

# An Update on the Current Practice in the Management of Melasma Patients by Dermatologists: A Cross-Sectional Online Survey in the Philippines

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**Abstract:** Melasma is a prevalent pigmentary disorder in the Philippines, with an estimated prevalence rate of 1.32%. The recurrent nature of melasma poses a significant therapeutic challenge among dermatologists in the country. This study aimed to evaluate the current practices in managing melasma among dermatologist who is a members of the Philippine Dermatological Society (PDS). The cross-sectional online survey was conducted to evaluate the current practice in the management of melasma patients among 350 Filipino dermatologists. The survey was carried out from April 1, 2022, to September 30, 2022. The majority of respondents (71.4%) diagnosed melasma based solely on clinical examination. Among those who assessed melasma severity before treatment, the Melasma Area and Severity Index (MASI) score (50.7%) and the Melasma Severity Scale (25%) were the most commonly utilized methods. Regarding management, 49.1% of respondents opted for topical treatments alone, while 47.7% preferred combination therapies. Sunscreen was identified as the first line topical treatment (96.3%) followed by Kligman's cream, hydroquinone and tretinoin. For procedural methods, chemical peels ranked first (34.73%) as the preferred method. Approximately 62% of the respondents prescribed oral medications, with tranexamic acid (68.7%) being the most commonly prescribed, followed by glutathione (39.14%), vitamin C (37.39%), polypodium leucotomos (32.17%), and procyanidin (23.48%). Majority (56.9%) of the respondents considered shifting to alternative modalities after 4 to

6 months of treatment. Furthermore, 47.4% of the respondents preferred a maintenance duration exceeding one year. This study's findings delineate the current practices of 350 Filipino dermatologists in managing melasma patients. The outcomes will likely serve as a valuable reference for future melasma guidelines and treatment algorithms in the Philippines and neighboring countries.

**Keywords:** Melasma, Management of melasma, Philippines, Dermatologists

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## Introduction

Melasma is one of the most common pigmentary disorders with an incidence as high as 30% in Asian women of childbearing age [1]. It presents clinically as brown macules or patches on the centrofacial, malar or mandibular region of the face, but more commonly presents with an overlap of the aforementioned clinical patterns [2]. Several risk factors that contribute to its pathogenesis include Fitzpatrick skin types III and IV, genetic predisposition, ultraviolet light exposure, pregnancy, and exogenous hormones while less commonly reported are thyroid disorders, phototoxic medications, and cosmetics [3]. Although considered as a benign condition, it certainly has an impact on the patients' quality of life, as affected individuals have low self-esteem, decreased social interaction and outdoor activities [4].

The exact prevalence of melasma worldwide is unknown, despite multiple studies conducted on the epidemiology of melasma in various countries. According to Khoza et al [5], melasma is most prevalent among Fitzpatrick skin phototypes III to V and patients of Hispanic, Latin American, Asian, Middle Eastern, and African descent.

The Philippine Dermatological Society (PDS) is a growing group of dermatologists in the Philippines with a 70-year history. Each of its members has undergone three years of training at its accredited institutions, encompassing both medical and cosmetic fields. In 2011, PDS developed its Health Information System (PDS-HIS), allowing comprehensive reporting of all related cases, both old and new, from its eleven accredited training institutions. Among the 809,

851 recorded dermatology cases from 2011 to 2022 [6], a total of 10,683 cases were reported as melasma (1.32%), with 9,350 identified as new cases (1.15%). Additionally, the study conducted by Gener-Pangilinan et al [7] reported the prevalence of melasma among Filipino patients seen at six government hospitals and private clinics, and reported a prevalence rate of 1.26%.

Topical hydroquinone 4% remains the gold standard of treatment [8], but there are other alternatives currently available, ranging from topical and oral medications to in-office procedures such as chemical peels and energy-based devices. In 2005, a local study investigated the various treatment modalities employed by practicing Filipino dermatologists and found that the top three topical depigmenting agents being used were tretinoin, hydroquinone and combination therapy. Among in-office procedures, microdermabrasion was preferred over laser therapy while vitamin C and glutathione emerged as the most commonly prescribed oral maintenance agents [9].

