ORIGINAL ARTICLE

Determining the Quality of Life of People with *Alopecia areata* and Associated Factors in Tertiary Hospitals in Capital City of Malaysia

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ABSTRACT

Introduction: *Alopecia areata* (AA) is a disabling hair disorder which usually begins in teenage years. Worldwide prevalence is 0.1-0.2%, with no data of prevalence in Malaysia. The aim of this study was to determine the quality of life of people with AA and associated factors in major tertiary hospitals in the capital city of Malaysia. **Materials and methods:** A cross-sectional study was conducted at three Dermatology Outpatient Clinics in three tertiary hospitals in the capital city of Malaysia over one year starting September 2021. A validated questionnaire incorporating the Dermatology Life Quality Index (DLQI) was used. A total of 150 participants with AA were successfully recruited. **Results:** The Dermatology Life Quality Index (DLQI) mean score was 28.9 with those scoring 29 and above classified as having a poor quality of life and those scoring 28 or less as having a good quality of life. Univariate and bivariate analysis showed that marital status and presence of diabetes was significantly associated with a poorer quality of life. In multivariate analysis, it was found that those who were not married had 1.39 higher odds of having poor quality of life as compared to those who were married (95% CI 1.23-1.65, p=0.04). It was also found that those with diabetes had 2.99 higher odds of having poor quality of life (95% CI 1.83-4.12, p=0.02). **Conclusion:** In conclusion, participants with AA who weren't married and with diabetes had poor quality of life. These findings can help physicians build on the body of literature in managing AA.
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Keywords: *Alopecia areata*, Malaysia, Dermatology, Quality of life, Factors

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INTRODUCTION

Alopecia areata (AA) is one of the commonest hair disorders that often affects those in the younger age group (1-2). It is an autoimmune disorder and can affect any part of the body with hair including the scalp, beard area, trunk, and genitalia. The prevalence in both genders has been noted to be equal, unlike most autoimmune disorders.

Prevalence in the general population is 0.1-0.2% (3) The lifetime risk of developing *Alopecia areata* is estimated to be 1.7% (4). Another recent study, meanwhile, reported a prevalence of 2.3% (5). In Malaysia, the data remains sparse on this condition.

Sudden loss of hair can negatively impact on quality of life (QoL) due to known roles in highlighting identity and self-image (6). This is because hair is often thought to improve facial features and attractiveness. The loss of hair may even result in excess psychosocial disorders such as anxiety, depression and problems in marriage and relationships (7-9). Significant impairment was detected in three quarters of patients with AA in a scoping review (10). This includes dimensions such as occupation, shopping and even performing housework. Furthermore, the presence of anxiety and/or depression was detected in up to 68% of these patients (10). This is further compounded by increased perceived stress and stigma along with loss of confidence (11). All these psychological disorders add to the emotional burden of the patients with AA and possibly their family as well (11).

In addition, the limited number of therapies that are often expensive, that are available for the treatment of AA, further compounded the effect on QoL (12). Even though camouflage techniques such as wig and hat are available, nevertheless this most of time does not help much in alleviating the negative perception of hair loss and self-image along with the resulting psychosocial disorders (13-15). In addition, cost and effectiveness is also an issue, especially with the use of hair transplants and biologics, for the former. Hair regrowth rates range from no regrowth to only around 30% (16).

Health-related QoL is the patient's assessment of the effect of their skin disease and treatment on their biopsychosocial and overall wellbeing (17). It is known to play a big impact in biopsychosocial management of the individual with medical illnesses, including dermatological disorders such as AA.

Understanding the impact of chronic dermatological disorders such as AA on the patient's QoL gives the clinician a deeper insight into the patient's overall health. This may also empower the patient to take part in shared decision making that can contribute to holistic care of the patient.

In Malaysia particularly, there is paucity in research exploring this very important aspect of skin disorders' management. Hence, the aim of this study was to determine the quality of life of people with *Alopecia areata* and associated factors in major tertiary hospitals in the capital city of Malaysia.

