

Frequency of Skin Diseases and its Associated Factors Among Patients Visiting a Dermatology Clinic

Sabika Jaffer¹, Syed Muhammad Zulfiqar Hyder Naqvi², Muhammad Zafar Iqbal Hyderi³, Syed Imtiaz Ahmed Jafry⁴, Iraj Jaffer⁵, Mudassir Hussain⁶

Abstract

Objective: To determine the frequency of skin diseases and its associated factors among patients visiting a dermatology clinic in Karachi.

Methods: A cross sectional study was carried out from December 2018 to May 2019 at Baqai Institute of Health sciences, Baqai Medical University, Karachi. Available relevant data of all patients visiting a selected dermatology clinic in Karachi for a period of two years, from 1st January 2017 to 31st December 2018, were retrospectively gathered and recorded on the study questionnaire by the principal investigator. Statistical package for social sciences version 19.0 was used for analysis. Chi-square test was applied to check associations between the independent variables and the study outcome whereas the significance level was set at 0.05. The duration of study was six months.

Results: The study findings revealed that the highest frequency of skin diseases among the patients was of psoriasis (25.3%), followed by dermatitis (23.3%), scabies (14.1%), fungal infection (11.9%), acne (9.0%), folliculitis (4.4%), atopic dermatitis (4.1%), keloid (3.2%), warts (2.8%) and vitiligo (1.9%). Moreover, 51.2% of the patients came in the summer season. The study results also showed that season was found to be significantly associated with diagnosis of the patients both among patients aged 25-49 years ($p < 0.001$) and patients aged 50 years and above ($p = 0.002$).

Conclusion: The most commonly presented skin diseases in descending order of frequency were psoriasis, dermatitis, scabies, fungal infections, and acne. Moreover, season was found to be significantly associated with diagnosis of the patients in two of the study age groups. Due efforts by all stakeholders such as imparting health education to the general public, increasing their awareness regarding the modes of transmission of common skin diseases, promoting healthy skin habits and improvement in practices of environmental sanitation are recommended.

Keywords: Skin diseases, risk factors, patients, dermatology

IRB: Approved by the departmental research committee of Baqai Institute of Health Sciences, Baqai Medical University, Ref.No.FHM-40-2019/MPH/DRC/02. Dated: 31st January 2019.

Citation: Jaffer S, Naqvi SMZH, Hyderi MZI, Jafry SIA, Jaffer I, Hussain M. Frequency of skin diseases and its associated factors among patients visiting a dermatology clinic in Karachi. [Online]. Annals ASH KMDC 2020;25:

(ASH & KMDC 25(2):90;2020)

Introduction

Skin is the largest organ of the body whose functions include sensation, heat regulation, immunological surveillance and water conservation. Skin diseases may be of different types such as infec-

tious, degenerative, congenital, inflammatory and cancerous which can affect people of any age, though young and elderly are affected more¹.

Skin diseases are the fourth leading cause of all human diseases, affecting 1.9 billion people globally¹. Moreover, skin conditions are estimated to contribute 1.79% to the burden of diseases measured in disability adjusted life years globally². Skin diseases are among the 10 most prevalent disease types globally with fungal skin diseases ranked 4th, other skin and subcutaneous diseases ranked 5th and acne vulgaris ranked 8th. They are also the 4th leading cause of non-fatal disease burden world-

¹ Baqai Institute of Health Sciences,
^{2,3,4} Department of Community Medicine,
Baqai Medical University

⁵ Sina Foundation

⁶ Department of Community Dentistry,
Karachi Medical and Dental College

Correspondence: Dr. Sabika Jaffer
Masters of Public Health Student,
Baqai Institute of Health Sciences
Email: sabikajaffer0077@gmail.com
Date of Submission: 3rd September 2019
Date of Acceptance: 13th August 2020

wide. Moreover, skin conditions ranges from 2nd to 11th leading cause of years lived with disability at the country level³. Their burden has been estimated to be high in both high and low income countries⁴.

Scabies is one of the commonest dermatological conditions, accounting for a substantial proportion of skin disease in developing countries. Globally, it is estimated to affect more than 200 million people at any time and recent scabies-related literature puts prevalence range from 0.2% to 71%. Scabies is endemic in many resource-poor tropical settings, with an estimated average prevalence of 5 - 10% in children. Recurrent infestations are common.

