

Pattern of Skin Diseases and Prescribing Practice in Dermatology in Public and Faith Based Hospitals in Three Regions of Tanzania

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Abstract

Skin diseases account for a higher proportion of outpatient attendances in Tanzania and they were among the top ten diseases of hospital admissions for children in 2009. Irrational medicine prescribing and use are serious global problems. The study investigated the prevailing skin diseases and the prescribing practice among out patients in public and faith based hospitals in three regions of Tanzania. Types of skin diseases and data for prescribing indicators were collected from patient records for a period of one year; January to December 2014 using WHO-Prescribing Indicator Forms. Structured questionnaires were used to obtain data from 43 OPD prescribers on availability and utilization of National Standard Treatment Guidelines (STG).

A total of 2151 medicines were prescribed for 1020 prescriptions with average of 2.1 medicines per encounter. Medicines prescribed by generics constituted 75% of the prescribed medicine 81-90% were from the Essential Medicine List while 72% of prescribers consulted STGs. Furthermore, 68.7% of the patients were treated in accordance with STGs. Types of skin diseases treated included noninfectious dermatoses (63.8%) and infectious dermatoses (36.2%) which included dermatitis variants (40%), pyoderma (19%) and superficial mycosis (12%).

The prescribing practice was agreeable with WHO guidelines for most of medicine use indicators except for percentage encounter with antibiotics, generic prescribing and availability of STGs. It was also noted in this study that steroids were irrationally prescribed. There is a need for continuing education on rational prescribing of antibiotics, use of generics and increased access to STGs which will lead to effective management of skin diseases.

Keywords: Skin diseases, Rational prescribing, Outpatients, Treatment Guidelines, Tanzania

INTRODUCTION

Skin diseases have been reported to be the fourth leading cause of non fatal disease burden globally [1]. Also some skin diseases are associated with decreased quality of life [2]. In the developing world, skin disorders constitute approximately one half of all diseases encountered and affect more than 60% of general population [2]. They appear to dominate patterns of illness at village or community level particularly in resource-poor areas [3]. Various types of diseases affect the skin, but they differ depending on age, geographical region, climate and socioeconomic status [4]. It is also recognized that factors such as poor housing, inadequate nutrition, unsanitary conditions and environmental pollution may contribute to prevalence of a disease [5]. The commonest skin disorders seen in developing countries are pyoderma and scabies, though they represent a significant problem which could benefit from public health measures [6].

In Tanzania, skin diseases account for a higher proportion of outpatient attendances. Available data suggest that skin disease in 2009 and 2010 was among the top ten diseases of hospital admissions for children with less than five years of age [7]. The common skin problems prevailing in Tanzania are scabies, bacterial skin infections, superficial mycosis and viral skin infections [8].

The World Health Organization has always stressed the importance of appropriate medicine prescribing and use

which plays a crucial role in disease management. Worldwide 50% of medicines are inappropriately prescribed while 50% of the medicines are inappropriately used [9]. Irrational prescribing and use of medicines include overuse or underuse, polypharmacy, use of brand medicines instead of generic ones, overuse of antibiotics, use of injectionables when oral medication is more appropriate, prescribing medicines that contravene clinical guidelines and self medication [10]. Many studies are being undertaken to address irrational prescribing and use of medicine and they normally rely on WHO/INRUD prescribing indicators which are believed to be sufficient for making intervention on medicine use improvement [9, 11, 12]

The information regarding knowledge on proper prescribing in skin disorders in Tanzania is scarce hence a need for the current study. Prescribing pattern studies and data on skin diseases spectrum are important in making informed decisions for channeling resources and setting priorities in the health sector [13]. As mentioned above irrational prescribing of medicines is a global problem of common occurrence in clinical practice, factors contribute to irrational use of medicines includes; lack of knowledge about medicines, unethical medicine promotions and irrational prescribing habits among the clinicians [14].