MATERIALS AND METHODS

A cross-sectional study was conducted at three major Dermatology Outpatient Clinics in the capital city of Malaysia over one year starting September 2021. The three clinics, namely at Hospital Kuala Lumpur, Putrajaya and Ampang, were chosen as they have a large pool of dermatology patients. The inclusion criteria were Malaysian patients aged 18 years and above who were attending the dermatology outpatient clinics at these major hospitals that have been diagnosed with AA and who could understand and complete the questionnaires in either English or Malay language. The exclusion criteria comprise those who have severe cognitive impairment, i.e. those are on medications for cognitive impairment or who scored 9 or less in mini-mental state examination (MMSE) taken as having severe cognitive impairment.

The estimated sample size was 150 participants with 90 percent power, 95 percent confidence interval (CI), and statistically significant level (6) at 5 percent. The total number of respondents needed was 150, after taking into account a non-respondent rate of 30 percent (based on the lifetime risk of developing *Alopecia areata* that was estimated to be 1.7%) (3-4).

Universal sampling i.e. convenience sampling was used to recruit respondents. The study was done face to face at the respective clinics by the author. Participants who came for their follow-up that fulfil the inclusion criteria and consent to be in this study, were recruited into the study. They were given a validated questionnaire, which was returned to the author after completion. The validated and self-administered questionnaire that includes three sections on socio-demographic details, medical illness and a section on QoL using the DLQI questionnaire was used.

DLQI questionnaire is a dermatology-specific QoL instrument, consisting of 10 questions with six domains - symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment (18-19). Scores ranged from 0- 30. Higher scores reflect a larger negative effect on QoL. Those scoring equal to the mean score and above were defined as having a poor quality of life and those scoring less than the mean score were defined as having a good quality of life.

Operational Definition

The independent variables for this study are:
1. Sociodemographic characteristics which include age, gender, ethnicity, educational status, marital status, monthly income and personal habits that include tobacco smoking and alcohol consumption
2. Clinical related factors which include presence of medical illness such as hypertension and diabetes
3. DLQI questionnaire that includes 10 questions examining the QoL.

Dependent factors are:
1. The presence of AA
2. Poor quality of life for people with AA (as shown by scores equal or above the means score in the DLQI questionnaire)

Data Analysis

For data analysis, Statistical Package for Social Sciences v26.0 was used. Descriptive analysis was used to analyze the data distribution normality, frequencies, means and standard deviation. Univariate and bivariate analysis were used to determine the factors associated with quality of life in patients with AA. Multivariate logistic regression was used to identify the determinants of poor quality of life. All variables with the p value < 0.05 in the univariate and bivariate analysis were entered into the multiple logistic regression analysis to determine the determinant of poor quality of life.

Ethical Clearance

This study obtained ethical approval from National Medical Research Register (NMRR-21-1216-59967).

RESULTS

A total of 150 participants with AA were successfully recruited for this study. Of the 150 participants with AA, majority of the participants were males (50.7%), of Malay ethnicity (80.7%), possessed at least secondary school education (94.7%), married (62.0%) and having a monthly income of less than RM5000 (60.0%) as shown in Table I. Majority of the participants also don't smoke (86.7%) or consume alcohol (96.7%) and are free of diabetes (86.7%) or hypertension (86.7%). The Dermatology Life Quality Index (DLQI) mean score was 28.9 with those scoring 29 and above classified as having a poor quality of life and those scoring 28 or less

as having a good quality of life.

Table I: Socio-demographic characteristics the participants and DLQI scores (N=150)

Factors	DLQI SCORE	
	Good n (%)	Poor n (%)
Age, years Mean (SD)	43.3 (7.2)	29.3 (7.8)
Gender		
Male	66 (86.8)	10 (13.2)
Female	62 (83.8)	12 (16.2)
Ethnicity		
Malay	103 (85.1)	18 (14.9)
Non-Malay	22 (75.9)	7 (24.1)
Educational status		
Primary school and below	5 (62.5)	3 (37.5)
Secondary school and above	110 (77.5)	32 (22.5)
Marital status		
Married	77 (82.8)	16 (17.2)
Not married	12 (21.1)	45 (78.9)
Monthly income		
>=RM5000	45 (75.0)	15 (25.0)
< RM5000	75 (83.3)	15 (16.7)
Smoking		
Yes	16 (80.0)	4 (20.0)
No	110 (84.6)	20 (15.4)
Alcohol		
Yes	3 (60.0)	2 (40.0)
No	110 (75.9)	35 (24.1)
Presence of Diabetes		
Yes	4 (20.0)	16 (80.0)
No	109 (83.8)	21 (16.2)
Presence of Hypertension		
Yes	14 (70.0)	6 (30.0)
No	110 (84.6)	20 (15.4)

