ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

DEPARTMENT OF DERMATOVENEREOLOGY

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS MELANOMA AMONG GENERAL PRACTITIONERS IN ETHIOPIA, 2025

BY: DR. DAWIT ALI (MD, DERMATOVENEOLOGY RESIDENT)

THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES SCHOOL OF MEDICINE DEPARTMENT OF DERMATOVENEREOLOGY AS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE SPECIALTY CERTIFICATE IN DERMATOVENEROLOGY

NOVEMBER 2025

ADDIS ABABA, ETHIOPIA

Addis Ababa University

College of Health Science

Department of Dermatovenereology

Assessment of Knowledge, Attitude and Practice regarding Melanoma among General Practitioners in Ethiopia,2025

By: - Dr. Dawit Ali (MD, Dermatovenereology Resident)

Advisor: -

Dr Tizita Yosef (MD, Dermatosurgeon, Assistant Professor of Dermatovenereology)

Dr Annisa Befekadu (MD, Associate Professor of Dermatovenereology)

Addis Ababa, Ethiopia

November 2025

THESIS SUBMISSION FORM

Name of the investigator	Dr. Dawit Ali (MD, Dermatovenereology Resident)
Name of advisors	Dr Tizita Yosef (MD, Dermatosurgeon, Assistant Professor of Dermatovenereology) Dr Annisa Befekadu (MD, Associate Professor of Dermatovenereology)
Full title of the research project	Assessment of Knowledge, Attitude and Practice towards Melanoma among General Practitioners in Ethiopia, 2025
Duration of the project	8 months
Study area	Ethiopia.
Total cost of the project	25,000
Address of investigator	Name: Dr Dawit Ali Phone: +251922741640

Declaration

Assurance of principal investigator I, the undersigned agree to accept responsibility for the scientific, ethical and technical conduct of the research project & for provision of required progress report as per terms and condition of the college of health sciences in effect at the time of grant is forwarded as the result of this application.

Name of principal investigator	Signature	Date
Dr Dawit Ali	_____	_____

Approval

This thesis proposal has been submitted with the approval of the university advisors

Name of the advisors	Signature	Date
Dr Tizita Yosef	_____	_____
Dr Annisa Befekadu	_____	_____

Acknowledgements

To begin with, I would like to give a special thanks to my Advisor Dr Tizita Yosef and Dr Annisa Befekadu who provided unconditioned assistance to me, offered positive guidance, constrictive remarks and never gave up. Besides, my warmest gratitude to Addis Ababa University College of Health Science, School of medicine, Department of Dermatovenereology that gave me a great opportunity to further this thesis. Lastly, I would like to thank my family.

Table of contents

List of acronyms

AAU:	Addis Ababa University
GP:	General Practitioners
KAP:	Knowledge Attitude and Practice
WHO:	World Health Organization

List of figures

List of tables

Abstract

Background: Melanoma is a highly malignant and aggressive skin cancer that occurs due to melanocytes. For 5 years (until 2022) in Ethiopia there were 255 cases and 117 deaths. The early diagnosis provides high chances of survival. Although healthcare professionals play an essential role in melanoma diagnosis, knowledge, attitude, and practice (KAP) have some significant gaps such as a lack of confidence in diagnostic instruments and insufficient training. Nevertheless, there is no extensive research on knowledge, attitudes, as well as practices of healthcare professionals particularly in low resource communities such as Ethiopia.

Objective: This paper among Assessment of Knowledge, Attitude and Practice towards **Melanoma among General Practitioners in Ethiopia, 2025.**

Methods: A cross-sectional study was done at the hospitals (N=233 selected General practitioners of july 2025 to october 2025 GC). A structured questionnaire based on various literature was used to measure Knowledge, Attitude and practice of GP. Thereafter SPSS version 27 software package was used to analyze the data. The descriptive summary statistics was calculated, the findings were illustrated with the help of texts, tables, and charts.

Result: Among the 237 GPs 233 of them responded, most were male (160, 68.7%) with a mean age of 29.51 ± 3 years. 187 (80.3%), had less than five years of work experience and 208 (89.3%) reported that they had not received any training related to performing a total body skin examination. While 154 (66.1%) demonstrated moderate knowledge of melanoma and 222 (95.3%) had a favorable attitude toward its diagnosis and treatment, 134 (57.5%) exhibited poor practice. There is positive correlation between years of professional experience and knowledge in our study. Male participants demonstrated significantly higher practice scores.

Conclusion:

This research found a significant gap in the positive attitudes and inadequacy of practical skills in caring of melanoma among general practitioners in Ethiopia. Whereas there was an average level of knowledge and a positive attitude was observed, more than half had poor clinical practice, which indicates a desperate need to increase training, especially on skin examination skills in order to achieve early detection and better patient outcomes.

Key words: Knowledge, Attitude, Practice, Pediatrics, Melanoma, Ethiopia

1 Introduction

1.1. Background

Melanoma is one of the most malignant forms of skin cancer, arising from melanocytes, the pigment-producing cells of the skin. It is not diagnosed in early stages and treated , it can rapidly metastasize to the lymphatic system and other organs. The incidence of melanoma has been increasing, particularly in regions with high levels of ultraviolet radiation exposure. (1).

The World Health Organization (WHO) estimated that approximately 330,000 new casesvof melanoma were diagnosed worldwide in 2022, with Africa accounting for 2.6% of the global burden. In the same year around 60,000 people dies due to melanoma. Over the last five years the incidence was more than one million melanoma cases worldwide, with Africa accounting 1.6% of these cases (2). In Ethiopia, 255 melanoma new cases and 117 melanoma-related deaths were reported, and the five-year prevalence was 563 cases (3). These results highlight the continuing increasing burden of melanoma in sub-saharan countries and emphasize the need for early detection systems and improved skin cancer management.

Early identification is the most important in enhancing patient outcomes. When treatment is at its early stage, surgical excision can be used and the cure rate is high. Diagnosed at an early stage, melanoma can be contained within the skin and even treated before it metastasizes. Conversely, metastatic melanoma is far less treatable, less curable, and requires more aggressive treatment in the form of chemotherapy, immunotherapy, or targeted treatments- treatment that are usually very side effect inducing. The death rates are significantly high when melanoma becomes advanced, which highlights the essence of early diagnosis (4).

The advanced staging of melanoma is also a common occurrence in Ethiopia, which leads to poor prognosis. It also has a great preference towards the foot. The nodular melanomas with deep vertical invasion being predominant indicates that it can be the result of the development of the previous lesion since most cases are detected at late stages (5).

The knowledge, attitudes, and practices about melanoma detection and prevention show significant gaps in healthcare professionals in most settings. Research has shown that in most cases general practitioners, nurse practitioners and medical students lack knowledge on the risk factors of

melanoma and the capacity to translate the knowledge into clinical practice. The problems are low confidence in the use of dermoscopy, insufficient performance of skin tests, and lack of melanoma recognition training. Lack of understanding of key risk factors, including birthmarks, blistering sunburns, etc., are other obstacles to effective prevention and early detection (6,7).

