

Dermoscopy Use in Africa: Determinants and Challenges

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ABSTRACT **Introduction:** Dermoscopy has evolved over the years beyond distinguishing benign pigmented lesions from melanoma to diagnosing virtually all diseases in dermatology. Overwhelming evidence demonstrates its utility in improving diagnostic accuracy, reducing unnecessary biopsies and lesion monitoring. Dermoscopy is widely used in Western nations, hence most descriptions of lesions in literature are predominantly on Fitzpatrick skin types I-III. Current evidence shows that there are unique dermoscopic features in the dark skin as a result of pigment and pathological reactions. Nationwide surveys and reports have been conducted across several continents to highlight prevalence and factors influencing dermoscopy use with the hope of maximizing its apparent benefits. There are currently no such reports from Africa.

Objectives: To evaluate dermoscopy use and its determinants among dermatologists in Africa.

Methods: A cross-sectional study. Online forms were e-mailed to individual practicing dermatologists and members of the African Society of Dermatologists and Venereologists.

Results: There were 196 respondents from 24 African countries. Half of them used dermoscopy. Training, practice settings and location, provision of dermatoscopes by institutions and knowledge of criteria were notable significant determinants. Multiple training exposures, knowledge of criteria, availability of dermatoscopes, use of both hand-held and videodermoscopes, average number of patients seen per day, and a positive outlook towards dermoscopy were significant determinants of frequency of use. Leading impediments were lack of training and inadequate dermatoscopes in practice.

Conclusions: Dermoscopy use in Africa is relatively low. Incorporating dermoscopy training into the curriculum with provision of dermatoscopes by training institutions will promote wider usage.

Introduction

There has been a rising global recognition of the utility of dermoscopy for diagnosis and management of skin diseases beyond neoplastic lesions in all skin types [1-5]. In addition to improving diagnostic accuracy of skin lesions thereby facilitating triage of skin lesions in primary care dermatology while reducing unnecessary biopsies, it also improves precision in determining the margins of excision and monitoring of lesions during treatment [6-8].

Dermoscopy is widely used in Western nations, hence most dermoscopic description of skin lesions in literature are predominantly in Fitzpatrick skin types I-III [9-14].

Current evidence shows that certain dermoscopic features may be specific to skin of color as a result of the role of pigment and reactionary effects due to inflammation [15, 16]. Additionally, several skin diseases are exclusively seen or commoner in the darker skin types. There are several dermoscopic descriptions of a wide variety of skin diseases in the fairer skin which has been streamlined by the standardization of terminologies for diagnostic criteria for specific dermatoses [7, 17-19]. There are however relatively few studies on dermoscopic features of skin lesions in the darker skin phenotypes [15,16, 20]. Until recently, there has not been standardized terminologies for the dermoscopy of skin lesions in skin of color [21,22]. However, in order to demonstrate the diagnostic utility of dermoscopy and formulate useful diagnostic criteria in darker skin types, many more studies from this population are needed.

The degree of usefulness of dermoscopy and the precision of dermoscopic criteria is dependent on appropriate use which in turn depends on proper training, use of standardized guidelines and appropriate reporting [9]. There are several articles on the use of dermoscopy among dermatologists in Europe, Australia, U.K, USA and Saudi Arabia [5,9-11,23-31]. There are currently no reports on dermoscopy use in Africa although a greater majority of persons with darker skin phenotypes live in Africa. This survey was carried out to evaluate the use of dermoscopy among practicing dermatologists in Africa, determine factors that predict its use and the drawbacks (if any) to the use of dermoscopy in Africa. It will serve as a

valuable groundwork for postulating why there are few reports from Africa and the findings can be used as a framework to enhance the use of dermoscopy in Africa.

Objectives

To evaluate the frequency of use of dermoscopy among African Dermatologists in their daily practice and to identify the determining factors, attitudes to use and also to highlight the obstacles to the use of dermoscopy among African dermatologists.

Methods

This was a cross sectional online survey conducted in Africa. Online forms were sent in person and through emails and/or WhatsApp posts to dermatologists practicing in Africa and members of the African Society of Dermatologists and Venereologists over a 3-month period.

Study Participants

Participants were recruited from the African society of Dermatologists and Venereologists (ASDV) and Dermatologic societies in Africa. Members were emailed through the ASDV and the Nigerian Association of Dermatologists (NAD) mailing list and WhatsApp group page. Snowballing method was also used to share the link to the online survey (through colleague dermatologists) with other dermatologists practicing in Africa in their contact list. Respondents comprised specialist dermatologists (consultants) and dermatology residents. Public health practitioners and pediatricians who were affiliates of ASDV and NAD and also provide dermatologic care also participated. Reminders were sent fortnightly throughout the study period. Approval for the study was obtained from the Anambra State Ministry of Health Ethics Committee, Awka and informed consent was obtained from all study participants.

