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The use of herbal medicines for treatment of androgenic alopecia in Riyadh, Saudi Arabia

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ABSTRACT

Androgenic alopecia is a process of hair loss that occurs in both males and females, whereby hair becomes weak and thin. Plants have long been used to aid hair growth, with evidence suggesting benefit of some plant and herbal products in treating androgenic alopecia. This descriptive cross-sectional, facility-based study involved all patients with androgenic alopecia attending dermatology outpatient clinics in Riyadh, Saudi Arabia. Data was collected using an author designed selfadministered questionnaire. All 384 participants reported having previous knowledge about herbal products used in androgenic alopecia, with social media (71.4%) and family and friends (78.6%) being the most commonly sources of information. Henna (61.2%) and aloe (56.3%) were the most commonly used herbal products, with hair damage being the most common indication (73.4%). Yogurt (54.4%) and eggs (49.5%) were among the most commonly mentioned home remedies for androgenic alopecia. The distribution of herbal product usage among research participants was rather balanced, with female individuals reporting more frequent use than male participants (p 0.001). Approximately 15.4% of participants said herbal remedies were unhelpful, while 61.7% said they were beneficial in treating AA. Patients with androgenic alopecia frequently employ a variety of herbal treatments and home remedies, including henna, aloe, yogurt and eggs. Hair damage treatment was the most frequent usage of natural and home treatments. In addition to being safe when used with other treatments for androgenic alopecia, herbal remedies were thought to be a successful therapy.

Keywords: Androgenic alopecia, herbal products, home remedies, effectiveness.

1. INTRODUCTION

Hair can be characterized as an improved epithelial structure framed by the keratinization of germinal cells; hairs are outgrowths from follicles existing on the skin. Hair consists of keratin with chemical components such as carbon, nitrogen, sulfur and oxygen. Hair development varies from one individual to another, but on average, hair grows about 15-30mm/month (Yang et al., 2014; Deo and Deshmukh, 2018). Hairs are also called epidermal subsidiaries because they start from the epidermis during embryological development. Hair falls out in the following three cyclical phases: Anagen, CatagenandTelogen (Kobayashi et al., 1993). Alopecia is loss of hair from some or all part of the body mainly the scalp, it can be source of physical and psychological distress. There are many types of alopecia such as androgenic alopecia (AA), diffuse alopecia, alopecia areata totalis, alopecia areta barbae and many other types (Jain et al., 2016).

In men the effects of AA can be observed since the twenties and overtime it leads to total baldness. The reason is dihydrotestosterone (DHT) which comes from testosterone (Lolli et al., 2017). DHT damages hair follicles and causes hair to stop growing. Baldness is more common in men because they produce more testosterone than females. Male Androgenic alopecia is related to several medical conditions such as coronary heart disease and enlargement of the prostate. Moreover, prostate cancer, insulin resistance (associated with diabetes and obesity) and hypertension are all associated with androgenic alopecia (Lolli et al., 2017).

In women, it is related to Polycystic Ovary Syndrome (PCOS), in which there is a hormonal imbalance that leads to menstrual irregularities, acne and hirsutism (Hordinsky and Junqueira, 2015; Hu et al., 2015). The most common type of baldness in women is androgenetic alopecia, also known as female pattern baldness. This is seen as hair thinning mostly occurs across the top and sides of the head. It affects approximately onethird of all susceptible women, but is most often observed after menopause, although it starts already in puberty (Stoughet al., 2005).

Plants have generally been used to advance hair growth since the early times featured in Ayurvedic, Chinese and Unani systems of medicine. Ayurvedic hair loss medicine contains herbs that prevent hair loss and improve hair growth (Rho et al., 2005). Previous literature suggests that there are several plant products that can be used for the treatment of androgenic alopecia including Ginkgo Biloba, Allium cepa L, Asiasari radix and Phyllanthus embelica (Banerjee et al., 2009). Extracts of herbal drugs from plants or their formulations are analyzed using a variety of routine quality control methods (Stenn and Paus, 2001). This study aims to explore the perspective and experience of patients with androgenic alopecia towards herbal products and home remedies used in treatment of androgenic alopecia.

