Epidemiological burden of Alopecia Areata in different cities of Al-Baha Region, Kingdom of Saudi Arabia: Cross-Sectional Descriptive Study

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Abstract

Background: Alopecia areata (AA) is an autoimmune disease that causes non-scarring hair loss. Significant epidemiological differences among the population observed throughout the investigation in the literature. The Kingdom of Saudi Arabia (KSA) was found to have a greater burden of disease than other countries, but the information is lacking in Al -Baha region, the southwestern area of KSA .

Aim: The aim of the present study was to determine the clinico-epidemiological profile and burden of AA in the Al-Baha region and to subsequently highlight the factors affecting disease prevalence.

Methodology: A well-structured quantitative questionnaire was developed and distributed using an online standardized questionnaire targeting 385 Albaha patients diagnosed with AA. The diagnosis of AA was confirmed clinically by consultant dermatology before patient recruitment into the study and resulted in sufficient accuracy. The responses were collected and analyzed using SPSS statistical analysis software. The frequency of disease prevalence, patients' ages, disease duration, impact on quality of life, risk factors, and associated diseases were analyzed.

Results: A total of 385 AA patients completed the questionnaire to achieve 100% response accuracy. Most of them were located in Al-Baha center (36.1%) followed by Baljurashi city (17.1%). The most frequent age of AA diagnosis was 21–30 years old (41.3%), and the disease duration was 3–6 months in the majority of the patients (26.8%). The most common type is patchy scalp AA in 57.1% of the patients followed by AA involving more than one site (24.4%). Diabetes mellitus and chronic anemia were the associated diseases 10.9% (for both) followed by thyroid diseases in 5.2% of the patients.

Conclusion: Overall, AA as a disease presents a significant concern for the population of Al-Baha region in Saudi Arabia considering the variable prevalence in different cities, especially in Al-Baha center itself. Onset occurs during adult working ages. Therefore, quality of life can be negatively affected, and outcomes can be severe. This study potentially adds more knowledge and theoretical understanding of AA clinico-epidemiology in our region.

Keywords: hair loss, Al-Baha, Saudi Arabia, Epidemiology

Introduction

Alopecia areata (AA) is a common immune-mediated condition of non-scarring hair loss, that presents as round or oval patches of hair loss and can appear at any age (1). The overall prevalence of AA is 2.1% of the world's population. The prevalence of AA is significantly different by area, is increasing over time, and is lower in adults than in children. Alopecia totalis, ophiasis, and universalis prevalence was 0.08% each (2). In Saudi Arabia, the prevalence of AA varies from 13.8% to 18.21%, which means AA has a higher prevalence in Saudi Arabia than other countries (3).

Regarding the pathogenesis of AA, the exact cause of AA is still unknown. It is thought to be caused by a loss of immune privilege in the hair follicle, autoimmune-mediated hair follicle damage, and an activation of inflammatory pathways (4). Several studies have indicated that autoimmune, infectious agents, hormones, diet, immunizations, genetics factors, stress and psychological disorders play a role in the pathogenesis of AA (4–7). Numerous studies have revealed strong connections between the severity of AA, atopic dermatitis, thyroid disease, and other autoimmune diseases in addition to a family history of AA (8,9).

Alopecia areata (AA) includes three main subtypes: (1) patchy AA (localized hair loss area), (2) alopecia totalis (entire scalp hair loss); (3) alopecia universalis (the complete loss of body and scalp hair); and less common appearances, including ophiasis pattern (band-like pattern of hair loss along the occipito-temporal margins), and ophiasis inversus (sisapho), a very rare band-like hair loss in the fronto-parieto-temporal area (10,11).

The diagnosis of AA is typically based on clinical findings, and additional testing is typically not required. However, a number of methods, such as dermoscopy or histology, can help confirm the diagnosis (12).

A variety of therapeutic options for the treatment of AA are available, including topical steroids, steroid injections, topical minoxidil, anthralin, phototherapies and lasers, topical immunotherapy, immunosuppressants, and cryotherapy. Factors, such as age, duration, and intensity of AA play a major role in response to treatment (7,13). Recently, the Food and Drug Administration (FDA) approved baricitinib (JAK 1/2 inhibitor) for treating severe AA. In two phase 3 trials involving patients with severe AA, oral baricitinib was better than the placebo with respect to hair regrowth at 36 weeks (14).

Disability-adjusted life years (DALYs), which include years lost to disability (morbidity) and years lost to death (mortality), are used to calculate the burden of disease. One DALY is equal to one year of lost healthy life. In 2010, 1,332,800 DALYs for AA were estimated globally (15).

Even though numerous and readily accessible epidemiological studies concerning AA from various regions in Saudi Arabia have been published, a lack of data concerning AA from the south region, particularly from the Al-Baha region, exists.

Materials and Methods

The study is region-specific research, targeting Saudi Arabia's population who reside in Al-Baha region. Al-Baha region is located in Saudi Arabia's southern region. Six towns make up the province, the most significant of which are Al-Baha center, Baljurashi, Almandaq, and Almekhwah, in addition to other smaller towns. With a population of 533,000, the province features 31 administrative centers. As discussed in the introduction, the aim of the present study was to determine the clinico-epidemiological profile and burden of AA in the Al Baha region and to subsequently highlight the factors affecting disease prevalence. The study further performed a descriptive analysis through data collection with the help of a questionnaire generated in English and then translated into Arabic so that the questions could be understood by the patients.

