopecia, as the result show a number of 68%. In 7% of the women, one of the problems associated with it is the annoying pruritus (figure 4).

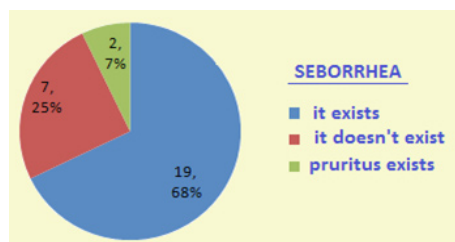


Figure 4. Scalp diseases of the patients.

The patients with androgenetic alopecia have in a great number (57%) at least one family member with the same problem. The relatives with hair loss problems, most often mentioned, are: the mother (in 29% of the cases), followed by the father in 21% of the situations (figure 5).

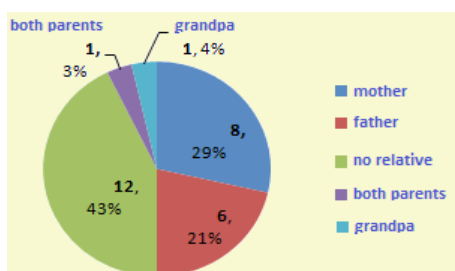


Figure 5. Relative with alopecia in the family.

A third of the women (32.1%) are well informed about the possible causes, and they incriminate the hormonal changes: 7.14 % relate the hair fall to pregnancy, 3.5% relate it to antibody pills intake. The other diseases of the patient are very important as they can be related to alopecia: 10.7% of the patients have thyroid problems while 7.14% of the women have polychistic ovary syndrome. Seborrhea is present in the patients' awareness as a cause of AGA only in 3.5% of the cases. Stress is reported in 7.14% of the cases (figure 6).

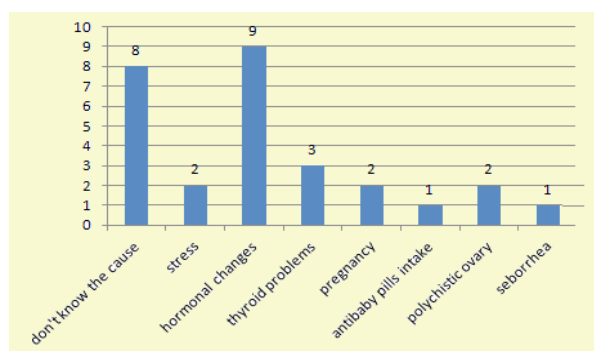


Figure 6. Opinion of the patients regarding the cause of the hair fall.

Cosmetic products and devices used on hair (mask & balm), (hair curling & straightner), (decolorizer, hair colour & back combing) (figure 7):

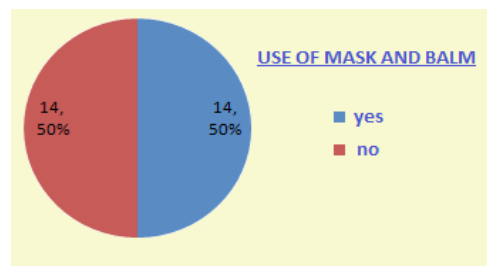


Figure 7. Cosmetic products used on hair.

Half of the patients (50%) take good care of their hair and use haircare products when washing the hair. The women use especially mask and balm, and are satisfied with the results.

Half of the women suffering from AGA try to have a better aspect of the hair and use electric devices to give a better look to the hair. 11% of the patients use the electric hair curling wand, while 39% of females use the hair straightner at 180-200 degrees Celsius. Only 50% of the patients do not use electric devices on their hair (figure 8).

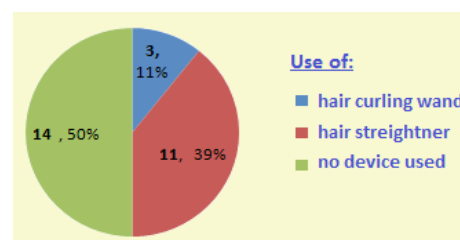


Figure 8. Use of electric devices on hair.

50% of the patients do not harm the hair by using chemical or physical agents. 28.5% of the females with alopecia use decolorizer and then colour the hair in brighter shades, so alopecia isn't so obvious any more. To give hair more volume, about 18% of the patients do use back combing (figure 9).