The prevalence of psoriasis in children has been estimated to range from 0% to 2.1% while in adults it varies from 0.91% to 8.5%; the data also shows that the occurrence of psoriasis depends upon geographic region, being more frequent in countries far from the equator⁵. Literature reveals that there is a significant rise in incidence of atopic eczema, which affects 165 million children globally; moreover, it has been found that skin infections like scabies and streptococcal infections affect 160 million children worldwide, particularly in low socioeconomic areas¹. It is also known that around 20% of young people are affected by moderate-to-severe acne whose severity correlates with pubertal maturity; it persists into the 20s and 30s in almost 64% and 43% of individuals, respectively; moreover, the heritability of acne in first-degree relatives is reported to be around 80.0%⁶. Combined strives on part of all stakeholders are suggested to decrease the socioeconomic burden of skin diseases globally⁷.

The pattern of skin diseases is known to vary in accordance with socioeconomic and environmental factors⁸. Factors that may aggravate the skin infections include hygiene, immunization, sanitary conditions, socioeconomic status, race, culture and climate change. The climatic change involves the seasonal variations as winter season affects the dryness to skin which may lead to allergy, rash and

itch, rainy season affects by spreading bacterial infections and summers by fungal infections⁹.

Pakistan is suffering from unpredictable climate change which is causing the many infections to become more prevalent, including skin diseases. It should be considered that natural disasters also affect the harmony adversely by physical and as well as psychological trauma which may lead to immediate or long term skin ailments¹⁰. Available estimates of local burden of skin diseases in Pakistan though are limited at best. In the given context, this study was conducted to determine the frequency of skin diseases and its associated factors among patients visiting a dermatology clinic in Karachi.

Patients and Methods

After taking ethical approval, a cross sectional study was conducted from December 2018 to May 2019 at Baqai Institute of Health sciences, Baqai Medical University, Karachi. The study population consisted of all patients (n=3249) who had visited a selected dermatology clinic, named Ali Patel SINA Foundation Clinic, in Karachi during a period of two years, from 1st January 2017 to 31st December 2018. Taking the percentage frequency of skin diseases among patients as 50% for the most liberal estimate, with 95% confidence level and 2% precision, the minimum required sample size was calculated to be 2401 participants.

Available relevant data of all patients visiting the OPD of the selected dermatology clinic such as month of visit, age, gender, need of financial assistance and diagnosis made by a dermatologist were retrospectively taken from hospital records and then recorded on the study questionnaire by the principal investigator after taking due permission from the clinical authorities. Relevant data of all patients visiting the OPD were included in the analysis, and no specific selection criterion other than the availability of data was applied. Moreover, as all diagnoses were made by a dermatologist, the chances of a misclassification bias were reduced to a minimum. Age groups were defined by categorizing age into 3 categories i.e. up to 24 years, 25 to 49 years and

50 years or above. Seasons were defined by categorizing months into summer, spring / autumn and winter based on average monthly temperatures i.e. April till September as summer, November till February as winter, and March and October as spring and autumn respectively. The diagnoses of the patients were classified into 10 diseases/disease categories after consultation with a dermatologist i.e. scabies, psoriasis, dermatitis, atopic dermatitis, folliculitis, acne, vitiligo, keloid, warts and fungal reactions.

Data were entered and analysed on statistical package for social sciences version 19. Descriptive analysis such as frequencies and percentages were executed for categorical variables while means and standard deviations were calculated for continuous variables. Inferential analysis was performed using chi-square test after stratifying on the basis of age to control for its potential confounding effects whereas the significance level was set at 0.05.

Results:

Against an estimated sample size of 2401 participants, data of total 3249 patients were analysed for the study. The study results showed that the mean age of patients was 43.27 ± 16.85 years, 73.5% of them were females, 43.7% belonged to 25-49 years age group whereas 63.8% needed financial assistance.