To fill these gaps, a number of suggestions have been put forward: medical education on melanoma should be made a part of medical programs in universities, medical staff should be given special training, patient education should be made more effective, and national guidelines on screening should be developed. Such measures are set to enhance early diagnosis, referral trends and preventive measures, which eventually limit morbidity and mortality due to melanoma (8). Through several studies conducted, evidence exists that training programs are more effective in improving the melanoma diagnostic skills of healthcare workers. These improvements however require repeated or refresher training in order to maintain. Nonetheless, the best training format and frequency are yet to be agreed upon, which points to the necessity of conducting additional research on the topic of continuous professional development in melanoma detection (9,10).

Although melanoma is of public health significance, little evidence has been done regarding the knowledge, attitudes, and practices of the healthcare professional, particularly resource-constrained environments. The available literature is usually small-scale and may include a specific population, including general practitioners or medical students, which subjects it to the risk of generalizability. Having such a gap, it is necessary to conduct more extensive and thorough research to realize the current obstacles and give effective strategies to enhance melanoma detection and prevention (11).

The proposed study will critically evaluate the knowledge, attitudes, and practices of medical practitioners in relation to the detection and prevention of melanoma. It attempts to fill the gaps in the literature by assessing these variables in a broad sample of healthcare providers. The study will recognize areas of knowledge gaps that can impede the need to adopt an effective clinical practice by investigating the awareness of melanoma risk factors, early symptoms, and diagnostic methods. It will also determine the attitude of healthcare professionals towards the prevention of melanoma and the degree of their confidence in diagnostic methods, like dermoscopy. This will help in getting to know what drives clinical behavior and making decisions (12).

The second goal of the study is to assess the real practice of melanoma prevention measures, such as the frequency of skin examination, what patients can do to educate themselves, and their referral behaviours when having suspicious lesions. The findings will inform future research by establishing obstacles to knowledge translation into practice to formulate specific training interventions and policy interventions that will help increase the timely detection of melanoma, shorten the time to diagnosis, and ultimately improve morbidity and mortality associated with this condition (13).

1.2 Statement of the problem

Melanoma, which is the deadliest type of skin cancer must be detected early and managed properly to have improved patient outcome. Although health professionals are highly crucial in timely diagnosis and treatment of melanoma, there is a worrying gap in the knowledge, attitudes, and practices (KAP) involving this disease. Studies have indicated that in non-specialist doctors, overall knowledge about clinical presentation of melanoma, limited training on diagnostic methods, such as total body skin examination, and dermoscopy and weak patient education on risk reduction and self-inspection are mostly lacking. The result of this gap in knowledge may be insufficiently quick diagnostics, ineffective management approaches, and eventually, negative patient outcomes. Also, the attitudes towards melanoma screening and management are diverse among health professionals that may affect their practice behaviors. Research shows that very few physicians believe in applying diagnostic instruments or educate patients on preventive measures. Hence, the KAP of healthcare professionals on melanoma requires an immediate evaluation and improvement to increase the rates of early detection and treatment opportunities and minimize the rates of mortality. The research is set to examine the present situation of KAP in the health profession, identify the gaps, and ensure that specific educational and training interventions can enhance the early detection and patient outcomes.

1.3 Significance of the study

In Ethiopia where the awareness of melanoma may be low this study is vital as: Early Detection: To increase the skills of the health professionals in the detection of melanoma at its initial stages, which will result in higher survival rates of patients.

- Educational Improvement: Findings out the knowledge and attitude gaps to initiate training and continuing education programs.
- Policy Influence: A guide to resource allocation and policymaking to manage skin cancer.
- Global Impact: Making a contribution toward the global knowledge of melanoma, in a wide variety of settings.
- Professional Empowerment: Giving knowledge powers to healthcare workers, hence improving the quality of patient care.

The intended impact of this research is to directly affect healthcare practices, education, policy change within Ethiopia, which will ultimately have an effect on the population health through lessening the effects of melanoma.

2. Literature Review

Despite the crucial role of healthcare professionals in detecting and managing melanoma, few studies have examined their knowledge, attitudes, and practices (KAP) regarding this cancer. Although melanoma is less common than other skin diseases, it is associated with substantial morbidity and mortality, particularly when diagnosed at advanced stages. Assessing healthcare professionals' knowledge and attitudes is essential for identifying service gaps and guiding interventions to improve early detection and optimize patient outcomes.

A study in Sri Lanka reported significant disparities in KAP among non-specialist physicians concerning melanoma. Only 3.3% of participants correctly identified all types of melanoma, while 80.5% could not name any. Almost all respondents (117, 95.2%) lacked confidence in using a dermoscope, and only 89.4% had never ever performed a total-body skin examination. Referral practices were poor; 85.4% had not referred any patients with suspicious lesions in the previous year, and awareness of self-skin examination was minimal (18)**.** The study recommended initiatives to strengthen diagnostic capabilities with dermoscopy, integrate total-body skin examinations, provide undergraduate education on melanoma, establish national screening policies, and enhance patient education with lower thresholds for specialist referral.

Quinlan et al. (2020) evaluated secondarycare health professionals (radiographers, physiotherapists and occupational therapists) KAP regarding melanoma detection. While all participants routinely observed patients' skin, 76% identified lesions, yet 44% offered no advice and only 27% recommended referral to a general practitioner. Only 8% had received melanoma-related education during undergraduate training, and 16% during postgraduate training, although 95% expressed interest in further education. Confidence in discussing melanoma-related topics was moderate; 58% felt comfortable advising on sun protection, but only 34% felt confident discussing skin cancer awareness. An educational webinar was subsequently delivered, and participants reported positive feedback regarding its relevance and practical applicability. The study highlights the potential of secondary care professionals in early melanoma detection and the critical need for educational interventions to enhance knowledge, confidence, and practices (19)**.**

Furfaro et al. (2008) assessed nurse practitioners in Illinois and California regarding melanoma knowledge and practices. While overall knowledge was adequate (average 80%), routine skin and melanoma-specific assessments were performed only 46% and 30% of the time, respectively. Patient education on prevention and risk factors was infrequent, with time constraints cited as the main barrier (80% in Illinois, 60% in California). Despite higher knowledge scores among California NPs, Illinois NPs conducted more routine skin assessments. The study emphasizes the need for improved education and training, recommending integration of melanoma content into advanced practice programs and expanded access to continuing education (20)**.**

A systematic review by Nahar et al. (2018) analyzed 21 studies on KAP regarding skin cancer among medical students. Knowledge of melanoma risk factors and prevention ranged from moderate to high, with senior students demonstrating better awareness. However, gaps remained; only 8.4% of students correctly identified the ABCD criteria. While over 90% recognized the importance of sun protection, fewer than 43% regularly used sunscreen, and only 17% performed adequate self-skin examinations. Many students underestimated melanoma's severity compared to other cancers, which negatively influenced preventive behaviors. The review highlights the need for targeted educational strategies within medical curricula to improve melanoma knowledge and preventive practices among future healthcare professionals (21)**.**