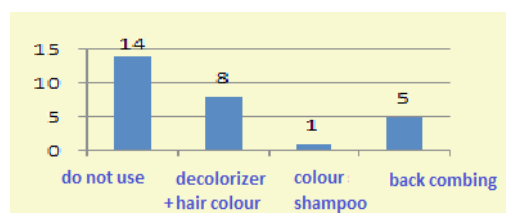


Figure 9. Use of chemical or physical agents on hair.

Usually, patients do not cover their scalp. Some females with hair loss problems (14%) cover the hair with: hats 7%, extensions 3.5% or hair sprays 3.5% to maintain a good look of the hair (figure 10).

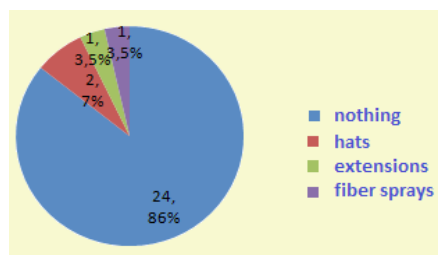


Figure 10. The patients cover the hair with.

#### IV. Psychosocial consequences

The self-confidence seems to be affected in the majority of the cases, 57% of the women patients say the reason is hair loss (figure 11).

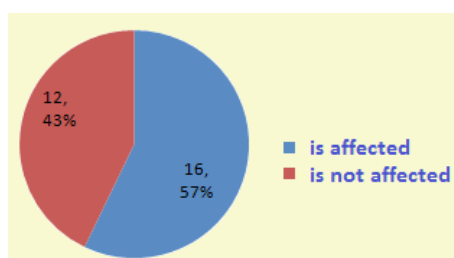


Figure 11. The self-confidence of the patients.

The mood of the patients with AGA is generally influenced by the hair loss problem, and 89% of the patients declare to be depressed (figure 12).

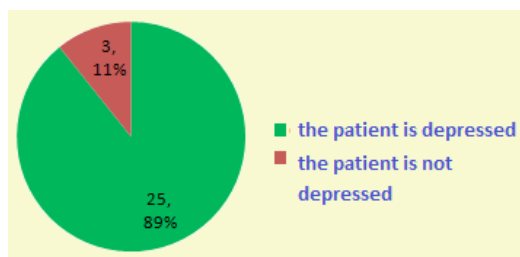


Figure 12. Hair loss affects the mood of the patient.

A big number of patients 46.4% say they think of hair loss all the time and to a more significant degree when combing and washing the hair (17.8%) (figure 13).

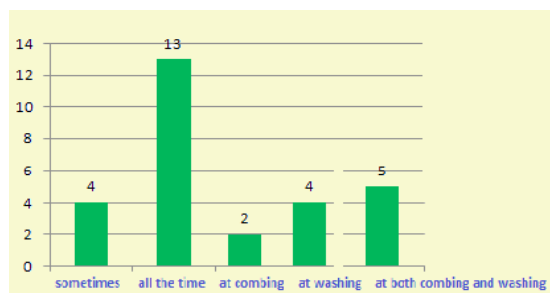


Figure 13. How often they think of hair loss.

Most of the patients (71.4%) feel that their general appearance suffers from the fact that they have alopecia. They confess that hair loss affects their social life and to a less degree their job and the intimacy (10.7%) (figure 14).

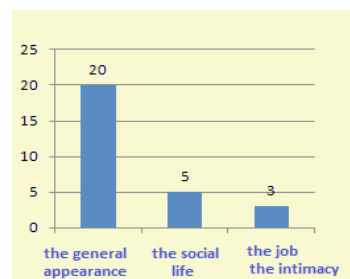


Figure 14. The aspects of quality of life that are affected.

#### V. Regarding treatment

Table IV. Treatment data.

