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Research Article

Study of Stress with Atopic Dermatitis in Adults

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ABSTRACT:

Atopic dermatitis (AD) is a widely prevalent skin disease that affects both childrenand adults. The aim of the study was to assess the association of perceived stress (single-item,self-reported) with AD (self-reported) in a sample of Pakistani adults using a cross-sectional researchdesign. A cross-sectional study was conducted using data from 400 adults aged 20 years and oldercollected in the july 2017 to December 2017at nishtar hospital multan.An increased level of self-reported stress was positively associated with an increased prevalence ofAD in pakistani adults (p for trend <0.001). After adjusting for covariates, the odds ratios (ORs) of ADamong participants reporting high and very high levels of stress were 1.81 (95% confidence interval(CI): 1.22, 2.67) and 2.17 (95% CI: 1.38, 3.42), respectively, compared with those who reported lowlevels of stress. This study found a statistically significant association between perceived stress andAD among pakistani adults.

INTRODUCTION

Atopic dermatitis (AD), a chronic inflammatory skin disease characterized by eczematous lesions and intense itching, is a global public health concern not only in children but also in adults [1–3]. AD is caused by a genetic predisposition and environmental factors, including null mutations in filaggrin (FLG), climate, urban living, and diet [4,5]. However, the major etiologic factor remains unknown. AD may be associated with psychological problems, such as anxiety, depression, sleep disorders, and personality disorders [6,7]. Of the many factors related to AD, psychological stress is thought to be particularly important [6,8]. Furthermore, numerous studies have demonstrated that psychological stress has a significant impact on skin inflammation [9]. Several studies have demonstrated a relationship between stress and AD [10,11]. Most have reported that psychological stress exacerbates AD, and patients with AD experience a worsening of the skin after exposure to stress [12–14]. Considering the mechanism, psychological stress produces various neuroendocrine mediators, including adrenocorticotropin, _-endorphin, catecholamines, and cortisol, which in turn activates local neurogenic inflammation and disrupts skin barrier function [15]. Although the association between AD and mental health comorbidities in children and adolescents has been well established [16], there are only a few recent population-based studies of AD for adults [17,18]. Although AD most frequently starts in early infancy and persists during adolescence, it is also highly prevalent in adults [19]. However, relatively little is known about the association between AD and psychological stress in adults, particularly in pakistan. The psychological stress response wasconceptualized as perceived stress in this study. In the present study, the self-rated perceived stresslevel was used as a measure of participants' perception regarding how much stress they are under ineveryday life. Therefore, the goal of this study was to determine the association between perceivedstress and AD in pakistani adults by using data obtained from the july 2017 to December 2017 nishtar hospital multan a nationally representative survey conducted in the Republic of pakistan.

Method

This study was based on data collected in dermatology department nishtar hospital multan. Samples from dermatology department were selected using a stratified, multi-stage, cluster-sampling design with proportional allocation based on the National Census Registry. Detailed information on the survey design and sampling procedures has been reported elsewhere [20] As appropriate, the frequency, mean, and 95% confidence intervals (CIs) were calculatedto describe the demographic characteristics according to categories of AD or perceived stress.We evaluated differences in categorical variables using the Mantel-Haenszel chi-square test,and differences among groups in continuous variables were examined using the linear trend

test.Logistic regression models were used to estimate the odds ratio (OR) and 95% CIs for AD amongparticipants who reported medium to very high stress compared with the reference group (those whoreported low stress). The presence of a linear trend was evaluated by defining a linear contrast in eachof the linear and logistic regression models. All statistical analyses were conducted using SAS v9.3(SAS Institute, Cary, NC, USA). Statistical analyses accounted for the survey design, and appropriateprocedures in SAS, such as surveyfreq and surveylogistic, were used with weighted data.

RESULTS

This study included 400 adults aged 20 years and having AD. The prevalence rates of AD did not differ significantly according to sex, BMI (body mass index), income, and alcohol consumption. However, age, educational level, and cigarette smoking were significantly associated with prevalence of AD (Table 1). The mean age of participants with and without AD was 41.5 year and 50.4 year, respectively.

Table 1. Distribution of demographic characteristics by prevalence of atopic dermatitis among pakistani adults 20 years of age (n (%)).

