

# Analysis of Dermatology referrals and diagnostic accuracy in a medical college



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## ABSTRACT

**Background:** Dermatology referrals play a vital role in patient care as well as in training for non-dermatologists. In present scenario of changing health care need and delivery, it would be of interest to doctors and policy makers to know the magnitude and reasons for dermatology consultations and its impact on patient care. **Aims and Objectives:** This study was conducted to describe demography of dermatology referrals and to analyse diagnostic accuracy of non-dermatologists and its impact on patient care. **Material and Methods:** This cross-sectional study was conducted at Manipal College of Medical Sciences, Pokhara. Preformed proforma having demographic data and details of referrals were recorded. Analysis of diagnostic accuracy by non-dermatologist was carried out. **Results:** Out of 174 referrals, men and women were equal in number with Mean age of  $35.6 \pm 22.3$  years. Referrals were more frequent from Internal medicine 40 (23%). The most common complaint in referral sheet was skin rashes of different types in 85 (48.9%). Primary department didn't offer treatment for skin lesions/symptoms in 73 (42%) of cases. After receiving referrals, dermatologists were able to diagnose clinically in 110 (63.2%) cases, in the rest, help of laboratory, imaging techniques and histopathology were needed. Cutaneous viral infections were the commonest dermatological diagnosis in 30 (17.2%) cases, followed by eczema/dermatitis in 174 (2.3%) cases. Primary department made correct diagnosis in only 83 (47.7%) cases. **Conclusions:** Non-dermatologists do have difficulties in identifying and addressing skin lesions and symptoms and there is benefit from dermatology consultations. Furthermore, dermatology consultations do have high educational value for non-dermatologists.

**Key words:** Dermatology; Referrals and Consultations; Skin diseases

## INTRODUCTION

Dermatology is primarily an out-patient specialty with important role in care of inpatients and other services.<sup>1</sup> Several referrals are made to dermatology by other specialties for proper patient management specially in institutional settings.<sup>2</sup> As a result of changing scenario of medical care, the magnitude of in-patient dermatology is decreasing, while the value of dermatologists as consultants within the hospital setting is increasing. Interdepartmental consultations also play a vital role in

training for non-dermatologists. Approximately 20% of the general population have skin ailments, which clearly reflects that, hospitalized patients have numerous skin complaints regardless of the cause of their presentation to clinicians.<sup>1</sup> Because of recent changes in the way health care need and delivery is assessed, it would be of interest to doctors and policy makers to know the reasons for dermatology consultations and its impact on patient care.<sup>3</sup> Role of dermatologist for patient care in neurological set up in Nepal has been emphasized in the past.<sup>4</sup> In developing countries, health seeking behavior is increasing

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and dermatology specialty is evolving, so the importance of dermatology consultations and its impact on health care will be an important asset to draw the attention of concerned authorities. The objectives of the study were to describe prevalence, pattern and demography of various dermatology referrals and to analyse diagnostic accuracy of the referring consultants.

## MATERIALS AND METHODS

After obtaining the ethical clearance from the institutional review board, this cross-sectional study was conducted over period of nine months (January 2020 to September 2020). Consecutive dermatology consultations/referrals at Manipal College of Medical Sciences, Pokhara were analysed by a consultant dermatologist. Preformed proforma having demographic details, primary diagnosis at the time of presentation/admission, primary department which called for consultation, chief dermatology complaint mentioned in referral case sheet, diagnosis made by dermatologist after relevant investigations were recorded. Analysis of diagnostic accuracy by non-dermatologist were carried out.

## RESULTS

During this study period, total of 174 patients were received through referrals, with mean age of  $35.6 \pm 22.3$  years. Males and females were in equal numbers. Department wise distribution of referrals are summarized in Table 1, showing department of Internal medicine seeking for maximum number of consultations in 40 (23%), followed by Surgery in 28 (16.1%) and Pediatrics in 26 (1.9%) cases.

The most common primary complaint mentioned in the referral sheet was skin rashes of different types in 85 (48.9%), followed by ulcer in 40 (23%) are summarized in Table 2.

