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Prevalenceofseborrheicdermatitisand itsassociationwithperceivedstress amongmedicalstudents; astudyfromKarachi,Pakistan.

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ABSTRACT

Objective: Seborrheic dermatitis (SD) is a common chronic inflammatory skin condition, often presenting asfirm, greasy scales in areas rich in sebaceous glands, particularly the scalp, face, and body folds. This studyinvestigatestheprevalentagegroupandgenderaswellasassessesthetriggeringand relieving factorsfamiliar with seborrheic dermatitis among undergraduate medical students and determines the association ofseborrheicdermatitiswith perceivedstress.

Methods:A single centered cross sectional study was conducted among undergraduate medical students ofJinnah Sindh Medical University (JSMU), Karachi. To determine study variables and various factors, theresearchers developed a data collection form and used a validated questionnaire of Perceived Stress Scale bySheldon Cohen for perceived stress level assessment among SD suffering medical students of JSMU, Karachi.Association between seborrheic dermatitisandvariousfactorswasstatisticallyassessed.

Results: It is revealedthat 39.8% of undergraduate medical students had seborrheic dermatitis, affectingmen predominantly. The mean age of the participants experiencing SD was 20.2 ± 1.65 years. Significantassociation was found between seborrheic dermatitis and stress ($p < 0.05$). Factors such as 67% winter season,43.7% dry and 31.7% humid indoor conditions, 57% lukewarm water used for hair washing, dietary habits andvarious hair chemicals arefoundtoaggravatescalpSD. More than half number (65.2%) of participantshaving SD foundhomeremedy/remediesmore effective and convenientthanpharmacologicaltherapies.

Conclusion: Aroundonethirdofundergraduatemedicalstudentshadseborrheicdermatitiswithmenpreponderance. Individuals mostly experience seborrheic dermatitis in their young adulthood. The evidencefrom the current study suggests a significant association between seborrheic dermatitis and perceived stress.Various factors such as season, indoor conditions(work/living place), hair products, temperature of water usedfor hair washing and dietary habits are determined to influence seborrheic dermatitis of scalp. Home remediesare preferred over pharmacological treatment as it is more convenient and efficacious in alleviating SD scalpcondition.

KEYWORDS: Medicalstudents, PerceivedStress, Scalp, Seborrheic Dermatitis.

I. INTRODUCTION

Seborrheic dermatitis (SD) is a common chronic degenerative dermatological condition worldwide, clinicallypresents with erythematous lesion and scaling as its basic features [1,2]. Seborrheic dermatitis mainly affects thesebaceous gland-rich regions of the scalp, face and trunk [3,4].In general population, SD estimated theprevalence of approximately 11.6% across the world [5]. According to an Asian survey, the prevalence ofseborrheic dermatitis in Malaysia, Indonesia, Guangzhou and Macao was 17.16%, 26.45%, 2.85% and 2.66%respectively,butapparentlytheactualincidencerateismuchhigher[6,7].Theincidenceofseborrheicdermatitisincreases with the age particularly after 20s and men are found to be more frequently affected than women [7,8].Inadolescentsandadults,seborrheicdermatitisonscalpmostlyarisesasgreasyscalingi.e. dandruff[9].The cause of seborrheic dermatitis is not clear, however it has been proposed that Malassezia yeasts play apivotal role in the pathogenesis of seborrheic dermatitis [10]. Many factors contribute to intensify this condition;they may include genetic predisposition, seasonal variations, stress/depression, sleep deprivation, alteredimmune response, use of chemical cosmetics, hyperhidrosis (excessive sweating), humidity, sunlight exposure,infections and malnutrition [11]. This condition can inflict physically as well as emotionally and detrimentstandards of living by encompassing discomfort, stigmatization, lack of confidence and limited social activities[12].Studies have documented that SD may settle itself but mostly it remains as a life time issue that

