

Challenges in skin tone assessment in moisture-associated skin damage

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Moisture-associated skin damage (MASD) is a term used to describe skin damage that is caused by prolonged exposure to moisture, such as incontinence-associated dermatitis (IAD), intertriginous dermatitis, periwound moisture-associated dermatitis and peristomal moisture-associated dermatitis. MASD is a hugely prevalent issue in hospitals and long-term care facilities (Voegeli, 2019). Studies have shown that skin tone bias exists in the diagnosis and treatment of MASD, the impact of which this paper discusses as well as how to prevent such bias while assessing and diagnosing MASD.

KEYWORDS:

■ Skin tone bias ■ Dark skin tones ■ Assessment ■ Management

Inequalities in healthcare have always been a problem. A study on undergraduate nurse education at five higher education institutions in the UK confirmed that learning was predominantly framed through a white lens, with white normativity being strongly reinforced through teaching and learning activities (Oozageer Gunowa et al, 2022). These findings highlighted that teaching skin tone diversity is needed to ensure meaningful teaching and learning experiences, with educators having a duty of care to inform and highlight health inequities in nursing to enhance equity in care.

In wound care, optimising treatment and outcomes for individual patients depends on accurate assessment and diagnosis, for which knowledge of signs and symptoms across skin tones is essential (Mukwende, 2020). In the

authors' clinical opinion, there is generally a lack of evidence around skin tones in wound care. Indeed, healthcare professionals diagnose moisture-associated skin damage (MASD) more frequently in patients with light skin tones and it has been found that patients with dark skin tones are more likely to be diagnosed with higher stage pressure ulcers (PUs), due to a lack of accurate assessment and early identification (Oozageer Gunowa et al, 2017). This can result in:

- ▶ Delayed healing
 - ▶ Prolonged hospitalisation
 - ▶ Increased risk of infection
- (Oozageer Gunowa et al, 2017).

In the authors' opinion, by applying colour awareness to holistic wound assessment, healthcare professionals can more appropriately manage skin conditions among patients of all skin colours and help reduce disparities in healthcare delivery.

Mukwende et al (2020) published a book, *Mind the Gap*, to educate students on the importance of recognising that certain clinical signs do not present the same on dark skin. Indeed, many of the signs

and symptoms that clinicians have been educated to look for when assessing patients' skin may present differently, depending on their skin tone. For example:

- ▶ Nurses are usually trained to assess skin breakdown by testing the skin's blanch response to light finger pressure. When evaluating for a stage I pressure ulcer, light pressure is applied to the skin; this temporarily squeezes blood out of the underlying area, reducing local blood volume and causing an area of blanching, or whitening. If the skin appears red, blue, or purplish and does not blanch, you might classify the area as a stage I pressure ulcer. But, in patients with dark skin, the blanching test has limited value, as the greater amount of melanin in dark skin may mask the blanch response, making the colour change invisible despite the local change in blood volume. It has been found that dark skin rarely shows the blanching response that clinicians are trained to look out for (Grimes, 2009)
- ▶ It is important to remember that skin irritation in patients with dark skin tones may cause hyperpigmentation (increased pigmentation) or hypopigmentation (reduced pigmentation), with no redness visible (Nijhawan and Alexis, 2011)
- ▶ Some of the issues with skin bias were highlighted during the Covid-19 pandemic when family members were being asked if potential Covid patients looked 'pale' or if their lips had 'turned blue' — not useful descriptors for patients with black skin, therefore compromising care (Mukwende et al, 2020).

Skin colour can reflect a patient's overall health and is an important

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part of assessing skin breakdown and wound healing. For instance:

- ▶ Pallor may indicate anaemia
- ▶ Cyanosis may signal hypoxemia
- ▶ The degree and extent of skin redness is important in burn care
- ▶ Understanding skin colour changes is crucial for detecting and staging pressure ulcers (Everett et al, 2012).

The exact nature of colour changes such as pallor, cyanosis, and redness varies with the patient's natural skin colour — and this can be challenging in providing clinically competent and culturally sensitive care. Long a source of discrimination, skin colour is a socially sensitive issue. Identifying and evaluating skin colour raises questions about stereotyping. It is clear that a systemic change is needed to eradicate the significant health inequities due to skin tone across care settings (Oozageer Gunowa et al, 2017; Mukwende, 2020).

WHAT CAUSES DIFFERENT SKIN TONES?

Simply said, skin tone is the result of melanin, a brown pigment in the skin. Melanin is produced in the epidermal layer of the skin and its purpose is to protect the skin by absorbing harmful ultraviolet (UV) radiation from the sun (Spierings, 2022). When the skin meets UV rays, cells called melanocytes produce additional melanin, which gives the appearance of darker skin. There is no difference in the number of melanocytes between skin types. The palest and darkest person will, on average, have the same number of these cells, i.e. melanocytes in their skin. However, the production and concentration of melanin in the epidermis is greater in dark skin (Spierings, 2022).