The primary department before asking for consultation, didn't offer treatment for skin lesions/symptoms in 73 (42%) of cases, offered symptomatic treatment to 69 (39.7%), combination of treatments to 30 (17.2%) and empirical antibiotics to 2 (1.1 %). After receiving the referrals dermatological diagnosis was made clinically in 110 (63.2%) patients, with help of laboratory tests in 3 (1.7%) patients, skin biopsy was done in 5 (2.9%) patients and combination of diagnostic modalities (laboratory tests, biopsy and imaging techniques) were used in 56 (32.2%) patients.

Final diagnosis by dermatologist based on clinical presentations and relevant investigations, showed cutaneous

viral infections to be the commonest in 30 (17.2%) cases, followed by eczema/dermatitis in 17 (9.8%) cases, are summarized in Table 3.

The referrals were 109 (62.6%) for in-patient cases and 65 (37.4%) for outpatient cases. Treatment modalities offered by dermatologist were both topical and systemic in 124 (71.3%) cases, systemic only in 20 (11.5%), topical only in 17 (9.8%), six patients (3.6%) were referred to other departments/institutes, surgical modality was used in 4 (2.3%), combination of medical and surgical modalities were used in 4 (2.3%) and no treatment was offered in one case. Primary department (non-dermatologist) made correct diagnosis in only 83 (47.7%) cases.

## DISCUSSION

In present study, we tried to analyze the various reasons for dermatologic consultations and diagnostic accuracy by non-dermatologists, which will have impact on patient care. Dermatological complaints are frequent in hospitalized as well as among patients reporting to other specialties for different ailments and are often important markers for internal diseases. Only a few studies have highlighted the role of dermatologists in providing referral services to other departments.<sup>4,5</sup> In our study, males and females were equal in number, similar to Galimberti et al, whereas, in study by Balai M et al, in 2017, males (62.05%) outnumbered females.<sup>5,6</sup> Almost all specialties in our

**Table 1: Distribution of dermatology consultations by requesting team**

|                                       |            |
|---------------------------------------|------------|
| Internal medicine with subspecialties | 40 (23.0%) |
| General surgery with subspecialties   | 28 (16.1%) |
| Pediatrics                            | 26 (1.9%)  |
| Obstetrics and gynaecology            | 15 (8.6%)  |
| Orthopedics                           | 12 (6.9%)  |
| Head and neck surgery                 | 11 (6.3%)  |
| Ophthalmology                         | 10 (5.7%)  |
| Emergency room                        | 10 (5.7%)  |
| Oncology                              | 9 (5.2%)   |
| Psychiatry                            | 8 (4.6%)   |
| Dental and maxillofacial surgery      | 5 (2.9%)   |

**Table 2: Primary complaint mentioned in referral sheet by non- dermatologist**

|                                   |            |
|-----------------------------------|------------|
| Skin rash                         | 85 (48.9%) |
| Ulcer                             | 40 (23.0%) |
| Itching                           | 12 (6.9%)  |
| Contact dermatitis                | 11 (6.3%)  |
| Tumor                             | 7 (4.0%)   |
| Folliculitis                      | 5 (2.9%)   |
| Hair loss                         | 4 (2.3%)   |
| Cellulitis/Vasculitis/Blepharitis | 4 (2.3%)   |
| Urethritis                        | 3 (1.7%)   |
| Others                            | 3 (1.7%)   |

**Table 3: Final dermatological diagnosis**

|   |            |
|---|------------|
| Cutaneous infections, viral                       | 30 (17.2%) |
| Cutaneous infections, bacterial                   | 11 (6.3%)  |
| Cutaneous infections, fungal                      | 9 (5.2%)   |
| Cutaneous infections, parasitic                   | 6 (3.4%)   |
| Cutaneous infections, protozoal                   | 2 (1.1%)   |
| Cutaneous adverse reaction, severe type           | 17 (9.8%)  |
| Cutaneous adverse reaction, non-severe type       | 5 (2.9%)   |
| Eczema/dermatitis                                 | 17 (9.8%)  |
| Connective tissue disorders/vasculitis            | 16 (9.1%)  |
| Urticaria/angioedema                              | 10 (5.7%)  |
| Sexually transmitted infections (bacterial/viral) | 5 (2.9%)   |
| Cutaneous malignancy                              | 5 (2.9%)   |
| Immunobullous disorders                           | 5 (2.9%)   |
| Dermatoses of pregnancy                           | 4 (2.3%)   |
| Infantile hemangioma                              | 4 (2.3%)   |
| Xerosis   | 4 (2.3%)   |
| Psoriasis   | 3 (1.7%)   |
| Others  | 21 (12.1%) |