Jacob and Jayakumari (2022) evaluated KAP regarding melanoma among 109 pharmacy students (52 Pharm.D., 57 M.Pharm). Most participants recognized the increasing incidence of melanoma (91.2% Pharm.D., 80.8% M.Pharm) and identified key risk factors such as ultraviolet exposure and family history (100% M.Pharm, 92.2% Pharm.D.). Awareness of symptoms was high (100% Pharm.D., 96.2% M.Pharm). Positive attitudes were observed, with nearly all students acknowledging melanoma as a deadly cancer and advising patients on sunscreen use. However, 28.8% of M.Pharm students reported they might attempt to treat melanoma themselves. The study highlights the need for interventions and awareness campaigns to enhance KAP among health professionals (17)**.**

Arouch and Elboim-Gabyzon (2024) investigated the role of physical therapists in early melanoma detection among 254 participants. While 75.2% recognized melanoma detection as part of their professional responsibilities, 59.1% reported minimal knowledge in identifying suspicious lesions,

and 77.2% were unfamiliar with the ABCDE detection tool. Despite these gaps, 94.1% expressed willingness to improve their knowledge. Only 44.1% had referred patients for dermatological evaluation, with referral rates positively correlated with professional experience ($p < 0.001$). The study highlights the need to integrate melanoma detection training into physical therapy education to enhance early detection efforts (16).

Göl and Erkin (2018) evaluated primary care physicians' knowledge and practices regarding skin cancer and self-skin examination in Turkey. Although participants were knowledgeable about skin cancer symptoms, their understanding of risk factors, such as congenital birthmarks and prior sunburns, was limited. Only 38.57% reported knowing how to perform self-skin examinations, and 32.86% actively performed them, with 61.7% citing uncertainty about what to examine. Furthermore, 85.71% had received no postgraduate training on self-skin examination. The study emphasizes the importance of educational interventions to bridge gaps between knowledge and practice and improve patient education and early detection (14).

A cross-sectional study in Tehran, Iran, assessed KAP regarding skin cancer among patients, medical students, and general practitioners. Among healthcare professionals, 90.7% demonstrated good knowledge, 31.3% had positive attitudes, but only 22.7% reported good preventive practices, with 56.4% achieving overall adequate KAP scores. Despite high knowledge and positive attitudes, preventive behaviors such as sunscreen use were low, highlighting a disconnect between knowledge and practice. Positive correlations between knowledge, attitudes, and practices were observed, but targeted interventions are needed to translate knowledge into consistent preventive action (15).

3. Objective

3.1. General objective

- To Assess Knowledge, Attitude and Practice towards Melanoma among General Practitioners in Ethiopia, 2025

3.2. Specific objectives

- To assess knowledge of GPs towards Melanoma risk factors, signs, and symptoms among General practitioners in Ethiopia
- To evaluate the attitudes of GPs toward melanoma screening and prevention practices, including their perceived importance of early detection.
- To investigate the current practices of General practitioners in conducting skin examinations and referring patients for suspected melanoma cases.

4. Method and Materials

4.1. Study area

4.2. Study design and period

The cross-sectional study was carried out between july 2025 to october 2025 GC.

4.3. Population

4.3.1. Source population.

All GPs in the health centers and hospitals within Ethiopia.

4.3.2. Study population

All the General practitioners in health centers and Hospitals in Ethiopia. From May 2025 to August 2025.

4.4. Inclusion and exclusion criteria

4.4.1 Inclusion criteria

Peds GPs willing to take part in health centers and hospitals all in Ethiopia.

4.4.2 Exclusion criteria

- Pediatrics residents
  - Who was not here last month on the date of data collection.
  - Those who were not willing to participate.
  - Those cases that were on sick leave during the time of data collection.
  - Those not working at the time of information collection were on the maternity leave.

4.5 Sample size calculation

A sample size of the eligible participants required in the study was calculated using a single population proportion formula.

Formula: $n=\frac{(z\alpha/2)^2 xp(1-p)}{d2}$

Where: n = the desired sample size

P= 50% (as the prevalence of knowledge of pediatricians about oral health in our setup is unknown)

d =5% (maximum margin of error the researcher is willing to allow)

Z =1.96 (standard normal deviation value corresponding to 95% confidence level)

n= (1.64)2*0.50(1-0.50) =271

(0.05)2

= (1.645)2 x 0.5 x (1-0.5) / 0.05^2= 271

Adjust for finite population size 1000 and Considering 10% non-respondent rate

Total sample size is N= 237

Data was collected using convenient sampling method.

4.6 Sampling Technique

- In this study consecutive/ enumerating technique was used to select the study participants

4.7 Data collection methods and producer

Structured questionnaire was used to get the data out of GPs and informed permission was taken. The questionnaire was based on the different literature with minor modification. It consisted of four parts. The first section was demographic basic information. The second section had 18 multiple choice questions that tested the knowledge of the participants. The third section used 8 questions to evaluate the attitude of GPs to the melanoma screening and prevention practice, the importance of early detection importance as the answers to questions included as agree, uncertain and do not agree. The fourth section includes 5 questions to determine practice among participants. All of the questions were in English and it will be sent to Gps through online Convenience sampling and they were doing it on spot.

4.8. Data processing and analysis

Upon the collection of the data it was keyed using Google form, each filled form was verified complete and then imported to the SPSS version 27 to undergo the analysis. The findings were provided in the form of descriptive statistics summary: frequencies, proportions, the mean, and standard deviation.

4.9. Study Variables

4.9.1. Outcome variable

- Knowledge, Attitude and practice

4.9.2. Explanatory variables

- Age
- Sex
- Work experience Year
- Training

4.10. Operational Definition

Scoring criteria (cut-off points of a good scoring system by Bloom: good ([?]80%), moderate (60-79%), and poor (<60%):

Good Knowledge - Respondents with a score above or equal to the mean score (80%) of knowledge related questions.

Moderate knowledge - The respondents with a mean score (60) or above and below mean score (79) in the knowledge related questions mean score.

Poor knowledge -The respondents with the low score of knowledge questions of below-mean score (60%).

Favorable attitude - The respondents whose attitude score was more or equal to the mean score (60%) of the questions in the category.

Unfavorable attitude - Respondents who have scores below the mean score (60%) of the attitude related questions.

Good practice - Respondents scoring higher or equal to mean score (80%) of practice related questions.

Moderate practice- Respondents who have above or equal mean score (60%) of the practice related questions but below the mean score (79%).

Poor practice - The respondents who scored lower than mean score (60%) of practice related questions.

4.11. Ethical consideration

A committee of Ethical clearance and official letter from the Department of Research and Publication Committee of Addis Ababa university, Department of Dermatovenereology was received. Verbal consent of each GPs was taken after securing the permission of the hospitals to take part in the study. The data collection was anonymous that does not involve names of individual participant and any other personal identifiers and confidentiality was ensured at every level of the study and the stored information was held in a secured location.

4.12 Dissemination of the result

The study findings will be tabulated and sent to Addis Ababa University, College of medicine and Health Sciences department of Department of Dermato-venereology. The abstract of the study will be submitted to the bodies with interest and the summary of the thesis would be sent to the international or national peer reviewed journal to get published.