Unfortunately, melasma often presents with frequent recurrences, posing a therapeutic challenge for dermatologists. Therefore, an up-to-date investigation into the treatment strategies for melasma involving a larger cohort of local dermatologists is desirable. Hence, this study aimed to determine the current practices in managing melasma in the Philippines among dermatologists and dermatology resident physicians undergoing training at various PDS accredited institutions. Additionally, considering the absence of a local guideline for melasma management, this study can serve as a crucial resource for developing melasma care guidelines and treatment algorithms in the Philippines.

## Methodology

### *Study Design and Study Procedure*

This is a descriptive, cross-sectional study conducted using an online survey form. The questions in the survey were discussed and approved by a panel of 11 expert dermatologists from the Pigmentary Disorders Interest Group of the PDS. The study was reviewed and approved by the Institutional Review Board of San Juan De Dios Educational Foundation Inc. The finalized survey was disseminated via Google Forms, with a link distributed to eligible respondents (refer to inclusion criteria for selection) through emails to their respective affiliated institutions of the expert members. The survey was conducted for 6 months, from April 1, 2022 to September 30, 2022. Subsequently, the collected results were collated and sent to a statistician for analysis. The respondents were recruited based on inclusion and exclusion criteria detailed below.

#### Inclusion criteria:

1. Dermatologists who completed a 3-year residency training program in PDS accredited training institutions:
  - 1.1. Diplomates: Graduates of a 3-year dermatology training program from an accredited PDS institution who passed the Philippine Board of Dermatology.
  - 1.2. Fellows: Individuals who meet the qualifications of a diplomate and have completed two consecutive years of private or government practice.
2. Dermatology residents/trainees currently undergoing training in PDS institutions (from first to third year levels).

#### Exclusion criteria:

1. PDS board-certified dermatologists practicing full-time abroad.

### *Sampling and Sample Size*

Quota sampling was used, and the sample size was determined using Slovin's formula [10]. Consent was obtained from eligible respondents and the recruitment was conducted until the required sample size was achieved. As of December 2022, the PDS consisted of 1,448 dermatologists, comprised of 1,279 board-certified dermatologists and 169 residents. With a 95% confidence level, 5% margin of error, and an estimated population proportion of 80%, the calculated minimum sample size required was 207 for board-certified dermatologists and 101 for residents.

#### *Tool*

The survey is comprised of 34 questions, featuring a combination of multiple-choice (21 questions) and free-text (13 questions) formats. Multiple-choice questions include pre-determined answer options or require ranking of listed items. The scope of the survey encompasses three main areas: respondent profile (eight questions), melasma diagnosis (four questions) and melasma management practices (22 questions). The English language was used in the survey.

#### *Statistical Analysis*

Statistical Package for the Social Sciences (SPSS) version 28 was used to analyze the data. Frequency, percentage, and mean were used to demonstrate the demographic profile data of the respondents and to describe the data gathered from the online survey.

## Results

### *Demographic Profile of the Respondents*

A total of 350 respondents were included in the study. Female comprised the majority (n=314, 89.7%) of respondents compared to male (n=36, 10.3%). The age of respondents ranged from 21 to 80 years old, with the majority falling in the 31 to

40-year age range (n=106, 30.3%). Respondents consisted of PDS fellows (n=189, 54%), diplomates (n=58, 16.6%) and dermatology residents-in-training from first to third year (n=103, 29.5%). The majority of PDS fellows and diplomates have been practicing for more than 20 years (n=101, 40.9%). Predominantly, most of the respondents practiced or trained in the National

Capital Region of the Philippines (n=226, 64.6%). The most common type of practice was a combination of hospital and private practice (n=148, 42.3%), with a majority (n=208, 59.4%) handling both general dermatology and aesthetic cases. Meanwhile, aesthetic-focused practices accounted for only 2.9% (n=10) of respondents (**Table 1**).