Study Instrument

The online questionnaire was semi structured and designed using guidelines in the technique and use of dermoscopy

combined with other questions adapted from previous surveys on dermoscopy use [9,18, 19]. It had 31 multiple choice questions bordering on demographics, practice settings, dermoscopy training, availability of dermatoscopes, frequency of use, knowledge of indications for use, perceived diagnostic usefulness in skin of color; knowledge and use of techniques and dermoscopic criteria. It was originally designed in English language and was also translated to French.

Data Analysis

Data cleaning was done using Microsoft office Excel, version 2016 (Microsoft Corporation). Inadequate responses were removed from the data set. At the point of question on training, those without training were not allowed proceed with the rest of the survey, instead, they were directed to tell why they did not have training before submitting. All the respondents were classified as either user or non-users of dermoscopy. Users of dermoscopy were further classified into high frequency users (uses dermoscopy at least two times a week) and low frequency users (uses dermoscopy less than two times a week). Continuous variables (age, duration of practice and duration of training in dermoscopy) were summarized as mean and standard deviation; and then grouped into non-continuous variables. Non-continuous variables were summarized as frequency and percentages. Chi-square test for association (when expected cell count ≥ 5) or Fishers exact test (when expected cell count < 5) were used to check for associations between use of dermoscopy and sociodemographic and work variables; similarly, association between frequency of use and sociodemographic and work settings related variables were sought. Further analysis of interplay between the factors that influence use and frequency of use of dermoscopy was done using multinomial logistic regression statistics, employing the stepwise forward entry method. Predictors are given as adjusted odds ratios (AOR) with 95% confidence intervals (CI). In order to avoid over exaggerated odd ratios, categories of variables that were very few were removed from the models. A first model with several possible predictors was made; then, only the significant predictors from the first model were moved to a second model. All statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 25 (IBM Corp.). For all inferential statistical methods, the threshold for statistical significance was predetermined at a significance level of $p < 0.05$.

Results

Socio-demographics

A total of 196 respondents (155 dermatology specialists, 29 senior residents, 11 junior residents and 1 intern) from 24 countries completed the survey with a response

rate (proportion of respondents from the total number of dermatologists contacted through successfully delivered emails/posts) of 31.8% (Figure 1). A majority (72.4%) of the respondents were females with most practicing in public or government funded teaching Hospitals and in urban localities.

Determinants of Dermoscopy Use Among African Dermatologists

Half (50%) of the respondents used dermoscopy in their practice. The factors influencing the use of dermoscopy in practice settings included training in dermoscopy, country of practice, provision of dermatoscopes by training institutions and knowledge of dermoscopic criteria/guidelines for the diagnosis of skin diseases (Tables 1 and 2). Notably, only 32% of the respondent training centres provided dermatoscopes.

On multivariate analysis, practice settings and source of information about dermoscopy were significant predictors of use of dermoscopy. Public/government funded teaching hospitals (affiliated with universities) were more likely to use dermoscopy than public/government funded Federal Medical Centers (not affiliated with universities) with an odd ratio of 2.58 ($P = 0.02$). Those that heard about dermoscopy during residency training were more likely to use dermoscopy than those that heard it from conferences (odd ratio = 3.03 and $P = 0.01$); and from colleagues (odd ratio = 3.93 and $P = 0.03$). Put in a second model, practice setting was the only significant predictor with those in public/government funded teaching hospitals more likely to use dermoscopy than public/government funded federal medical centers, (odd ratio= 2.49; $P = 0.02$).

Frequency of Use of Dermoscopy

More than half (66.3%) of the individuals who used dermatoscopes were high frequency users (defined as using dermoscopy 2-3 times per week or every working day) while 33.7% were low frequency users (once in one or two weeks or rarely-less than once in two weeks). Provision of dermatoscopes by training centres ($P = 0.02$), average number of patients seen per day ($P = 0.002$), use of existing dermoscopic criteria to aid diagnosis of skin diseases ($P = 0.009$), a positive outlook towards dermoscopy with respect to dermatology practice ($P = 0.007$) and use of both hand-held and video dermatoscopes were significant determinants of frequency of use (Table 3).

On multivariate analysis, practice settings, current cadre, average number of patients seen daily, and number of training sessions were significant determinants of frequency of dermoscopy use. Those in Private Hospitals were less likely to be low frequency users than public/government funded teaching hospitals (odd ratio = 0.03, $P = 0.02$); Registrars/