Skin tone can be constitutive or facultative. Constitutive skin tone refers to the genetically determined levels, types, and distribution of epidermal melanin, which is not influenced by intrinsic or extrinsic factors. Facultative skin tone refers to an increased epidermal melanin content as a result of intrinsic factors (e.g. hormones) or extrinsic factors

(e.g. environmental factors such as sunlight) (Everett et al, 2012). This means that skin colour can be changeable across all skin tones.

CHALLENGES IN DIAGNOSIS AND TREATMENT

There are several challenges in diagnosing and treating MASD in patients with dark skin tones. One is the visual appearance of MASD. MASD often presents as erythema or redness, which can be difficult to see in patients with dark skin tones. Additionally, healthcare providers may be less familiar with the visual appearance of MASD in patients with dark skin tones, leading to underdiagnosis and undertreatment.

MASD represents another area of skin damage where identifying 'redness' is often referred to, and consideration needs to be made of how this may present in a range of skin tones. Classification of IAD — for example, the Ghent Global IAD Categorisation Tool (GLOBIAD) — relies on 'redness' as a key indication of damage, while noting that, in patients with dark skin tones, this may present as skin that is paler or darker or more purple than red (Beeckman et al, 2018). It is important that healthcare professionals are aware of this distinct difference.

Erythema

Erythema (from the Greek, *erythros*, meaning red) means a change in colour of an area of skin, caused by increased blood flow (British Association of Dermatologists [BAD], 2021). It has traditionally been used to detect skin areas that may be infected or have other abnormalities. It is a symptom common to many diseases, such as infections and inflammatory skin diseases like eczema or psoriasis (Dhoonmoon et al, 2023). While redness can be an obvious symptom in people with less deeply pigmented skin, where it contrasts clearly against light skin tones, this is not necessarily the case in people with dark skin tones, for example, black, brown and olive skin tones (Dhoonmoon et al, 2021). Changes in colour can run the spectrum of pink, red and purple — in some

Practice point

In wound care, it is important to remember that skin tone is separate from race, e.g. not all people classified as Black have dark skin tones. Terms like 'brown' or 'black' should be used, i.e. those that do not centre around lighter skin tones or use light skin as the 'norm' or baseline, as this raises the question 'darker than what?' For example, this would mean saying 'dark skin tones' rather than 'darker' or 'non-white'.

cases, it may be limited to a subtle darkening of the existing skin tone (Dhoonmoon et al, 2023).

An example of this is sunburn. Indeed, it is a common misconception that people with dark skin tones do not burn in the sun. It can and does happen, but may not be easily visible. If it does occur, it may not appear as 'redness' that people generally associate with sunburn. In the authors' clinical opinion, while signs of erythema in dark skin can be easy to miss, there are ways of spotting it. For example, it can be easier to spot when affected areas are compared with unaffected skin.

In the authors' clinical opinion, there is no straightforward way to predict exactly what colour erythema will look like in an individual's skin. It is dictated by a person's skin tone, of which there are many more variations than most people realise, and the nature of the disease in question. In addition to this, if inflammation is not easy to spot on a patient's skin, it is sensible to consider other potential symptoms of their condition, such as pain, warmth, swelling, signs of feeling unwell or illness (Dhoonmoon et al, 2023).

Another challenge, as discussed earlier, seen across the world is the lack of diversity in medical education and training (Dhoonmoon et al, 2021). Medical education and training often does not include sufficient instruction on the diagnosis and treatment of skin conditions in patients with dark skin tones.

In wound care, a lack of education around skin tone awareness may mean that clinicians are not trained to spot signs and symptoms in all skin tones. The challenge then being that if skin changes are not seen, they will not be treated. Healthcare professionals may miss these even when inspecting the skin, leading to late identification and diagnosis of skin damage, and potentially patient harm (Oozageer Gunowa et al, 2022).

SKIN TONE CHANGES IN MOISTURE-ASSOCIATED SKIN DAMAGE (MASD)

Risk assessment and prevention strategies are of key importance in MASD (Fletcher et al, 2020a). Clinicians must be vigilant, both in maintaining optimal skin conditions and in diagnosing and treating early stages of MASD, to prevent progression and skin breakdown (Beeckman et al, 2020). More specifically in dark skin tones:

- ▶ Limited research suggests that the hydrophilic/lipophilic balance of the skin differs across skin tones, which may affect how the skin holds moisture (Fotouh et al, 2008)
- ▶ Anecdotal evidence also suggests that dark skin tones may have increased need for moisturising treatments, but further research is required in this area.