institute required the services of a dermatologist during the management of their patients. Most frequently asked consultation in our study was from department of internal medicine (23%), similar to study by Fernandes I et al, where, it was 33.7%.<sup>7</sup> In a study by Galimberti et al. it was 45%.<sup>5</sup> In a similar study by Chandalavada M, internal medicine followed by orthopedics requested the most dermatological consultations, whereas, in a study by Chojer P et al, internal medicine constituted 41.5% of consultations.<sup>8,9</sup> Walia NS et al showed that medical and surgical specialties were the source of more than half the referrals to the dermatologist.<sup>3</sup> The reason for this may be because internist has the bulk of patients in hospital setting, so are the referrals.

In present study, skin rash (48.9%) was the commonest complain in referral sheet, whereas, eczema (33.1%) was the commonest in a study by Tay LK et al in 2011 and skin infections (22%) in a study by K Ahmad et al in 2009.<sup>10,11</sup> Analysis of 614 hospital consultations at the Mayo Clinic by Storan ER et al confirmed that dermatology consult services were requested most often for management of common skin diseases, like skin infections (18.5% of cases) and dermatitis (12.9%).<sup>12</sup> Whereas, non-specific symptoms or elementary symptoms constituted 56% of referrals in study by Maza et al.<sup>13</sup>

In our study, diagnosis was made clinically in 63.2%, laboratory tests were done in 1.7%, biopsy was done in 2.9% and combination of diagnostic modalities (clinical examinations, laboratory tests, imaging techniques and biopsy) in 32.2% whereas in a study by Kroshinsky D et al, biopsy was done in 40.2% of cases.<sup>14</sup> In a study by Galimberti et al biopsies confirmed 71.7% of the initial bedside diagnoses.<sup>5</sup> Final diagnosis made by department of dermatology in present study, showed cutaneous viral infections (17.2%) to be the commonest one followed by eczema/dermatitis and cutaneous adverse drug reaction of

severe type in 17 (9.8%) each. Primary department referring the case did not offer empirical treatment for dermatological complaint in 42% cases in our study and offered some types of empirical/symptomatic treatment to 58% cases, similar to Maza et al, where treatment was offered in 40% of cases.<sup>13</sup> In a study by Galimberti et al 70.3% of patients were not offered treatment for their cutaneous findings.<sup>5</sup> Different modalities of treatment offered by dermatologists shows combination (topical and systemic) in 71.3% of cases, topical only in 9.8% and systemic in 11.5%, whereas, in a study by Maza et al, topical treatment was offered to 80% of cases.<sup>13</sup>

Referring specialties often missed common dermatologic symptoms and diagnoses. Incorrect diagnosis made by referring specialties was 52.3% in our study, similar to study by Maza et al, where it was 56.3%.<sup>13</sup> In a study by Chandalavada M less than 10% of patients were offered a diagnosis by the referring specialty and even fewer correlated with the dermatologist's diagnosis.<sup>8</sup> Primary team identified correct dermatologic diagnosis before consultation in only 25.23% of cases in study by Chojer et al, and in 23.9% of cases in study by Davila M et al.<sup>9,15</sup> In a study by Walia NS et al, dermatologic consultation changed the dermatologic diagnosis and treatment in more than two third of the patients which reinforces the importance of involvement of dermatologist in holistic patient care.<sup>3</sup>

## LIMITATIONS OF THE STUDY

This study was conducted in less duration with less sample size which was the major limitations. The number of visits performed by dermatologist per consultations and delay until visits was not addressed.

## CONCLUSION

Non-dermatologists have difficulties in identifying and addressing skin lesions and there is clear benefit from dermatology consultations. Furthermore, dermatology consultations have been reported to have high educational value for non-dermatologists. Multicenter study with larger sample size for longer duration and follow-ups will help to address the importance of dermatology consultations in a better way.