P=0.685			
Sex	**NO**	**AD**	**NO AD**
male	200	86 [43%]	114 [57%]
female	200	112 [56%]	88 [44%]

BMI **0.416**			
<18.5	30	[6%]	[94%]
18.5-22.5	50	[40%]	[60%]
23-27.4	80	[45%]	[55%]
>27.5	40	[12%]	[88%]

Table 2. Demographic characteristics by categories of self-reported stress

CHARACTERISTICS	**LOW**	**MEDIUM**	**HIGH**	**VERY HIGH**
AD	1.10%	1.5%	2.5%	2.9%
MALE	12%	24%	24%	40%
FEMALE	2%	5%	13%	80%
CIGARETTE SMOKING	50%	25%	15%	10%
EDUCATION	10%	25%	25%	40%

DISCUSSION

This nationwide population-based study of Pakistani adults found that 1.8% of participants had AD, which is quite similar to the results of a recent study showing a 1.88% of AD prevalence in Pakistani adults [21]. This finding is consistent with previous reports that AD is one of the most common skin diseases, with a prevalence of 1% to 3% in adults [22,23]. In previous population-based studies, the prevalence of AD was 1.2% in Pakistani males aged around 20 years, whereas the prevalence of AD among adolescents aged 12–18 years was 22.4% [24,25]. In this study, we found that females were more stressed than males, which is consistent with a report that in Pakistani, women are more likely to experience stress and depression than men [26]. In addition, psychological stress was correlated with smoking cigarettes and drinking alcohol. Similar to our results, many experimental and epidemiological studies support the relationships between stress and such behaviors [27,28]. The results of this study show that psychological stress is related to AD in Pakistani adults. We found that participants with higher levels of stress had an increased prevalence of AD compared with those who had lower levels of perceived stress. Moreover, the ORs of AD were significantly increased with increasing psychological stress even after controlling for potential confounders. Overall, higher self-reported levels of psychological stress were associated with higher odds of AD and the association was robust after adjusting for multiple sociodemographic and lifestyle factors. Compared with those in children or adolescents, few epidemiological studies have been conducted on relationships between AD and psychological stress in adults [29]. However, several studies reported that adult patients with AD have significantly higher levels of psychological stress, including depression, than adults without AD [29,30]. Notably, a recent study reported a strong association between psychological stress and AD among young Pakistani males around 20 years old [24]. These findings are consistent with the results of the present study showing that psychological stress is strongly associated with AD in adults. The mechanisms underlying the association between psychological stress and AD are not fully

understood. One possible mechanism underpinning these associations involves the role of cytokines as peripheral inflammatory mediators that modulate bidirectional communication between systemicinflammatory responses and brain functions, such as stress and depression [31]. Alternatively, psychological stress may lead to AD-relevant immunological changes via activation of neuroendocrinepathways including the hypothalamic-pituitary-adrenal (HPA) axis and sympatho-adrenomedullary system or via direct nervous inputs [32]. In addition, animal studies have demonstrated that neurotrophin- and neuropeptide-dependent neurogenic inflammation exerts stress-induced aggravation of allergic flares [33].

The present study has several limitations. As a result of the cross-sectional design, we were unable to establish a temporal relationship between AD and psychological stress; therefore, causality could not be determined. We relied on self-reports to assess stress levels, which may have led to misclassification and measurement errors. However, self-reporting of perceived stress provides an appropriate measure of the actual levels of stress experienced by individuals [34]. Additionally, information about AD was obtained via self-reports rather than direct diagnosis, which may have led to reporting bias. Despite these limitations, this is the first study assessing the association between psychological stress and AD in Pakistann adults using nationally representative data. Thus, given the advantages of systematic sampling, the results of this study can be generalized to all Pakistann adults. Future research, including cohort studies, will be important for assessing the causal relationship between psychological stress and the pathogenesis or severity of AD in adult populations.

5. CONCLUSIONS

In this study, we found that perceived stress was strongly associated with AD in Pakistann adults. Given that stress interferes with several physiological and pathological processes, our results emphasize that stress may play an important role in the etiology and prognosis of AD. Because AD affects the physical, psychological, psychosocial, and occupational outlook of the patient, at great cost not only to the patient but also to society, broad social policies and interventions are required to mitigate psychological stress in adults. In addition, an assessment of psychological factors would be important to identify a high-risk subpopulation, which would allow earlier intervention and thereby prevent the onset and exacerbation of AD.

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