For the responses, the questionnaire was created on Google forms after receiving permission from the university's Research and Ethics Committee. Informed consent forms were distributed and signed by the patients. The patients with alopecia areata were targeted to collect responses in different cities of Al-Baha region, and for children the questionnaire was filled in by their parents. The questionnaire consisted of questions regarding patients' experience, assumptions, heredity, ethnicity, and other genetic variables for disease prevalence. Demographic information of the patients was collected for evaluating age, gender, and qualification-related credentials. Data collected from the study were subject to statistical analysis with the aid of Statistical Package of Social Sciences (SPSS) software.

The study included responses from 385 patients, including male and female respondents, based on a 5-point Likert scale. Patients reporting scalp radiation therapy, chemotherapy and trichotillomania, and cancer were excluded from the study before data collection. The patient's family history was an important part of the information collected from the patients through the distributed questionnaire. Questionnaire distribution was done through an online platform to save time and cost, due to limited resources and time concerns.

The results were generated in real time to maintain the credibility of the study results. The study also complied with ethical standards for which no patients' personal information was shared, and only the responses were included to obtain the demographic analysis. Patients were guided through the study objectives to avoid misconceptions and misunderstandings.

The study results showed the extent of AA burden and its determinants in Al-Baha locals in Saudi Arabia via statistical analysis, to serve as the base to analyze ethnic and demographic characteristics for the occurrence of AA in the population.

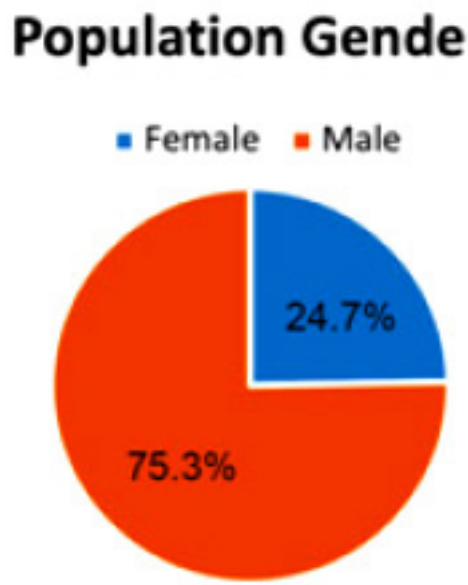
Results

Study population

After receiving the responses from 385 AA patients who completed the questionnaire, the response rate was found to be 100% since all patients responded to the survey. The patients demographic study found that responding participants included 75.3% male and 24.7% females (see Table/Figure 1). Al-Baha Center comprised the highest percentage of AA patients (36.1%) followed by Baljurashi City (17.1%) as illustrated in Table/Figure 2.

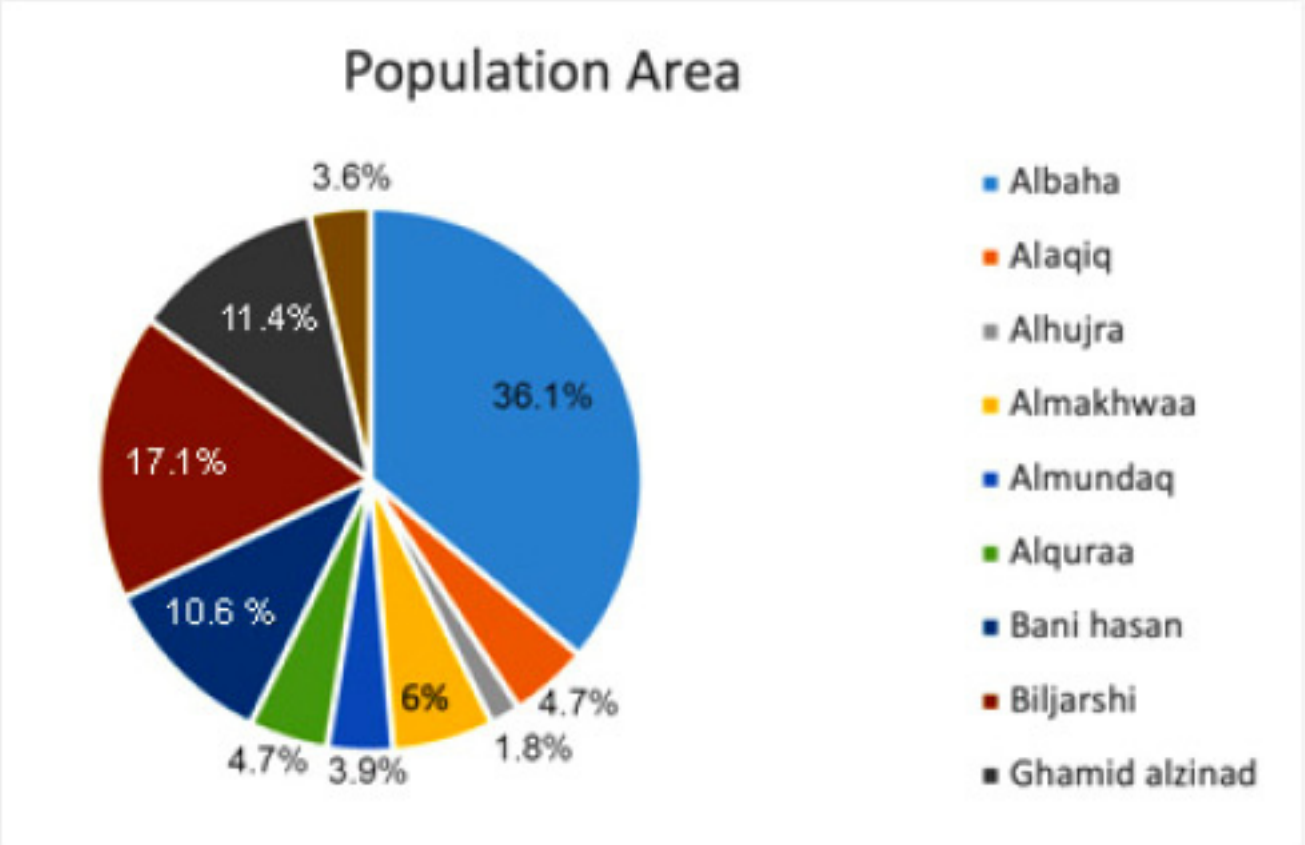
Table/Figure 1. Population Gender

		Patient Numbers	Percentage
Gender	Male	290	75.3%
	Female	95	24.7%
	Total	385	100%