5 Result

5.1 Sociodemographic characteristics of Study population

A total of 233 general practitioners (GPs) responded to our questionnaire. More than two-thirds, 160 (68.7%), were male, while females accounted for 73 (31.3%). The mean age of the participants was 29.51 ± 3 years, and nearly three-fourths, 173 (74.2%), were 30 years of age or younger.

In terms of professional experience, most GPs, 187 (80.3%), had less than five years of work experience. Only a small proportion had longer experience, including 43 (18.5%) with 5–10 years, 1 (0.4%) with 11–20 years, and 2 (0.9%) with more than 20 years.

Regarding training, most GPs, 208 (89.3%), reported that they had not received any training related to performing a total body skin examination, while only 25 (10.7%) had received such training. The socio-demographic characteristics of the study population is shown in table 1.

Table 1: Socio-demographic characteristics study population 2025.

Demographic variables		**Frequency**	**Percent**
Gender	Male	160	68.7
	Female	73	31.3
	Total	233	100.0
Age	≤ 30 Years	173	74.2
	> 30 Years	60	25.8
	Total	233	100.0
Professional years of Experience	< 5 years	187	80.3
	> 20 years	2	0.9
	11-20 years	1	0.4
	5-10 years	43	18.5
	Total	233	100.0
Received Training	No	208	89.3
	Yes	25	10.7
	Total	233	100.0

5.2Knowledge, attitude, and practice to wards Melanoma

5.2.1 Knowledge

Knowledge about melanoma was assessed using an 18-item questionnaire, and overall knowledge levels were categorized based on Bloom's cut-off points: good (≥80%), moderate (60–79%), and poor (<60%). In this study, the mean knowledge score of participants was 11.36 ± 2.09. The findings showed only 3.9% of respondents demonstrated good knowledge, 66.1% demonstrated moderate knowledge, and 30% had poor knowledge level regarding melanoma (Fig. 1)

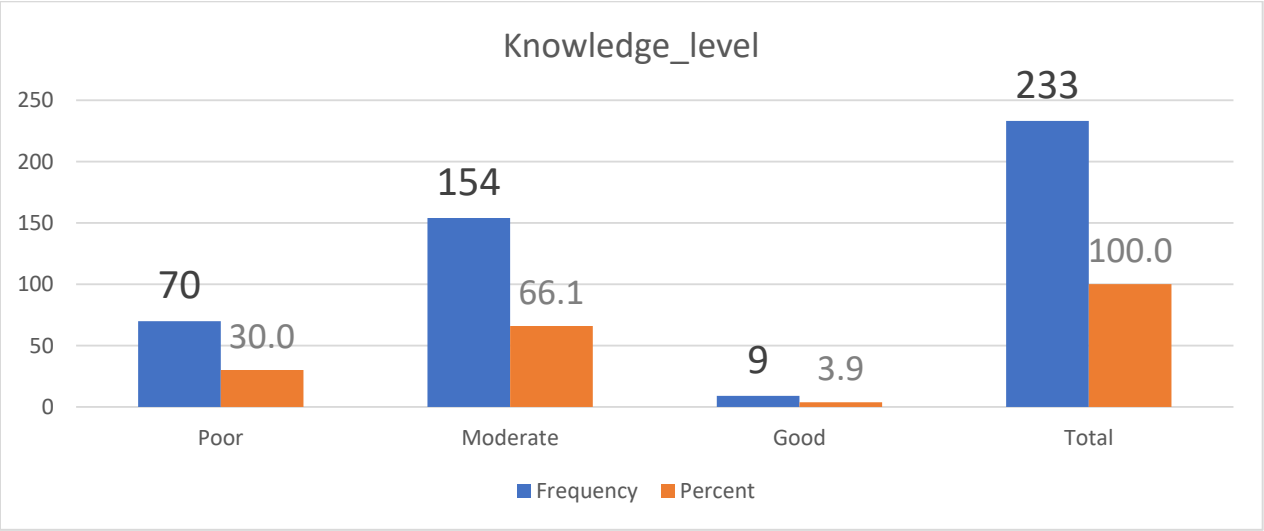

Fig 1 knowledge level of GPs towards Melanoma, 2025

Participants' responses to the 18 melanoma knowledge questions revealed substantial variability in item-specific understanding. Very low awareness was observed regarding established risk factors for melanoma, with only 6.9% answering correctly identifying all the risk factors. Knowledge was also limited on the most common melanoma type in individuals with skin color, where only 32.2% responded correctly, and on the visceral metastasis site, with 44.2% answering accurately.

In contrast, participants showed excellent knowledge in several key areas. High proportions correctly identified the ABCDE criteria for melanoma (92.3%), suspicious nail pigmentation characteristics (88.8%), and the fact that melanomas can occur on palms, soles, and subungual sites (87.6%). Similarly, 82.0% recognized common early signs of melanoma, and 82.8% correctly identified typical diagnostic tendencies in individuals with skin of color.

Performance on image-based recognition tasks was mixed. While 76.0%, 83.7%, and 69.1% correctly recognized melanoma in some images (items 13, 15, and 16 respectively), accuracy dropped markedly for others. Only 32.6%, 37.8%, and 49.8% correctly identified the lesions as 14, 17, and 18. (Table 2)

Table 2 knowledge questions of the response towards melanoma, 2025

Knowledge question Melanoma	**Answered**	
	Correctly %	Incorrectly %
1 Which of the following is a known risk factor for melanoma?	6.9	93.1
2 Which skin type is most at risk of developing melanoma?	68.7	31.3
3: Which type of melanoma is most common in skin color?	32.2	67.8
4: What is the most likely site for initial metastasis in melanoma?	63.1	36.9
5: Which of the following is a common early sign of melanoma?	82.0	18.0
6: What is the ABCDE criteria for identifying melanoma?	92.3	7.7
7: Which of the following symptoms might indicate an advanced melanoma?	60.9	39.1
8: A diagnosis of a lesion suspicious for melanoma can be made with?	78.5	21.5
9: What is the most likely site for visceral metastasis in melanoma?	44.2	55.8
10: Some type of melanomas can occur on the palms, soles and subungual areas?	87.6	12.4
11: Melanoma in skin of color is usually diagnosed?	82.8	17.2
12: Which characteristics of the pigmented band on the nail is suspicious of melanoma?	88.8	11.2
13 : Is this lesion suspicious for melanoma? Picture	76.0	24.0
14: Is this lesion suspicious for melanoma? Picture	32.6	67.4
15: Is this lesion suspicious for melanoma? Picture	83.7	16.3
16: Is this lesion suspicious for melanoma? Picture	69.1	30.9
17: Is this lesion suspicious for melanoma? Picture	37.8	62.2
18: Is this lesion suspicious for melanoma? Picture	49.8	50.2

5.2.2 Attitude

Attitude towards melanoma diagnosis and treatment were assessed using an 8-item questionnaire, and overall Attitude levels were categorized based on modified Bloom's cut-off points: Favorable (≥ 60%), and unfavorable (<60%) attitude. In this study, the mean attitude score of participants was 31.01 ± 4.58. The findings further showed that most of the respondents, 222 (95.3%), had favorable attitude about melanoma diagnosis and treatment (Fig 2)

