

ISSN:

2542-2758 (Print) 2542-2804 (Online)

ARTICLE INFO:

Received Date: 16 May, 2023
Acceptance Date: 11 Dec, 2023
Published Date: 31 Dec, 2023

KEYWORDS:

Knowledge, Practice, Superficial fungal infection

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Access the article onlineDOI: <https://doi.org/10.62065/bjhs464>**CITATION:**

Yamu S, Choudhary D, Aryal S. Knowledge Attitude And Practice Regarding Superficial Fungal Infections In Dermatology Patients In Eastern Nepal. *Birat J. Health Sci.* 2023;8(3):2096-2101.

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Knowledge Attitude And Practice Regarding Superficial Fungal Infections In Dermatology Patients In Eastern Nepal

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ABSTRACT

Introduction: Superficial fungal infection is one of the most common diseases in dermatology evolving like an epidemic. Hence further research is necessary to minimize the occurrence and prevention of the disease.

Objectives: To assess the knowledge, attitude and practice about superficial fungal infection and implicate the result in educating the patients thereby minimizing its further recurrence and re-infections.

Methodology: A hospital based observational descriptive quantitative cross-sectional study was conducted in all patients with superficial fungal infections attending dermatology outpatient department at Birat Medical College Teaching Hospital. A self-designed questionnaire which was double translated by two individuals in different translations and validated was used to assess knowledge, attitude and practice (KAP) regarding superficial fungal infections. Data were entered in Microsoft excel and analyzed in terms of proportions and percentage.

Results: Out of total 162 patients participating in the study, less than half of the study population was aware that it was a fungal infection; majority did not know how to apply medication in an appropriate technique. They strongly believed that hot weather was the cause. They practiced daily bath, but did not change their clothes often. They preferred taking over the counter medications and visited dermatologists less often and did not complete the total dose of prescribed medication and shared their prescription with their family members for similar problem.

Conclusion: All clinicians treating with superficial fungal infection should emphasize on counseling the patients regarding behavioural changes which will not only aid in treatment but will also focus on its preventive aspect.

INTRODUCTION

Superficial fungal infections of the skin involve the keratinized tissues like the skin, hair and nails. It is caused predominantly by dermatophytes of the genera *Trichophyton*, *Microsporum* and *Epidermophyton*. However, there are infections caused by yeast (*Candida* species) and non-dermatophytes also. It is increasing day by day like a silent epidemic and is one of the commonest causes of dermatology outpatient visits at Birat Medical College Teaching Hospital. According to WHO, the global prevalence of dermatophyte infection is 25%.¹In Nepal, the prevalence of dermatophytosis is 11.4%² with 1% in a community based study to 17.3% in a hospital based study.^{3,4}

There are several factors contributing in the causation of superficial fungal infections apart from the causative organism like environmental factors especially with hot and

humid climate like in Terai region of our country, individual susceptibility, lack of personal hygiene, socioeconomic factors.⁵

This is even increasing due to lack of treatment seeking knowledge, traditional practices and false beliefs. This surge in dermatophytosis has made it necessary to educate the patients regarding the cause, prevention and treatment. This will also prevent irrational use of antifungal drugs and rampant use of topical steroids along with home remedies that invite more complications.

Although there are many dermatology clinics and doctors treating this condition, surprisingly the lack of awareness and the ignorance people have regarding superficial fungal infection may be one of the causes of the prevalence and recurrence of the disease. Medication will definitely resolve the problem but without the proper knowledge and the important practices that one has to follow, it will not help to cure the cause.

Self-medication is also one of the major health concerns for dermatologists nowadays. Due to lack of proper knowledge, medication adherence and compliance is another problem. This has been highlighted by studies where majority of patients do not visit dermatologist and purchase medication from local pharmacy.⁶

Hence knowledge, attitude, practice surveys are essential to help plan, implement and evaluate patient behaviour. It can identify knowledge gaps, cultural beliefs, or behavioural patterns so that it can facilitate understanding and action. Identifying the risk factors will aid in developing preventive strategies, drug selection and improve medication compliance.⁷As a whole this will help reduce health burden as well as economic burden to the patients.