The WHO/ INRUD core indicators for assessing medicines uses patterns in Health facilities were developed to be used

as a measure of performance in three general areas related to rational use of medicine in primary health care sector and they includes i) Pharmaceutical prescribing practices by health provider ii) Key elements of patient care, covering clinical consultations and medicines dispensing and iii) Availability of facility specific factors which include support of rational use, such as key essential medicines and minimum pharmaceutical information [15]. The current study employed; WHO/INRUD prescribing indicators which measures the performance of health care providers in several key dimensions related to the appropriate use of medicines [10]. These included i). Average number of medicines prescribed per patient encounter ii) Percentage of medicines prescribed by generic name iii). Percentage of encounters with an antibiotic prescribed iv). Percentage of encounters with an injection prescribed and v). Percentage of medicines prescribed from an Essential Medicines List (EML) or formulary. Furthermore, the study employed the facility indicators, which represents the features of the working environment that measures the ability to prescribe medicine rationally and these included i). Availability of clinical guidelines and EML and ii) The percentage of key medicines available in a facility.

METHODOLOGY

Study Design

The study design was cross sectional retrospective and prospective. Data for type of skin diseases and prescribing indicators were collected retrospectively from medical records that were recorded between January and December 2014. Prospectively, structured questionnaires were used to collect data from Outpatient Department (OPD) prescribers regarding availability and utilization of STG.

Study Population

The study population included 43 OPD prescribers available at the time of survey, and 4520 OPD prescribing records of skin disorders from which 1020 study sample were obtained through random sampling. The study units were all referral regional hospitals which were either public or faith based health facilities (FBHF) from Dar es Salaam, Morogoro and Kilimanjaro regions, Tanzania.

Sampling Procedures

The study employed Mixed Sampling Procedure to select health facilities. Purposeful sampling included referral public and faith based health facilities in Morogoro and Kilimanjaro regions. In Dar es Salaam, one public health facility was selected using simple random sampling (lottery method) among three available facilities Mwananyamala, Temeke and Amana. Hindu Mandal Hospital, a faith based hospital, was purposeful selected. The WHO guidelines for comparison of medicines use involving more than one health facility were employed to obtain the study sample of encounters five health facilities were involved in the study [10].

The study employed 204 encounters per health facility over a year whereby 17 encounters per month were selected randomly making an overall 1020 encounters.

Data Management and Analysis

Data was collected using a WHO Prescribing Indicator Survey Form; Quantitative data regarding type of skin diseases, average number of medicines per prescription, percentage of generic medicines prescribed, percentage of medicines prescribed from EML, percentage of encounters with antibiotics and injections prescribed were determined and summarized on the WHO survey Form. Data were then recorded on the Microsoft Excel spread sheet and exported to Statistical Package of Social Sciences (SPSS Version 20.0) for cleaning and analysis.

A structured questionnaire was used to collect information on demographic data of the prescribers, availability of STG) and utilization of STGs. Collected data were analyzed using SPSS under descriptive statistics. Mean (average), minimum and maximum values and the confidence intervals for indicators were generated using Epi-info 7 software. Statistical significance for categorical variables was tested using the Chi square at 5% level of significance. Differences with p-values less than 0.05 were considered significant.

RESULTS AND DISCUSSION

A total of 1020 patient records (encounters) of skin diseases from dermatological outpatient clinics were reviewed. Of the total patients records reviewed, 55.8% (569/1020) were females and 44.2% (451/1020) were males (Table 1). The patients' ages ranged between 3 months to 80 years with a mean age of 28.2 years (SD 17.9) for females and 26.9 years (SD 17.6) (males). It was noted that groups with age below 30 years for both females and males were mostly affected. A high proportion of the male patients were in the age group of 21-30 (24.2%) while the female patients were in the age group between 11-20 years (20.7%). Atopic dermatitis were more in children while contact dermatitis was observed more among adults' patients, this could be due to work related exposure or self-treatment with various skin remedies. These groups represent workers and school age students who are prone to the risk factors such as nature of occupation, involving more in physical activities with risk for contact skin irritants.