**Table 1.** Demographic profile of the respondents.

Demographic profile	n	%
<b>Age (years)</b>		
21- 30	73	20.9
31-40	106	30.3
41 -50	58	16.6
51 - 60	72	20.6
61 - 70	35	10
71 - 80	6	1.7
<b>Gender</b>		
Male	36	10.3
Female	314	89.7
<b>PDS Consultant or Resident</b>		
1 <sup>st</sup> year resident	30	8.6
2 <sup>nd</sup> year resident	23	6.6
3 <sup>rd</sup> year resident	50	14.3
Diplomate	58	16.6
Fellow	189	54
<b>Years of Practicing as a Dermatologist</b>		
1 to 5	54	21.9
6 to 9	28	11.3
10 to 20	64	25.9
>20	101	40.9
<b>Region Currently Practicing/Training</b>		
Region I-II	28	8
Region III	37	10.6
Region IV	47	13.4
Region V	11	3.1
Region VI	3	0.9
Region VII	7	2
Region VIII	0	0
Region IX	3	0.9
Region X	3	0.9

Region XI	9	2.6
Region XII	5	1.4
Region XIII	3	0.9
NCR	226	64.6
MIMAROPA	1	0.3
CAR	3	0.9
ARMM	1	0.3

#### Type of Dermatological Practice

Hospital based practice	109	31.1
Private practice	93	26.6
Both hospital and private practice	148	42.3

#### Frequently Seen Cases

General dermatology/pathologic cases	132	37.7
Predominantly aesthetic cases	10	2.9
Both general dermatology/pathologic and aesthetic cases	208	59.4

NCR – National Capital Region; MIMAROPA – Mindoro Occidental, Mindoro Oriental, Marinduque, Romblon, Palawan; CAR – Cordillera Administrative Region; ARMM – Autonomous Region in Muslim Mindanao

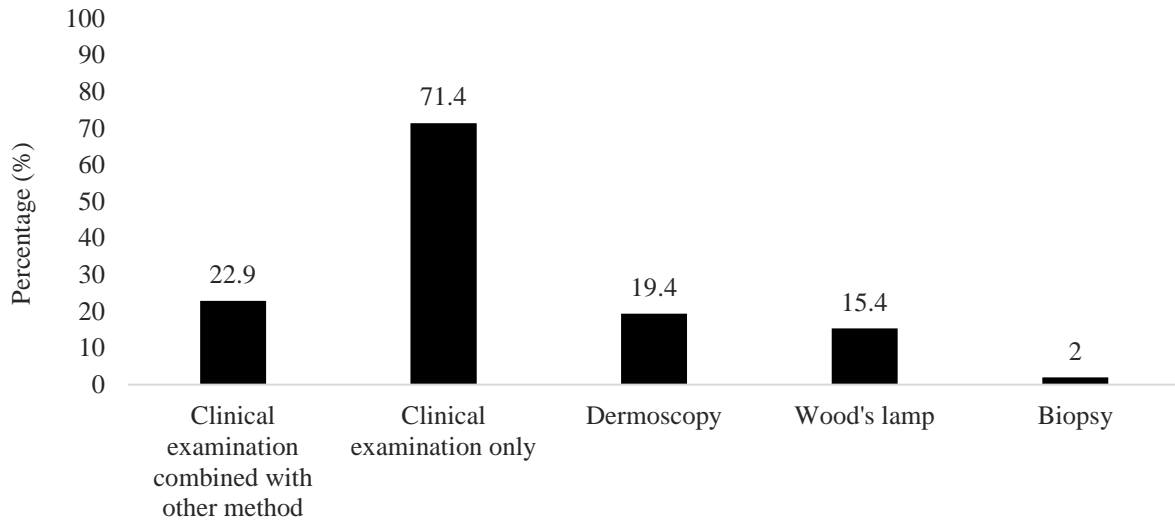
### Diagnosis of Melasma

Results revealed that majority of the respondents diagnose melasma using clinical examination only (n=250, 71.4%). A smaller percentage combined clinical examination with other methods such as dermoscopy (19.4%), Wood's lamp examination (15.4%) and skin biopsy (2%) as shown in **Figure 1**. Prior to initiating treatment, the majority of respondents (n=209, 59.7%) did not measure melasma severity. Among those who assessed melasma severity before treatment (n=141, 40.3%), the Melasma Area and Severity Index (MASI) score (n=69, 50.7%) and the Melasma Severity Scale (n=34, 25%) were the two most commonly used methods. More than half of the respondents (n=209, 59.7%) determined the melasma subtype prior to treatments.