Table/Figure 2. Population Area

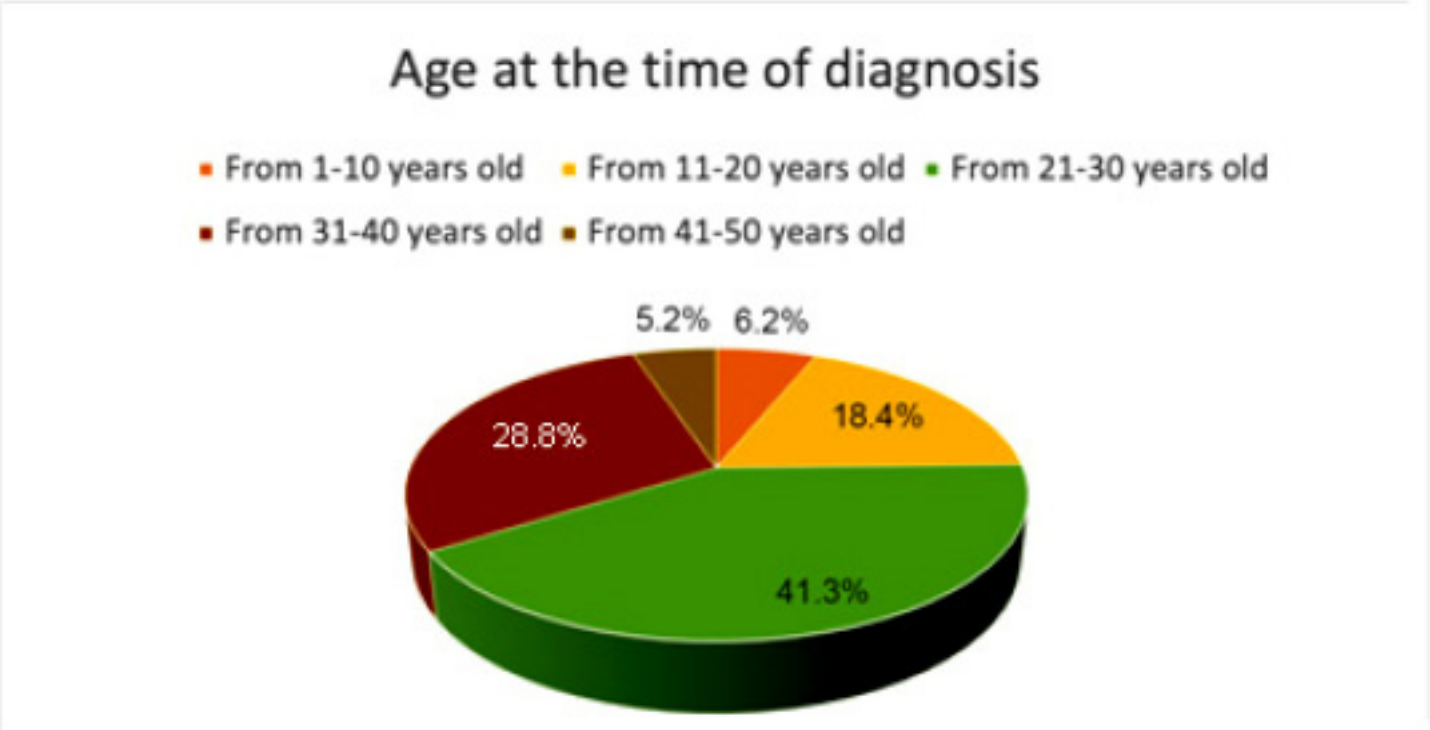
		Patient Numbers	Percentage
Cities	Al-Baha center	139	36.1%
	Baljurashi	66	17.1%
	Ghamid alzinad	44	11.4%
	Bani hasan	41	10.6%
	Almakhwaa	23	6.0%
	Alquraa	18	4.7%
	Alaqiq	18	4.7%
	Almundaq	15	3.9%
	Qilwa	14	3.6%
	Alhujra	7	1.8%
	Total	385	100%



Disease characteristics:
Most were diagnosed at the age range of 21 to 30 years old (41.3%) followed by 31 to 40-year-old patients (28.8 %); however, other age ranges during which patients were diagnosed with the disease were also found (Figure/Table 3).

