Challenges of identifying eczema in darkly pigmented skin

With the changing demography of the UK, it is imperative for nurses to be culturally aware and competent in identifying and treating skin conditions presented in people across a spectrum of ethnic backgrounds, as Joan Myers explains.

**Abstract**

There is a paucity of information about the difference in the presentation of eczema in darkly pigmented skin compared to children with fair or white skin. This article describes the possible challenges of diagnosing eczema in children with darkly pigmented skin. The physiological difference in darkly pigmented skin compared with fair or white skin is explored, and how eczema may be manifested and identified in darkly pigmented skin. The author uses the term darkly pigmented skin to describe children of black Caribbean, African or Asian descent.

**Keywords**

Child health, darkly pigmented skin, eczema, minority groups, paediatrics, skin

SKIN COLOUR is an important consideration when making assessments and diagnosing clinical conditions, particularly visual observable assessments, such as gauging tissue perfusion, assessing for jaundice, pallor, cyanosis and the blanch response (Everett et al 2012).

However, the challenge of assessing darkly pigmented skin was rarely mentioned until recently in medical or nursing textbooks or in the wider literature, including dermatological textbooks giving guidance on clinical assessments in dermatology. Petit and Tailor (2013) reported that clinical dermatology emerged as a concept in Europe in the 19th and 20th centuries, and many classic texts described skin diseases as they present in white-skinned patients.

The National Institute for Health and Care Excellence (2007) recognises that atopic eczema in children from Asian, Caribbean and African backgrounds may present differently in their white counterparts. The term darkly pigmented skin will be used in this article to refer to people of black African, Caribbean or Asian descent.

Domingo and Matsui (2009) acknowledged that there is a paucity of research and academic acknowledgement of any difference in presenting skin conditions when assessing or making differential diagnosis in white or darkly pigmented skin. Dadzie (2009) surveyed trainee dermatologists in the UK and found that they experienced challenges in diagnosing dermatological conditions in darkly pigmented individuals. Ebede and Papier (2006) stated there are deficiencies in dermatology educational resources, and a possible lack of training about diagnosing and managing skin conditions in darkly pigmented individuals among dermatologists.

**Cultural competence**

There is, however, a need for healthcare professionals to be cognisant and competent in assessing, diagnosing and managing dermatological conditions in patients from ethnically diverse backgrounds. Epidemiological studies and data obtained from health service records indicate that there are observable differences in the presentation of different dermatological conditions in people with darker skin pigments (Alexis et al 2007).

Cultural competence is the ability of healthcare professionals to apply knowledge and appropriate skills in their interaction with clients from diverse ethnic backgrounds (Srivastava 2007). This is particularly important in the UK, which shows considerable demographic change towards becoming an ethnically diverse society, with more than 50% of primary school children coming from non-white ethnic groups (Office for National Statistics 2011).
It is vital that healthcare practitioners recognise the difference in the appearance and presentation of skin conditions in darkly pigmented skin (Bethell 2005).

Bhopal (2007) stated that looking at ethnic or racial variations in health can provide a better understanding of disease aetiology and assessment, and can lead to better care planning. However, this should not be done in isolation. The patient’s environment, lifestyle, culture and genetic make-up should be considered important factors when making a differential diagnosis (Bhopal 2007).

This article outlines some areas of the physiology of the skin that help explain why eczema may present differently in children with darkly pigmented skin compared with children who have white skin. It also explores the effects of itching and scratching on darkly pigmented skin, and the possible challenges this poses when assessing, diagnosing and managing eczema in children with such skin.

The management of atopic eczema in children will not be examined because there is an abundance of literature on this subject and its management is the same irrespective of ethnicity and skin pigmentation (Myers 2009, 2013, Van Onselen 2012, Lawton 2014).

**Physiology**

**Skin colour** Melanin is the primary determinant of skin colour; it is present in all skin types, but how close it is to the surface of the skin determines how dark the skin will appear (Everett et al 2012). Melanin is synthesised by melanocytes in the basal layer of the epidermis regardless of a person’s ethnic group. However, in darkly pigmented skin, the rate of production, size and shape of the melanocytes is greater in concentration compared with the melanocytes of people who are fair or light skinned (Alexis et al 2007).

Skin colour is the main factor that affects how dermatological conditions differ in presentation in children with darkly pigmented skin compared with those who have white skin (Manning 2004, Rawlings 2006). One of the main challenges dermatologists encounter is in interpreting the presentation of erythema. Inflammatory changes in darkly pigmented skin are more subtle, and the severity of atopic eczema can be underestimated Van Onselen (2012).