The study results further revealed that the most frequently presented disease was psoriasis (25.3%), followed by dermatitis (23.3%), scabies (14.1%), fungal infection (11.9%), acne (9.0%), folliculitis (4.4%), atopic dermatitis (4.1%), keloid (3.2%), warts (2.8%) and vitiligo (1.9%). Furthermore, 51.2% patients came in the summer season.

The study results also showed that gender of the patients was not significantly associated with their diagnosis in any of the age groups ($p > 0.05$ for all). Moreover, season was found to be significantly associated with diagnosis both among patients aged 25-49 years ($p < 0.001$) and patients aged 50 years and above ($p = 0.002$) but not among patients aged up to 24 years ($p > 0.05$) where the diseases that presented most frequently in summer included

dermatitis and keloid among patients aged 25-49 years while psoriasis, keloid and acne among patients aged 50 years and above; the diseases that presented most frequently in spring/autumn included scabies, and warts among patients aged 25-49 years while dermatitis, atopic dermatitis, folliculitis and vitiligo among patients aged 50 years and above; and the diseases that presented most frequently in winter included psoriasis, atopic dermatitis, folliculitis, fungal infections, acne and vitiligo among patients aged 25-49 years while scabies, fungal infections and warts among patients aged 50 years and above (Tables 1 A, 1 B and 1 C).

Discussion:

This study was an attempt at establishing a baseline about the seasonal variation in frequency of skin diseases among the population of Karachi.

The study findings revealed that the highest frequency of skin diseases among the patients was of psoriasis (25.3%), followed by dermatitis (23.3%), scabies (14.1%), fungal infection (11.9%), acne (9.0%), folliculitis (4.4%), atopic dermatitis (4.1%), keloid (3.2%), warts (2.8%) and vitiligo (1.9%). Moreover, 51.2% of the patients came in the summer season. The study results also showed that season was found to be significantly associated with diagnosis of the patients both among patients aged 25-49 years and patients aged 50 years and above.

Surprisingly, the frequency of psoriasis was found to be 25.3% in this study which is very high to that seen in other studies such as results from Aman S et al., 2017 reported the frequency of the psoriasis to be 3.8%¹¹. Likewise, Ahmed I et al., in 2017 reported frequency of psoriasis to be 2.1%¹². The difference in study settings could be accounted for this observed difference but all studies were conducted in specialized skin clinics or tertiary care hospital with a skin OPD. This study finding warrants further exploration. Psoriasis is an autoimmune disease that appears on the skin. Exacerbations of mostly Chronic Autoimmune and Inflammatory skin disorders such as psoriasis were the reason of the consultation in 25.5% of the patients in a study done by Tameez-

Table 1 A. Association between Gender, Season and Diagnosis (Up to 24 Years)

Variable (n=513)	Diagnosis										p-value
	Scabies n (%)	Psoriasis n (%)	Dermatitis n (%)	Keloid n (%)	Atopic Dermatitis n (%)	Folliculitis n (%)	Fungal Infections n (%)	Acne n (%)	Vitiligo n (%)	Warts n (%)	
Gender											
Male	7 (5.1)	4 (2.9)	40 (29.0)	7 (5.1)	4 (2.9)	4 (2.9)	23 (16.7)	48 (34.8)	1 (0.7)	Nil	0.436
Female	7 (1.9)	16 (4.3)	117 (31.2)	18 (4.8)	19 (5.1)	9 (2.4)	46 (12.3)	136 (36.3)	7 (1.9)	Nil	
Season											
Summer	7 (2.4)	12 (4.1)	79 (27.2)	17 (5.9)	12 (4.1)	6 (2.1)	37 (12.8)	113 (39.0)	7 (2.4)	Nil	0.496
Spring/Autumn	4 (3.7)	4 (3.7)	38 (34.9)	3 (2.8)	6 (5.5)	3 (2.8)	11 (10.1)	40 (36.7)	Nil	Nil	
Winter	3 (2.6)	4 (3.5)	40 (35.1)	5 (4.4)	5 (4.4)	4 (3.5)	21 (18.4)	31 (27.2)	1 (0.9)	Nil	

Table 1 B. Association between Gender, Season and Diagnosis (25-49 Years)