Superficial fungal infection has emerged as an epidemic in dermatology. Most of the patients with infection do not seek proper treatment and receive over the counter medications or some other forms of treatment (ayurvedic, quack) prior to visiting dermatologist along with complications. So this study will find the knowledge gap in patients, change their attitudes and will help them seek timely and proper treatment of superficial fungal infections.

METHODOLOGY

A hospital based observational descriptive quantitative cross-sectional study was conducted in all patients with superficial fungal infections attending dermatology outpatient department at Birat Medical College Teaching Hospital during the year 2021. Total duration of study was 6 months from June 2021 to November 2021. Ethical clearance from institutional research committee was taken prior to start of the study (Reference number IRC-PA-138/2077-78). All patients above 18 years attending dermatology OPD with superficial fungal infections were included in the study. Severely ill who had difficulty in participation were excluded from the study. They were explained carefully regarding the aim of the study and informed consent was taken. A self-designed questionnaire which was

double translated by two individuals in different translations was validated by doing a pilot study in 10% of sample size. The questionnaire which consisted of two parts was used to assess knowledge, attitude and practice regarding superficial fungal infection. The first part included socio-demographic profile and the other part included questions regarding knowledge, attitude and practice related to superficial fungal infection.

Each question was scored 1 for yes answers and 2 for no or not sure answers.

STATISTICAL ANALYSIS Data were entered in Microsoft Excel and analyzed in terms of proportions and percentage

RESULTS

There were a total of 162 patients attending dermatology outpatient department at Birat Medical College Teaching Hospital with superficial fungal infections who participated in the study. The age group of the cases ranged from 18 to 85 years. Maximum cases fell into 18-37 years. The mean age group was 38.89 years. The socio-demographic profile is tabulated in table 1.

Table 1: Socio-demographic profile of study population (N=162)

Variables		Number (n)	Percentage (%)
Age (in years)	18-37	82	50.62
	38-57	59	36.42
	58-77	20	12.35
	78-97	1	0.61
Sex	Male	95	58.64
	Female	67	41.36
Marital status	Married	120	74.07
	Unmarried	40	24.70
	Widow	2	1.23
Religion	Hindu	140	86.42
	Muslim	18	11.11
	Buddhist	4	2.47
Education	Masters	7	4.32
	Bachelor	27	16.67
	Intermediate	27	16.67
	Secondary	59	36.41
	Primary	27	16.67
	Illiterate	15	9.26
Income per month	3000-52000	140	86.42
	52001- 100000	15	9.26
	100001		3.70
	200000	6	0.62
	200001-300000	1	

There were 95(58.64%) males and 67(41.36%) females with male to female ratio of 1.41:1with male predominance. Out of the total, 120(74.07%) were married and 40(24.70%) were unmarried while 2 (1.23%) of them were widow. There were

86(53.09%) employed and 76 (46.91%) unemployed. Out of the unemployed, 37 were housewives (22.83%) and 26(16.05%) were students followed by 22(13.58%) involved in agriculture. Regarding education, maximum were literate and only 15(9.26%) were illiterate.

The majority of the cases, i.e., 140 (86.42%) were from income group who earned Rs3000 to Rs 52000 per month. The lowest income was Rs 3000 and highest income in this study was 3 lakhs.

Regarding the knowledge, out of total study cases of 162, only 49(30.25%) were aware that it was a fungal infection. The remaining 113(69.75%) were not aware about the disease. There were only 20% of them who were aware of other predisposing factors. Also there was a large population (90.74%) who did not know how to apply medication in an appropriate technique. Results regarding knowledge are tabulated in table 2.

Table2: Knowledge regarding superficial fungal infection (N=162)

QUESTIONS	YES	Percentage (%)	NO	Percentage (%)
1. Are you aware of superficial fungal infection?	49	30.25	113	69.75
2. Do you know that good personal hygiene can prevent fungal infection?	110	67.90	52	32.10
3. Do you know it requires treatment?	147	90.74	15	9.26
4. Do you know that moisture/sweat can lead to fungal infection?	138	85.19	24	14.81
5. Do you know about the predisposing factors?	20	12.35	142	87.65
6. Do you know how to apply ointment?	15	9.26	147	90.74
7. Does it spread among each other?	115	70.99	47	29.01

The attitude regarding superficial fungal infection showed that patients had a strong belief that it was due to hot and humid weather(90.12%) and that the problem resolved only by taking medication(95.06%). This study also found that 86.42% of the

patients were depressed due to the recurrence of this problem. Results of attitude regarding superficial fungal infection are shown in table 3.