Univariate and bivariate analysis showed that marital status and presence of diabetes was significantly associated with a poorer quality of life ($p<0.05$) (Table II and III). These two factors were entered into the multivariate analysis using multiple logistic regression analysis to determine the determinants of the poor DLQI scores (Table III) using the ENTER method. All the assumption of binary multiple logistic regressions were met including using a binary dependent variable, ensuring independence of observations, using dependent variables with little or no multicollinearity and linearity of independent variables and log odds of the dependent variable along with meeting the sample size requirements. As only 2 variables were entered into the multiple logistic regression with a maximum of 15 variables allowing for a sample size of 150, this assumption is also met.

Table II: Factors associated with poor DLQI scores among the participants (bivariate analysis) (N=150)

Factors	Bivariate analysis	
	Chi square value/ Independent t-test@	p value
Age	0.930@	0.63
Gender		
Male	1.573	0.47
Female		

CONTINUE

Table II: Factors associated with poor DLQI scores among the participants (bivariate analysis) (N=150) (CONT.)

Factors	Bivariate analysis	
	Chi square value/ Independent t-test@	p value
Ethnicity		
Malay	0.723	0.55
Non-Malay		
Educational status		
Primary school and below	1.756	0.34
Secondary school and above		
Marital status		
Married	3.790	0.03
Not married		
Monthly income		
>=RM5000	1.873	0.78
< RM5000		
Smoking		
Yes	0.132	0.99
No		
Alcohol		
Yes	0.527	0.92
No		
Presence of Diabetes		
Yes	8.929	0.03
No		
Presence of Hypertension		
Yes	2.122	0.75
No		

Table III: Determinants of poor DLQI scores among the participants using logistic regression analysis (N=150)

Factors	Univariate analysis			Multivariate analysis		
	Odds ratio	95% Confidence interval	p value	Odds ratio	95% Confidence interval	p value
Age	1.01	0.87-1.03	0.43			
Gender						
Male	0.98	0.89-1.76	0.77			
Female	ref	ref	ref			
Ethnicity						
Malay	1.23	0.59-1.89	0.99			
Non-Malay	ref	ref	ref			
Educational status						
Primary school and below	0.88	0.18-2.1	0.66			
Secondary school and above	ref	ref	ref			
Marital status						
Married	ref	ref	ref	ref	ref	ref
Not married	1.30	1.13-1.57	0.02	1.39	1.23-1.65	0.04
Monthly income						
>=RM5000	ref	ref	ref			
< RM5000	8.98	0.87-12.23	0.99			
Smoking						
Yes	2.08	0.77-2.45	0.07			
No	ref	ref	ref			
Alcohol						
Yes	1.09	0.98-1.23	0.89			
No	ref	ref	ref			
Presence of Diabetes						
Yes	2.80	1.79-3.76	0.03	2.99	1.83-4.12	0.02
No	ref	ref	ref	ref	ref	ref
Presence of Hypertension						
Yes	2.11	0.88-2.34	0.54			
No	ref	ref	ref			

In multivariate analysis, it was found that those who were not married had 1.39 higher odds of having poor quality of life as compared to those who were married (95% CI 1.23-1.65, p=0.04) (Table III). It was also found that those with diabetes had 2.99 higher odds of having poor quality of life and this association was also statistically significant (95% CI 1.83-4.12, p=0.02).