clears andflares. Individuals with scalp seborrheic dermatitis may get temporary relief by applying anti-dandruff shampoowith anti-inflammatory (immunomodulatory) ,keratolytic and antifungal agents [13]. Other therapeuticapproaches includetopicalcorticosteroidandcalcineurininhibitors,sulfurproductswith orwithout salicylicacid and tea tree oil based shampoos [14,15]. A number of medical conditions may confound with SD, includingpsoriasis, atopic or contact dermatitis, and erythrasma, therefore the diagnosis of SD is clinical, based onerythematous patches with greasy scales on predilection areas including the scalp, face, ears, presternal orintertriginousareas [16,17]. Worldwide stressamongstudentsisanunavoidablephenomenonandstudieshaveshownthattheincidenceofperceived stress is found to be high among medical students as compared to students of other faculties, whichhave an impact on different aspects of health [18,19,20,21]. As stress is the root of various diseases, manystudieshaverecognizedtherelationbetweenstressandskindiseaseslikeseborrheicdermatitis[22,23,24].Stresscontributesasap oorprognosticfactorofseborrheicdermatitiswhichaggravatesthisconditionasitbecomes more intense[24].Since the literature is deficient pertaining to understand the prevalence of clinically evident seborrhoeicdermatitis(dandruff)anditsassociationwithstressamongmedicalstudents,thereforethepurposeofthisstudywas to evaluate the prevalent age group and gender as well as to assess the triggering and relieving factorsfamiliar with seborrheic dermatitis among undergraduate medical students and to determine the associationbetweenSDandstress.

II. MATERIALSANDMETHODS

A. Study Designand Population: A single centered cross sectional study was conducted among undergraduate medical students of JinnahSindhMedicalUniversity(JSMU),Karachioveraperiodofeightmonthsfrom February2020toSeptember2020.Thestudy was approved by Institutional Review Boards (JSMU/IRB/2018/141) of Jinnah Sindh Medical University.Our inclusion criteria comprised of undergraduate medical students with clinically diagnosed or having featuresof seborrheic dermatitis of scalp/dandruff, enrolled in Jinnah Sindh Medical University, Karachi. Those SDpatientswhoinvolved bodypartsother thanscalp were excluded.

B. Sampling Technique andSample Size: Simple Random sampling technique was implemented to select the study participants. The sample size wasdetermined by using open EPI software. Considering the number of medical students enrolled in the university,thepopulationsize=1750,anticipated frequencyof50%,confidencelimitas+/-5andconfidencelevelof95%wastaken, theminimumsamplesize calculated was316.

C. Data collection: Data was collected by the research team members with a written informed consent from the undergraduatemedicalstudentswithclinicallydiagnosedorhavingfeaturesofseborrheicdermatitisofscalp/dandruffwithinthe university premises. To determine study variables and various factors, the researchers developed a datacollectionformandusedavalidatedquestionnaireofPerceivedStressScalebySheldonCohenforperceivedstress level assessment among SD suffering medical students of JSMU, Karachi [25]. The questionnaire wasdevelopedafterextensiveliteraturereviewusingPubMedandGoogleScholarthathavemettheobjectivesofthestudy. It comprised of multiple choice and close-ended questions divided into four sections. The first partincludesdemographicdata.Thesecondpartinquiredtheprevalencerateofseborrheicdermatitisamongmedicalundergraduates. The third section contains questions that were structured to assess various factors associatedwith seborrheic dermatitis. The fourth part assessed the prevalence of perceived stress among medical studentswithseborrheic dermatitis.

D. Data analysis:IBM Statistical Package for the Social Sciences (SPSS), Version 22.0 was used for data analysis. Descriptivedatawerereportedusingpercentagesandmean.Chi-squaretestwasappliedtoobservetheassociationamongstudyvariableswherep-valueof<0.05 wastakenasthreshold ofstatisticalsignificance.

III. RESULTS

Atotalof316medicalstudentsfromJinnahSindhMedical University, participatedinthesurveyandprovidedcomplete data on all variables in this analysis. The study questionnaire was widely responded by the females (79.1%) as compared to males (20.9%). The mean age of the respondents was 20.72 ± 0.23 years. Majority ofthe students were from MBBS 4th year (26.5%) followed by 2nd year (23.7%), 3rd year (21.5%), 1st year(16.8%)and5thyear (11.5%)**[Table 1].**Out of 316 respondents, 126 (39.8%) participates were observed to be affected by SD.Among 249 (78.7%) offemales, who participated in this research, only 86 (34.5%) females were having SD. In comparison to females,out of 67 (21%) males, 40 (59.7%) males were having SD. The mean age of the participants experiencing SDwas 20.2 ± 1.65 years. More than half number of participants (73.8%) having SD were observed to haveaggravatedSDduringstressandabout26%participants'scalpconditionremainedsameduringstresscondition.Atotal of85(67%)participants'scalpconditionsufferingfromSDwasfoundtobeaffectedbywinter,followedby summer 12.6% and negligible number of participants' scalp condition was affected by fall , rainy and springseason. Nonetheless