Table /Figure 3. Age at the time of diagnosis

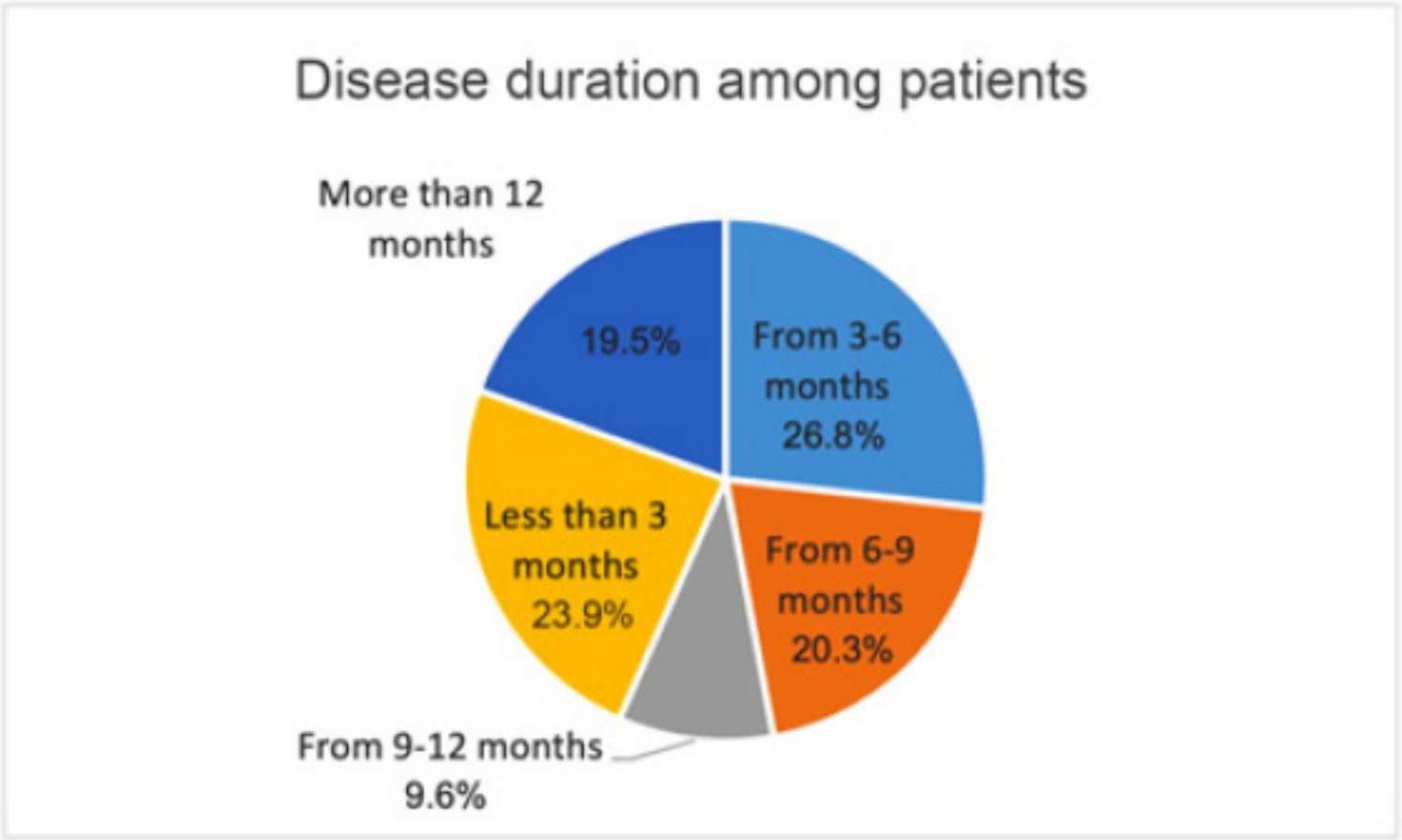
		Patient Numbers	Percentage
Age at the time of diagnosis	From 21 to 30 years old	159	41.3 %
	From 31 to40 years old	111	28.8%
	From 11 to 20 years old	71	18.4%
	From 1 to 10 years old	24	6.2%
	From 41 to 50 years old	20	5.2%
	Total	385	100%



The duration of their AA disease lasted usually around 3–6 months (26.8%) while it was present less than 3 months in about 23.9 %. A smaller percentage of patients continued to present with AA after nine months as shown in Figure/Table 4.

Table/Figure 4. Disease duration among patients

		Patient Numbers	Percentage
Disease duration	Less than 3 months	92	23.9%
	From 3 to 6 months	103	26.8%
	From 6 to 9 months	78	20.3%
	From 9 to 12 months	37	9.6%
	More than 12 months	75	19.5%
	Total	385	100%