2. MATERIALS AND METHODS

This is a facilitybased, cross-sectional study that was conducted in dermatology outpatient clinics in Riyadh, Saudi Arabia during the period ofJuly to October 2022. Study subjects included adult patients with a confirmed diagnosis of androgenic alopecia who live in Riyadh, Saudi Arabia, while criteria for exclusion included inability to communicate in Arabic or English languages, being aged < 18 years, patients diagnosed as an early stage of androgenic alopecia.

The sample size was determined to be 384 subjects using Epi info 7 software statistical calculators taking into consideration an unknown prevalence of androgenic alopecia in Riyadh, Saudi Arabia, 95% confidence level with 5% margin of error. Participants were enrolled in the study using a convenience sampling technique by including all patients who agree to participate in the study after obtaining informed consent.

Data will be collected through selfadministered questionnaire. The questionnaire was largely adapted from a previous study conducted in Northwestern Saudi Arabia by (Alyoussef et al., 2020). The questionnaire was designed after rigorous literature search and consultation with specialists to meet the objectives of the study. The questionnaire is divided into three parts. In the first part, the sociodemographic characteristics of the participants will be collected, as well as data on their source of information for the treatment of these disorders. The second part will collect data on the use of herbal plants. The third part will collect data on the use of home remedies. Another physician will review information to decrease the chance of mistake.

Data coding, management and analysis were done using Statistical Package for Social Sciences (SPSS) version 26. Raw data was entered to SPSS after appropriate coding and undergone revision for data entry errors and assessment of questionnaire completion. Descriptive statistics were run and results were expressed as frequencies and percentages for categorical variables and as means and standard deviations for continuous variables. In addition comparison between groups regarding response to categorical variables was done utilizing chi-square tests and results were interpreted according to the resulting p-value and chi-square test statistic (X2). A p-value of less than or equal to 0.05 was considered statistically significant for all purposes.

The nature and the purpose of the studywere explained to the participants prior to the study. In addition, the participants wereassured that the information collected in the study will be confidential. A full consent was obtained from the participants prior to the study. Ethical clearance was obtained from the Saudi Ministry of Health and from the hospital review board (IRB NoH1R1-19-Sep22-01).

3. RESULTS

The study included 384 participants with a diagnosis of androgenic alopecia (AA). The mean age of the participants was 40.5 ± 13.7 years, with about two-thirds (66.4%) being of male gender. Nearly one-half (42.9%) of the participants were university graduates, while only 16 (4.2%) did not receive formal education. All participants expressed some form of knowledge regarding herbal products that can be used in AA (Table 1).

Table 1 Demographic and general information about study participants

		Mean (SD)	N	N %
Age in years		40.5 (13.7)		
Gender	Male		255	66.4%
	Female		129	33.6%
Highest level of education	Illiterate		16	4.2%
	Elementary/primary school		46	12.0%
	Secondary school		113	29.4%
	University		165	42.9%
	Postgraduate		44	11.5%
Do you have any previous knowledge about herbal products?	Yes		384	100.0%
	No		0	0.0%

Regarding herbalproducts and home remedies used by study participants, Henna was the most commonly reported product as used by 61.2% of the participants, with the most common indication for herbal products use being hair damage as stated by 73.4% (Table 2). Moreover, yogurt and eggs were the most commonly reported home remedies used in AA by 54.4%, 49.5% of the participants, with treatment of hair damage (46.6%) and hair cleaning (40.1%) being the most prominent reasons for use of home remedies (Table 3).

