Evaluation of Diagnostic Accuracy of Referrals to Dermatology Clinic in Ile-ife, South-western Nigeria.

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ABSTRACT

INTRODUCTION: Nigeria is a densely populated country with a population of 182 million. The challenge posed by the provisions of health care to this ever increasing population has continually justified the need for the reinforcement of primary health care delivery in Nigeria. Efforts to improve the efficiency of primary health care delivery will be impeded by a high rate of missed diagnosis, since most of the patients may eventually go to secondary or tertiary health facilities. This study was therefore conducted to assess the rate of misdiagnosed dermatoses among patients referred to our dermatology clinic.

MATERIALS AND METHODS: The study which was conducted between January 2016 and June 2016 at the dermatology clinic of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, was a descriptive cross sectional study involving 273 patients referred to the clinic. Relevant data were obtained and analyzed using SPSS version 16.

RESULTS: Patients between the age of 2 and 93 years participated in the study. The mean age of the participants were (35.6 ± 19.7) years. The males were 50.9% while females were 49.1%. The proportion of dermatoses arranged in descending order were Infections 38.8%, Dermatitis 17.6%, Acne and acne form eruptions 8.4%, Skin tumour 7.7%, Papulosquamous eruption 7%,, reactive dermatoses 5.9% and pigmentary dermatoses were 5.5%. Other dermatoses constituted 9.2%. The study also showed that 36.8% of all the dermatoses were diagnosed correctly while 63.2% were wrongly diagnosed. With the exception of acne and acneform group of dermatoses which has the highest rate of correctly diagnosed dermatoses 63.6%, other categories of dermatoses were largely misdiagnosed. The proportion of correctly diagnosed dermatoses were as follows; Infections (41.5%), Dermatitis (31.2%), Reactive dermatoses (25%), Pigmentary dermatoses (46.7%), Papulosquamous (15.8%) and Skin tumours (42.9%).

CONCLUSION: The proportion of wrongly diagnosed dermatoses was relatively high among cases referred to dermatology clinic. This high rate may negatively impact on the efficiency of primary health care delivery services in Nigeria. The introduction of continued medical education (CME) points in dermatological courses, a functional two-way referrer system and tele-dermatological practices are recommended to reduce the deleterious effects of the misdiagnosed dermatoses and improve health service delivery.

Keywords: Dermatoses, referrer, misdiagnosis, dermatology, clinic, primary health, Nigeria.

INTRODUCTION

Nigeria is the most populous nation in Africa and has a population of about 182million according to National Population Commission (NPC).[1] The growing population further stretching/burdened the limited health facility and funding. In lieu of this challenge, reinforcement of primary health care has been viewed as the way to improve accessibility to health care. Larger percentage of the population receive health care at the primary health care level with very few getting to the teaching hospitals which are the apex referral centres in Nigeria.[2]

The federal government of Nigeria in bid to upgrade health service delivery is proposed a scheme whereby all the primary health centres in Nigeria will have at least one medical doctor. While the hurdle of adequately staffing all the primary health care centres is being tackled, a large proportion of misdiagnosed skin diseases will however pose a significant setback for the scheme. This is because with high rate of missed diagnosis, most of the patients may still end up at the tertiary facilities thereby undermining the set objectives and increasing the cost of health care.[3,4]

The importance of making a correct skin diagnosis is not limited to the management of skin alone. Recognition of skin disorders may also aid the diagnosis of systemic diseases and thereby facilitating the management of such disease. Making a wrong skin diagnosis may therefore result in missing the diagnosis of associated systemic disease. This is particularly so in case of paraneoplastic manifestation in skin and uncommon systemic diseases.

This study sought to determine the proportion dermatoses that were wrongly diagnosed and use the obtained data to suggest policy guide which may enable the conservation of resources that may have been wasted as a result of treating wrongly diagnosed disease, associated side effects of drugs and loss of consultation time.

MATERIALS AND METHODS

Study location: The study was carried at the Department of Dermatology outpatient clinic of Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife between January 2016 and June 2016. The department has five consultants comprising of two professors of dermatology and three consultant dermatologists. It also has eleven specialist dermatology residents. The clinic sees on average of 80 patients per week with about 15 new consults per week. Obafemi Awolowo University Teaching Hospital is a referral center located in the south-west zone of Nigeria. It receives referrals from the primary and secondary health care facilities located within the five states in the zone.