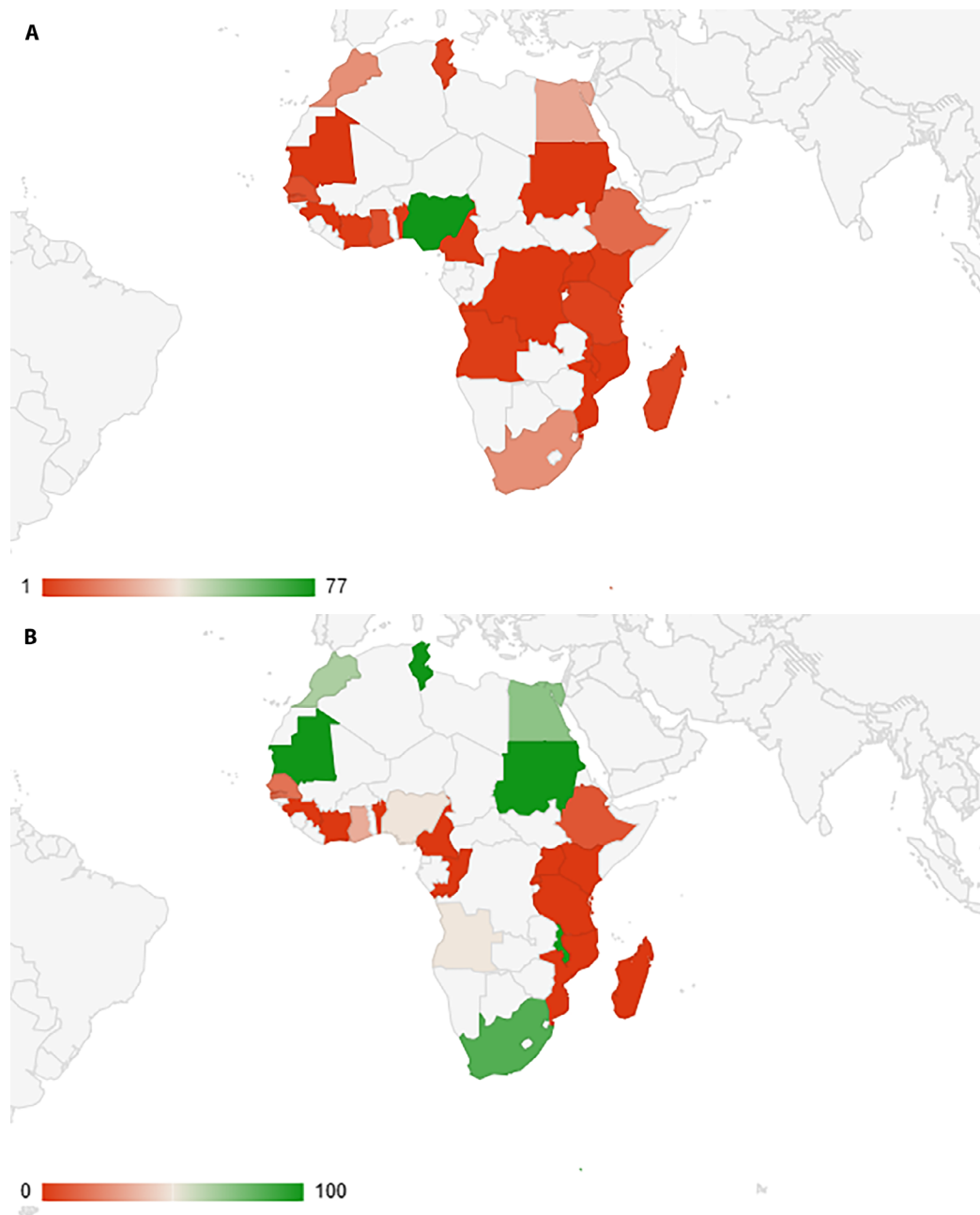


Figure 1: (A) Distribution of respondents by country of practice. (B) Distribution of users by country (percentage users)

residents were less likely to be low frequency users than specialists/consultants (odd ratio = 0.08, $P = 0.05$). Also, those that see <10 patients daily were more likely to be low frequency users than those seeing 21-50 patients (odd ratio = 41.53, $P = 0.01$), and those with <3 training were more likely to be low frequency users than those with ≥ 3 training (odd ratio = 5.05, $P = 0.05$). All variables significant in the first model remained significant in the second model.

Impediments to the Use of Dermoscopy Among African Dermatologists

Half (50%) of the respondents reported not using dermoscopy. Notable setbacks to the use of dermoscopy were lack of training, technical/expertise support and challenges with

interpretation of dermoscopic findings followed by unavailability of dermatoscopes (Figure 2).

A few of the respondents (5.6%) were not using dermoscopy in spite of having training. Reasons included: no access to a dermatoscopes (unable to buy personal ones) and lack of confidence in spite of training.