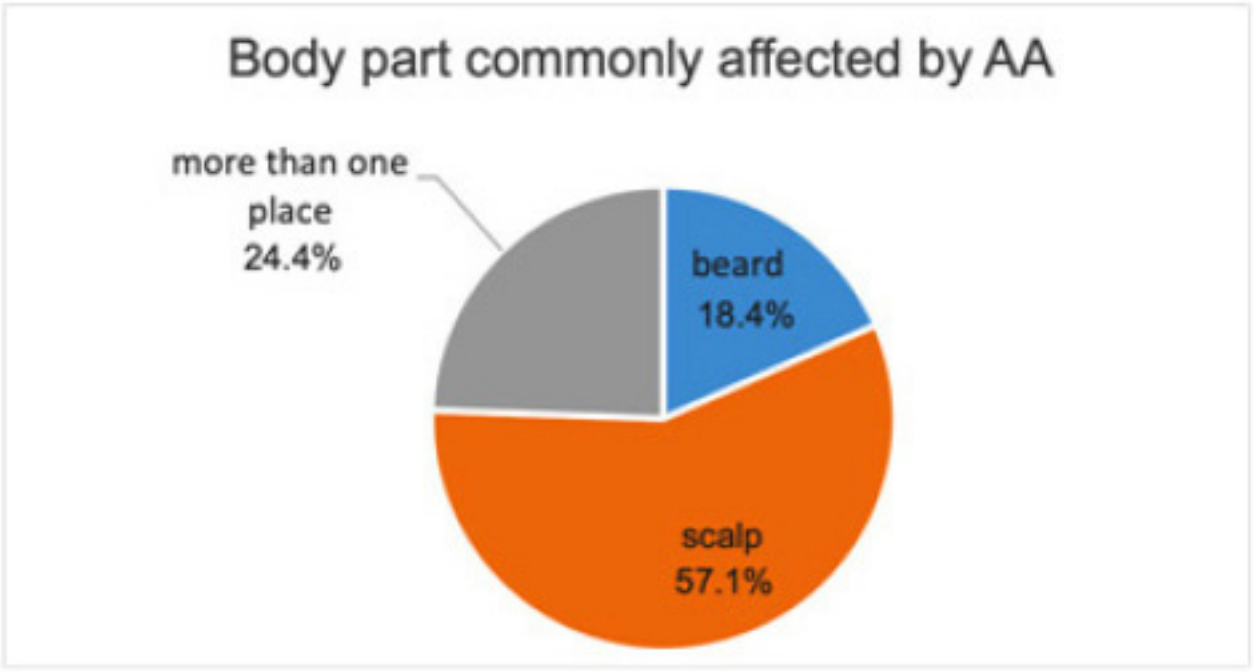


Body Site

The most common body part usually affected was the scalp in patchy type (57.1 %), and beards in male patients were involved in about 18.4%. AA affecting more than one site was found in about 24.4% of the patients.

Table/Figure 5 - Body part commonly affected by Alopecia Areata (AA).

		Patient Numbers	Percentage
Body sites	Scalp	220	57.1%
	Beard	71	18.4%
	More than one place	94	24.4%
	Total	385	100%

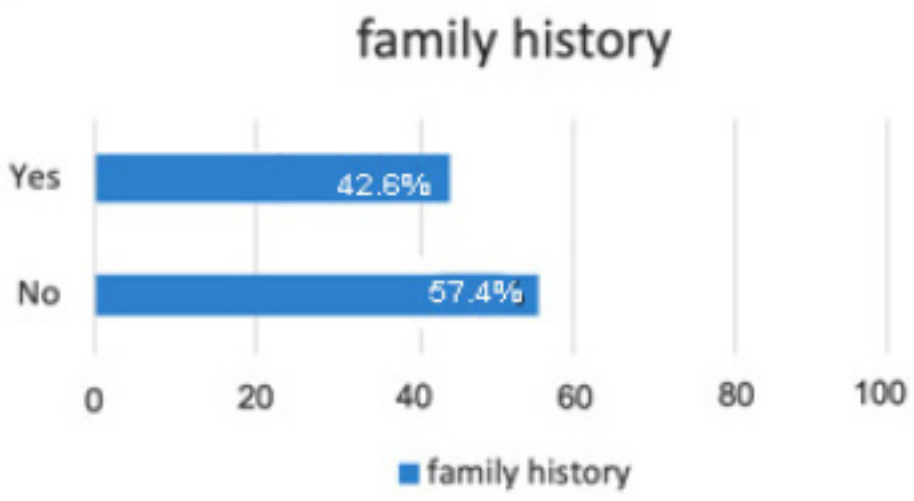


Family History

More than half (57.4%) of patients reported a negative family history of disease, while 42.6 % of patients reported a positive family history. These results may indicate the role of other factors that can cause AA in the target population.

Table/Figure 6 family history of having AA.

		Patient Numbers	Percentage
Family history	No	221	57.4%
	Yes	164	42.6%
	Total	385	100%