Study design: The study was a descriptive cross sectional study involving 273 subjects. There sampling method employed was a convenience (purposive) sampling. Patients without referral letter and those who were already visiting dermatologist were excluded from the study. Patients who did not give consent to participant in the study were also excluded and those referred by non-doctors. With the aid of a proforma, relevance information including participants' demographic data, diagnosis made and treatment given before presenting to our clinic were noted. The final diagnosis made by the dermatology team aided by relevant laboratory investigations and the treatments given were noted and compared.

Data analysis: Data were analyzed using SPSS version 16, and relevant descriptive (Mean, SD) inferential (t-test, chi square) statistical methods were used to analyze the data

Ethical approval of the Obafemi Awolowo University Teaching Hospital OAUTHC, Ile-Ife was south to enable the execution of the study. Consent: Informed consent was sought from all the participants.

RESULTS

The participants in the study were predominantly between 21years and 40years old constituting 48% of total participant. Participant under the age of 20 years constituted 20.1% while those between 41-60years and 61-80years were 17.6% and 11.7%, respectively. Elderly participants above 81 years old were the fewest constituting 2.6% of total participant recruited for the study.

The age of the participants ranges from 2 years old to 93 years old. The mean age of participants was (35.6 $\pm$19.7) year. Both genders were proportionately represented in the study. The male participants marginally outnumbered the female participants constituting 50.9% while the females were 49.1%.

Age	Frequency	Percent
0-20	55	20.1
21-40	131	48.0
41-60	48	17.6
61-80	32	11.7
81-100	7	2.6
Total	273	100.0

Table 1: Age of Participants

Gender	Frequency	Percent
Male	139	50.9
Female	134	49.1
Total	273	100.0

Table 2: Gender of Participants

To enable efficient analysis of data, the large spectrum of dermatoses found in this study were grouped into infectious, dermatitis, reactive dermatoses, pigmentary dermatoses, acne and acneform eruption, papulosqamous diseases, skin tumour and others. Reactive dermatoses include urticaria and other types of reactions. Exfoliative dermatitis was classification along with dermatitis while fixed drug eruptions were group with pigmentary dermatoses.

The study reveals that 36.8% of the total cases seen were correctly diagnosed by the referring physicians while 63.2% were wrongly diagnosed. The most prevalent dermatoses were infectious diseases which constituted 38.8%. Infectious diseases were correctly diagnosis in 41.5% while 58.5% were wrongly diagnosed. Dermatitis was the next in line with 17.6% if the total dermatoses observed in this study. Dermatitis was correctly diagnosed in 31.2% of cases while a larger proportion 68.8% was misdiagnosed. Pigmentary dermatoses have a fairly equal prevalence of correctly 46.7% and incorrectly53.3% diagnosed dermatoses. The highest proportion of correctly assessed dermatoses was Acne and Acneformdermatoses63.6% were correctly diagnosing while 36.4% were not.

Skin tumour constitutes 7.7% of the total dermatoses observed in this study. Of these tumours 42.9% were correctly diagnosed while 57.1% were misdiagnosed. Papulosquamous dermatoses were fairly common among the dermatoses and were observed in 7% of cases. Of these, 15.8% were correctly diagnosed while 84.2% were wrongly diagnosed. This category however was composed heterogeneous classes of dermatoses. Significant association was found between the physician ability to make a right or wrong assessment and the group of dermatoses (P=.009).

Dermatoses	Frequency	Percentage
Infections	106	38.8
Dermatitis	48	17.6
Others	25	9.2
Acne and Acneform eruptions	23	8.4
Skin tumours	21	7.7
Papulosquamous deiseases	19	7.0
Reactive dermatosis	16	5.9
Pigmentary Dermatoses	15	5.5
Total	273	100.0

Table 3: Spectrum of Dermatoses referred to dermatology clinics

Dermatoses		Correctness of diagnosis		Total
		correct	incorrect	
Infections	Count	44	62	106
	% within class of diagnosis	41.5%	58.5%	100.0%
Dermatitis	Count	15	33	48
	% within class of diagnosis	31.2%	68.8%	100.0%
Reactive dermatosis	Count	4	12	16
	% within class of diagnosis	25.0%	75.0%	100.0%
Pigmentary Dermatoses	Count	7	8	15
	% within class of diagnosis	46.7%	53.3%	100.0%
Acne and Acneform eruptions	Count	14	8	22
	% within class of diagnosis	63.6%	36.4%	100.0%
Papulosquamous deiseases	Count	3	16	19
	% within class of diagnosis	15.8%	84.2%	100.0%
Skin tumours	Count	9	12	21
	% within class of diagnosis	42.9%	57.1%	100.0%
Others	Count	4	21	25
	% within class of diagnosis	16.0%	84.0%	100.0%
Total	Count	100	172	272
	% within class of diagnosis	36.8%	63.2%	100.0%