Dermoscopy Training

Some of the various training options by the respondents included hands on/on the job training, online/social media, conference, virtual, part of undergraduate/residency training and structured training (certification trainings). More than half of the respondents (52.6 %) had some form of training while 47.4% had no training at all. The most commonly

Table 1. Association between country of practice and use dermoscopy

Country of practice	Non-users N (%)	Users N (%)	Total N (%)
Nigeria	39(50.6)	38(49.4)	77(100)
Ethiopia	11(91.7) ^a	1(8.3)	12(100)
Ghana	4(66.7)	2(33.3)	6(100)
South Africa	3(15)	17(85) ^a	20(100)
Angola	1(50)	1(50)	2(100)
Tanzania	3(100)	0(0)	3(100)
Uganda	1(100)	0(0)	1(100)
Kenya	2(100)	0(0)	2(100)
Malawi	0(0)	1(100)	1(100)
Tunisia	0(0)	4(100) ^a	4(100)
Rwanda	1(100)	0(0)	1(100)
Mozambique	1(100)	0(0)	1(100)
Sudan	0(0)	1(100)	1(100)
Senegal	5(83.3)	1(16.7)	6(100)
Madagascar	4(100) ^a	0(0)	4(100)
Cameroun	2(100)	0(0)	2(100)
Guinea	1(100)	0(0)	1(100)
Benin	2(100)	0(0)	2(100)
Ivory coast	2(100)	0(0)	2(100)
Mauritania	0(0)	1(100)	1(100)
Egypt	7(28)	18(72) ^a	25(100)
Maroc	7(35)	13(65)	20(100)
Gambia	1(100)	0(0)	1(100)
Congo	1(100)	0(0)	1(100)
Total	98(50)	98(50)	196(100)
F(P value)	53.86(<0.01)		

^a indicates a strong likelihood that the country is either a user or non-user of dermoscopy depending on its specific placement.

reported mode of training was on the job training and hands-on training (Table 4). Reasons for not having dermoscopy training are highlighted in Figure 3. Determinants of training were country of practice ($P < 0.001$) and years of practice ($P = 0.04$). Interestingly, use and frequency of use of dermoscopy were significantly associated with the number of training activities undertaken (Table 5).

Awareness and Use of Guidelines and Techniques in Dermoscopy

A greater proportion (78.6%) of those who had training on dermoscopy were aware of the existence of dermoscopic criteria for skin diseases. While 55.3% use them always, 34% use them sometimes. Commonest reasons for use included ensuring uniformity of diagnosis and providing more confidence in diagnosis while the commonest reason for non-use was poor knowledge of and difficulty remembering different criteria.

Indications for Use of Dermoscopy and Perceived Usefulness of Dermoscopy

The common indications for the use of dermoscopy are mostly pigmented lesions and non-tumoral dermatoses as summarized in Figure 4. Majority (82.5%) of the respondents with training believed that the use of dermoscopy had improved their dermatologic practice, 10.7% did not think it improved their practice while 1.9% did not know if it did. Dermoscopy was considered most useful for diagnosis (91.6%), lesion monitoring (70.4%), treatment monitoring (61.4%), guidance for biopsy (60.2%) and considered least useful for patient education (1.2%) and hair transplantation (1.2%).

On the perception on the usefulness of dermoscopy, majority of the respondents (84.5%) believed that dermoscopy was comparable to clinical examination with the unaided eye and histopathology while 1.9% and 8.7% thought clinical examination and histopathology were superior to dermoscopy respectively.

Table 2. Association between sociodemographic and other variables and use of dermoscopy

		Non-users N (%)	Users N (%)	Total N (%)	X(P)
Practice setting	Public /government funded Teaching hospitals	54(55.1)	63(64.3)	117(59.7)	6.28(0.09)
	Public/ Government funded Federal Medical Centers	28(28.6)	14(14.3)	42(21.4)	
	Private hospital	11(11.2)	16(16.3)	27(13.8)	
	Private funded Teaching hospitals	5(5.1)	5(5.1)	10(5.1)	
Place of practice	Urban	78(79.6)	84(85.7)	162(82.7)	1.60(0.44)
	Semi-urban	16(16.3)	10(10.2)	26(13.3)	
	Rural	4(4.1)	4(4.1)	8(4.1)	
Gender	Male	31(31.6)	23(23.5)	54(27.6)	1.63(0.21)
	Female	67(68.4)	75(76.5)	142(72.4)	
Current Cadre	Intern	1(1)	0(0)	1(0.5)	2.11(0.54)
	Registrar/Junior resident	5(5.1)	6(6.1)	11(5.6)	
	Senior Registrar/Senior Resident	17(17.3)	12(12.2)	29(14.8)	
	Specialist/Consultant	75(76.5)	80(81.6)	155(79.1)	
Average number of patients seen in a day	<10	18(18.4)	13(13.3)	31(15.8)	1.44(0.69)
	10-20	55(56.1)	62(63.3)	117(59.7)	
	21-50	22(22.4)	21(21.4)	43(21.9)	
	51-100	3(3.1)	2(2)	5(2.6)	
How did you hear about dermoscopy?	No prior knowledge	3(3.1)	0(0)	3(1.5)	6.55(0.25)
	Residency training	51(52)	65(66.3)	116(59.2)	
	Conference	28(28.6)	22(22.4)	50(25.5)	
	Graduate certificate and MSc dermatology	2(2)	2(2)	4(2)	
	Colleagues	10(10.2)	6(6.1)	16(8.2)	
	Online	4(4.1)	3(3.1)	7(3.6)	
Are you aware of guidelines or techniques to the use of dermoscopy in dermatology?	Yes	1(1)	80(81.6)	81(41.3)	131.31(<0.01)
	No	97(99)	18(18.4)	115(58.7)	
Does your training center provide dermoscopes	Yes	0(0)	33(33.7)	33(16.8)	39.68(<0.01)
	No	98(100)	65(66.3)	163(83.2)	