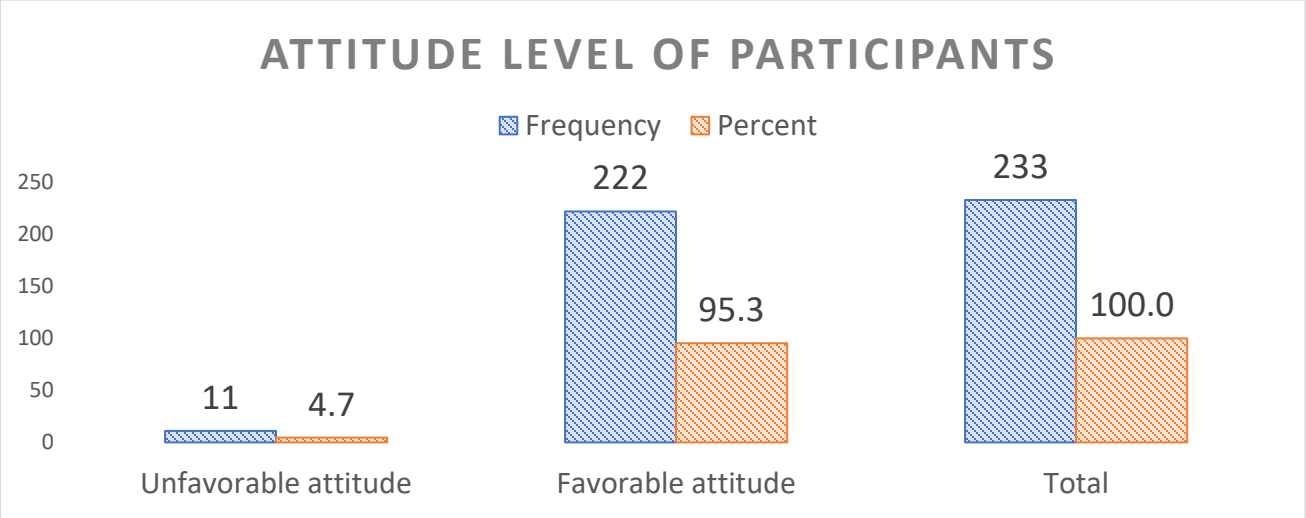

Fig 2 attitude level of participants towards melanoma diagnosis and treatment, 2025

Only a small proportion of participants felt confident in diagnosing melanoma, with just 39.5% agreeing or strongly agreeing, while a notable share, 33.5% disagreed.

Support for routine melanoma screening was strong, with 70.0% agreeing or strongly agreeing that screening should be part of patient care even in individuals with skin of color. Nearly all participants acknowledged the importance of early detection, with 91.0% agreeing or strongly agreeing that early diagnosis improves patient outcomes.

When asked whether training on skin cancer should emphasize dark skin types, responses were mixed: 40.8% agreed or strongly agreed, 36.4% disagreed, and 22.7% remained neutral.

Participants expressed a clear interest in additional skill development. The majority 90.5% agreed or strongly agreed that they would benefit from more training on total skin examinations, and 86.7% indicated they would attend a training program on performing total body examinations and identifying suspicious lesions.

There was also strong endorsement for patient education, with 94.4% agreeing or strongly agreeing that teaching patients about skin self-examination is important.

However, misconceptions persist: 70.8% agreed or strongly agreed with the incorrect belief that darker skin provides full protection against melanoma.

Table 3 Attitude questions of the response towards melanoma, 2025

Attitude Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1: I feel confident in clinically diagnosing melanoma	7.7	25.8	27.0	34.3	5.2
2: Melanoma screening should be a routine part of patient care, even in skin of color.	3.0	7.7	19.3	46.8	23.2
3 : Early detection of melanoma is important for improving patient outcomes	5.6	0.9	2.6	27.5	63.5
4: Training on skin cancer should be on dark skinned types.	9.4	27.0	22.7	25.8	15.0
5: I would benefit from additional training on total body skin examinations.	3.0	2.1	4.3	40.3	50.2
6: Educating patients about skin self-examination is important.	3.4	0.4	1.7	42.9	51.5
7: I would attend a training program on performing a total body examination and identifying suspicious skin lesions	3.9	3.4	6.0	42.9	43.8
8: I believe darker skin offers full protection against melanoma.	5.6	9.4	14.2	45.5	25.3

5.2.3 Practice

Regarding practices related to melanoma diagnosis, five questions were designed to assess participant's practice. Good practice was for participants who answered above Scores of 80% or higher, moderate (60–79%), and poor (<60%).

In this study, the mean practices score of participants was 7.42 ± 1.43 and more than half of the participants, 134 (57.5%), demonstrated a poor practice about melanoma whereas more than one third 84(36.1%) had moderate and only 15(6.4%) had good practice level (Fig. 3)

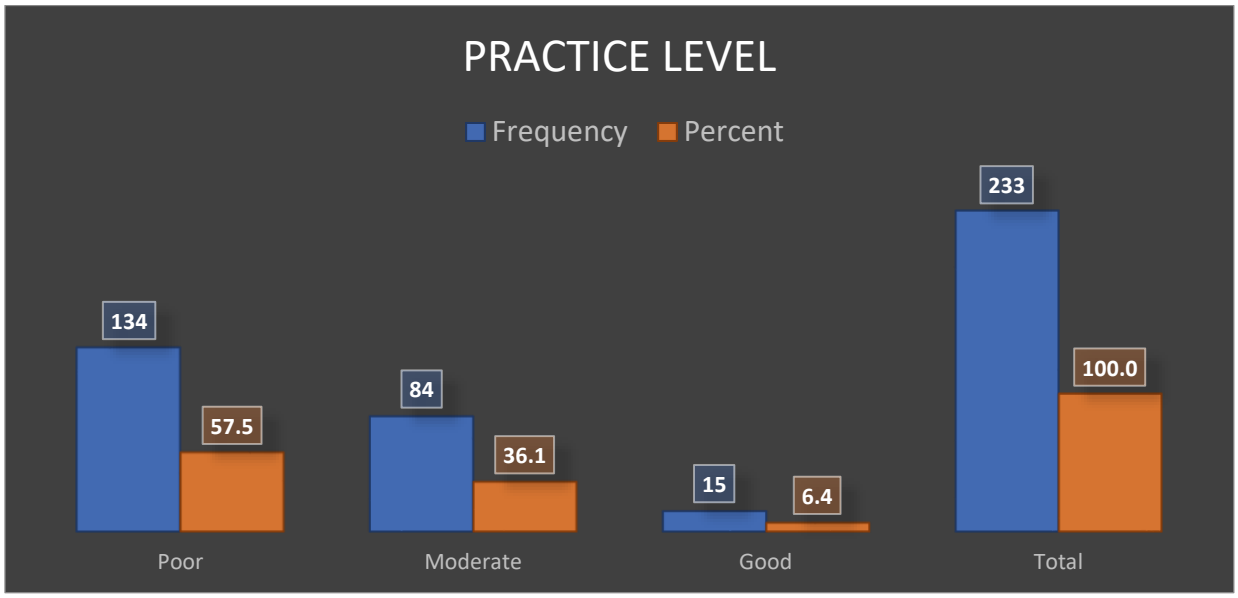

Fig 3 Practice level of participants towards melanoma diagnosis and treatment, 2025