DISCUSSION

This study found that participants with AA who were not married and having diabetes as having higher DQLI scores (i.e. poorer QoL). This is not unexpected as the burden of managing illness on its own and having chronic medical illness will increase the risk of having a lower quality of life as shown in three different studies by Eckert J et al., Cash TF et al. and Alfonso M et al. (7-9). Often living alone and having chronic medical illness can possibly contribute to lower QoL. This can indirectly be due to higher stresses contributed by the ever-changing work and relationship environment. Living alone or being unmarried can exacerbate feelings of isolation and stress, particularly in individuals with visible conditions like AA (20). All of this can have a negative impact on mental health and self-esteem. A study had noted that individuals with high levels of loneliness are more likely to experience everyday stressors and have prolonged emotional responses to it (21).

It is well known diabetes, being a chronic illness, not only adds physical health burdens but also increases stress and reduces the capacity to manage AA. Often, maladaptive coping strategies e.g., self-blame and self-distraction were related to increased diabetes specific-stress and depression (22).

This dual burden of being alone and having a chronic illness like diabetes often might make treatment adherence more challenging (23-24). They also may exacerbate the risk of diabetes induced cardiovascular morbidity and mortality (25).

In regard to not being married and having diabetes contributing to lower quality of life as shown by higher DQLI scores, various studies done globally also highlighted similar results. Studies by Eckert et al., Muntyanu et al., and Alfonso et al. support the notion that chronic conditions and relationship status significantly impact QoL (8-10).

Other factors such as age, gender, ethnicity, educational status, monthly income, personal habits, and presence of hypertension were not significantly associated with DQLI scores. This shows that this autoimmune disorder is present equally among our population and can affect all ages and genders, in terms of QoL. This differs from a study that shows Zhang M et al. which showed that younger aged patients with AA had a significantly higher DQLI (26). This is not surprising as being in the productive age group and having AA at the same time can impact on confidence in performing the daily jobs and applying for a new job placement.

The above study by Zhang M et al. also similarly showed that QoL was not affected by gender, marital status, educational level and monthly income, which is similar to this current study (26). However, a study by Senna M et al. did show that female patients with AA were more impacted than males (27). In today's modern world, loss of hair in females can severely diminish their confidence and self-esteem as noted in this study (27). The importance of this current study is also shown by a previous systematic review of patients with AA that reiterates the fact that AA can significantly result in lower quality of life scores as in other chronic dermatological conditions such as acne and psoriasis, for example (28). As shown in the above sections, the presence of AA can severely limit the QoL in terms of occupational and domestic functioning as well as affecting performing hobbies (10). Also important is the higher prevalence of psychological disorders in these patients (10). This is furthermore compounded by low efficacy of available treatment as well as often self-borne costs for its' treatment (16).

The data from this study helps physicians recognize the importance of QoL in treating their patients holistically. The role of support systems, like family and friends, in managing QoL for individuals with AA and diabetes, cannot be overemphasized. It can improve self-care and also improve treatment adherence (29). Being married might provide better coping mechanisms and reiterate the role of social support in stress strain mitigation (30). In managing the impact of not being married and having diabetes on lower QoL in patients with AA, health practitioners can incorporate psychological support or counseling for patients having lower QoL. Practical strategies including promoting shared understanding of emotional support, enhancing provider's capability to deliver emotional support, and building patient's networking opportunities in treatment processes that encompasses themes such as warmth and kindness, deep listening, and social connection in the process of treatment (31).

The main limitation of this study is that it was mainly conducted in the Klang Valley and this may limit its generalizability. This implies that these studies should in future be expanded to all cities in Malaysia, to enable the study's findings to be more generalizable. Another limitation of this study was its cross-sectional design which may limit the correlation between the cause and effects. Convenience sampling was done for this study as the prevalence in the general population of AA is only 0.1-0.2%. The author recognized the limitation of this method of sampling in introducing bias. However, other possible sources of bias such as improper validation

and reliability of the questionnaire and respondent's bias were minimized by proper validation of the questionnaire and by conducting the pilot study.

CONCLUSION

This study found that participants with AA who were not married and having diabetes had poor quality of life. These findings can help physicians build on the body of literature in managing this chronic skin problem. Specifically, those factors found to be leading to higher DQLI scores (i.e. lower QoL) should be targeted to ensure patients with AA have a better quality of life, which may improve their adherence to treatment and success in treatment.

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