Characteristic	Value	Percentage
<u>She addressed for help to</u>		
A doctor	16	(57.1)
A pharmacist	3	(10.7)
A friend	2	(7.14)
Did not ask for help	7	(25)
<u>Therapies already tried</u>		
No previos treatment	4	(14.3)
Minoxidil 2%	11	(39.2)
Vitamins	3	(10.7)
Topic solutions	5	(17.8)
Vitamis + topic solutions	6	(21.4)
<u>Treatment to stop hair fall</u>		
Local: topic applications	4	(14.3)
Local + General (pills)	4	(14.3)
Laser (LLLT)	3	(10.7)
Local + Laser	2	(7.14)
All 3: local + laser+ general	15	(53.57)
<u>Purpose of hair growth treatment</u>		
To use any solution which induces hair grow	13	(46.4)
To use only natural solutions to grow hair	2	(7.14)
To protect the existing hair, rather than regrowth	13	(46.4)

Values are presented in number (%) or mean  $\pm$  standard deviation.

**VI. Regarding the patient evaluation of the questionnaire:** All women found the questionnaire useful and 98% said it was easy to complete.

**VII. The doctor assessed the questionnaire** himself and explained why he was so interested in using it for future patients.

#### Discussions

The patients were divided into **two age groups** on the basis of age:

Group A (younger age group) is in fact Group I (18 to 30 years, both age inclusive): 19 women (68%)

Group B (older age group) is Group II + III (31 to 50 years, both age inclusive): 9 women (32%)

There were no remarkable differences between groups A and B regarding the **environment distribution** (county or urban) of the patients.



In both groups interviewed, as the **level of education** is concerned, all the women were school graduates, and the majority (75%) graduated a university.

68% of the women from group A (18 to 30 years old) had the most increased **willingness to get treatment** prescribed by the doctor and begin the therapy. In this group, 13 patients out of 19, already consulted a doctor regarding hair loss, while in group B only 4 women out of 9 went to the doctor for this issue.

Young patients from group A are most of them in **stage I Ludwig** (88%) and 22% in stage II. Older patients from group B, are 55% in stage II Ludwig. Looking at both group ages, women patients seem to notice from the beginning the hair loss problem. They address to the doctor as so as they can, as the majority of the study patients 28% find themselves in stage I of AGA, conform Ludwig scale.

The patients from group A and B had major complaints regarding the combination of **hair loss and hair thinning**, which was found in 42.8% of the cases.

75% of the patients have **visible scalp**. Young patients from group A have visible scalp in 78% of the cases, while in the older patients the issue is more severe, as they have a noticeable scalp in 88% of the cases. In this situation, women patients tend to cover the scalp with items or cosmetic solutions: hats 7%, extensions 3.5% or hair sprays 3.5%.

39% of the patients declare having **thin hair**. Androgenetic alopecia is characterized by the shortening of anagen phase and miniaturization of the hair follicle followed by thinning of the hair and hair loss. Also, the hair is more fragile, and the fact that hair becomes friable was reported by 17.8 % of the patients inquired with this questionnaire. An equal number of patients reported having soft and oily hair (14.2%). Seborrhea was found in 68% of the patients, who complained that they had to wash the hair every two days. 7% of the patients also had problems with the pruritus of the scalp.

The most annoying issue for the patients with AGA was the fact that the disease influenced in a negative way their **general appearance**. The women feel they are not so beautiful attractive and successful any more because of the hair fall. 71.4% of the females say that their social life is affected and the consequences can be felt also at work or in intimacy (10.7%).

AGA is a disease with psychosocial influences because the patients tend to think of the disease in excess. Almost half of them (46%) report **thinking of hair loss** all the time. Some patients (17.8%) are badly influenced by the hairdresser, who complains about the patient's hair. Consequently the patients start thinking about their thin hair every time they wash or comb it.

This situation becomes frustrating for the patient and the disease starts to interfere with the mood of the patient. Unfortunately, 89% of the patients **declare to be depressed** because of the disease. This means that the dermatologist

should be aware of the great negative impact of the disease and should encourage the patients by inducing a positive way of thinking.

In his paper "Burden of Hair Loss", published in 2004, Hadshiew stated: "Hair loss provokes anxieties and distress more profound than its objective severity would appear to justify. This reflects the profound symbolic and psychosocial importance of hair" [5].