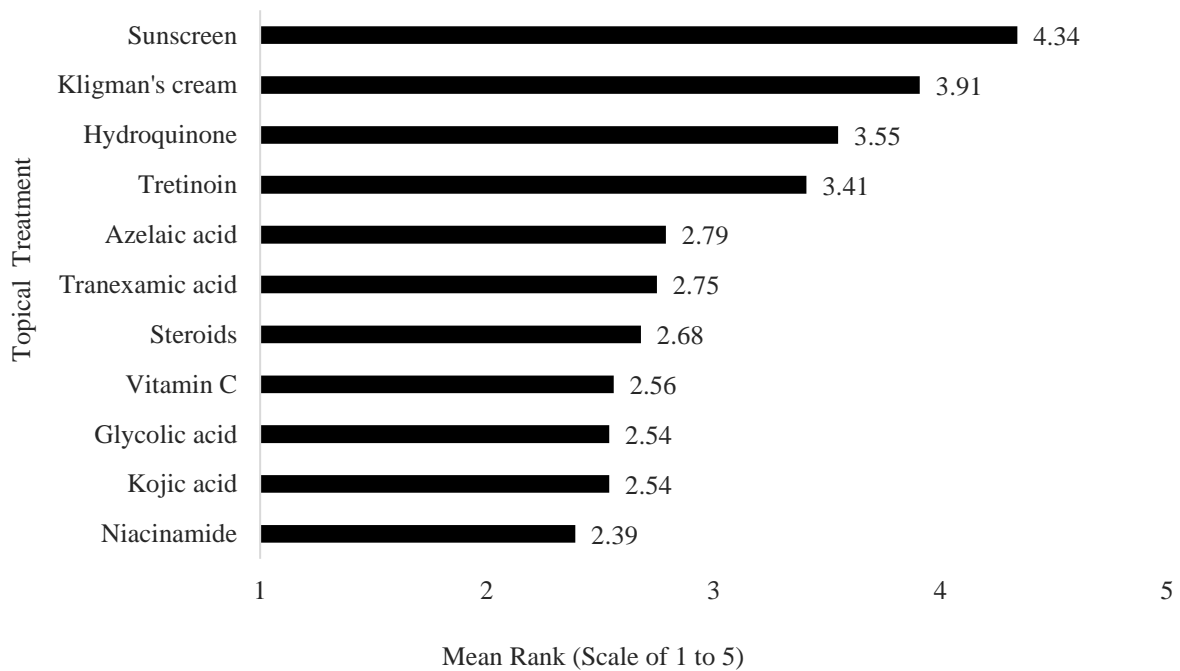
### Management of Melasma

First-line treatment option for melasma

The most common first-line treatment option for melasma among respondents was topical treatment alone (n=172, 49.1%) followed by combination treatment (n=167, 47.7%). Among those opting for combination treatments, topical medications were often combined with various procedures. These included chemical peels (n=58, 34.73%), other topical medications (n=34, 20.36%), laser therapy (n=19, 11.38%), a combination of chemical peels and laser (n=18, 10.78%), oral medications (n=15, 8.98%), other procedures such as microneedling, microdermabrasion, platelet rich plasma (PRP), or exosomes (n=9, 5.39%), combinations of oral medications and chemical peels (n=6, 3.59%), oral medications with chemical peels and laser treatments (n=2.99%), and oral medications with laser treatments (n=3, 1.8%). Sunscreen emerged as the most preferred topical treatment, followed by various formulations of the modified Kligman's cream, hydroquinone and tretinoin (**Figure 2**). Of the 337 (96.3%) respondents who chose sunscreen as their preferred topical treatment for melasma, 97.33% (n=328) chose an SPF level between 30 to 50. Meanwhile SPF >50



**Figure 1.** Methods for diagnosis of melasma.



**Figure 2** Topical treatments options for melasma.

is preferred by a few respondents (n=8, 2.37%) and only 0.38% (n=1) prescribing sunscreen with an SPF <30.

#### Procedural treatment options for melasma

Of the available procedural methods used for the management of melasma, chemical peel ranked the highest, followed by laser treatment. The least

preferred procedural methods are iontophoresis (Figure 3).