Hypopigmentation is the loss of skin colour and hyperpigmentation is the presence of increased pigmentation, which causes the skin to become even darker. These changes can occur as a result of cutaneous inflammation, injury or dermatological treatment (Van Onselen 2012). Post-inflammatory hypo- or hyperpigmentation is more intense and persistent, and more vivid in darkly pigmented skin (Manning 2004).

The stratum corneum, the outer layer of the epidermis, is the same thickness in darkly pigmented and light skin, however, darkly pigmented skin has more cell layers, making it more difficult to remove. Constant rubbing and scratching will cause lichenification or skin thickening to be more prominent or pronounced in darkly pigmented skin (Petit and Diallo 2013) (Figure 1).

Lichenified skin is sometimes described as looking like elephant hide or like the bark of a rough tree. Lichenification is usually seen in chronic eczema; however, in darkly pigmented skin it may be manifested in the acute phase of atopic eczema (Viera et al 2013).

**Collagen** Darkly pigmented skin contains extremely compact bundles of collagen – a protein that makes up the fibres in the skin – in greater number between the epidermis and dermis. The epidermal junction length in darkly pigmented skin is three times that of lighter skin (Taylor 2002).

This increased amount of collagen has positive and negative effects on the skin. It causes darkly pigmented skin to appear more plump and taut compared with white skin and, as a result, it is less likely to wrinkle (Czerkasij 2013).

However, the greater amount of collagen means that dark skin is more prone to excessive scarring than white skin due to the formation of fibrosis residue, leading to keloid scarring (Viera et al 2013). According to Mustoe et al (2002), keloid scars are more likely to develop in darkly pigmented skin than lighter skin, which means they are more prevalent in people with darkly pigmented skin (Viera et al 2013).

**Ceramide** Jungersted et al (2010) found that darkly pigmented skin has a lower level of ceramide (waxy lipid) in the stratum corneum, so it is more prone to dryness and possible skin infection, especially if a child has atopic eczema. It is especially prone to dryness after washing or with overuse of cleansers and detergents. In the UK air humidity is lower than in warmer climates, so those living in the UK have an increased risk of skin dryness (Jungersted et al 2010).

**Looking at ethnic or racial variations in health can provide a better understanding of disease aetiology and assessment**
When darkly pigmented skin is dry it may have an ‘ashy’ appearance, giving it a grey hue (Uhoda et al 2003). This light grey scaly appearance of dryness is sometimes perceived as a sign of poor health, but it is not necessarily a sign of eczema. The ashy appearance is more likely to be a sign of mildly dry skin. In clinical practice and in the experience of the author, people with darkly pigmented skin consider the shiny appearance of their skin to be a sign of good health and so they prefer to keep their skin smooth and shiny by ensuring that it is well moisturised.

Atopic eczema
Atopic eczema is a common chronic relapsing inflammatory pruritic skin condition that can affect a child of any ethnic origin. However, there may be an ethnic variation in the clinical presentation of atopic eczema in darkly pigmented skin compared with lighter skin tones (Treadwell 2013). Shaw et al (2011) state that eczema appears to be more prevalent in darkly pigmented skin and its presentation differs to that in white or very fair skin.

Vachiramon et al (2012) stated that it can be challenging to recognise early stage eczema in darkly pigmented skin due to differences in initial presentation. Petit and Tailor (2013) reported that variable changes in the colour of darkly pigmented skin with a dermatological condition may mask other clinical conditions. It is, therefore, important to be aware of the challenges in identifying, diagnosing and managing the presentation of eczema in children with darkly pigmented skin (Czerkasij 2013).

### Box 1 Diagnostic criteria for atopic eczema

To be diagnosed with atopic eczema the child must have an itchy skin condition (or reported scratching or rubbing in a child), plus three or more of the following:
- General dry skin in the past year
- A history of itchiness in skin creases, such as the folds of the elbows, behind the knees, front of ankles or around the neck (or the cheeks in children under four years)
- A history of asthma or hay fever (or a history of atopic disease in the first-degree relative in children under four years)
- Visible, flexural eczema (or eczema affecting the cheeks or forehead and outer aspects of limbs in children under four years). Darkly pigmented skin is more likely to have eczema in outer aspects of limbs
- Onset in the first two years of life (not always diagnosed in children under four years)

(National Institute for Health and Care Excellence 2007)
Atopic eczema is associated with dysfunction in the epidermal layers of the skin (Brown and Reynolds 2006). This irritating pruritic disease affects the epidermis and dermis, and generally manifests at three months of age but can occur at any age. Although there is no cure for eczema, most children are likely to grow out of it by their teenage years.

Diagnosis of atopic eczema is made on observable clinical presentation because there is no specific laboratory test (Lawton 2008). Box 1 lists the diagnostic criteria for eczema, which is the same regardless of ethnic group.