Variable (n=513)	Diagnosis										p-value
	Scabies n (%)	Psoriasis n (%)	Dermatitis n (%)	Keloid n (%)	Atopic Dermatitis n (%)	Folliculitis n (%)	Fungal Infections n (%)	Acne n (%)	Vitiligo n (%)	Warts n (%)	
Gender											
Male	42 (12.0)	90 (25.7)	72 (20.6)	8 (2.3)	20 (5.7)	18 (5.1)	46 (13.1)	34 (9.7)	6 (1.7)	14 (4.0)	0.447
Female	126 (11.8)	274 (25.6)	254 (23.8)	38 (3.6)	62 (5.8)	59 (5.5)	137 (12.8)	74 (6.9)	22 (2.1)	23 (2.2)	
Season											
Summer	87 (11.9)	171 (23.5)	187 (25.7)	32 (4.4)	29 (4.0)	39 (5.3)	92 (12.6)	57 (7.8)	15 (2.1)	20 (2.7)	<0.001
Spring/Autumn	49 (14.0)	97 (27.8)	84 (24.1)	5 (1.4)	17 (4.9)	19 (5.4)	44 (12.6)	20 (5.7)	4 (1.1)	10 (2.9)	
Winter	32 (9.4)	96 (28.2)	55 (16.1)	9 (2.6)	36 (10.6)	19 (5.6)	47 (13.8)	31 (9.1)	9 (2.6)	7 (2.1)	

Table 1 C. Association between Gender, Season and Diagnosis (50 Years and Above)

Variable (n=513)	Diagnosis										p-value
	Scabies n (%)	Psoriasis n (%)	Dermatitis n (%)	Keloid n (%)	Atopic Dermatitis n (%)	Folliculitis n (%)	Fungal Infections n (%)	Acne n (%)	Vitiligo n (%)	Warts n (%)	
Gender											
Male	84 (22.5)	112 (30.0)	83 (22.3)	5 (1.3)	6 (1.6)	14 (3.8)	40 (10.7)	Nil	11 (2.9)	18 (4.8)	0.332
Female	191 (20.2)	325 (34.4)	192 (20.3)	28 (3.0)	21 (2.2)	40 (4.2)	95 (10.1)	1 (0.1)	14 (1.5)	37 (3.9)	
Season											
Summer	110 (17.1)	237 (36.8)	41 (21.9)	20 (3.1)	11 (1.7)	22 (3.4)	67 (10.4)	1 (0.2)	9 (1.4)	26 (4.0)	0.002
Spring/Autumn	65 (21.1)	83 (26.9)	77 (25.0)	5 (1.6)	11 (3.6)	16 (5.2)	28 (9.1)	Nil	10 (3.2)	13 (4.2)	
Winter	100 (27.4)	117 (32.1)	57 (15.6)	8 (2.2)	5 (1.4)	16 (4.4)	40 (11.0)	Nil	6 (1.6)	16 (4.4)	

Ud-Din BA et al., in 2010¹³. Psoriasis occurs when the immune system mistakes the skin cells as a pathogen, and sends out faulty signals that speed up the growth cycle of skin cells. The cause of psoriasis is not fully understood, but it is believed to have a genetic component and local psoriatic changes can be triggered by an injury to the skin known as the Koebner phenomenon⁷. Psoriasis is a fairly idiosyncratic disease. The majority of people's experience of psoriasis is one in which it may worsen or improve for no apparent reason. Psoriasis occurs more likely in dry skin than oily or well-moisturized skin, and specifically after an external skin injury such as a scratch or cut⁷. Thus having around 25% of psoriasis in our study is a cause of grave concern since psoriasis is a complex, systemic disease associated with significant morbidity and mortality.

