

# A scoping review exploring the confidence of healthcare professionals in assessing all skin tones

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## Abstract

**Background:** Health inequalities and poorer outcomes have been identified for patients with dark skin tones. The reasons are multi-factorial, but may include delayed treatment due to a lack of recognition of early clinical signs of physiological deterioration. Within the medical literature there is a light skin tone bias, leading to healthcare professionals having insufficient knowledge regarding the assessment of patients with different skin tones, which may result in reduced confidence and create patient safety issues. The aim of this scoping review was to explore the confidence levels of healthcare professionals when assessing patients of different skin tones.

**Methods:** The methodology followed scoping review frameworks set out by Arksey and O'Malley (2005), the Joanna Briggs Institute (Peters et al., 2020), and the PRISMA Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018). Searches for literature were performed between February and June 2022 using electronic databases EBSCO (Academic Search Complete, The Allied Complementary Medicine Database, e-journals, MEDLINE, CINAHL), British Nursing Index (ProQuest), Scopus, Web of Science, Zetoc, UpToDate, Google Scholar, NICE Evidence, ResearchGate, Opengrey and The British Association of Dermatologists. No date range was specified, expanders were left on, and the findings screened using inclusion and exclusion criteria. Included papers were synthesised using narrative synthesis.

**Results:** Thirteen papers were identified, and the extracted data charted by the paper's origin, sample size, profession and confidence levels. Our synthesis revealed reduced confidence in assessing, managing and diagnosing skin conditions in dark skin tones. A lack of training was cited by different health professionals, but undertaking tailored training and experiential learning increased confidence.

**Conclusions:** There is a safety issue for patients with dark skin tones, as healthcare professionals lack clinical confidence in managing and treating all ethnicities equally. Tangible diversity within healthcare training is required, supported by inclusive skin tone imagery and appropriate terminology within medical literature.

### **Keywords**

confidence; ethnicity; healthcare; paramedic; skin tone

## **Introduction**

Confidence in the clinical assessment of patients is likely to vary between clinicians, since confidence stems from knowledge (Rotenstreich, 1972). Confidence can be gained through formal learning and experience, but if a subject is not taught, understood or acknowledged as important to be learned, it will lead to variability in clinical practice. The range of confidence in assessing dark skin tones by different healthcare professionals is not known, but health inequalities relating to ethnicity and skin tone continue to exist and negatively affect patient outcomes (NHS Race and Health Observatory, 2022; Williams et al., 2022). Institutional racism is one underlying explanation, (Diop et al., 2021) but limited clinical confidence in assessing patients with all skin tones may be another. The Equality Act (2010) lists race as a protected characteristic, which is subdivided into 'colour, nationality and ethnic or national origins,' but it is unclear if clinical assessment knowledge is currently sufficient to ensure equality for all.

Traditional imagery in medical and healthcare literature suggests a bias towards light skin tones (Lester et al., 2019; Massie et al., 2021). These sources underpin much of the clinical training provided, indicating that skin tone bias applies when training clinicians, including paramedics. It is also apparent in the colloquial clinical terminology used in skin assessment, for example using terms like pale, redness, blue, which are not inclusive and could create bias in what is looked for. Subsequently, clinicians will lack the necessary knowledge to become confident in examining, managing or treating patients with dark skin tones (Rotenstreich, 1972). Clinical assessment guidelines, such as the Joint Royal Colleges Ambulance Liaison Committee, & Association of Ambulance Chief Executives (2022) are showing changes in assessing the subtleties of all skin tones, but this is a relatively new development and does not appear to have extended into physiology books aimed at paramedics. This suggests that there may only be limited changes in clinical practice occurring, such as routinely examining the palm creases of patients for pallor as a standard part of a systematic ABCDE approach (JRCALC 2022;

Resuscitation Council (UK), 2021). The ABCDE approach is designed to enable clinicians to identify life threatening unwell patients rapidly, enabling earlier treatment to prevent further deterioration, but if the emphasis remains on assessing light skin, patients with a dark skin tone who are seriously unwell may not be detected early. A further issue is pulse oximetry, which can produce inaccurate readings in those with a dark skin tone (Fawzy et al., 2022; Sjoding et al., 2020). Inaccurate pulse oximetry led to a 'significantly delayed' treatment for patients with a dark skin tone in a retrospective cohort study conducted by Fawzy et al. (2022). The comparison of pulse oximetry and simultaneous arterial blood gases were undertaken in 7126 patients, finding that pulse oximetry readings overestimated the actual oxygen saturation levels in patients with dark skin. Early patient deterioration was not detected through other clinical signs either, reinforcing the suggestion that because literature encourages light skin assessment, clinicians may not be identifying warning signs, such as peripheral cyanosis on dark skin.