[x^2=18.64, df= 7, Level of significance= 0.009]

Table 4: Precision of correctly and incorrectly diagnosed dermatoses

DISCUSSION

All categories of patients ranging from pediatric, young adults, middle aged adults and the elderly ware seen in the dermatology clinic. The mean age of patients recorded for the study was (35.6±19.7) year with age range of 2-93years. The highest proportion of patients was the young adults within 21-40years old. Both males and females were represented in almost equal proportions.

The skin is the largest as well as the most accessible organ in the body. This unique access to the skin permit a lot of changes to be notice which hitherto would not have been noticed if the skin was to be an internal organ. On the contrary, disorders of internal organs will only be notice when these changes are associated with symptoms such as pain or other forms of discomfort or when there is functional impairment.

In this study, a high proportion of missed diagnosis was demonstrated among the patients referred to our dermatology clinic. Moreno et al similarly demonstrated a high prevalence of missed diagnosis among general practitioners.[5]These accessibility to the skin therefore allows for the description of a wide range of skin diseases most of which are similar and indistinct in their clinical presentations. This lack of clinical distinction among the skin disorder and lack of adequate exposures of undergraduates to dermatologic training in many centers contributed to the misdiagnoses. Inability to recognize a number of uncommon dermatoses may be frequency observed among doctors who are not dermatologist.[5]

Despite the large number of dermatoses, the challenge of making diagnosis was further compounded by the fact that most health centers do not have access to competent dermatopathologist and in few centers where these are available, lack of

sufficient skills on the part of the clinician may deprive the pathologist relevant clinical information necessary for interpretation of histological findings. This cause enormous diagnostic dilemma and the attendant missed diagnosis. Since clinic pathological correlation requires some level of clinical skills to be able to supply relevant information to enable the interpretation of biopsy histology, the biopsy as a diagnostic tool is therefore less efficient in the hand of a non-dermatologist further reducing the prospect of making correct diagnosis.

Less than half of the patients with infectious dermatoses were diagnosed correctly. Dermatitis, pigmentary dermatoses, and reactive dermatoses were also poorly recognition since large proportion of these dermatoses are erythematous they may present indistinctly on a darker background of the negroid skin further contributing to the rate of missed diagnosis. Papulosquamous dermatoses, skin tumour and the other rare dermatoses were also largely misdiagnosed.

Topical preparations containing potent steroid, antifungal and antibacterial are frequently used by patients before presenting to the general practitioners. These usually altered the appearance of skin lesions thereby leading to missed diagnosis especially by non-dermatologist. The absence of effective two-way referral system also deprives the doctor referring the patients of a feedback necessary to enhance on the job training. This will also contribute to the high rate of missed diagnosis.

However, Acne and acneform eruption had the highest rate of correctly diagnosed dermatoses, with 63.6% of the dermatoses correctly diagnosed. Acne vulgaris being very common dermatoses is relatively easy to diagnose. Patients are often referred when there is moderate or severe form of the disease or when there is adverse drug reaction due to steroid use or other forms of self-medication by the patients. Significant association was demonstrated between the type of dermatoses and the physician's ability to diagnose dermatoses correctly ($P < 0.05$).

A high rate of missed diagnosis will undoubtedly increase the rate of prescription of drugs and investigations that may not enhance patient recovery. This will impact negatively on patient's finance especially in our settings where most patients are not covered by health insurance. It also increased the need for patients' referrals thereby adding to the cost of care.[3] Feldman et al had reported an increase in consultation time arising from missed / incorrect diagnosis.[6]

CONCLUSIONS & RECOMMENDATIONS

The proportion of missed diagnosis among cases referred to dermatology clinic is very high. This is associated with its attendant high cost of care arising from prescribing inappropriate medication, side effect of medication and loss of consultation time.

In consideration of the impact this may have on the efficiency of our primary health care, we do recommend the inclusion of dermatology topics in the doctors continuing medical education (CME) as part of the prerequisite for annual practicing licensing of doctors, as well as a functional two-way referral system both of which will enhance on the job training. In addition to the above, the availability of improved and functional tele-dermatological practice will play significant role in reducing rate of misdiagnosed dermatoses thereby improving health service delivery while reducing its cost.

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