Diagnosis

The diagnosis of eczema in darkly pigmented skin can be challenging because of its sometimes different presentation to fair or white skin (Jarvis 2004). For example, atopic eczema, which usually appears primarily in flexure of elbows and behind knees, may have a reverse pattern in darkly pigmented skin, presenting in the extensor surfaces first as well as flexures (Van Onselen 2012).

This is the result of constant rubbing and scratching. It can vary from acute oozing through to skin thickening very quickly. Reaction patterns are prominent and often exaggerated in darkly pigmented skin (Petit and Diallo 2013) (Box 2).

Other types of eczema

Seborrhoeic eczema Also known as cradle cap, this type of eczema can sometimes result in hypopigmentation where skin appears lighter, especially around the hairline, on the face, flexures of limbs and in the nappy areas. Most cases of hypo- or hyperpigmentation resolve spontaneously in a few months or weeks of treatment (Callender et al 2011).

Discoid eczema A type of eczema that appears as round disc-shaped nummular lesions and is more common in darkly pigmented skin. This type of eczema can be misdiagnosed as ringworm in darkly pigmented skin. The round brown or reddish blistering lesions are extremelyitchy; the skin around them may appear normal and dry, but they can still be itchy.

Follicular eczema Occasionally, the only feature of eczema in darkly pigmented skin is multiple follicular papules; this is known as follicular eczema, which is focused around the hair follicle. The presentation of the multiple follicular papules – raised and spotty skin that looks like goose pimples – is unique to darkly pigmented skin (Allen et al 2008).

Eczema in babies with darkly pigmented skin may appear as follicular eczema, which can blister and crust due to excessive scratching. Box 3 describes colour changes in presentation of eczema in darkly pigmented skin.

Diagnosis

To enable correct diagnosis of eczema in darkly pigmented skin it is important to accurately assess the skin. Assessment must include inspection and palpation, as well as asking the patient or parent to describe and show where there are areas of concern.

The colour, presence of an open wound, warmth, moisture and turgor of the skin can aid assessment and diagnosis of eczema (Hess 2010). In assessing for eczema, the practitioner needs to feel the texture and check the skin for heat, scaling, crusting or hyperkeratosis – a build-up of skin cells (Manning 2004).

Erythema or redness is more difficult to detect in darkly pigmented skin (Bethell 2005, Clark 2010). Rashes also may appear more purple-brown in colour, making it harder to assess the severity of acute eczema (Ben-Gashir et al 2002, Hart 2002). It is crucial to look for other signs such as tenderness, lumpiness, warmth and scratch marks, as well as oozing or crusting on the skin.

**Box 2** Presentation of eczema in darkly pigmented skin

<table>
<thead>
<tr>
<th>Condition</th>
<th>Colouration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follicular</td>
<td>Small papules around hair follicles, which are often diffuse</td>
</tr>
<tr>
<td>Discoid</td>
<td>Often becomes hyperpigmented</td>
</tr>
<tr>
<td>Lichenification</td>
<td>Scars</td>
</tr>
<tr>
<td>Keloid formation</td>
<td>Scars</td>
</tr>
<tr>
<td>Post-Inflammatory hypopigmentation</td>
<td></td>
</tr>
</tbody>
</table>

**Box 3** Skin colour changes in darkly pigmented skin

<table>
<thead>
<tr>
<th>Condition</th>
<th>Colouration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallor</td>
<td>Ashen grey, or yellow-brown, dark brown dull-looking skin</td>
</tr>
<tr>
<td>Inflammation</td>
<td>Hyperpigmentation, darker brown discolouration of skin</td>
</tr>
<tr>
<td>Erythema</td>
<td>Purplish tinge, which may be difficult to see, macular, local or generalised. Feels warm to touch, skin may be taut and feel hardened</td>
</tr>
</tbody>
</table>

(Adapted from Hughes and Van Onselen 2000)
The child or parent may be able to detect very subtle changes in skin colour, so it is important to ask them to show you what is normal skin colour and what is abnormal colouration or erythema. By inspecting and comparing one area with another the health practitioner will be able to identify changes in skin colour (Hughes and Van Onselen 2000).

**Conclusion**

Historically, dermatology has focused on white skin. However, with the changing demography of the UK, it is imperative to consider a global perspective when diagnosing and managing skin conditions. This must, therefore, include accurately assessing patients of African, Caribbean and Asian (Dadzie 2009) descent.

This is important because dermatological conditions, such as atopic eczema, may present differently in darkly pigmented skin and patients may respond differently to treatment or require alternative therapies from people who have white skin. It is vital that healthcare professionals are culturally aware and competent in detecting, diagnosing and treating skin conditions presented by people from diverse ethnic backgrounds.

**References**


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