When assessing MASD:

- ▶ A baseline should be established against which to assess/track healing or deterioration. The standard for documentation of skin assessment is within 24 hours of admission to inpatient care
- ▶ Skin tone changes must be noted. Skin may present as redness, darkening, lightening or purple tones. Damage may be difficult to spot if clinicians are just looking for signs of redness
- ▶ Inspect the skin thoroughly and regularly. Skin assessment should be ongoing in inpatient and long-term care
- ▶ Ensure protective measures, such as barrier products, are used when patients are at significant

risk of MASD, before the damage occurs

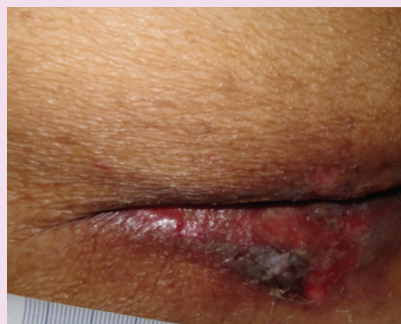
- ▶ It is important to be aware of changes when MASD is classed as severe, i.e. the epidermis has been eroded away due to prolonged exposure to moisture. Melanin is in this epidermal layer and so when the lower layers, i.e. the dermal layers of skin, are exposed, MASD will present as pink or red in all skin tones (Fletcher et al, 2020b).

Good skin assessment is fundamental and should include:

- ▶ Touching the skin, feeling for heat, moisture, texture of the skin
- ▶ Listening to the patient's perspective to aid accurate assessment and understanding their personal choices and preferences
- ▶ Looking and comparing similar anatomical locations
- ▶ Photographing and documenting wound and skin changes.

The cases below illustrate how MASD will appear in dark skin tones.

Case study one



This patient was admitted to hospital from a care home following an episode of recurrent chest infections and sepsis. The patient had urinary incontinence and used incontinence pads and was nursed in bed. The patient was prescribed several medications but was not using any prescribed skin care, such as emollients or barrier products. The patient was extremely dehydrated and had severe incontinence-associated dermatitis (IAD) to the natal cleft and the skin was broken and weeping.

The image shows that the skin has become hyperpigmented and darkened. This would have been the first sign of moisture damage and changes to the skin due to prolonged exposure to moisture. Post inflammatory hyperpigmentation (PIH) is when the skin in an area of injury becomes darker due to increased pigment (melanin) left from the healing process. Dark skinned individuals are more prone to have PIH and it can appear as dark brown or a reddish brown in colour (Grimes, 2009). Because the patient's skin was not protected and had been exposed to continuous moisture from urinary incontinence, the IAD progressed to severe. This is when the skin has broken, and the area has become pink and red where the dermal layers are now exposed.

Medi Derma-PRO Skin Protectant Ointment and Medi Derma-PRO Foam & Spray Incontinence Cleanser were used to help heal and protect the skin from further breakdown. After four days of use with the ointment, the moisture damage was less severe. The skin had started to heal, with less exudate and fewer broken areas. The patient appeared more comfortable. After seven days of treatment the patient's skin management was able to be stepped down to a film product for protection.

Case study two



This patient was admitted for acute confusion and a urinary tract infection (UTI). The patient was incontinent of urine and had previously had episodes of IAD and been prescribed a barrier cream. As seen in the image

above, there is extensive scarring to the natal cleft from previous episodes of IAD.

In the authors' opinion, dark skin does tend to be more prone to scarring, which can be a barrier to diagnose IAD, as the skin is already very discoloured. In this case, the wound was bleeding from the creases in the natal cleft, which suggests that this area is damaged from moisture and is open. It is important for the skin to be clean and thoroughly dry in the skin folds, to prevent further damage (Fletcher et al, 2020b). A barrier film product, Medi Derma-S Total Barrier Film, which can be applied to wet skin that is open was prescribed to give longer lasting protection against the moisture damage.

Using a film allowed the skin to be protected from further moisture damage in the skin fold by diverting the moisture and reducing friction. After using Medi Derma-S Total Barrier Film for three days, the patient's skin improved — it was no longer open or bleeding. Moving forward, it was advised that the patient continued to use this barrier film, as it is a more suitable product to use in skin folds that are regularly exposed to moisture.

DISCUSSION

Considering the clinical cases shared here, it is important to understand that lack of awareness, education, and training in correctly assessing/diagnosing different skin tones may have easily led to misdiagnosis or an incorrect diagnosis, and possibly delayed treatment for certain patients with MASD. Collaborative efforts across different sectors of influence (such as universities, hospitals, primary care, industry partners and care sectors) and training are required — first, by incorporating education to increase awareness of different skin tones; second, avoiding skin tone bias to facilitate and ensure equality in treatment across patients.

CONCLUSION

Regardless of patient demographics, clinicians should have the knowledge and awareness to provide optimal care for all. Healthcare providers need to understand that different skin tones require varying approaches to wound care, and patients from diverse backgrounds may have different needs to skin and wound care. When assessing and diagnosing MASD, a clear distinction across different skin tones from white to olive, to brown and black, and different types of dark skin tones, is essential.

An overarching goal should be to drive awareness, enhance education, provide exposure to different skin tones and provision of ongoing training for all healthcare professionals. In all wound types, it is important to be aware of how signs and symptoms may present in a range of skin tones. Wound care education must be ongoing and constantly evolving to keep pace with changes in healthcare practice and technology. By staying up to date with best practice, healthcare providers can ensure that they are providing the best possible care to all patients, regardless of their skin colour. **JCN**

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