Table 3: Attitude towards superficial fungal infection (N=162)

QUESTIONS	Yes	percent	no	Percent
1. Is it normal to have this condition?	48	29.63	114	70.37
2. It is caused due to hot weather.	146	90.12	16	9.88
3. It resolves with medication only.	154	95.06	8	4.94
4. I think it heals on its own.	6	3.70	156	96.30
5. I feel depressed after getting this infection.	140	86.42	22	13.58
6. I keep my body clean and moisture free all the time but still have the problem.	121	74.69	41	25.31

Regarding practice, majority of the patients practiced daily bath (85.19%). Only 126 patients (77.78%) wiped their body parts after bath but did not practice changing their clothes often (51.85%) though 132 patients (81.48%) said they changed their clothes after sweating. Majority i.e.145 (89.50%) cases dried their clothes in direct sunlight. Most of the patients i.e., 92 cases (56.79%) preferred taking over the counter medications and 123 cases (75.93%) visited dermatologist less often. 148 (91.36%) patients also denied sharing clothes with each other.

with their family members if they had similar problem. Results of practices in superficial fungal infection are tabulated in table 4.

Majority of the patients (89.51%) practiced regular trimming of nails. However 129 patients (79.63%) admitted that they did not complete the duration of prescribed medication. Also, this study showed that 139 patients (85.80%) shared their prescription

Table 4: Practices followed by study population in superficial fungal infection (N=162)

Questions	Yes	Percentage (%)	No	Percentage (%)
Do you bathe often?	138	85.19	24	14.81
Do you wipe your body after every bath?	126	77.78	36	22.22
Do you dry your clothes and towels in direct sunlight?	145	89.51	17	10.49
Do you share your clothes?	14	8.64	148	91.36
Do you prefer OTC medications?	92	56.79	70	43.21
Do you visit dermatologist for treatment?	39	24.07	123	75.93
Do you change your clothes often?	78	48.15	84	51.85
Do you change your clothes after sweating?	132	81.48	30	18.52
Do you trim your nails regularly?	145	89.51	17	10.49
Do you complete the prescribed treatment?	33	20.37	129	79.63
Do you share prescription with family members with similar problem?	139	85.80	23	14.20

DISCUSSION

There were a total of 162 patients attending dermatology OPD at BMCTH with superficial fungal infections who participated in the study. The age group of the cases ranged from 18 to 85 years. Maximum cases were from 18-37 years age group which was similar to other studies.^{8,9}The mean age group was 38.89 years. More cases in this age group could be because they are more health conscious and they do not require help to reach hospital unlike the younger and older age groups who are mostly dependent on other family members.

Majority of study population were males (58.64%) with male to female ratio of 1.4:1 which showed similar result by other studies.¹⁰⁻¹²This did not match with the studies done by Kulkarni et al and Pires et al and Dsouza et al.¹³⁻¹⁵ It could be due to the fact that mostly males are working group compared to females and they have increase sweating.

Similarly, housewives were mostly affected among the unemployed group of study population (22.83%). This is probably because they are mostly engaged in cooking near heat for long hours and also due to their attire which predispose to sweating which favors for fungal growth.

Regarding knowledge, almost half of the study population was not aware about superficial fungal infection. This was not in accordance with the study conducted by Kulkarni et al.¹² Here 60% were aware that it was fungal infection. Most patients thought sweating was the most important factor that caused fungal infection which was similar to a study by Dsouza MJ K et al and Sivaramakrishnan S AKS et al.^{15, 16}

Studies have explained that spores of dermatophytes are germinated on the skin surface as a result of excess sweating, which acts as the source of nutrition to the spores. Similar findings were reported in study conducted by Sahin et al.¹⁷

Although majority of study population had knowledge that good personal hygiene could prevent infection, they did not know how to apply medication.