15% were found to have no effect of season on their scalp condition. The incidence of SD sufferers' scalp condition intensified by dry indoor setting was found to be 43.7% followed by humid 31.7% ,polluted 10.3% , cold 8.3% , and warm indoor setting (work/living place)5.6% . Approximately 57%participants suffering SD used lukewarm water for hair washing followed by 37% participants who used coldwater andonly5%used hotwater**[Table2].**

More than half number of participants (62%) having SD, were not having sugar in their diet, however 37%participantswerehavingsugarintheirdiet.About70%participantshavingSDusedtoeatfastfoodandonly29.5% did not eatfastfood.Around72%participantssufferingfromSD did not takemultivitaminsandmineralsupplementswhileonly27.1%participantstookmultivitaminsandmineralsupplements.It was observed that 41.9 % participants suffering from SD did not use any hair chemical. However 19.5 % SDsufferers used fortifying shampoo followed by soap 10%, conditioner 9%, hair spray 8.5%, hair gel 7.1%, andammoniahaircolor2.8%.Approximately27%participantshavingSDusednaturaloilsashomeremedyfortheirscalp condition, followed by egg 22%, yoghurt 17%, aloe vera 15.2%, onion water 13% and only 4% used neemleaves.Nearly41 %participantsexperiencingSDseekno medicaltherapyfortheir scalp condition.Nevertheless, 40 % participants used medicated shampoo for their scalp condition, followed by antifungalmedication 10.4%, steroids 6.6% and only 2.3 % used anti-inflammatory medication for their scalp condition**(Fig.1).** More than half (65.2%) participants having SD found home remedy/remedies more effective andconvenientthan21.9%participantswhofoundmedicatedshampoomoreeffectiveandconvenientfollowedby7.6% participants who found prescribed medicine more effective and convenient. Majority (70.6%) of theparticipants' scalp condition got better with the remedies or treatments while 17.4% found no effect of theremedies or treatments on the scalp condition. Nonetheless 11.9% participants having SD used no remedy ortreatmentfor theirscalpcondition**[Table2].**

It has been observed that, out of 126 participants suffering from SD, 54.7% had moderate stress level followedby 32.5% had high stress level while 12.7% had low stress level. In comparison to remaining 190 participantswhowerenotsufferingfromSD,53%hadlowstresslevelfollowedby39%hadmoderatestresslevelandonly9% participants had high stress level **(Fig.2).** Significant association was found between various factors andseborrheicdermatitisasexplainedin**Table2.**

Table1: Socio demographic status of the study participants

DEMOGRAPHICSTATUS	PERCENTAGE%(FREQUENCY)
GENDER	
Male	21%(67)
Female	78.7% (249)
AGE	20.72 Mean0.23S.D
YEAROFSTUDY	
1st Year	16.7%(53)
2nd Year	23.4%(74)
3rd Year	21.8%(69)
4th Year	26.2%(83)
5thYear	11.7%(37)