Table 2 Types and indications for use of herbal products for AA by study participants

		N	N %
Herbal products used for hair and scalp treatment	Aloe	216	56.3%
	Almond	151	39.3%
	Castor	84	21.9%
	Coconut	191	49.7%
	Garlic	182	47.4%
	Henna	235	61.2%
	Lemon	195	50.8%
	Olive	203	52.9%
	Sesame	115	29.9%
	Others	53	13.8%
Indications for use of herbal products	Hair damage	282	73.4%
	Hair loss	223	58.1%
	Dandruff	156	40.6%
	Hair cleaning	85	22.1%
	Others	53	13.8%

Table 3 Types and indications for use of home remedies for AA by study participants

		N	N %
Home remedies used for hair and scalp treatment	Eggs	190	49.5%
	Honey	158	41.1%
	Yogurt	209	54.4%
	Butter	77	20.1%
	Mineral oil	71	18.5%
	Others	43	11.2%
Indications for use of home remedies	Hair damage	179	46.6%
	Hair loss	65	16.9%
	Dandruff	126	32.8%
	Hair cleaning	154	40.1%
	Others	46	12.0%

Family & friends (78.6%) and social media (71.4%), followed by herbal shops (53.4%) and internet websites (53.1%) were the most frequently mentioned sources of information regarding natural products used in AA (Figure 1). Regarding use of natural products along with other prescription medications for AA, 204 (53.1%) participants were taking a medication for AA treatment, while only 43 (11.2%) reported a history of drug interaction with herbal products. Moreover, only 59 (15.4%) reported having a medical condition related to baldness. Frequency of using herbal products was somewhat evenly distributed among study participants, with female participants reporting more frequent use compared to males ($p < 0.001$). Majority of participants (76.6%) listed family and friends as the source of herbal products recommendation. Only 15.4% of participants rated herbal products as being ineffective, while 61.7% reported herbal products as being effective in treatment of AA (Table 4).

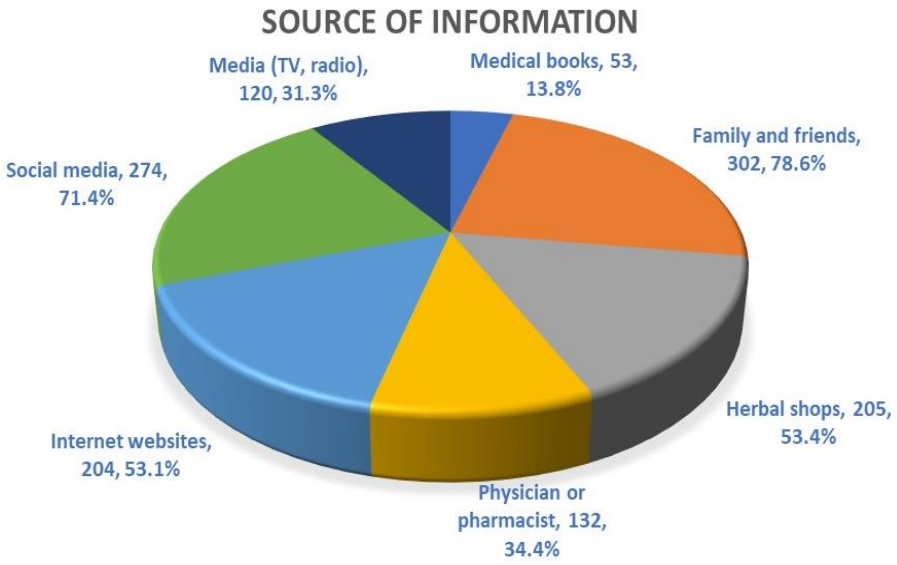

Figure 1 Source of information about natural products used in AA

Table 4 Information regarding the use of natural and herbal products in treatment of AA and their interaction with prescription medications

		Gender						
		Male		Female		Total		p (X^2)
		N	N %	N	N %	N	N %	
Do you take prescription medication to treat AA?	Yes	129	50.6%	75	58.1%	204	53.1%	0.16 (1.96)
	No	126	49.4%	54	41.9%	180	46.9%	
Do you have any medical condition related to baldness?	Yes	41	16.1%	18	14.0%	59	15.4%	0.585 (0.297)
	No	214	83.9%	111	86.0%	325	84.6%	