#### Oral medication treatment options for melasma

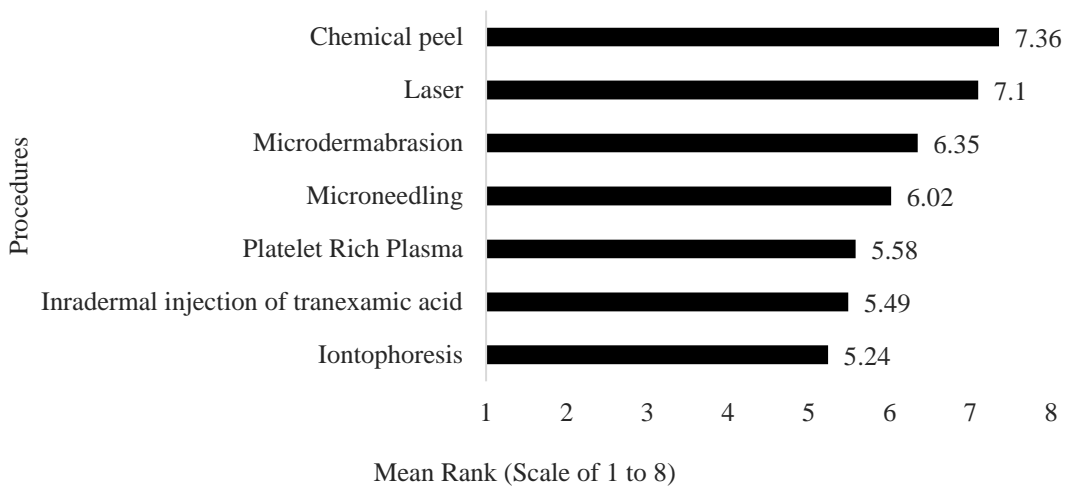
Oral medications were prescribed by 62% (n=217) of the respondents, with tranexamic acid (TA) (n=79, 68.7%), ranking first, followed by glutathione (n=45, 39.14%), vitamin C (n=43,

37.39%), polypodium leucotomos (n=37, 32.17%), and procyanidin (n=27, 23.48%) (**Figure 4**).

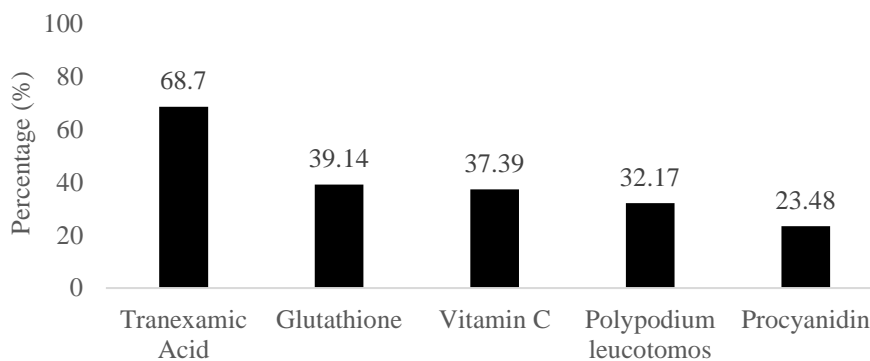
Dosage of prescribed oral medications for melasma

Tranexamic acid, being the most prescribed oral medication, was given by 66.09% (n=76) of the respondents at a preferred total daily dose of 500

mg (single dose or 250 mg 2 times per day). Glutathione with variable dosing from 200 mg to 1,500 mg, was mostly given at 500 mg per day (n=33, 84.6%). Polypodium leucotomos was given by the majority of respondents at 480 mg daily (n=22, 59.46%). Meanwhile, Vitamin C was given at doses ranging from 500 mg to 1,000 mg per day (n=41, 95.35%) and procyanidin was prescribed with 48 mg as the preferred total daily dose (n=24, 20.87%).



**Figure 3** Procedural treatment options for melasma.



**Figure 4** Oral medication treatment options for melasma.

Duration of intake of prescribed oral medications for melasma

Tranexamic acid was given at a range of 1 to 12 months, with the majority of respondents (n=44,

59.46%) prescribing it for 3 months. Procyanidin was prescribed for 3 months by the majority of the respondents (n=9, 31.03%). Polypodium leucotomos (n=14, 38.89%), glutathione (n=15, 32.61%) and ascorbic acid (n=21, 26.09%) were

given indefinitely by the majority of the respondents.