In this study, patients had a strong belief that it was due to hot and humid weather (90.12%) and that the problem resolved only by taking medication (95.06%). Hence they were found to be more dependent on medication rather than preventive measures. Also, 86.42% of the patients felt depressed due to this. This was not comparable with the study done by Khan et al where they reported only 36.57% of cases of fungal infection with depressed feelings.⁸

Our study population followed all health hygiene practices well. They had regular bath, wiped their body parts after bath and dried their clothes in direct sunlight but did not practice changing their clothes often (51.85%) on regular basis. There were 132 patients (81.48%) who said they changed their clothes after sweating. We found they had normal good practices according to the questionnaire they answered but had problems related to medication practices. Among the total, 92 cases (56.79%) preferred taking over the counter medications and 123 cases (75.93%) did not visit dermatologist for treatment. This may be because most of the drugs are available over the counter and patients either buy themselves or the pharmacists provide those medications without doctor's prescription, mostly steroid mixed medications. Also we have experienced that most of the patients who visit us are those who have visited local medical shops rather than dermatologist. Next problem we have found is regarding sharing of prescription among family members who have similar problem.¹⁸This results in incomplete dosing and duration of treatment and incomplete cure of fungal infection

CONCLUSION

This study found out that superficial fungal infections were more prevalent in younger age group with male predominance. Almost half of the study population was unaware what superficial fungal infection exactly was. They were dependent on medications only as they believed it was due to hot and humid climate and sweating and only medication could cure their condition. Patients were more focused on over the counter medication and less frequently visited dermatologist for treatment and they did

not know how to apply topical medication. Hence it is important that we treating clinicians educate them about the disease and emphasize them to seek dermatologist's help and incorporate behavioral changes so that they get proper treatment and recurrence and recalcitrant infections are minimized.

RECOMMENDATIONS

Since superficial fungal infection is an emerging problem in the community, similar studies need to be carried out in different regions of the country, not only in tertiary centers. It is recommended that all patients be educated well regarding the dos and don'ts and medication instruction so as to minimize its occurrence and prevention of fungal infections

LIMITATION OF STUDY

The limitation of this study is that fungal culture was not performed. All patients clinically diagnosed as superficial fungal infections were included in the study

ACKNOWLEDGEMENT

We would like to thank all patients who participated in the study and were eager enough to learn about the disease cause and its prevention and the importance of visiting dermatologist for their treatment. We are much thankful towards department of dermatology and everyone from Birat Medical College Teaching Hospital for their constant encouragement and support.