The practice-related findings revealed notable gaps in several key areas of skin cancer and melanoma care. A majority of participants (79.0%) had never performed a total body skin examination for skin cancer detection during their career, indicating poor practice in this fundamental screening activity, while only 21.0% demonstrated good practice. In contrast, when encountering a suspicious mole or lesion, most respondents (76.4%) reported taking an appropriate next step, reflecting good practice, whereas 23.6% did not. Discussion of skin cancer or melanoma risk-reduction strategies with patients was also limited, with 71.2% reporting poor practice and only 28.8% engaging in such counseling. Referral behavior for suspected melanoma was strong overall, with the vast majority indicating they would refer a patient to a dermatologist 65.7% were

very likely and 30.0% likely to do so—while only a small minority were neutral, unlikely, or very unlikely to refer. However, practices related to updating melanoma-related knowledge were less robust; more than half of respondents (57.9%) rarely updated their knowledge, and 31.8% did so only sometimes, while very few reported doing so often (6.4%) or always (3.9%).

5.3 Factor associated with Knowledge and practice of participants

Analysis of factors associated with knowledge level showed that age was not significantly correlated with knowledge score (Spearman's $\rho = -0.100$, $p = 0.127$). Knowledge scores also did not differ significantly by gender ($U = 2327.5$, $p = 0.386$) or P8 status ($p = 0.386$). However, years of professional experience was significantly associated with knowledge level (Kruskal–Wallis $H = 8.774$, $df = 3$, $p = 0.032$), with higher knowledge scores observed among participants with longer professional experience.

Regarding practice level, age showed a weak positive but non-significant correlation with practice score ($\rho = 0.124$, $p = 0.058$). Gender was significantly associated with practice, with males demonstrating higher practice scores than females ($U = 4614.5$, $p = 0.003$). No significant differences in practice scores were observed across categories of professional experience ($H = 6.888$, $df = 3$, $p = 0.076$) or by P8 status ($p = 0.186$).

Finally, the relationship between knowledge and practice revealed a weak positive correlation that did not reach statistical significance ($\rho = 0.115$, $p = 0.079$), indicating that higher knowledge levels were not necessarily associated with better practice performance.

Outcome	Variable	Test	Statistic	p-value	Interpretation
Knowledge	Age	Spearman's correlation	$\rho = -0.100$	0.127	Not significant
	Gender	Mann–Whitney U	$U = 2327.5$	0.386	Not significant
	Years of professional experience	Kruskal–Wallis	$H = 8.774$ ($df = 3$)	**0.032**	**Significant**

	P8 status	Mann–Whitney U	U = 2327.5	0.386	Not significant
Practice	Age	Spearman's correlation	ρ = 0.124	0.058	Not significant
	Gender	Mann–Whitney U	U = 4614.5	**0.003**	**Significant**
	Years of professional experience	Kruskal–Wallis	H = 6.888 (df = 3)	0.076	Not significant
	P8 status	Mann–Whitney U	U = 2232.5	0.186	Not significant
Knowledge vs Practice	Knowledge score	Spearman's correlation	ρ = 0.115	0.079	Not significant

6. Discussion

This study was a cross-sectional study, conducted to assess Knowledge, Attitude and Practice towards Melanoma among General Practitioners in Ethiopia, 2025 involving of two hundred thirty three General Practitioners July 2025 to November 2025 GC.

The study discovers that only 3.9% had good knowledge level indicating a gap in knowledge. And the rest of 66.1% demonstrated a moderate level of knowledge about melanoma whereas 30% had poor knowledge level. The study further showed that 95.3% of our participants had favorable attitude about melanoma diagnosis and treatment. our study also revealed 57.5% demonstrated a poor practice about melanoma whereas 36.1% had moderate and only 6.4% had good practice level.

In this study, only 3.9% had good knowledge level. 62.9% percent of respondents correctly stated that the lung is the most likely site for visceral metastasis compared to the 13.8% from the study on srilanka which is significantly higher. 86.5% doctors were aware that melanoma can occur on the palms, soles and sub-ungual areas compared to 62.6 from the previous sited study. 78.5% of participants correctly identified melanoma is confirmed by excision biopsy compared to that of 68.3 from the previous study. Clinical identification of lesions proved more challenging, with low percentages (<50%) of correct identification on multiple clinical images. In our study 92.3 percent of participants know the ABCDE rule to identify melanoma lesions which is good. The higher attitude scores in this study likely stem from nationwide online sampling, which tends to capture more motivated, proactive GPs with better access to updated guidelines and continuing education. In contrast, the Sri Lankan hospital-based study may have included practitioners with limited exposure to dermatology updates, resulting in lower scores.

Studies among other healthcare professionals similarly identified drawbacks in melanoma riskfactor recognition and clinical features, suggesting that limited melanoma knowledge is not unique to general practitioners. A study in Israel 77.2% of physical therapists not being acquainted with the ABCDE tool. The mean scores of knowledge toward skin cancer were 80% in medical students and General practitioners in iran. But this study assessed knowledge on skin cancer in general. But good level of knowledge in Nurse Practitioners in illinos US is seen about malignant melanoma (average% of 80%). which can be explained by adequate patient exposure and resources to update knowledge.(20)

Regarding attitudes only 7.7% are of participants felt strongly confident in diagnosing melanoma. Most 90.5% agreed or strongly agreed with the statement that doctors should be trained to perform a total body skin examination for skin cancer detection. This is higher than the srilanka study which is 69.9%. A majority 86.7% indicated to be happy to attend a training program on performing a total body examination and identifying suspicious skin lesions which is slightly higher than the study in srilanka (75.6%).

Positive attitudes toward early detection and training were consistently observed across studies involving different healthcare proffesionals. A comparable finding was also observed in ireland on health and social care professionals the majority of respondents(95%) expressed interest in receiving further education on skin cancer and provided positive feedback following the educational session.(19) Similar high number (94.1%) of physical therapists having a desire to improve their knowledge in israel.(16)

79.0% of participants had never performed a total body skin examination for skin cancer detection during their career which is alarming. This is comparable to the finding in srilanaka (89.4%).. Only 28.8% doctors had discussed regarding skin cancer/melanoma risk reduction with a patient which is very low and similar finding in the other study (17.9%). But when they encounter suspicious lesion 76.4% of them are likely to refer it which is a good practice. Practice scores were comparable between this nationwide online Ethiopian study and the Sri Lankan hospital-based one, likely due to shared limitations in dermatology training for GPs and similar primary care management challenges in both low-resource contexts

Sub-optimal routine skin examination and delayed referral practices have been reported both among general practitioners and other healthcare professionals in other studies also. Similarly a study in ire-land which reported 58% of the respondents discussing sun protection with their patients.(19) But the same study reported 50% of participants reported examining the 6 body parts regularly. Another study in Israel also found out 44.1% of physical-therapists stated they had not referred any patients for further dermatological assessments.(16) The nurses in Illinois and California only performed routine skin examinations on their patients 46% discussed with patients about melanoma.(20)

Although most participants demonstrated good theoretical knowledge of melanoma their performance declined when the assessment involved clinical images. Theoretical questions often test recall of definitions, risk factors, which clinicians can answer based on their training. However image-based questions require visual diagnostic skills such as identifying subtle color variegation, asymmetry or evolving border skills that depend on clinical exposure. The mixed scores on pictures suggest that while doctors understand melanoma conceptually they may have limited real life practice.