#### Shifting to another treatment option for melasma

Majority of the respondents in this survey considered shifting to another alternative modality after 4 to 6 months (n=199, 56.9%) but 33.4% (n=117) preferred an earlier period of 1 to 3 months. The most common reason for shifting was non-improvement, followed by worsening of the condition, presence of side effects from the medication and recurrence of melasma. Cost of medication was the least common cause.

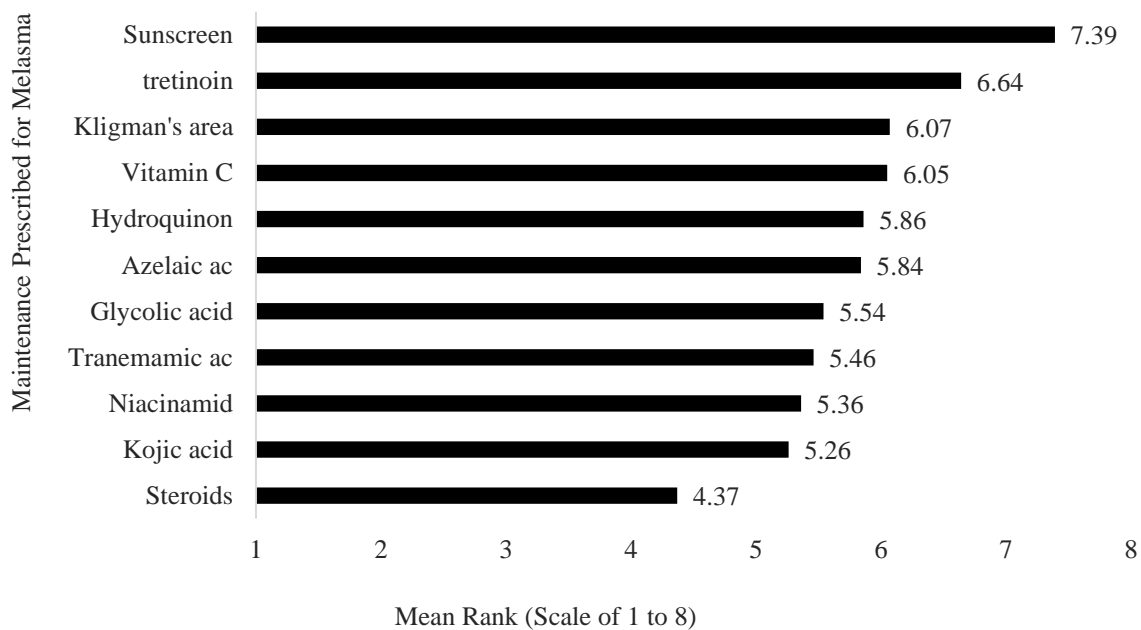
#### The frequency of follow-up for melasma

Monthly follow-up was preferred by most of the

respondents (n=241, 68.9%), followed by less than a month (n=61, 17.4%), every 2 months (n=35, 10%) and more than 2 months (n=13, 3.7%).

#### Maintenance therapy prescribed for melasma

For maintenance therapy of melasma, sunscreen was the most prescribed, followed by tretinoin, modified Kligman's cream and topical vitamin C, respectively. The least prescribed were steroids and kojic acid (**Figure 5**). A maintenance therapy duration of more than one year is preferred by 47.4% (n=166) of the respondents, followed by 3 to 6 months (n=93, 26.6%) and 6 to 12 months (n=77, 22%). Only 4% (n=14) of the respondents maintained their patients on medications for less than 3 months.



**Figure 5** Maintenance therapy prescribed for melasma patients

#### Confidence in managing melasma patients

Management of melasma cases is included in the basic training of dermatologists. Attending workshops or seminars helps affirm their knowledge and broaden their approach in handling melasma patients. In this study, 157 (44.9%) respondents engaged in seminars/work-

shops related to melasma, while 193 (55.1%) respondents did not. Regarding confidence in managing melasma, the majority of respondents rated their level as fairly confident (n=177, 50.6%). Only a small percentage expressed complete confidence (n=22, 6.3%), and very few claimed to have no confidence at all (n=6, 1.7%).