Conclusions

This is the first report evaluating the use of dermoscopy and its determinants among dermatologists in Africa. The low response rate was comparable with those recorded in most of the studies on dermoscopy in the literature [5,11, 27,30].

Various nationwide surveys and pan-continental studies from other continents reported dermoscopy use ranging from 56.9 % to 98% [5, 9-11,23-26,28-31]. Despite widespread awareness of its dermatological utility, dermoscopy use was predictably lower (50%) than in Western societies. This observation aligns with the evolving role of dermoscopy in diagnosing skin conditions in individuals with

darker skin phototypes, a population largely represented in Africa [21,22,32,33]. Historically, dermoscopy had been used exclusively for distinguishing neoplastic lesions from pigmented and non-pigmented benign lesions in lighter skin phototypes [34]. These dermatoses were previously considered to be uncommon in skin of colour hence the erstwhile limitations to dermoscopy in the darker skin phototypes [21,22].

Secondly, dermatologic criteria for diagnosis of dermatosis in skin of colour have only recently been reported [21,22,32]. This may contribute to the limited use of dermoscopy in this region. Knowledge of dermatoscopic guidelines/criteria and techniques translates to confidence in

Table 3. Association between practice related factors and frequency of dermoscopy use

		Low frequency N (%)	High frequency N (%)	OR(CI)	P value
Average number of patients seen in a day	<10	9(69.2)	4(30.8)	5.71(1.61-20.34)	0.01
	10-20	22(35.5)	40(64.5)	0.75(0.29-1.91)	0.54
	21-50	2(9.5)	19(90.5)	0.15(0.03-0.71)	0.01
	51-100	0(0)	2(100)	0.37(0.01-8.12)	0.53
How did you hear about dermoscopy?	Residency training	27(41.5)	38(58.5)	3.19(1.16-8.80)	0.02
	Conference	3(13.6)	19(86.4)	0.24(0.06-0.88)	0.03
	Graduate certificate and MSc	1(50)	1(50)	2.00(0.12-33.02)	0.31
	Colleagues	1(16.7)	5(83.3)	0.37(0.04-3.34)	0.22
	Online	1(33.3)	2(66.7)	0.98(0.08-11.27)	0.98
Are you aware of guidelines or techniques to the use of dermoscopy in dermatology?	Yes	24(30)	56(70)	0.42(0.15-1.21)	0.11
	No	9(50)	9(50)	2.33(0.82(-6.60)	0.11
Does your training center provide dermoscopes	Yes	6(18.2)	27(81.8)	0.31(0.11-0.86)	0.02
	No	27(41.5)	38(58.5)	3.19(1.16-8.80)	0.02
Has the use of dermoscopy changed your management of dermatologic conditions in any way?	Yes	24(28.2)	61(71.8)	0.17(0.04-0.62)	0.01
	No	7(63.6)	4(36.4)	4.10(1.11-15.23)	0.01
	Don't know	2(100)	0(0)	10.39(0.48-223.07)	0.12
Do you use existing dermoscopic criteria in the diagnosis of skin diseases?	Yes	14(24.6)	43(75.4)	0.37(0.15-0.89)	0.02
	No	5(83.3)	1(16.7)	11.42(1.27-102.37)	0.02
	Sometimes	14(40)	21(60)	1.54(0.65-3.66)	0.32
What type of dermoscope do you use?	Hand-held/Handyscope	28(37.3)	47(62.7)	2.14(0.71-6.41)	0.17
	Videodermoscope	5(55.6)	4(44.4)	2.72(0.67-10.92)	0.15
	Both	0(0)	12(100)	0.06(0.01-1.11)	0.05
	Don't know	0(0)	2(100)	0.37(0.01-8.12)	0.53
Are you aware of any complications from the use of dermoscopes?	Yes	11(44)	14(56)	1.82(0.71-4.63)	0.21
	No	22(30.1)	51(69.9)	0.54(0.21-1.39)	0.21

CI = confidence interval; OR = odds ratio.

dermoscopic diagnosis and was found to be strongly associated with use in this study (Table 3) as was observed in some other studies [23,27]. Dermoscopy is now applicable across all skin types, including darker skin. Understanding its principles, methods, terminology, reporting, and criteria in diverse skin tones is crucial for its effective use, as highlighted by this study findings [21,22, 28, 30].