The positive correlation between years of professional experience and knowledge can be explained by years of clinical exposure which increases familiarity with disease recognition, risk factors, and management. Consistent with previous researches, years of professional experience was positively associated with knowledge in this study. For instance, health professionals with longer working experience were more likely to demonstrate better knowledge of tuberculosis infection control in Addis-Ababa (26), and nurses with >10 years of experience had significantly higher knowledge about geriatric care than those with fewer years of experience in northeastern Ethiopia(27) . These findings support our finding that years of clinical exposure and practical engagement over time contribute to enhanced knowledge levels in health professionals.

Male participants demonstrated significantly higher practice scores. This pattern is observed in KAP studies across low- and middle-income countries(25) and can explained by the fact that males are disproportionately represented in physicians whereas females predominate in nursing and frontline roles. Self-reported practice scores also tend to favour roles dominated by males.

In our study, we found that knowledge scores were not related to whether practitioners had received training or not. This can be explained by that training opportunities usually depend on when a hospital or organization provides the training, not on how old or experienced the doctor is and training's are not targeted to those with poor knowledge and high patient exposure. Because of this the training's may have become not much effective.

In our study we didn't find significant correlation between knowledge and practice. In contrast the Tehran study showed Knowledge, attitude and practice toward skin cancer in medical students/GPs were positively correlated.(15)

To the best of our knowledge, this is the second KAP study specifically targeting general practitioners on melanoma following the sri-lanka study , highlighting a major gap in the literature, particularly in our country where melanoma is becoming prevalent and making direct comparison difficult.

The study found that the majority of participants do not have a good level of knowledge, Attitude or practice on melanoma despite early diagnosis being the best strategy to detect signs of Melanoma and improve outcome of treatment.

7 Limitations of the study

As KAP study with a sample size of 237 the ability to detect significant correlations between knowledge, attitude and practice variables may have been constrained .

Another limitation of this study is the absence of standardized questionnaire for melanoma related KAP quessionaire which may affect the comparability and validity of the findings.

8. Conclusion

This study demonstrates unsatisfactory knowledge attitudes, and practices among general practitioners toward melanoma. Given the pivotal role of primary physicians in early detection targeted training programs and system-level improvements are needed. Addressing these gaps can significantly improve melanoma outcomes in the healthcare system.

9. Recommendations

Based on the findings of our study, the following recommendations are forwarded for the respective organs:

1 Incorporating melanoma modules into Continuing Professional Development (CPD) training with clear targeted training for primary physicians with long years experience

2 Preparing clear melanoma image atlas that can help General practitioners to identify early lesions

3 Integrating Melanoma in dermatology course of undergraduate studies

4 Preparing clear referral and management algorithms for melanoma

10. Reference

1. Gandini S, Sera F, Cattaruzza MS, Pasquini P, Picconi O, Boyle P, et al. Meta-analysis of risk factors for cutaneous melanoma. Eur J Cancer. 2005;41(1):45–60.
2. World Health Organization. Global Cancer Observatory: Melanoma of Skin. WHO; 2022.
3. International Agency for Research on Cancer (IARC). Ethiopia Cancer Statistics 2022. Lyon: IARC; 2023.
4. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2022. CA Cancer J Clin. 2022;72(1):7–33.
5. Raju GC, Melekoğlu L, Teshome A. Clinical pattern and outcomes of melanoma among Ethiopian patients. East Afr Med J. 2019;96(4):231–7.
6. McCarthy WH. Melanoma: early detection and treatment. Med J Aust. 2004;180(4):164–7.
7. Afsar FS, Yalçin B, Serdar ZA. Knowledge, attitudes, and practices of medical students regarding melanoma. Dermatol Pract Concept. 2019;9(1):20–7.
8. Leiter U, Keim U, Garbe C. Epidemiology of skin cancer: update 2020. Adv Exp Med Biol. 2020;1268:123–39.
9. Menzies SW, Emery J, Staples M, Davies S, McAvoy B, Fletcher J, et al. Impact of dermoscopy and short-term sequential digital dermoscopy imaging for melanoma detection in primary care. Br J Dermatol. 2009;161(6):1270–7.
10. Pagnoni A, Rezzani C, Guarneri F, et al. Training interventions for improving melanoma diagnosis among healthcare providers: a systematic review. J Eur Acad Dermatol Venereol. 2021;35(3):521–9.
11. Sinclair C, Foley P. Skin cancer prevention in healthcare settings: a review. Australas J Dermatol. 2019;60(3):168–77.
12. Glanz K, Saraiya M, Wechsler H. Standards for the knowledge, attitudes, and practices of health professionals in melanoma detection. Am J Prev Med. 2019;57(3):425–34.
13. Losina E, Walensky RP, Geller A, Beddingfield FC, Wolf LL, Gilchrest BA. Assessing factors influencing melanoma detection and dermatology referral in clinical practice. Arch Dermatol. 2007;143(3):397–404.

14. Göl B, Erkin G. Primary care physicians' knowledge and practices regarding skin cancer and self-skin examination in Turkey. Turk J Med Sci. 2018;48(4):856–63.
15. Baghani M, Robati RM, Mozafari N, Baghani M, Kassir M, Sheibani F, Mansouri V. Knowledge, Attitude, and Practice toward Skin Cancer among Patients of Dermatology Clinics and Medical Students/General Practitioners. J Skin Cancer. 2024 May 20;2024:9081896. doi: 10.1155/2024/9081896. PMID: 38803467; PMCID: PMC11129908.
16. Arouch A, Elboim-Gabyzon M. The role of physical therapists in early melanoma detection: a cross-sectional study. Phys Ther. 2024;104(4):pzad018.
17. Jacob R, Jayakumari A. Knowledge, attitudes and practices of pharmacy students regarding melanoma: a cross-sectional study. J Pharm Pract Res. 2022;52(2):142–50.
18. Karunathilake I, De Silva AP, Dassanayake AS, et al. Knowledge, attitude and practices of non-specialist physicians regarding melanoma in Sri Lanka. Ceylon Med J. 2019;64(3):123–9.
19. Quinlan A, Smith R, Thompson J, et al. Knowledge, attitudes and practices of secondary care health professionals regarding melanoma detection: a cross-sectional study. J Eur Acad Dermatol Venereol. 2020;34(6):1304–12.
20. Furfaro L, Rossi MC, Gagne J, et al. Nurse practitioners' knowledge and practices regarding malignant melanoma in Illinois and California. J Am Acad Nurse Pract. 2008;20(6):288–95.
21. Nahar VK, Saha S, Rahman M. Knowledge, attitude and practices of medical students regarding skin cancer: a systematic review. J Cancer Educ. 2018;33(3):467–77.
22. World Health Organization. Global Cancer Observatory: Melanoma of Skin. Geneva: WHO; 2022.
23. International Agency for Research on Cancer (IARC). Ethiopia Cancer Statistics 2022. Lyon: IARC; 2023.
24. Moodley, S.V., Zungu, M., Malotle, M. et al. A health worker knowledge, attitudes and practices survey of SARS-CoV-2 infection prevention and control in South Africa. BMC Infect Dis 21, 138 (2021).
25. Sah PK, Lai W, Gupta N, Bist BS, Gautam S, Sapkota KR, Koirala B, Kong Zhuo I, Sesay M and Guan Y (2025) Knowledge, attitudes, and practices of healthcare providers in pre-hospital care in Nepal.