## Discussion

Numerous studies have explored the prevalence of melasma and its impact on patients' quality of life. Furthermore, the clinical epidemiologic features and treatment options for melasma have been well-researched. However, there is still a paucity of studies regarding melasma management in the Philippines, highlighting the need to identify how dermatologists in the country manage this condition.

There are various methods available to diagnose melasma, with clinical examination of skin pigmentation being the most commonly used approach. The majority of respondents in this study relied solely on clinical presentation for diagnosis, while only a third combined clinical examination with other methods such as Wood's Lamp and dermoscopy. Only a few of the respondents performed a skin biopsy, which was primarily advocated in cases where there was uncertainty in the diagnosis. Wood's Lamp illumination helps distinguish between epidermal and dermal melasma. However, in individuals with darker skin and mixed types of melasma, Wood's Lamp examination might yield inconclusive results [11,12]. Additionally, the introduction of dermoscopy has aided in distinguishing melasma from other hyperpigmentary disorders [13-15], although it necessitates familiarity with the equipment and accurate interpretation of the structures. These diagnostic techniques, excluding more sophisticated methods like spectrophotometry and VISIA imaging, were mentioned in the 2021 version of the Consensus on the Diagnosis and Treatment of Melasma in China [1]. In the therapeutic ladder recommended by Sarkar et al [16], clinical assessment is conducted along with Wood's Lamp examination whenever feasible for the diagnosis of melasma.

Once the diagnosis of melasma is confirmed, it is essential to conduct objective assessments not only by capturing before and after photographs but also by employing a severity scoring system that one is proficient with. Various

scales, such as the Melasma Area Severity Index (MASI), modified Melasma Area Severity Index (mMASI), Melasma Severity Score (MSS), and Melasma Severity Index (MSI), have been developed and have proven to be helpful in assessing improvements in melasma [17,18]. Preferences regarding which assessment to use vary among practitioners. While MSS and MSI are less popular than MASI and mMASI, they are considered more practical and easier to use in daily clinical practice [18]. Despite being taught during residency, the utilization of these measurements is not mandatory for every clinician or dermatologist treating melasma. This is evident in this survey, where the majority of respondents do not use scales or indices to measure melasma severity during patient treatment. Among the respondents who do use severity scales, MASI and MSS emerged as the two most preferred assessment scoring systems.

Melasma is a complex hyperpigmentary disorder, considering its multifactorial nature and evolving pathology [19]. As such, there is still no optimal therapeutic regimen for melasma sufferers. The response to treatment varies among individuals, which significantly impacts clinicians' confidence in managing melasma cases. In the context of the Philippine setting, despite years of training and clinical practice as dermatologists, only 6.3% reported complete confidence in managing melasma cases, with the majority (50.6%) indicating a fair level of confidence. Meanwhile, a study conducted by Ma et al [20] found that only 2% of respondents from the British Association of Dermatologists reported having high confidence levels in managing melasma and post-inflammatory hyperpigmentation cases.

This study revealed that the majority of respondents adhere to international guidelines [1] in managing melasma. Topical treatment plays a significant role in their management strategies, either used alone or in conjunction with procedural methods and oral medications. These practices align with findings from an earlier study on melasma treatment strategies in the country

[9]. Combination treatments usually preferred and can be utilized to optimize management, particularly in challenging cases as monotherapy may not offer significant benefits to patients [3]. Topical lightening agents such as hydroquinone, retinoids, and a combination of both, are considered a first-line management approach for melasma [3,16,21], often used in conjunction with topical corticosteroids. Hydroquinone, recognized as the gold standard for treating melasma, and tretinoin, a known photoaging agent, are widely used either alone or in combination with fluocinolone as triple combination creams (TCC) or dexamethasone as Kligman's cream. Notably, one of the most successful combination for topical treatment consists of 4% hydroquinone, 0.05% tretinoin, and 0.01% fluocinolone acetonide. Meanwhile, variations of the Kligman's formula have shown to be the most clinically effective initial therapy for patients with melasma [3,21]. Additionally, other commonly used topical agents include azelaic acid, kojic acid, ascorbic acid, arbutin, licorice extract, and soy [3,16] which are utilized to mitigate potential side effects associated with hydroquinone and tretinoin. Sunscreen usage is considered mandatory, with a preferred SPF range of 30 to 50.