In this study, the frequency of scabies was found to be 14.1%, while that of acne and vitiligo was 9.0% and 1.9%, respectively. Likewise, Ahmed I et al., in 2017 reported frequency of scabies to be 15.4%, acne 8.5% and vitiligo 1.2% among patients coming to general OPD¹². Similarly, Maan MA et al., in 2012 reported the frequency of scabies to be 13.9%, acne 11.6% and vitiligo to be 2.3%¹⁴. Sarkar SK et al., in 2010 also reported the frequency of scabies to be 18.0%¹⁵. Moreover, Fasih S et al., in 2017 and Yousuf AK et al., in 2013 found the frequency of scabies to be 14.8% and 13.4% respectively^{16,17}, whereas Al Hassan AT in 2011 reported the frequency of acne to be 7.0% among patients attending a dermatology outpatient clinic¹⁸. All of these estimates are comparable lending a degree of validity to them. On the contrary though, Memon KN et al., in 2011 reported the prevalence of scabies to be 45.5% among patients coming to a tertiary care health facility¹⁹ while Ali A in 2012 found 44.2% of patients coming to an OPD to suffer from scabies²⁰. Such a high prevalence may be attributed to socio-economically deprived catchment populations of the study sites reported.

Among fungal infections, the frequency of tinea infection was found to be 8.2% in our study. Similarly, Sarkar SK et al., in 2010 reported the fre-

quency of tinea infection to be 12.8% among patients coming to dermatology and venereology OPD¹⁵.

Moreover, the frequency of warts was found to be 2.8% in this study which is similar to the frequency reported by Tameez-Ud-Din BA et al., in 2010¹³. This consistency in findings adds to the credibility of the study results.

In our study the frequency of dermatitis was found to be 23.3%. Tameez-Ud-Din BA et al., in 2010 reported the frequency of dermatitis to be 13.9%¹³ while Alam MN et al., in 2017 reported the frequency of dermatitis to be only 5.4% among patients attending dermatology OPD²¹. Furthermore, the frequency of atopic dermatitis was found to be 4.1% in this study. Alam MN et al., in 2017 though reported it to be 12.4%²¹. In both instances, these differences in results could be attributed to the differences in sample sizes and study settings as both of the later studies were conducted with larger sample sizes and in tertiary care hospitals with potentially different referral patterns.

Furthermore, the frequency of fungal infection was found to be 11.9% in this study. Likewise, Bilgili S et al., in 2012 reported the frequency of fungal infection to be 10.4%²². Contrary to the study results however, Maryum H et al., in 2016 reported the frequency of fungal infection to be 3.0%²³. As the later study was conducted in a tertiary care hospital with potentially different referral patterns and catchment area, such a difference in study findings is plausible.

Also, the frequency of folliculitis among the study participants was found to be 4.4%. Interestingly, Memon KN et al., in 2011 also reported it to be 4.4%¹⁹, though Fasih S et al., in 2017 found it to be 1.6%¹⁶, a frequency marginally different from what observed in this study.

It was also found that 51.2% of the patients in this study visited the dermatology OPD in summer season, 23.6% in spring/autumn while 25.2% in winter. On the contrary, Shrestha S et al., in 2014 reported that 30.0% of the patients visited the OPD

in winter, 44.5% in spring/autumn while 25.5% in summer²⁴. Such a difference was expected though due to different age composition of the study population of both studies i.e. patients of all ages in this study against patients aged 14 years in the later study.

Moreover, the study result showed the overall prevalence of scabies to be 16.5% in winter. Shrestha S et al., in 2014 also reported a very high prevalence of scabies in winter i.e. 28.8%²⁴. This finding may be due to the reason that in winter the chances of contact with any potentially contaminated clothing material are higher than in any other season.

Availability of information on a limited number of demographic characteristics in the original data was the prime limitation of the study. Furthermore, it is acknowledged that being a single centre study, the generalizability of the study findings is limited.

Conclusion

The most frequently presented skin diseases in descending order of frequency were psoriasis, dermatitis, scabies, fungal infections, and acne. Moreover, season was found to be significantly associated with diagnosis of the patients in two of the study age groups.

In light of the study findings it is imperative that due efforts are made by all stakeholders for reducing the prevalence of skin diseases in Karachi. Such endeavours should not only focus on imparting the much needed health education to the general public regarding the importance of maintaining personal and household hygiene, but also on increasing their awareness regarding the modes of transmission of common skin diseases. Also, healthy skin habits can ensure a protection against many skin diseases and public resources should be used to make people aware of skin diseases and highlight its preventive aspects. The recent actions by the World Health Organization in framing a resolution to member states for concerted action especially on psoriasis and in recognizing scabies

as a neglected disease provide a huge impetus for change^{25,26}. Moreover, the need for improvement in facilities and practices of environmental sanitation cannot be overlooked, particularly in less privileged areas of Karachi.