## REFERENCES

1. Mancusi S and Festa Neto C. Inpatient dermatological consultations in a university hospital. *Clinics*. 2010; 65(9):851-855.  
<https://doi.org/10.1590/S1807-59322010000900007>
2. Chowdhury SN, Podder I, Saha A and Bandyopadhyay D. Interdepartmental dermatology: Characteristics and impact of

- dermatology inpatient referrals at a teaching hospital in Eastern India. *Indian J Dermatol*. 2017;62(1):29.  
://doi.org/10.4103/0019-5154.198044
3. Walia NS and Deb S. Dermatology referrals in the hospital setting. *Indian J Dermatol Venereol and Leprol*. 2004; 70(5):285.
  4. Thapa DP and Thapa A. Dermatology referrals in a neurological set up. *Our Dermatol Online*. 2014; 5(3):254-257  
<https://doi.org/10.7241/ourd.20143.63>
  5. Galimberti F, Guren L, Fernandez AP and Sood A. Dermatology consultations significantly contribute quality to care of hospitalized patients: a prospective study of dermatology inpatient consults at a tertiary care center. *Int J Dermatol*. 55(10), e547–e551.  
<https://doi.org/10.1111/ijd.13327>
  6. Balai M, Gupta LK, Khare AK, Mittal A, Mehta S and Bharti G. Pattern of inpatient referrals to dermatology at a tertiary care centre of South Rajasthan. *Indian Dermatol Online J*. 2017; 8(1):25.  
<https://doi.org/10.4103/2229-5178.198759>
  7. Fernandes I, Velho G and Selores M. Dermatology inpatient consultation in a Portuguese university hospital. *Dermatol Online J*. 2012; 18.
  8. Chandalavada M. Study of inpatient dermatologic referrals. Abstract: 12th South zone Conference of IADVL Oct' 2002;102.
  9. Chojer P, Malhotra SK and Kaur A. To study the relevance of inpatient dermatology referrals in a Teaching Hospital of North India. *Clinician*. 2018; 6:7-11.  
<https://doi.org/10.7241/ourd.20183.5>
  10. Tay LK, Lee HY, Thirumorthy T and Pang SM. Dermatology referrals in an East Asian tertiary hospital: a need for inpatient medical dermatology. *Clin Exp Dermatol: Clinical dermatology*. 2011; 36(2):129-134.  
<https://doi.org/10.1111/j.1365-2230.2010.03923.x>
  11. Ahmad K and Ramsay B. Analysis of inpatient dermatologic referrals: insight into the educational needs of trainee doctors. *Ir J Med Sci*. 2009; 178(1):69-71.  
<https://doi.org/10.1007/s11845-008-0251-y>
  12. Storan ER, McEvoy MT, Wetter DA, el-Azhary RA, Hand JL and Davis DMR. Pediatric hospital dermatology: experience with inpatient and consult services at the mayo clinic. *Pediatr Dermatol*. 2013; 30:433-437.  
<https://doi.org/10.1111/ijd.12555>
  13. Maza A, Berbis J, Gaudy-Marqueste C, Morand JJ, Berbis P, Grob JJ, et al. Evaluation of dermatology consultations in a prospective multicenter study involving a French teaching hospital. *In Ann Dermatol Venereol*. 2009; 136(3):241-248.  
<https://doi.org/10.1016/j.annder.2008.12.020>
  14. Kroshinsky D, Cotliar J, Hughey LC, Shinkai K and Fox LP. Association of dermatology consultation with accuracy of cutaneous disorder diagnoses in hospitalized patients: a multicenter analysis. *JAMA dermatology*. 2016; 152(4):477-478.  
<https://doi.org/10.1001/jamadermatol.2015.5098>
  15. Davila M, Christenson LJ and Sontheimer RD. Epidemiology and outcomes of dermatology in-patient consultations in a Midwestern US university hospital. *Dermatology online journal*. 2010;16(2):12.

**Author's Contribution:**

**AK-** Concept and design, review of literature, manuscript preparation and revision; **SS-** Review of literature and manuscript revision; **JP-** Literature search and review; **BB-** Literature search and review; **RG-** Data collection; **MA-** Manuscript revision, statistical analysis and interpretation; **BS-** Manuscript revision, statistical analysis and interpretation.

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