Based on clinical diagnosis as revealed by the medical records, the patterns of skin diseases observed in this study comprised of 36.2% infectious dermatoses (Table 2). These findings show a higher percentage when compared to a study in Saudi Arabia where infectious dermatoses constituted 28.6% [16]. However, in India, Anand District infectious dermatoses were reported to be as low as 18.14% [17]. A previous study in Tanzania reported 30.4% for infectious dermatoses which is lower than what was obtained in this study [18]. Generally many other studies reported infectious dermatoses to account for almost one third of all skin disorders. The most prevalent five dermatological disorders included; bacteria skin infection (pyoderma) (19%), atopic dermatitis (15%), fungal infection (12%), *Acne vulgaris* (8.4%) and allergic contact dermatitis (8.4%) (Table 2). Pyoderma, atopic dermatitis, contact dermatitis, fungal and *Acne vulgaris* were also reported to be the most commonly encountered skin

diseases in previous studies conducted in Tanzania, Nigeria and India [18- 20].

Bacterial infection presented as cellulitis, impetigo, folliculitis, erythrasma and Dermatitis cruris pustulosa atrophicans (DCPA). Superficial fungal infection presented with candidiasis, *Tinea corporis*, *Tinea versicolor*, *Tinea capitis* and *Tinea unguium*. This was similar to what was reported in previous study done in Dar es Salaam [18]. Parasitic skin infection, scabies was found to occur as low as 3% among all total dermatoses (Table 2). This is in line with a previous study done in 10 years ago on children in a rural area of Tanzania [21]. The low prevalence of scabies could probably be due to improved housing conditions, decreased overcrowding especially at night and increased supply of clean water [22, 23].

Of all the top ten skin diseases we found that the distribution was significantly higher among females than males (44.8% vs.36.6%; $p=0.002$; Table 3). Females were more likely to contract skin disorders than males and this could probably be due to the fact that some skin problems are associated with the use of cosmetics products which is a common practice among females. Moreover, females tend to seek medical care about their skin than their males counterparts hence they attend OPD skin clinic in relatively high proportion. Atopic dermatitis and contact dermatitis were seen more in females than males while fungal infection were found more in male when compared to female. Pyoderma was predominant among the top ten skin diseases, a hot climate especially where hot humid atmosphere prevail can be a predisposing factor to development of the disease [24]. In Colombia, the prevalence of streptococcal pyoderma in children was reported to increase as the weather became hotter and more humid i.e 12.2% in the subtropical zone and 26.8% in the tropical zone [25].

A total of 2151 medicines were prescribed on 1020 prescription encounters studied. Steroids were the most prescribed medicines constituting 35.3% (760/2151) followed by antibiotics 23.4% (504/2151) and antifungal 13.4% (289/2151) (Table 4). Topical formulations prescribed medicines accounted for (56.3% (1210/2151), oral medications (41.2% (887/2151), and injectables 2.5% (54/2151). Similar trends were seen in studies done in India where topical route constituted 60.2% of prescribed medicines followed by oral route 38.1% and parental route 1.7% [26]. On the other hand Dutta et al. reported oral route and topical formulations to constitute 54.18%, and 45.82% respectively of all prescribed medicines [14].

However, irrational prescribing was noted in case of steroids whereby about 53.7 % (548/1020) of prescriptions contained a steroid. Steroids were prescribed mostly for atopic dermatitis 24.3% (133/548), contact dermatitis 14.1% (77/548) and non-specific dermatitis 8.8 % (48/548). Steroids were irrationally prescribed for several skin disorders including *Acne vulgaris* 2.4% (13/548), cellulitis 2.2% (12/548), and impetigo 1.1% (6/548). This needs an intervention precisely because, though topical steroids side effects are not taken seriously, they might bring up undesirable outcome [27].

The average number of medicines per encounter across health facilities surveyed in this study (Table 5) ranged from 1.9–2.5 with a mean of 2.11 (SD 0.64). The determined number of medicines per encounter was slightly higher when compared to both WHO value (1.6-1.8) and 1.8, a value obtained in the National Baseline Survey of 2002 [10, 28]. This performance is considerably good since the average number of the medicines prescribed around 2 is acceptable. The value obtained from this study is comparable to that which was obtained for Malawi [29] and better than 2.79 a value which was obtained for Uttarakhand, India [14]. However, Faith based health facilities had a slightly higher number of medicines per prescription e.g Hindu Mandal Hospital had a mean of 2.5 (SD=0.7) drugs per prescription 2.5(SD=0.7) compared to Temeke Regional Hospital, a public health facility, which had a mean of 2.0 drugs per prescription (SD=0.5). Despite the fact that faith based health facilities were also found to have a higher proportion of health workers who have attended training on Rational Use of Medicines (RUM) and own copies of STGs. The observed differences can possibly be attributed to financial incentives which increases pressure on prescribing.