Conflict of Interests

Authors have no conflict of interests and received no grant/funding from any organization.

References

1. Hay RJ, Augustin M, Griffiths CE, Sterry W, Abuabara K, Airoidi M, et al. Board of the International League of Dermatological Societies and the Grand Challenges Consultation groups. The global challenge for skin health. *Br J Dermatol* 2015;172:1469-72.[DOI: 10.1111/bjd.13854]
2. Karimkhani C, Dellavalle RP, Coffeng LE, Flohr C, Hay RJ, Langan SM, Nsoesie EO, Ferrari AJ, Erskine HE, Silverberg JI, Vos T. Global skin disease morbidity and mortality: an update from the global burden of disease study 2013. *JAMA Dermatol* 2017;153:406-12.[DOI: 10.1001/jama.dermatol.2016.5538]
3. Hay RJ, Johns NE, Williams HC, Bolliger IW, Dellavalle RP, Margolis DJ, Marks R, Naldi L, Weinstock MA, Wulf SK, Michaud C. The global burden of skin disease in 2010: an analysis of the prevalence and impact of skin conditions. *J Invest Dermatol* 2014;134:1527-34.[DOI: 10.1038/jid.2013.446. Epub 2013 Oct 28]
4. Hollestein LM, Nijsten T. An insight into the global burden of skin diseases. *J Invest Dermatol* 2014; 134:1499-501.[DOI: 10.1038/jid.2013.513.]
5. Parisi R, Symmons DP, Griffiths CE, Ashcroft DM. Global epidemiology of psoriasis: a systematic review of incidence and prevalence. *J Invest Dermatol* 2013; 133:377.[DOI: 10.1038/jid.2012.339. Epub 2012 Sep 27.]
6. Bhat K, Williams HC. Epidemiology of acne vulgaris. *Br J Dermatol* 2013; 168:474.[DOI: 10.1111/bjd.12149.]
7. Seth D, Cheldize K, Brown D, Freeman EE. Global Burden of Skin Disease: Inequities and Innovations. *Curr Dermatol Rep* 2017;6:204-10.[DOI: 10.1007/s13671-017-0192-7. Epub 2017 Aug 7.]
8. Grills N, Grills C, Spelman T, Stoope M, Hellard M, El-Hayek C, Singh R. Prevalence survey of dermatological conditions in mountainous north India. *Int J Dermatol* 2012;51:579-87.[DOI: 10.1111/j.1365-4632.2011.05131.x.]