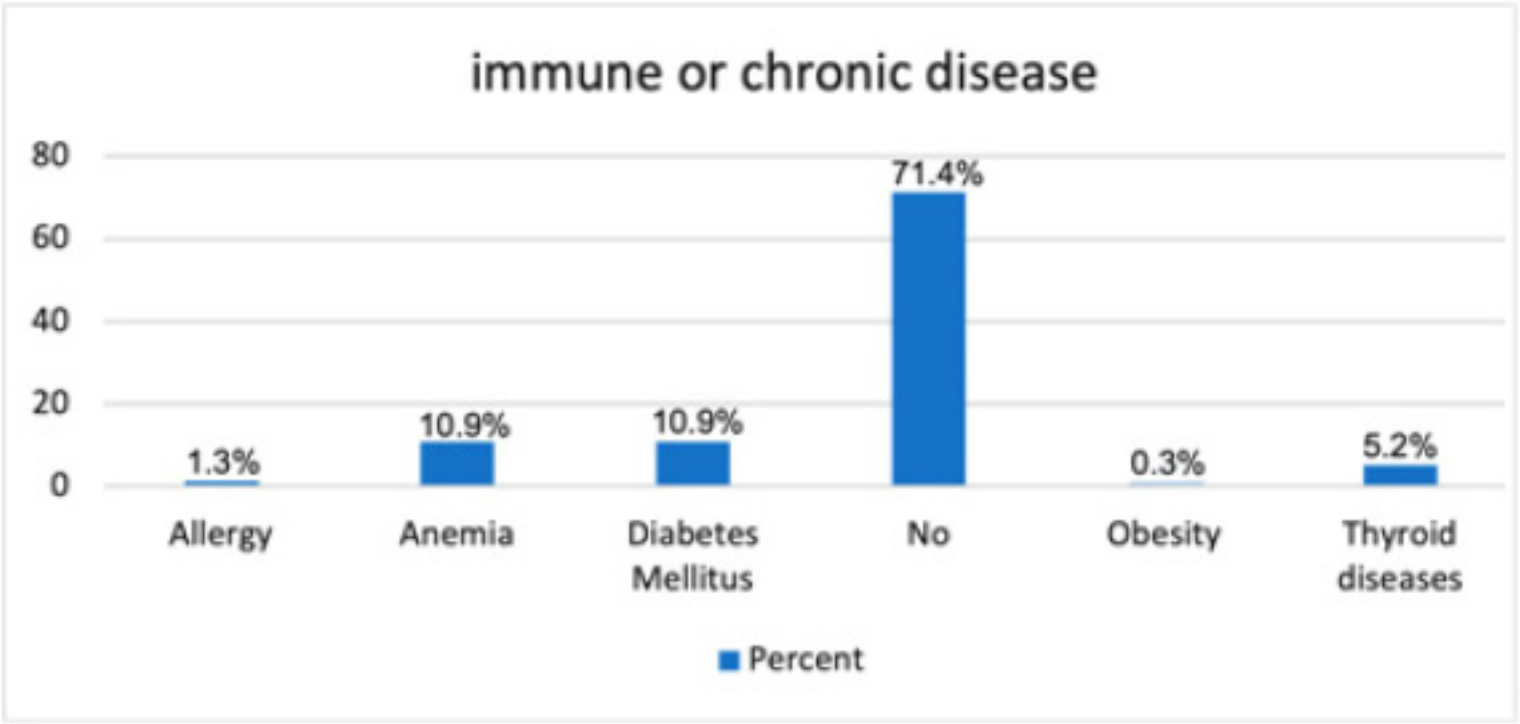


Associated immune and chronic Disease

About 71.4% of the patients did not have immune or chronic diseases, whereas 28.6% did. The most common diseases were chronic anemia and diabetes mellitus (10.9 %) followed by thyroid diseases in 5.2 %, atopic dermatitis, and obesity. The role of immune diseases must also be studied for understanding the risk of inducing AA.

Table/Figure 7 Associated chronic or immune diseases

		Patient Numbers	Percentage
Associated chronic or immune diseases	No	275	71.4%
	Diabetes Mellitus	42	10.9%
	Chronic Anemia	42	10.9%
	Thyroid diseases	20	5.2%
	Atopic dermatitis	5	1.3%
	Obesity	1	.3%
	Total	385	100%



Quality of Life

About 66.2% of patients reported that alopecia negatively affects their quality of life, raising the concerns for this disease and its consequences on an individual's daily living activities (see Figure/Table 8). On a rating scale from 1 to 10 assessing the severity of the negative impact of AA on quality of life, most patients reported the negative impact had a severity between 4 and 8, indicating that most of our patients experienced moderate negative effects on their quality of life as shown in Figure/ Table 9.

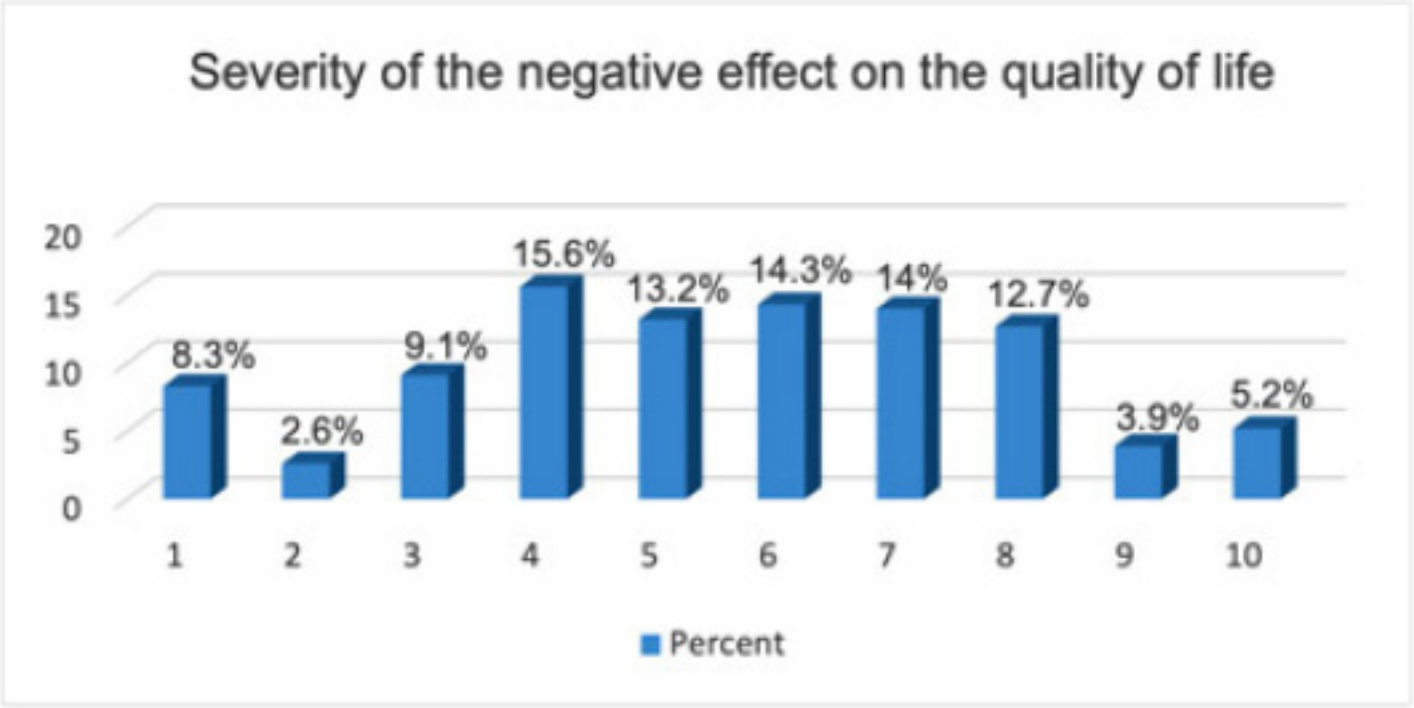
Table/Figure 8. AA impact on quality of life