The average percentage of medicines prescribed by generic name across all health facilities was 75% (Table 5). Similar findings were reported in a previous study done in Tanzania which explored prescribing practice for the top ten diseases including malaria, pneumonia, helminthes, dermatitis and urinary tract infections [30]. The WHO recommends 100% prescribing by generic names [31]. Generic prescribing measures cost effectiveness in health system whereby cheaper and affordable medicines are procured. Furthermore, the use of generic names, helps in drug identification and enable better information exchange between the health care providers.

This study has shown a better performance in generic prescribing when compared to other countries, Saudi Arabia (61.2%), Lesotho (35.6%), and a study done in India reported a very poor performance where all medicines were prescribed in brand name [14, 16, 32]. However, studies undertaken by the WHO in other countries reported generic prescribing levels as high as 82–93% [32]. The encounters with an antibiotic prescribed ranged from 31.4%–46.0%, with a mean of 38% and SD of 5.3%. This value was higher than WHO standards but lower than (42%) obtained in National Baseline Survey [28]. The prescriptions encountered with injectables constituted 5% (SD 3.9%) of all prescriptions, compared to WHO guidelines of 13- 24%. Again this study has indicated a better performance when compared to a study done in India where antibiotics and injectables encounter were 46.86% and 6.76% respectively [33]. The use of antibiotics in dermatology could be reduced if prescribers decrease the practice of prescribing fixed dose combinations of topical preparations which contain antibiotics, antifungal and steroids. This practice lead to irrational use of antibiotics, however, antibiotics could be prescribed in cases of eczematous conditions which may occur with bacterial and fungal as secondary infections. Irrational prescribing of

antibiotics is of great concern in view of the rampant global antimicrobial resistance [34].

The percentage of medicines prescribed from the EML ranged from 81%–90%, with a mean 85% (SD 3.7%). When the data is disaggregated by hospital, Morogoro Regional hospital had the best performance in this indicator amounting to 90% of all prescribed medicines. Temeke hospital was the lowest performer with 81% of the medicines prescribed from the EML.

This study also determined prescriptions which were abiding to STGs. The study has shown that 75% and 59.3% of the encountered prescriptions were in accordance with the STGs in public and faith based health facilities respectively (Table 6) with overall adherence of 68.7% ($P < 0.001$). The adherence was found to be significantly higher in Public Health facilities as compared to Faith based Health facilities. This observation differs from WHO report which showed that in developing countries, in primary care, less than 40% of patients in the public sector and 30% of patients in the private sector are treated in accordance with STGs [35]. The adherence to STGs in this study were better compared to a study on selected diseases conditions including pneumonia, diarrhea, candidiasis and hypertension done in Namibia, where an overall compliance were 26.2% using strict criteria and 55.1% using loose criteria [36]. Adherence to STGs in public health facilities in a previous study in Tanzania was slightly low (70.08%) compared to the findings of this study [37].

Furthermore, a total of 43 OPD prescribers were interviewed regarding availability and utilization of STGs. All studied health facilities were found to own at least a copy of STG. Of the 43 interviewed prescribers 33 (72%) reported to consult STGs during both prescribing and clinical case management. However, only 65% (28/43) of them had copies of STG on their working desks. However, in the faith based hospitals 80% (12/15) of prescribers had STGs on their working room/desks while only 57% (16/28); P -value 0.134) of the public health facilities had STGs. Prescribers and dispensers may from time to time

require to consult references to remind them some issues related to services they provide regarding diagnosis, dosage, regimens, indications and medicines interaction hence the need of this important document. This study recorded a better performance in this indicator when compared to a study in Nigeria whereby only 35% of the prescribers interviewed were found to have copies of STGs and 29.7% of them reported to use them regularly in their clinical practices [38].