Undertaking training in dermoscopy, country of practice and certain practice settings (public/government funded teaching hospitals) significantly correlated with use in this study and was in consonance with findings from several studies [9, 11, 27, 29]. Lack of training as a major barrier to the use of dermoscopy among the respondents in our study was also consistently observed in several other studies [29,30 ,31,35]. There is compelling evidence from several studies that training is key in promoting the use of

dermoscopy [9,10,26-28]. Dermoscopy training in Africa was low when compared to the Western societies some with training rates as high as 98% [9,11,12,25].

While training was generally less prevalent in many sub-Saharan African countries, our study revealed that countries with higher dermoscopy training rates (Egypt, South Africa, and Tunisia) may have well-structured dermoscopy training integrated into their curriculum or established as a standard practice in dermatology. This is evident in the significant association found between these countries and dermoscopy training. This emphasizes the low dermoscopy use, primarily due to limited training in these countries. Dermoscopy recent recognition in diagnosing darker skin explains this [21,22]. Integrating dermoscopy training in African curricula, along with raising awareness and offering diverse training opportunities, will enhance dermatologists skills.

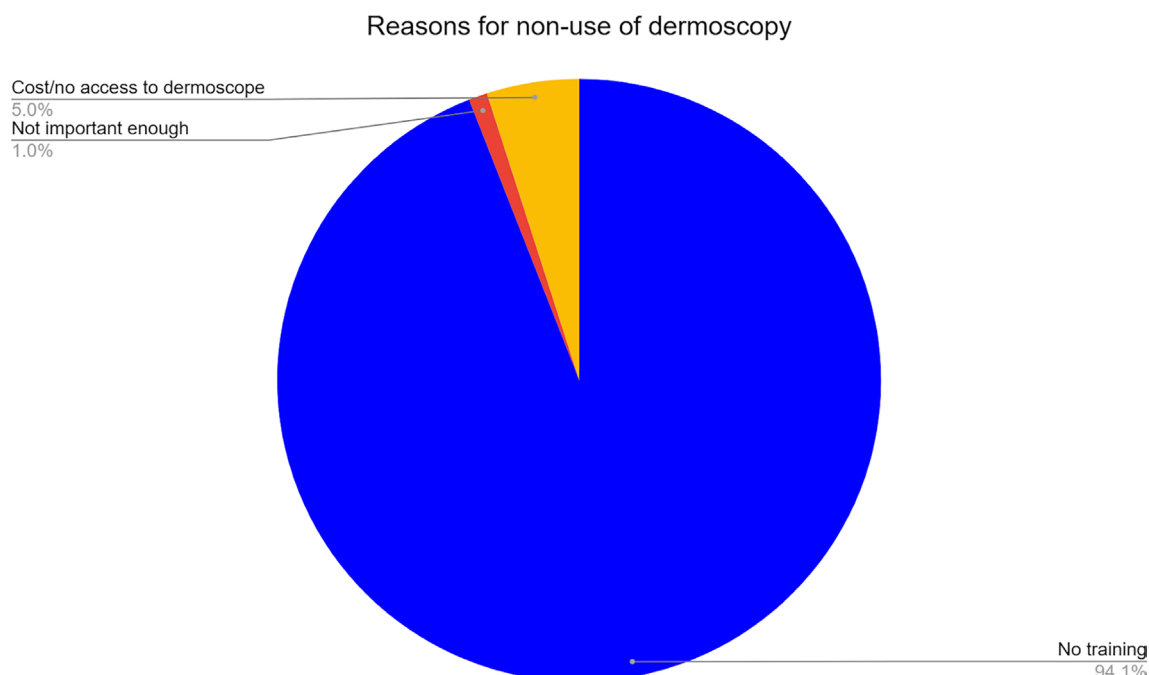


Figure 2. Reasons for not using dermoscopy

Table 4. Association between type of training and use or non-use of dermoscopy use

		Users versus non-users		
		Non-users N (%)	Users N (%)	Total N (%)
Kind of training received	On the job training	1(1.9)	52(98.1)	53(100)
	Hands-on	0(0)	53(100)	53(100)
	Virtual	0(0)	29(100)	29(100)
	Part of undergraduate/postgraduate training	4(9.8)	37(90.2)	41(100)
	Online/social media	0(0)	25(100)	25(100)
	Graduate certificate and MSc	0(0)	12(100)	12(100)
	Structured (certification) training	1(10)	9(90)	10(100)
	Conference/workshops	0(0)	6(100)	6(100)
	Chi-square(p-value)	13.79(0.05)		

The unavailability of dermatoscopes and the inability of training institutions to provide them posed significant challenges to dermoscopy use, contrary to findings in other studies where many respondents had access to dermatoscopes [5, 29]. In our study, the cost of dermatoscopes was also identified as a notable barrier, deviating from findings in other studies [9,36]. Unfortunately, dermatoscopes are not locally produced in most sub-Saharan African countries, leading to high costs due to shipping and import duties. Interestingly, an Australian study revealed that despite respondents not owning personal dermatoscopes, practice centers supplied most of the devices used [36].