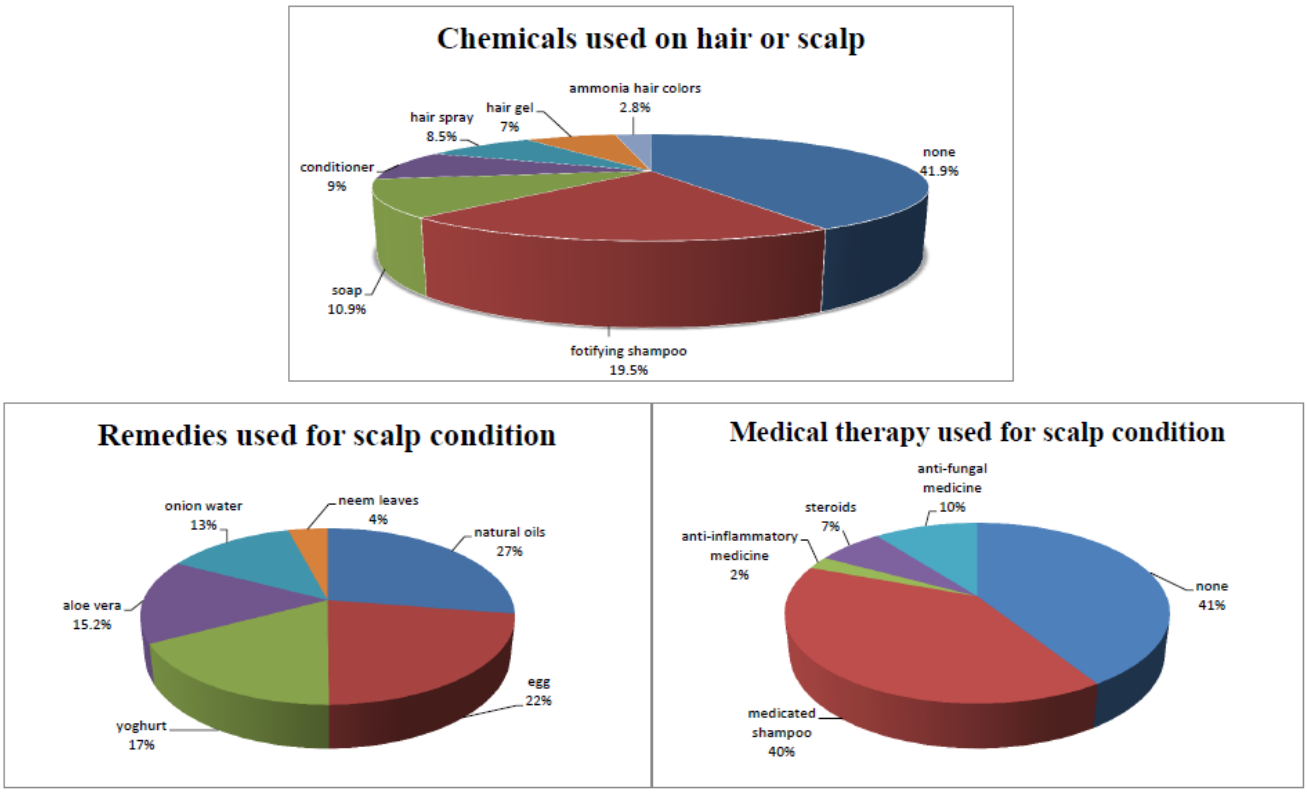

Figure1: showsdifferentfactoraffecting scalp condition in SD

Table2: Possible associations of different factors with seborrheicdermatitis.

Determinants	Number of participants			Pvalue*
Gender	**SDpatients**	**Non-SD patients**	**Total**	
Female	86(34.5%)	163(65.4%)	249	0.00
Male	40(59.7%)	27(40.2%)	67	
	126(39.8%)	190(60.1%)	316	
Age	20.2	Mean±1.65years		0.16
Stressintensity				
High	41(32.5%)			
Moderate	69(54.7%)			0.00
Low	17(12.69%)			
SDduringstress				
Aggravates	93(73.8%)			0.00
Remainssame	33(26%)			
Seasonaggravatedstresscondition				
Winter	85(67%)			

Summer	16(12.6%)	
Fall	3(2.3%)	
Rainy	2(1.5%)	0.00
Spring	1(0.7%)	
None	19(15%)	
Indoorenvironmentintensifiedscalpcondition		
Dry	55(43.7%)	
Humidity	40(31.7%)	
Polluted	13(10.3%)	0.00
Cold	11(8.7%)	
Warm	7(5.6%)	
Hairwashedattemperature		
Lukewarm	72(57%)	
Hot	7(5%)	0.00
Cold	47(37%)	
Scalpconditionwithremediesandtreatments		
Got better	89(70.6%)	
Remains same	22(17.4%)	0.00
Not used	15(11.9%)	

Pearson Chi-square.