Did you have any history of adverse reactions, drug-drug interactions from using herbal products in the treatment of AA?	Yes	29	11.4%	14	10.9%	43	11.2%	0.71 (0.137)
	No	206	80.8%	113	87.6%	319	83.1%	
How often do you use herbal products?	Never	20	7.8%	2	1.6%	22	5.7%	<0.001* (21.16)
	Occasionally	72	28.2%	17	13.2%	89	23.2%	
	Sometimes	68	26.7%	39	30.2%	107	27.9%	
	Often	45	17.6%	36	27.9%	81	21.1%	
	Always	50	19.6%	35	27.1%	85	22.1%	
Who usually recommends the herbal products you take?	Family and friends	195	76.5%	99	76.7%	294	76.6%	0.15 (6.69)
	Herbal shopkeeper	118	46.3%	56	43.4%	174	45.3%	
	Pharmacist	144	56.5%	85	65.9%	229	59.6%	
	Healthcare provider (doctor, nurse)	73	28.6%	30	23.3%	103	26.8%	
How do you score the "effectiveness" of herbal products according to your experience?	Effective	157	61.6%	80	62.0%	237	61.7%	0.635 (0.91)
	Neutral	56	22.0%	32	24.8%	88	22.9%	
	Ineffective	42	16.5%	17	13.2%	59	15.4%	

4. DISCUSSION

This cross sectional study surveyed the use of herbal products and home remedies among patients with androgenic alopecia and their perceived effectiveness of herbal products used in treatment of androgenic alopecia. The mean age of study participants was 40.5 ± 13.7 years, which supports the current view that the risk of androgenic alopecia is linked with older individuals (Lolli et al., 2017). Moreover, the gender representation in this study also supports the current epidemiology of the disease, with males representing two-thirds of affected individuals in this study (He et al., 2022). In addition, previous studies have reported a milder degree of hair loss in females compared to males owing to the different pathophysiology of the disease among males and females (Price et al., 2003; Redleret al., 2017).

The results of the current study demonstrate the perceived effectiveness of herbal products in treatment of androgenic alopecia, as 61.7% rated them as being effective. The efficacy of herbal products has been described in the literature a study done by (Mccoy and Ziering, 2012) about Botanical Extracts in Asia found that most of the Botanical Extracts used for androgenic alopecia are lauric acid and myristric acid. Those molecules were found to be acting by reducing free testosterone level (Mccoy and Ziering, 2012). Additionally, a randomized clinical study concluded that herbal formulations are more effective in reducing hair loss, especially with concomitant use of more than one product (Pekmezciet al., 2018). Moreover, the role of herbal oil and herbal cream in androgenic alopecia has been substantiated with a significant influence in reducing hair loss and promotion of new hair growth (Ravichandran et al., 2008; Banerjee et al., 2009).

The use of herbal medicine in general is a common practice in Saudi Arabia and although there are few reports on the common complementary and alternative therapies, use of plants as a medical instrument has long been instrumented in the Saudi population's beliefs (Kamel et al., 2017). This supports our finding that all study subjects reported having previous knowledge about herbal products. In addition, major sources of information were nonmedical source including family and friends, social media, internet websites and herbal shops. This may reflect the thinking that use of herbal treatment is not linked with modern medicine and may also indicate the scarcity of information offered by medical staff regarding herbal treatment. This finding has also been reported by Alyoussef, (2020) in a previous study conducted in Saudi Arabia (Alyoussef et al., 2020).

5. CONCLUSION

The study showed common use of several herbal products and home remedies among patients with androgenic alopecia including Henna, aloe, yogurt and eggs. The most common reason for use of herbal and home remedies was treating hair damage. Herbal products were regarded as an effective treatment that is safe when taken with other medication used for androgenic alopecia.

Ethical approval

The study was approved by the Medical Ethics Committee of King Saud Medical City (Ethical approval code: H1R1-19-Sep22-01).

Informed consent

Written &oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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