Dermatologists in academic Public/Government-funded Teaching Hospitals were more inclined to use dermoscopy compared to non-academic Public/Government-funded

Federal Medical centers, which contrasts with findings in a French study [26]. This difference may be attributed to Teaching Hospitals involvement in dermatology research, academic programs, and residency training, which likely necessitate modern diagnostic methods like dermoscopy. Additionally, the availability of advanced medical equipment and referrals for complex cases requiring specialized diagnostic accuracy could drive the use of innovative diagnostic tools, including dermoscopy. Further studies are required to explore this observation.

In contrast to other studies that identified female gender, younger age, and years of experience as significant factors, our study did not find such associations [10,23, 27,30]. Nevertheless, our findings indicate that there are no gender or age constraints to dermoscopy use in our study population

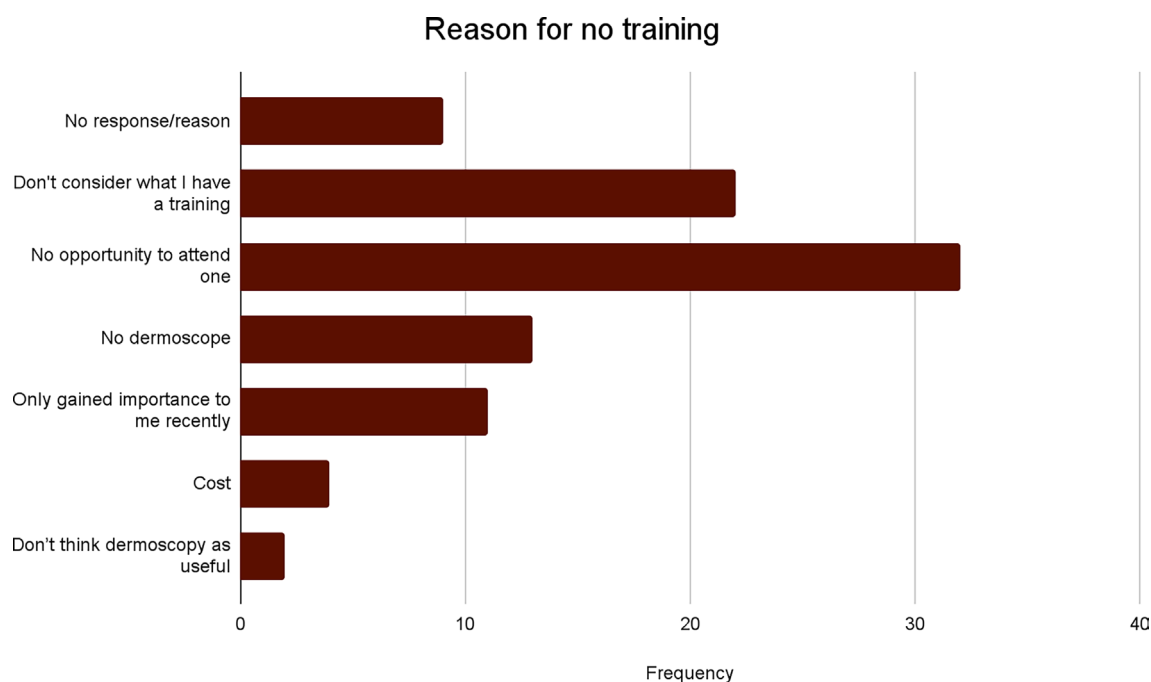


Figure 3. Reasons for not undergoing dermoscopy training

Table 5. Association between the number of training and practice of dermoscopy

Number of training		≥3	<3	OR(CI)	P value
Use	Non-users	0(0)	98(100)	0.01(<0.01-0.1)	<0.01
	Users	42(42.9)	56(57.1)	148(8.94-2454.56)	<0.01
How often do you use a dermoscope?	Never	0(0)	98(100)	0.01(<0.01-0.11)	<0.01
	Rarely (less than once in two weeks)	2(22.2)	7(77.8)	1.05(0.21-5.25)	0.95
	Sometimes (once in a week or two)	7(29.2)	17(70.8)	1.61(0.62-4.18)	0.32
	Often (2 or 3 times a week)	12(57.1)	9(42.9)	5.42(2.09-14.05)	<0.01
	Always (every working day)	21(47.7)	23(52.3)	5.69(2.69-12.05)	<0.01
Frequency among users only (N = 98)	Low frequency	9(27.3)	24(72.7)	0.36(0.14-0.90)	0.02
	High frequency	33(50.8)	32(49.2)	2.75(1.11-6.81)	0.02

CI = confidence interval; OR = odds ratio.

as was seen in one study, and further research is warranted to investigate the underlying reasons for this divergence [26].