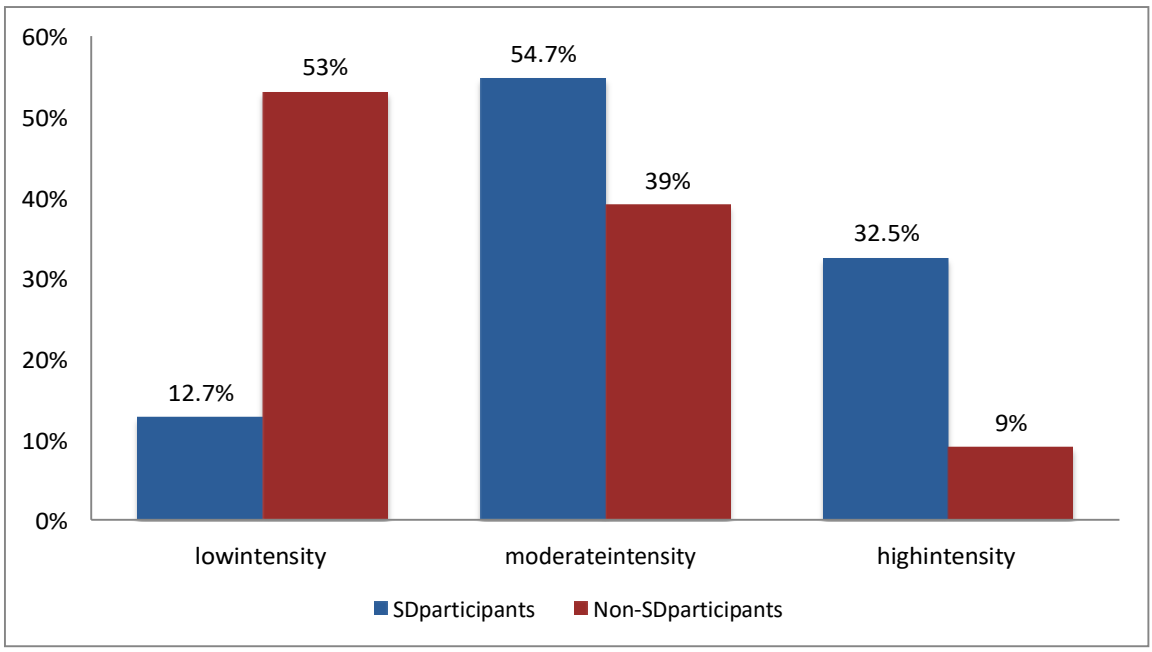

Figure2: Stresslevelofstudyparticipants

IV. DISCUSSION

Inthisundergraduatemedicalstudentpopulationstudy,thepointprevalenceofseborrheicdermatitiswas39.8%.The mean age of participants having SD was around 20, which is similar to an Egyptian research survey, statedthatindividualshavingSDusuallystartstoexperienceseborrheaordandruffinyoungadulthood[26].

Nonetheless another study claimed infantile period to be most commonly involved age group [27]. This conflictcould be because of selection of only undergraduate students in our study. Though it has been reported thatseborrheic dermatitis has a biphasic incidence, occurring in infants (age= 2 weeks to 12 months) and duringadolescence [28]. Since the most affected organ of androgen in skin are sebaceous glands, the glands grow andwork more in response to androgen activity resulting in enormous amount of sebaceous secretions [29,30].

Inthisstudy,malepopulationwasfoundtobemoresusceptiblethanfemalepopulationwithapercentageof59.7%whichisinaccordance withrecentpaststudies [31,32].Globally, it is a general impression that medical students experience significantly higher levels