The study also determined the availability of 15 key essential medicines in stock. The availability of essential medicines was found to range from 73.3 – 100% with an average of 84% (SD= 12 %). This is a good observation since the ability to prescribe medicine rationally is usually influenced by two important components including adequate supply of essential medicines and access to unbiased information about these medicines. The performance in this indicator was higher when compared to the overall average of 75% and 79% which was obtained in the National Baseline Study of 2002 and a previous study done in Tanzania [28, 39]. Since the capacity of Medical Store Department (MSD) to supply all essential medicines is not optimal, this improvement could be attributed to efforts of individual health facility to effectively utilize different available medicines financing options like Community Health Fund (CHF) and National Health Insurance Fund (NHIF) to acquire the essential medicines. Furthermore, the study determined the extent of continuing education for the prescribers as regard to RUM whereby only 35% of prescribers from both public and faith based health facilities had attended in service training on RUM. Results also show that prescribers attendance to RUM trainings was higher in faith based facilities (53%) compared to public health facilities (25%) even though the difference was not statistical significant. There is a need for providing continuing educational so as to enhance adherence to STGs and usage of EML especially for prescribers in resource limited countries like Tanzania.

Table1: Patients with Dermatological Disorders

Age group (years)	Female n=569	Male n= 451	Total
0.25 -10	104 (18.3%)	95 (21.1%)	199
11 - 20	118 (20.7%)	92 (20.4%)	210
21 - 30	114 (20.0%)	109 (24.2%)	223
31 - 40	100 (17.6%)	54 (12.0%)	154
41 - 50	67 (11.8%)	54 (12.0%)	121
51 - 60	36 (6.3%)	28 (6.2%)	64
61 - 70	21 (3.7%)	12 (2.7%)	33
71 - 80	9 (1.6%)	7 (1.6%)	16
Total	569 (100%)	451 (100%)	1020

Table 2: Distribution of skin disorders among outpatients in the health facilities

Dermatological disorders	No. of cases (n)	Percentage
Infectious disorders		
Fungal Infections	123	12.1
Bacterial infection (Pyoderma)	194	19
Viral Infection	21	2.1
Parasitic Infection (Scabies)	31	3.1
Total	369	36.3
Non Infectious dermatological disorders		
Acne vulgaris	86	8.4
Allergic conditions		
Atopic dermatitis	152	14.9
Allergic contact dermatitis	86	8.4
Nonspecific dermatitis	52	5.1
Seborrheic dermatitis	34	3.3
Total	410	40.1
Papulo squamous diseases		
Psoriasis	17	1.7
Pityriasis alba	8	0.8
Lichen planus	11	1.1
Lichen simplex chronicus	4	0.4
Total	40	4
Pigmentary disorders		
Vitiligo	35	3.4
Melasma	4	0.4
Leukoderma	8	0.8
Total	47	4.6
Itching conditions		
Urticaria	44	4.3
Pruritus	27	2.6
Pruritic papula eruptions	11	1.1
Prurigo nodularis	19	1.9
Allergic medicines reactions	9	0.9
Total	110	10.78
Miscellaneous		
Erythroderma	10	1
Photo dermatitis	3	0.3
Keloid Scar	25	2.5
Hemangioma	1	0.1
Erythema	4	0.4
Actinic cheilitis	1	0.1
Total	44	4.3

Table 3: Distribution of the top ten skin diseases by sex

SN		Female	Male	Total (%)
$X^2 = 26.88$ P-value 0.002				
1.	Bacterial skin infection	98 (9.6%)	96 (9.4%)	194 (19.0%)
2.	Atopic dermatitis	95 (9.3%)	57 (5.6%)	152 (14.9%)
3.	Fungal infection	57 (5.6%)	66 (6.5%)	123 (12.1%)
4.	Acne vulgaris	42 (4.1%)	44 (4.3%)	86 (8.4%)
5.	Allergic contact dermatitis	52 (5.1%)	34 (3.3%)	86 (8.4%)
6.	Nonspecific dermatitis	27 (2.6%)	25 (2.5%)	52 (5.1%)
7.	Urticaria	35 (3.4%)	9 (0.9%)	44 (4.3%)
8.	Vitiligo	24 (2.3%)	11 (1.1%)	35 (3.4%)
9.	Scabies	13 (1.3%)	18 (1.8%)	31 (3.1%)
10.	Pruritis	14 (1.3%)	13 (1.3%)	27(2.6%)
Total		457 (44.8%)	373 (36.6%)	830 (81.4%)