Dermoscopy was more frequently utilized by respondents who had a higher patient load, had access to dermatoscopes, and held a positive view of dermoscopy diagnostic benefits while also adhering to diagnostic criteria. Dermatologists with a higher patient load are more likely to encounter diverse skin lesions, making dermoscopy a valuable diagnostic tool. Access to dermatoscopes and a positive view of its diagnostic utility, along with adhering to criteria, indicate

a better understanding and promote its frequent use. This mirrors previous research, showing a consistent trend in dermoscopy utilization [9,35].

An intriguing discovery was the higher dermoscopy usage among residents compared to specialists/consultants, possibly due to younger individuals greater adoption of digital technology. Residents are also more inclined to use diagnostic aids, unlike experienced specialists.

We observed that there was an increased use of dermoscopy by those who were exposed to frequent training

Places dermoscopy have been found useful

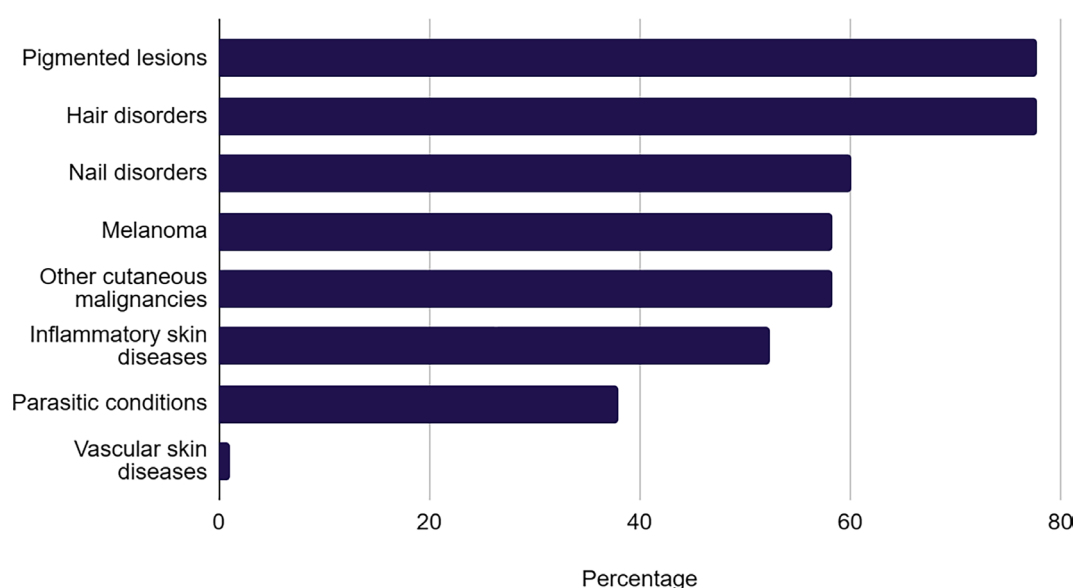


Figure 4. Indications for using dermoscopy

sessions which was not surprising as we felt that this translated to increasing confidence in the use of dermoscopy with more dermoscopy training exposures [26,27]. These findings also reiterate the key role of continuous standardized and structured training incorporating dermoscopic guidelines and criteria.

In contrast to several studies from other continents where dermoscopy is mainly used for distinguishing benign pigmented skin lesions from tumors, most of our respondents used dermoscopy for non-tumoral dermatoses (Figure 4) [23, 26, 31,36]. This is possibly due to the relatively lower incidence of skin tumors in darker skin types. Recent research, including our own, suggests an increasing trend in dermoscopy use for various conditions, like inflammatory and hair diseases, reflecting a growing awareness of dermoscopy utility in diagnosing non-tumoral skin diseases [5].

The underutilization of dermoscopy wide diagnostic potential, especially for vascular tumors, may be due to challenges visualizing blood vessels in darker skin due to pigment interference. This is exacerbated by the limited data and illustrations of dermoscopic characteristics in dark skin, as existing literature primarily focuses on features in lighter skin [15, 16,20].

This study limitations include potential responder bias from self-reported data in a voluntary online survey, possibly overestimating dermoscopy use and positive attitudes among specialists with specific interests or expertise in dermoscopy. Key factors such as training and familiarity with dermoscopic criteria may be more prevalent among participating dermatologists who actively seek knowledge and information about dermoscopy. To mitigate this bias, future research employing

random sampling and diverse representation of dermatologists from varied backgrounds and practice settings in Africa.

Dermoscopy is an evolving practice in Africa although its use is currently low. Challenges to its use include unavailability of dermatoscopes and lack of training. Provision of dermatoscopes in practice settings/institutions, promoting opportunities for training in dermoscopy in the dark skin, inclusion of dermoscopy training in dermatology training curricula and having dedicated workshops will improve dermoscopy use in Africa.

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