9. World Health Organization. Epidemiology and Management of Common Skin Diseases in Children in Developing Countries. 2005 [Online]. Available from: <https://apps.who.int/iris/handle/10665/69229>. Accessed on:14th February 2020.
10. ul Bari A, Ishfaq M, Butt UA, Hanif I. Pattern of skin disorders in Muzaffarabad: a comparison of pre-and post-earthquake scenario [Online]. J Pak Assoc Dermatol 2016;17:149-53. Available from:<http://ajku.edu.pk/research-publications> Accessed on: 14th February 2020.
11. Aman S, Nadeem M, Mahmood K, Ghafoor MB. Pattern of skin diseases among patients attending a tertiary care hospital in Lahore, Pakistan. J Taibah Univ Med Sci 2017;12:392-6.[DOI: 10.1016/j.jtumed.2017.04.007]
12. Ahmed I, Ansari M, Malick K. An audit of dermatoses at Baqai institute of skin diseases, Karachi. J Pak Assoc Dermatol 2017;13:117-22.[: 10.12669/pjms.335.13665.]
13. Tameez-Ud-Din BA, Bangash FA, Abbas H. Burden of skin diseases at a tertiary care hospital [online]. J Rawalpindi Med Coll 2010;14:90-2. Available from:<https://pdfs.semanticscholar.org/a25/58010aba33635b1b5c89a-200a6299a0ef8a7.pdf> Accessed on: 14th February 2020.
14. Maan MA, Ahmad M, Ahmad U, Akhtar MS, Irfan M, Hashmie ZY. Spectrum of Dermatological Conditions in a Rural Community [Online]. Ann Punjab Med Coll 2012;6:72-4. Available from:http://apmc.com.pk/Download/APMC/apmc_v6n1/17-%20Spectrum%20of%20Dermatological%20Conditions%20in%20a%20Rural%20Community.pdf Accessed on:14th February 2020.
15. Sarkar SK, Islam AK, Sen KG, Ahmed AR. Pattern of skin diseases in patients attending OPD of Dermatology Department at Faridpur Medical College Hospital, Bangladesh [Online]. Faridpur Med Coll J 2010;5:14-6. Available from:<https://www.banglajol.info/index.php/FMCJ/article/view/6807> Accessed on: 14th February 2020.
16. Fasih S, Arif AB, Younas S. Pattern of skin diseases in Abbas Institute of Medical Sciences, Muzaffarabad [Online]. Pak J Physiol 2017; 13:26-9. Available from:<https://pjp.pps.org.pk/index.php/PJP/article/view/284> Accessed on: 14th February 2020.
17. Yousuf AK, Joarder Y, Aktar A, Hoq MN, Rahman M, Akter F, Begum H, Akhtar MR, Rahman AS. Pattern of skin diseases in patients attended OPD of Dermatology and Venereology in a tertiary care teaching hospital in Bangladesh [online]. Bangladesh J Physiol Pharmacol 2013;29:8-11. Available from:<https://www.banglajol.info/index.php/BJPP/article/view/20061> Accessed on: 14th February 2020.
18. Al Hassan AT. The pattern of skin diseases in Karbala city: A retrospective study[online]. Al-Qadisiyah Med J 2011;7:117-28. Available from:<http://qu.edu.iq/journalmed/index.php/QMJ/article/view/273> Accessed on: 14th February 2020.
19. Memon KN, Soomro RA, Ansari MS. Pattern of skin diseases in patients visiting a tertiary care health facility at Hyderabad, Pakistan. J Ayub Med Coll Abbottabad 2011; 23:37-9.
20. Ali A. Prevalence of skin disease in chak-36, union council Ahmed Rajo, taluka Shaheed Fazil Rao (Golarchi), district Badin, Sindh, Pakistan [Online]. FUUAST J Biol 2012;2:7. Available from:<http://fuuastjb.org/index.php/fuuastjb/article/view/288> Accessed on:14th February 2020.
21. Alam MN, Husain A, Quarashi SA. The pattern of skin and venereal disorders among patients attending in the OPD of dermatology and Venereology department of a tertiary care private hospital, Dhaka, Bangladesh [Online]. J Pak Assoc Dermatol 2017;27:10-4. Available from:<https://www.banglajol.info/index.php/BJMS/article/view/32846> Accessed on: 14th February 2020.
22. Bilgili SG, Karadag AS, Ozkol HU, Calka O, Akdeniz N. The prevalence of skin diseases among the geriatric patients in Eastern Turkey. J Pak Med Assoc 2012;62:535.
23. Maryum H, Alam MZ, Ahmed I. Pattern of skin diseases in a tertiary care private hospital, Karachi [online]. J Pak Assoc Dermatol 2016;24:292-7. Available from:<http://www.jpap.com.pk/index.php/jpap/article/view/215>. Accessed on: 14th February 2020.
24. Shrestha S, Jha AK, Thapa DP, Bhattarai CK. Seasonal variation of common skin diseases in pediatric age group a retrospective study conducted in a medical college of Nepal [Online]. J Univers Coll Med Sci 2014;2:7-11. Available from: <https://www.nepjol.info/index.php/JUCMS/article/view/10483> Accessed on: 14th February 2020.
25. Sixty-Seventh World Health Assembly. Psoriasis. 2014 [Online]. Available from: http://apps.who.int/gb/ebwha/pdf_files/WHA67/A67_R9-en.pdf. Accessed on: 14th February 2020.
26. World Health Organization. Neglected Tropical Diseases: Scabies [Online]. Available from: http://www.who.int/neglected_diseases/diseases/scabies/en/. Accessed on:14th February 2020.