of stress[19,33,34]. In this study SD was found to become more aggravated during stress. This relation has also beenproven by a study done at King Saud University (KSU), Saudi Arabia [35]. In accordance with our study, aboutmore than half of the SD sufferers medical undergraduates were experiencing moderate intensity stress althoughmajority of those who were experiencing low intensity stress were not suffering from SD and a few participants did not experienceanyeffectofstressonSD.Inadditiontothethreefactors,seasonalvariationalsoplaysroleinaffectingseborrheicdermatitis.AsstatedbyanEgyptianstudy,ingeneralseborrheicdermatitisaggravatesinthewinter, and improves in the summer season [26]. In this study, we found the winter season as anotheraggravating factor of SD, and a small percentage of sufferers experienced aggravated scalp condition in otherseasons as well, although some SD sufferers did not find any effect of season on SD. Scalp condition in SD issupposed to be affected by hair products containing alcohol, soap, greasy emollients, and other known triggerfactors [36]. As per our study, it was found that nearly half of the SD sufferers did not use any hair productalthough some had used the hair products and found them provoking factor for their scalp condition. Dry ordamp conditions in the indoor environment, also aggravate SD scalp condition in many Asian countries [37]. Itwas also observed in this study that dry and humid work/living place intensified the scalp condition 43.7% and31.7%respectively. On the other hand, this study also established a relation between SD and the temperature ofwater which is used for hair washing. More than half of the sufferers were found to be using lukewarm water forhair washingwhilefewwereusingcold or hotwater.Besides this, association of SD with diet was also observed, nearly two fourth of the SD sufferers were nottakingsugarintheirdietandmorethanonefourthofthemweretakingsugar.IncontrasttothisstudyapreviousstudystatedthatindividualshavingSDwerefoundtotakehigheramountofsugar[38].Itwasfurtherobservedthat majority of the participants having SD were taking fast food. However, this study could not find anysignificanceofthisrelation,astheinformationina previous studyregardingtherelationbetweenSDanddietisinsignificant as well [39]. In this study another determinant of SD was evaluated out regarding multivitamins,more than two fourth of the sufferers did not to take multivitamins and mineral supplements although few ofthemwerefoundtotakethesesupplements.AsignificantassociationofSDwithmultivitaminscanalsobeseeninapaststudy,theindividualswhoweretakingmultivitaminswerelesslikelyto haveSD[40].

AccordingtoasurveyinVietnam,themostcommonmethodsoftreatingseborrheicdermatitisathomeareapplecider vinegar, tea tree oil, coconut oil, olive oil and aloe vera [41]. Patients also considered essential oils(rosemary, lavender, tea tree, thyme etc.) as an important therapy in treating scalp dermatitis [42]. Both of thesepast studies represent our study findings. Agents used to treat seborrheic dermatitis can be grouped according totheir mode of action into following categories: (a) Antifungals (ketoconazole, ciclopirox etc.), (b) Anti-inflammatory (corticosteroids, tacrolimusetc) and (c) keratolytic agents (salicylic acid, sulphur, coal tar, urea).All of the above agents are available in the form of shampoos, creams, lotions, emulsions, hair oils [43]. 65.2%SD patients in our study population preferred home remedies over pharmacological treatment whereas 99% ofVietnamese patientsweredissatisfiedwiththemodernmethod oftreatment[41].Certain limitations are inherent in cross-sectional study designs such as the present study, including samplerepresentativeness and potential selection. This study covers only undergraduate medical students havingfeaturesofSD(dandruff),whichcouldbeconsideredalimitationofthestudy.Also,thesamplesizeisnotlargeenough, which is another limitation. As the study is conducted in Jinnah Sindh Medical University, Karachi;which comparatively consists of higher proportion of females than males, therefore we could receive unequalresponses gender-wise which limits the generalizability of the study population. Our study investigating theassociationbetweenSDandstressisrestrictedtoundergraduatemedicalstudentsonlythatlimittheresults.Moreoverthisstudy did not includeotherdeterminantsofSDasidefromthevariablesweincludedinthisstudy,which lead to the possibility of our results being affected by other inciting factors, due to the association ofseborrheic dermatitis with various factors. This limitation suggests an opportunity for future multivariateresearch to study the numerous factors that can determine the severity of scalp seborrheic dermatitis. Thereforethere is requirement for further experimental and longitudinal designs that should include health outcomes andshould cover large number ofdifferentpopulationsand age groups.

V. CONCLUSION

Around one third of undergraduate medical students had seborrheic dermatitis with men preponderance.Individuals mostly experience seborrheic dermatitis in their young adulthood. The evidence from the currentstudysuggestsasignificantassociationbetweenseborrheicdermatitisandperceivedstress.Variousfactorssuchas season, indoor conditions (work/living place), hair products, temperature of water used for hair washing, anddietary habits are determined to influence seborrheic dermatitis of scalp. Home remedies are preferred overpharmacologicaltreatmentasitismoreconvenientandefficaciousinalleviatingSDscalpcondition.

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