		Patient Numbers	Percentage
Impact on quality of life	Yes, it affected me	255	66.2%
	No, it didn't affect me	130	33.8%
	Total	385	100%

Table/Figure 9: Severity of the negative effect on the quality of life

		Patient Numbers	Percentage
Severity of the negative effect on the quality of life " 1 indicates the least severe negative effect 10 indicates the most severe negative effect "	1	32	8.3%
	2	10	2.6%
	3	35	9.1%
	4	60	15.6%
	5	51	13.2%
	6	55	14.3%
	7	54	14.0%
	8	49	12.7%
	9	15	3.9%
	10	20	5.2%
	Total	381	99%
Missing System		4	1%
Total		385	100%

Figure 9: Severity of the negative effect on the quality of life

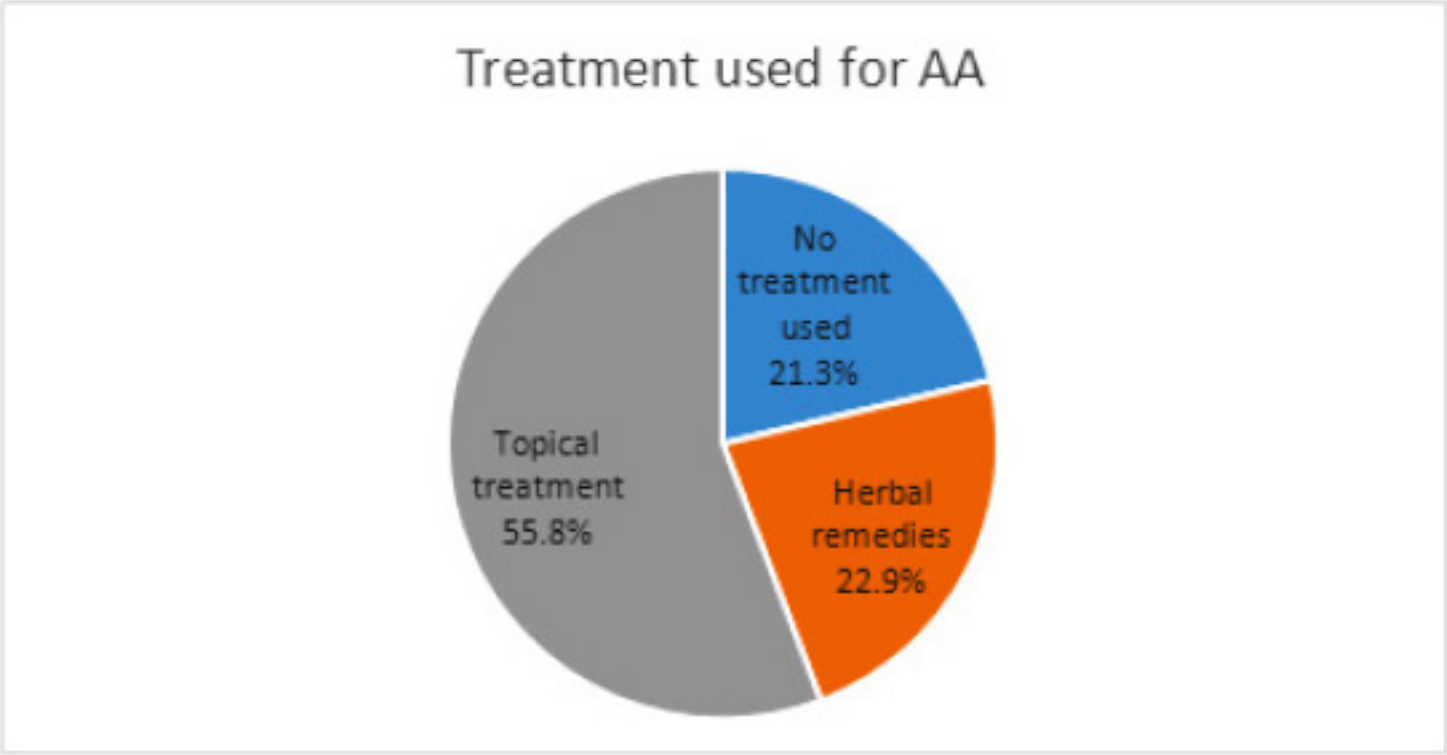


Type of Treatment

The most common treatment type reported was topical medications including local injection (55.8%). However many patients used herbal remedies (22.9%). About 21.3 % of the patients used no treatment and the condition improved with time. Minoxidil spray, topical corticosteroids, and local corticosteroids injection were the most commonly used treatment modalities.

Table/Figure 10: Type of treatment used by our patients

		Patient Numbers	Percentage
Type of treatment	topical treatment	215	55.8%
	herbal remedies	88	22.9%
	no treatment used	82	21.3%
	Total	385	100%



Discussion

Worldwide, AA affects 2% of the global population (2). Few studies have discussed the epidemiology of the disease in Saudi Arabia and its regions like Jeddah and Riyadh (3,13,16). One study clearly highlighted that AA onset is significantly higher in Saudi Arabia than in Western countries (3).