In-office procedures for melasma management encompass chemical peels, laser treatments, and light therapies. Chemical peels such as glycolic acid, trichloroacetic acid (TCA), Jessner's solution, tretinoin, or their combinations are typically recommended as second-line therapy [16]. Meanwhile, laser and light-based treatment options, which have been increasingly gaining popularity for managing melasma, are considered as third-line therapy in the algorithm proposed by Sarkar et al [16] and are advocated only for the inactive stage of melasma according to the recent consensus on melasma in China [1]. The therapeutic ladder for melasma proposed by Trivedi et al [22] also suggest laser and light-based treatments as third-line therapy, to be used in combination with first-line therapies (after maximizing topical medications and chemical peels) for management of melasma cases. Laser

and light therapy for melasma can be classified into five categories: intense pulsed light (IPL), Q-switched lasers, picosecond lasers, nonablative fractionated resurfacing lasers, and ablative fractionated resurfacing lasers. Among these treatments, non-ablative fractional lasers demonstrate the most beneficial outcomes, as it is capable to treat a wider range of skin types, including Fitzpatrick skin types III-VI [22]. In the present study, respondents preferred employing chemical peels and lasers in conjunction with topical treatments for managing melasma. Additionally, other methods used for managing melasma included microdermabrasion, micro-needling, PRP, intradermal injection of TA, and iontophoresis.

Among the oral treatment options for melasma, TA, glycyrrhizin, Vitamin C, glutathione, procyanidin, polypodium leucotomos, pycnogenol, carotenoid and melatonin have been mentioned in reviews and consensus recommendations [1,16]. Oral TA is the preferred choice of oral treatment for melasma among the respondents in this study, with the majority prescribing it at a dose of 500 mg daily for 3 months. Tranexamic acid was the most studied oral medications for melasma, showing considerably good results [1,16,23]. It can be used alone [16] or together with topical agents [1,16]. The recommended dose is 250-500 mg once or twice a day for three to 3 to 6 months [1]. The other oral medications, though showing promising results, require further evidence to be recommended as monotherapy for melasma [1,16,24]. However, inclusion in the management as an adjunct may offer good treatment outcomes due to their anti-inflammatory and antioxidant effects [23].

The primary goals in treating melasma are to lighten or completely remove hyperpigmentation and prevent its recurrence [1]. Given its unpredictable nature and resistance to treatment, managing melasma should extend beyond resolving hyperpigmentation. The response to treatment can span 3 to 12 months or longer [25], thereby making the duration of treatment pivotal for successful outcomes [1,16]. At present, there

are no set rule on the duration of melasma treatment [1,16,22]. However, it is crucial that once the desired lightening is achieved, a maintenance regimen is implemented. This includes controlling risk factors, using safe topical agents, and intermittently incorporating procedural treatments [22]. In this study, majority of the respondents typically treat melasma for up to 6 months, conducting monthly follow-ups, before considering alternative management, usually due to a lack of improvement. Due to recurrence tendency of melasma, maintenance treatment was implemented, for periods ranging from 3 months to over a year. These involve the use of topical sunscreen, tretinoin, Kligman's cream, or vitamin C serum.

### Conclusion

This study examined the current practices of 350 Filipino dermatologists in the management of melasma patients. In this study, sunscreen was the most commonly prescribed first line treatment and maintenance medication for melasma, while a significant number of respondents continue to recommend various formulations of the modified Kligman formula, tretinoin, and hydroquinone combinations. This study found that only a few of the respondents expressed complete confidence in managing melasma, while half of the respondents reported being fairly confident. Almost half of the respondents relied solely on topical treatments, while the other half opted for combination therapies involving chemical peels, lasers, and oral medications like TA, pycnogenol, glutathione, and Polypodium Leucotomos. Moreover, the majority of respondents considered shifting to alternative modalities after 4 to 6 months of treatment. Nearly half of the respondents preferred a maintenance therapy duration of over one year. The findings of this study can potentially serve as a reference point for updating melasma guidelines and treatment algorithms in the Philippines.

### Limitations of Study

This study is not without limitations. One of its limitations was the failure to inquire about complications encountered from melasma treatments and how they were managed.

### Conflict of Interest

There is no potential conflict of interest.

### Funding Source

There is no funding involved in this study.

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