Table 4: Distribution of Various Drug Groups and Their Routes of Administration

SN	Type of Medicines Prescribed	Frequency (%)	Oral	Topical	Intra muscular
1.	Steroids	760 (35.3%)	100 (4.7%)	616 (28.6%)	44 (2.1%)
2.	Antibiotics	504 (23.4%)	293 (13.6%)	201 (9.3%)	10 (0.47%)
3.	Antifungal	289 (13.4%)	120 (5.6%)	169 (7.9%)	
4.	Antihistamines	178 (8.3%)	173 (8.0%)	5 (0.23%)	
5.	Keratolytics	165 (7.7%)	14 (0.65%)	151 (7.0%)	
6.	Others	255 (11.9%)	187 (8.7%)	68 (3.2%)	
7.	Total	2151 (100)	887 (41.2%)	1210 (56.3%)	54 (2.5%)

Others include; antiseptics, analgesics, vitamins, antiparasites, anti-viral, sunscreens and emollients

Table 5: Comparative Means of Core Medicine use Indicators in the studied Health Facilities

Indicators	Average no. medicines/en counter	% Medicines by generic name	% Antibiotic encounters	% Injections encounters	% Medicines Prescribed from EML	% of key indicator Medicines in stock
WHO standard values	1.6 – 1.8	100.0	20.0 –26.8	13.4-24.1	100.0	100
National baseline Survey 2002	1.8	82	42	14	98.5	87.3
Study average at 95% CI	2.11(2.0,2.3)	75 (68.6,79.7)	38(34,42.3)	5.0(2.1,7.6)	85 (82.4,87.9)	84(76.0,93.3)
Health Facility	Mean (SD)					
Temeke Regional Hospital	2.0 ± 0.5	77.8	36.8	1.5	81	73.3
St.Francis Referral Hospital	2.2 ± 0.6	76.0	39.2	4.9	84.4	100
Morogoro Regional Hospital	2.0 ± 0.7	77.0	31.4	10.8	90	80
Hindu Mandal Hospital	2.5 ± 0.7	62.8	36.8	6.4	82	73.3
Mawenzi Regional Hospital	1.9 ± 0.6	81.8	46.0	1.5	87.4	93.3
Maximum	2.5	81.8	46	10.8	90	100
Minimum	1.9	62.8	31.4	1.5	81	73.3

Table 6: Proportion of Patients Treated According to STG and Type of Health Facility

Facility	Adhered to STG		Not Adhered		Total
Faith Based Health facilities	242	(59.3%)	166	(40.7%)	408
Public Health facilities	459	(75%)	153	(25%)	612
Total	701	(68.7%)	319	(31.3%)	1020
$\chi^2 = 28.02$ P-value < 0.001					

CONCLUSION

This study found out that pyoderma, dermatitis/eczema, and superficial mycoses were the three most encountered skin diseases in the Dermatology Outpatient clinics of the studied referral hospitals. Prescribing practices were agreeable with WHO four (4) indicators, including; average number of medicines per prescription, prescribing from EML, percent of encounter with injectables and availability of key medicines in stocks. However, 3 indicators were not in accordance with the WHO guidelines and they included percent encounter with antibiotics, generic prescribing and percent availability of STGs among prescribers. From this study it is recommended that in service training on rational use of medicines especially antibiotics and steroids should be provided to both public and faith based prescribers. Also an intervention is necessary to enhance accessibility to STGs by improving their distribution. This will in turn improve prescribing practices and enhance effective management of the prevailing skin diseases at relatively lower costs.

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