26. Demissie Gizaw, G., Aderaw Alemu, Z. & Kibret, K.T. Assessment of knowledge and practice of health workers towards tuberculosis infection control and associated factors in public health facilities of Addis Ababa, Ethiopia: A cross-sectional study. Arch Public Health 73, 15 (2015).
27. Amsalu, E.T., Messele, T.A. & Adane, M. Exploring the effect of professional experience on knowledge towards geriatric care among nurses working in adult care units. BMC Geriatr 21, 227 (2021).

ANNEX I Questionnaire

Addis Ababa University

College of Health Sciences

Department of Dermatovenereology

A questionnaire prepared to assess knowledge, Attitude and practice in General practitioners towards Melanoma

Section 1: Demographics

1 Age: --------

2 Gender:

- ✧ Male
- ✧ Female
- ✧

3Years of Professional Experience

- ✧ < 5 years
- ✧ 5-10 years
- ✧ 11-20 years
- ✧ > 20 years

Part I: Knowledge of Melanoma

Please choose the correct appropriate answer. It can have more than one correct answer

1 Which of the following is a known risk factor for melanoma?

- ✧ Exposure to UV radiation
- ✧ Eating a diet high in fats
- ✧ Regular exercise
- ✧ Family history of melanoma
- ✧ Trauma
- ✧ History of sunburns
- ✧ Immunosuppresion

2 Which skin type is at risk of developing melanoma?

- ✧ Dark skin
- ✧ Fair skin with freckles
- ✧ brown skin
- ✧ Dark brown skin

3 Which of the following are types of melanoma?

- ✧ Nodular
- ✧ superficial
- ✧ Acral
- ✧ Lentiomaligna

4 What is the most likely site for initial metastasis in melanoma?

- ✧ Lymph nodes
- ✧ Liver
- ✧ Brain
- ✧ Skin

5 Which of the following is a common early sign of melanoma?

- ✧ A mole with smooth, even borders
- ✧ A new mole or growth that changes in size, shape, or color
- ✧ A mole with a symmetrical shape and uniform color
- ✧ A freckle that appears after sun exposure

6 What are the ABCDE criteria for identifying melanoma?

- ✧ Asymmetry, Border irregularity, Color variation, Diameter > 6 mm, Evolving shape
- ✧ Acute, Benign, Circular, Elevated, Detected
- ✧ Asymmetry, Border smoothness, Color, Diameter > 3 mm, Edema
- ✧ None of the above

7 Which of the following symptoms might indicate an advanced melanoma?

- ✧ New moles or changes in existing moles
- ✧ Itchy or bleeding mole
- ✧ Pain or swelling near the lymph nodes

8 Which of the following is used for detecting melanoma?

- ✧ Clinical history and physical examination
- ✧ Dermoscopy
- ✧ Skin biopsy (histopathology examination)
- ✧ Ultrasound imaging

9 What is the most likely site for visceral metastasis in melanoma?

- ✧ Lung
- ✧ Liver
- ✧ Kidney
- ✧ Pancreas

10 Some melanomas can occur on the palms, soles and subungual areas

A) True

B) False

C) Don't Know

11 The diagnosis of melanoma is confrmed by excision biopsy

A) True

B) False

C) Don't Know

12 Which characteristics of the pigmented band on the nail is suspicious of melanoma?

- ✧ Symmetrical, uniform in color (light brown/tan), narrow (<3 mm), and stable over time
- ✧ Asymmetrical, with irregular width (>3-6 mm or widening), multiple colors (brown, black, blue, red), or rapidly changing in size/shape/color
- ✧ Always faint, single-colored, and unchanged for years
- ✧ Only visible in certain lighting and consistent
  Extends to the nail fold, cuticle, or skin (Hutchinson's sign), or accompanied by nail splitting, cracking, or deformity
- ✧ one nail involvement with bleeding, sores, nodules, or unexplained pain/tenderness

13 which of the pictures below are suspicious for Melanoma



		

Part II: Attitudes

(5-point scale: 1 = Strongly Disagree 2 disagree 3 neutral 4 agree to 5 = Strongly Agree)

1 I feel confident in clinically diagnosing melanoma.

2 Melanoma screening should be a routine part of patient care, especially for high-risk individuals.

3 Early detection of melanoma is important for improving patient outcomes.

4 Training on skin cancer should be on dark skinned types.

5 I would benefit from additional training on total body skin examinations.

6 Educating patients about skin self-examination is important

7 I would attend a training program on performing a total body examination and identifying suspicious skin lesions

8 I believe darker skin offers full protection against melanoma.

Part II: Practices Related to Melanoma

1 Have you ever performed a total body examination for skin cancer detection in your career?

- ✧ Yes
- ✧ No
- ✧ Don't want to answer

2 If Yes: How many times have you performed a total body examination in the past 12 months? Put a number,----------

3 How many patients with suspected melanoma have you referred to a dermatologist in the past 12 months?

---

4 When you identify a suspicious mole or lesion, what is your usual next step?

- ✧ Perform a biopsy
- ✧ Refer the patient to a dermatologist
- ✧ Recommend the patient to monitor the lesion and return for follow-up
- ✧ Advise sun protection and monitor the lesion over time
- ✧ Other

5 Have you ever discussed skin cancer/melanoma risk reduction with a patient?

- ✧ Yes
- ✧ No
- ✧ Don't want to answer

6 If you suspect melanoma in a patient, how likely are you to refer them to a dermatologist for a full evaluation?

- ✧ Very likely
- ✧ Likely
- ✧ Neutral
- ✧ Unlikely
- ✧ Very unlikely

7 How often do you update your knowledge about melanoma (e.g., new treatments, screening guidelines)?

- ✧ Always
- ✧ often
- ✧ sometimes
- ✧ rarely
- ✧ never

8 Have you ever received training to perform a total body examination for skin cancer detection?

- ✧ Yes
- ✧ No
- ✧ Don't want to answer