The patient's opinion regarding the **cause of hair fall** is an interesting issue. Almost a third of the patients (28%) can't mention a reason. A third of the women (32.1%) are well informed about the possible causes and they incriminate the **hormonal changes**: 7.14 % relate the hair fall to **pregnancy**, 3.5% relate it to the **antibaby pills intake**.

Trueb in "The Umsch in May 2002" underlines the fact that: "Since the identification of female pattern hair loss, most cases have been recognizes to be due to AGA, often during phases of life characterized by fluctuations of sexual hormone levels or in connection with intake or cessation of hormonal therapy" [1].

The other diseases of the patient are very important as they can be related to alopecia: 10.7 % of the patients have **thyroid problems**, while 7,14% of the women have **polychistic ovary syndrome**. As Bedocs said in his scientific work "Adolescent hair loss" in 2008: "Androgenetic alopecia may begin in adolescence, and topical minoxidil is effective at retarding further hair loss. It may be a sign of underlying androgen excess, particularly polycystic ovary syndrome in women" [6].

57% of the patient have a relative with alopecia in the family, most frequently the mother (in 29% of the cases), followed by the father in 21% of the situations. It is a well established issue that androgenetic alopecia has a genetic transmission and if the parents have alopecia the risk of children having the same problem is three times bigger.

**Stress** is related by the patients with the disease in 7.14% of the cases. As Hadshiew presented the latest discoveries in the field: "Recently, in vivo studies in mice have substantiated the long-held popular belief that stress can exert profound hair grow-inhibitory catagen-inducing and hair-damaging pro-inflammatory effects" [5]. Stress has always been implicated as one of the causal factors involved in hair loss but the scientific proof was still missing.

**Seborrhea** is present in the thought of the patients as a cause of AGA only in 3.5% of the cases. This is a hypersecretion of the sebaceous glands of the scalp, due to internal and external causes, with a strong dependence on hormones, androgens being the main hormones responsible. Testosterone is prior to reaching the pilosebaceous follicle and stimulating the sebaceous secretion, it transforms into the active form of the hormone which is 5-dihydro-testosterone, due to the action of the enzyme 5 alpha

reductase. ACTH also influences the sebaceous gland. Hair oiled by this sebaceous secretion becomes shiny, sticky, heavy, difficult to comb and easily accumulates dirt. Frequently, the sebum undergoes oxidative processes which generate bad smells. The secretion of sebum is low during infancy, elevated during puberty, reaching its maximum level in the adulthood, to decrease with old age.

When hair is oily, it doesn't have a good look any more, and patients tend to wash it in excess. It is very important to use the right products for hair, because excessively degreasing shampoos may generate dandruff or a rebound effect which increases sebaceous secretion in the scalp. 50% of the patients treat their hair correctly and use mask and balm.

Also the chemical and physical agents are important risk factors for the hair, as 50% of the patients use them. Back coming for giving volume is used by 17.8% of the patients, while 11% of the patients use the electric hair curling wand and 39% of the women use the hair straightener at 180-200 Celsius degrees. Unfortunately, while giving the hair a better appearance, the use of this devices makes harm: the hair breaks because of the mechanical action and of the high temperature.

To stop the hair fall, 12 young women from group A (63%) would choose a **combined therapy**: laser LLLT + topic applications + pills. The same therapeutic solution is chosen by the older patients, in 66% of the cases. The reason could be the belief that more treatments have more chances to be successful by their synergic action. 52.6% of the young patients would rather protect their hair by therapy, while older women would choose any possible solution to regrow hair. This fact shows that the women with advanced alopecia are more likely to try any therapy because they are so keen on solving the hair loss problem.

As the **doctor assessed the questionnaire** himself and explained why he was so interested in using it for future patients, he also underlined that:

"Insight into the negative impact of stress on hair growth and the integration of stress-coping strategies into the management of hair loss disorders might lead to enhanced therapeutic modalities with the alleviation of clinical symptoms as well as the concomitant psychological implications" [5].

## Conclusions

AGA has a negative impact on the quality of life of female patients. The psychic support of the women suffering from hair loss must be included in the classical treatment scheme.

The questionnaire was well accepted by patients and was considered useful by the doctor.

The results of the questionnaire show interesting risk factors that should be taken into consideration. The questionnaire is also a tool to be used in assessing patients with hair loss problems in future studies.

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