CONFLICT OF INTEREST

None

FINANCIAL DISCLOSURE

None

REFERENCES

1. Khodadadi H, Zomorodian K, Nouraei H, Zareshahrabadi Z, Barzegar S, Zare MR, et al. Prevalence of superficial-cutaneous fungal infections in Shiraz, Iran: A five-year retrospective study (2015-2019). *J Clin Lab Anal.* 2021 Jul;35(7):e23850. DOI: [10.1002/jcla.23850](https://doi.org/10.1002/jcla.23850) PMID:34028857 PMCID:PMC8274978
2. Paudel D, Manandhar S. Dermatophytic Infections among the Patients Attending DI Skin Hospital and Research Center at Maharajgunj Kathmandu. *J Nepal Health Res Counc.* 2015 Sep-Dec;13(31):226-32. PMID: 27005717
3. Shrestha DP GD, Rosdahl I. Prevalence of skin diseases and impact on quality of life in hilly region of Nepal. *Journal of Institute of Medicine.* 2012;34(3):6.<https://nepjol.info/index.php/JIOM/article/view/8917>
4. Basnet B NS, Shrestha S, Gautam S. Burden of skin diseases in Western Nepal: A hospital based study. *American Journal of Public Health Research.* 2015;3:3. Doi: 10.12691/ajphr-3-5A-14
5. Mathur M, Kedia SK, Ghimire RB. "Epizoonosis of dermatophytosis": A clinico- mycological study of dermatophytic infections in central Nepal. *Kathmandu Univ Med J (KUMJ).* 2012 Jan-Mar;10(37):30-3. DOI: [10.3126/kumj.v10i1.6910](https://doi.org/10.3126/kumj.v10i1.6910) PMID:22971858
6. Joshi S, Shrestha S, Timothy U, Jha A, Thapa D. Health Seeking Behavior and Cost of Care of Chronic Dermatophytosis: A Hospital-Based Cross-Sectional Study. *Nepal Medical College Journal.* 2020;22(3):8. DOI: [10.3126/nmcj.v22i3.32656](https://doi.org/10.3126/nmcj.v22i3.32656)
7. Sushil Paudel SP, Upama Paudel. Impact on quality of life and factors associated with relapse in Dermatophytoses. *Journal of Pakistan Association of Dermatologists.* 2022;32(2):7.<https://www.jpap.com.pk/index.php/jpad/article/view/1902>
8. Yoon HJ, Choi HY, Kim YK, Song YJ, Ki M. Prevalence of fungal infections using National Health Insurance data from 2009-2013, South Korea. *Epidemiol Health.* 2014;36:e2014017. DOI: [10.4178/epih/e2014017](https://doi.org/10.4178/epih/e2014017) PMID:25358415 PMCID:PMC4220602
9. Nawal P PS, Patel M, Soni S, Khandelwal N. . A study of superficial mycoses in tertiary care hospital. *National Journal of Integrated Research in Medicine.* 2012;3(1):4.
10. Rajashekar TS NS, Kuppuswamy SK *Int J Res Dermatol.* 2019;5(1):139-43. *Dermatology life quality index in patients with persisting and recurrent dermatophytoses.* *International Journal of Research in Dermatology.* 2019;5(1):5<https://doi.org/10.18203/issn.2455-4529.IntJResDermatol20190233>
11. Narang T, Bhattacharjee R, Singh S, Jha K, Kavita, Mahajan R, et al. Quality of life and psychological morbidity in patients with superficial cutaneous dermatophytosis. *Mycoses.* 2019 Aug;62(8):680-5. DOI: [10.1111/myc.12930](https://doi.org/10.1111/myc.12930) PMID:31102543
12. Gamage H, Sivanesan P, Hipler UC, Elsner P, Wiegand C. Superficial fungal infections in the department of dermatology, University Hospital Jena: A 7-year retrospective study on 4556 samples from 2007 to 2013. *Mycoses.* 2020 Jun;63(6):558-65. DOI:[10.1111/myc.13077](https://doi.org/10.1111/myc.13077) PMID:32187409
13. Pires CA, Cruz NF, Lobato AM, Sousa PO, Carneiro FR, Mendes AM. Clinical, epidemiological, and therapeutic profile of dermatophytosis. *An Bras Dermatol.* 2014 Mar-Apr;89(2):259-64. DOI: [10.1590/abd1806-4841.20142569](https://doi.org/10.1590/abd1806-4841.20142569) PMID:24770502 PMCID:PMC4008056

14. Kulkarni Noopur Sudhakar ESS. A Study on Knowledge, Attitude and Practice Regarding Superficial Fungal Skin Infections and Its impact on the quality of life of people attending Dermatology OPD of Urban Health Centre, Khopoli, Raigad District. Indian Journal of Preventive Social Medicine. 2020;51(4):7.
15. Dsouza MJ K, Hundi G...eISSN:2279-0853, p.ISSN:2279-0861. Vol.17 (6) Ver.1 June 2018, 64-70. Awareness of Risk Factors for Dermatophytoses and its impact on Quality of Life among adults in Mangalore. A cross-sectional study. IOSR Journal of Dental and Medical Sciences. 2018;17(6):7.
DOI: 10.9790/0853-1706016470
16. Sivaramakrishnan S AKS, Kumar AN, Sukanya G. Study on knowledge, attitude and behaviour of patient towards dermatophytosis and importance of maintaining personal hygiene. International journal of advances in medicine. 2021;8:6.
DOI:10.18203/2349-3933.ijam20213710
17. Sahin GO, Dadaci Z, Ozer TT. Two cases of tinea ciliaris with blepharitis due to *Microsporum audouinii* and *Trichophyton verrucosum* and review of the literature. Mycoses. 2014 Sep;57(9):577-80.
DOI: 10.1111/myc.12201
PMID:24724801
18. Shrestha S JS, Tamang RK. Knowledge and Practice Regarding Topical Corticosteroids Among Dispensers in Community Pharmacies of Kathmandu Valley: A Cross-Sectional Survey. Journal of Institute of Medicine Nepal. 2021;43(3):6.