More male patients than females participated in the study, indicating higher disease occurrences in the male population. Al-Ajlan et al. (2019) reported in a study in Saudi Arabia that more cases of females than males in the studied population were found. However, the prevalence in males was still greater than in females with males having 18% and females having 11% prevalence (3). Besides, in prevalence studies in Western regions, such as the United States (US), equal numbers of male and female patients with AA diagnoses were studied, and it was concluded that AA occurs more often in the male gender.

The age of disease onset varies among different cities of the Al-Baha region. It was noticed that patients are mostly diagnosed with AA at the age of 21 to 30 years followed by the age groups of 31 to 40 years and 11 to 20 years. These findings show that the onset of disease in the Al-Baha region occurs earlier compared to other studies. In regard to the duration of disease, our results indicated that the duration of the disease varies among male patients from less than 3 months, 3–6 months, 6–9 months up to 9–12 months. In females, the duration of onset was usually 9–12 months and more than 12 months. Both age and duration of onset can influence the severity of the disease. One study in Turkey found that ophiasis is 2.9 times more likely to occur in people with > 12 months of AA duration than those with < 12 months of disease duration (17). Such a risk of complications, therefore, necessitates the need for assessing the disease duration.

In addition, in our study, the scalp was found to be the most common region that was affected (57.1%). However, in males, beard regions were also affected in 18.4% of the patients, while in other cases of disease more than one place of the body are affected in 24.4%. Studies in the literature report that some body areas have specific signaling pathways for hair growth and development thereby making them genetically susceptible loci to AA (18). A study in Jeddah reported that disease severity can be estimated by the involvement of specific body regions such that moderate cases of AA had < 50% of the scalp region involved, whereas severe cases have > 50% involvement of scalp hair loss (16). The effects on the scalp were further studied for the influence on the quality of one's life whereby it was reported that AA incurs feelings of embarrassment and self-consciousness and impacts the choice of clothing (19).

Upon investigation of the risk factors for AA, most patients reported that they did not have a family history of AA (57.4%), while 42.6% of patients reported a positive family history. This result is the same as the findings from a very early study in the US in which 42% of AA patients had a family history of AA(20). A study in Kuwait likewise reported 51% of family history in children with AA. However, such a history was not found for first-degree relatives (21). However, earlier studies in China report a 1.6% prevalence among first-degree relatives for AA patients with a positive family history of AA (22). In the recent literature, Wang et al. (2018) studied the impact of a family history of AA identifying that family history is associated with earlier onset of the disease, severity, and AA relapses. Also, a remarkable reduction in the regrowth of hair occurs. This finding means that a family history of AA can worsen the mild conditions of patients with such a diagnosis (23). Some patients with family history of AA have reported that they have immune or chronic diseases, most commonly anemia and diabetes mellitus followed by thyroid diseases. Hence, the study of these diseases and their association with AA must also be studied. Some environmental triggers reported in the literature consist of emotional stress, pregnancy, micronutrient deficiencies, such as Vitamin D, Vitamin B9, zinc, and natural disasters(2,24).

Interestingly, a significant proportion of patients reported that AA negatively affects their lives. Literature has also studied the impact on quality of life using different scales of life quality and depression index in a Japanese population. The results showed negative effects on mental health, and social and emotional functioning of the target population (25). The scale used in the present study was based on the AA Symptom Impact (AASI) scale for assessing the impacts of AA on daily life activities (work, enjoyment, relationships, interactions, and quality of life). The scale ranging from 1 to 10 has an interpretation such that 1 indicates no interference in daily functioning, and 10 indicates complete interference (26). In this regard, the present findings show that alopecia can negatively impact the quality of life from moderate to even severe, to the extent of completely disrupting the quality of daily functioning (for those reporting 10 on the scale). It was reflected overall that Alopecia can interfere with one's quality of life and has a variable range of symptoms from mild to moderate to severe; hence, study of its management in conjunction with its etiology is concurrently important.

The present study also investigated the type of treatment received by the patients. A range of treatments, including herbal remedies, topical treatment administration, and local injections, are available. From our findings, it was revealed that most of the patients use topical treatments, including local injections followed by herbal remedies. A study in the Taif region of KSA reported that doctors referred to topical corticosteroids as the most preferable treatment for AA due to 90% effectiveness (27).

Our study presents some limitations since the online distribution of questionnaires and the focus on different cities of Al-Baha region even though the study must be fully conducted within the target region. The reasons for such activities are due to the accessibility and feasibility of research and because the aim of the study was to study the burden of the disease in the Al-Baha region, whereas other

regions of the KSA may show other significant findings for investigating this disease in the target area. Also, based on some limitations in the present study, future research can be improved in terms of its design and outcomes for attaining more effective findings.

Conclusion

Throughout the study, AA as a disease was reflected as a wide concern for the population of Al-Baha region in Saudi Arabia considering the variable prevalence in different cities, especially in Al-Baha center itself. AA was found to be more prevalent in males than in females in Al-Baha. The usual age of incidence was around 21–30 years or 31–40 years old. The duration of AA significantly varies and can influence disease severity. Both family history and environmental drivers can trigger the incidence of AA in the target population. Apart from this, the indication of a link between autoimmune disease and AA appears to exist. Finally, this study potentially adds more knowledge and theoretical understanding of AA epidemiology and risk factors in Al-Baha region, Saudi Arabia since very limited literature on this topic can be found.

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