The issue is complicated further, because racism continues to exist within healthcare (NHS, 2022; NHS Race and Health Observatory, 2022; The King's Fund, 2020). Conversely, clinical bias may also be due to 'colour blindness' where clinicians avoid acknowledging skin tone as they do not wish to appear racist (Penner & Dovidio, 2016). Unfortunately, this denial of a patient's individual characteristics may be inadvertently creating negative healthcare outcomes (NHS Race and Health Observatory, 2022) and could be compounded by an unacknowledged lack of confidence in treating all skin tones.

This background rationale led to the development of this scoping review, with its aim to explore the existing literature on the confidence levels of healthcare professionals when examining patients with differing skin tones.

## Methods

A scoping review was selected to identify gaps in research by exploring a wide range of sources (Booth et al., 2022). The review was undertaken following the methodological framework by Arksey and O'Malley (2005), underpinned by the Joanna Briggs Institute *Manual for evidence synthesis* (Peters et al., 2020) and PRISMA Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

Database searches were conducted in two stages between February and June 2022 by the author. The Cochrane Library, EBSCO (Academic Search Complete, The Allied Complementary Medicine Database, e-journals, MEDLINE, CINAHL), British Nursing Index (ProQuest), Scopus, Web of Science, Zetoc and UpToDate were searched in February 2022, with no parameters regarding date ranges. The selection of electronic databases was based on seeking to find papers related to allied health

professionals, nurses, physicians and clinicians. Search terms were mapped using PerSPecTIF (Booth et al., 2022), and sought for in abstracts and titles with expanders left on. Table 1 details the search terms used in the EBSCO database and includes synonyms relating to ‘healthcare professionals’ ‘clinical setting’ ‘confidence’ ‘assess\*’ ‘skin tone’ and ‘ethnicity’. Several different searches were undertaken, with each set of results screened for eligibility for inclusion.

**Table 1.**

EBSCO database search (February 2022).

<b>Database: EBSCO</b> (with Academic Search Complete, The Allied Complementary Medicine Database, e-journals, MEDLINE, CINAHL) Date of search: 19 February 2022–27 February 2022	<b>Results</b>
‘healthcare professional’ OR physician or doctor OR nurse OR paramedic or dermatologist OR practitioner or clinician or therapist (field: abstract) AND confidence OR self-efficacy OR ‘self efficacy’ OR self esteem (field: title) AND skin OR ‘skin of colour’ or ‘skin of color’ OR BAME or BME OR ethnicity OR race OR divers* (field: title) AND *hospital OR clinical setting OR *care (field: abstract) AND *hospital OR clinical setting OR *care (field: abstract)	4474 results (28 repeats)

Duplicate results were removed automatically. The remaining records were initially screened by title, using the inclusion and exclusion criteria listed in Table 2. The remaining records were screened by abstract, and then full text.

**Table 2.**

Exclusion and inclusion criteria.

Exclusion criteria	Rationale
<ul style="list-style-type: none"><li>• Perspectives from the patient viewpoint</li></ul>	Only clinician perspectives were sought
<ul style="list-style-type: none"><li>• Skin referred to in relation to cancers, or certain conditions, or disease, rather than skin tone</li></ul>	Exploring skin as an organ was not the review question
<ul style="list-style-type: none"><li>• Papers primarily discussing other protected characteristics such as gender reassignment, sex, sexual orientation, age, disability, gender reassignment, religion/belief, pregnancy and maternity</li></ul>	Not directly relevant to skin tone
<ul style="list-style-type: none"><li>• Papers published in anything other than English</li></ul>	One researcher with one spoken language and no resources for translation
Inclusion criteria	Rationale
<ul style="list-style-type: none"><li>• Unlimited time range</li><li>• Published and unpublished literature</li><li>• All study designs (e.g. primary research, literature reviews, journal letters, conference papers)</li><li>• All methodologies</li><li>• Papers involving any healthcare professional or student and confidence in assessing dark skin tones</li></ul>	For a wide search strategy in line with a scoping review

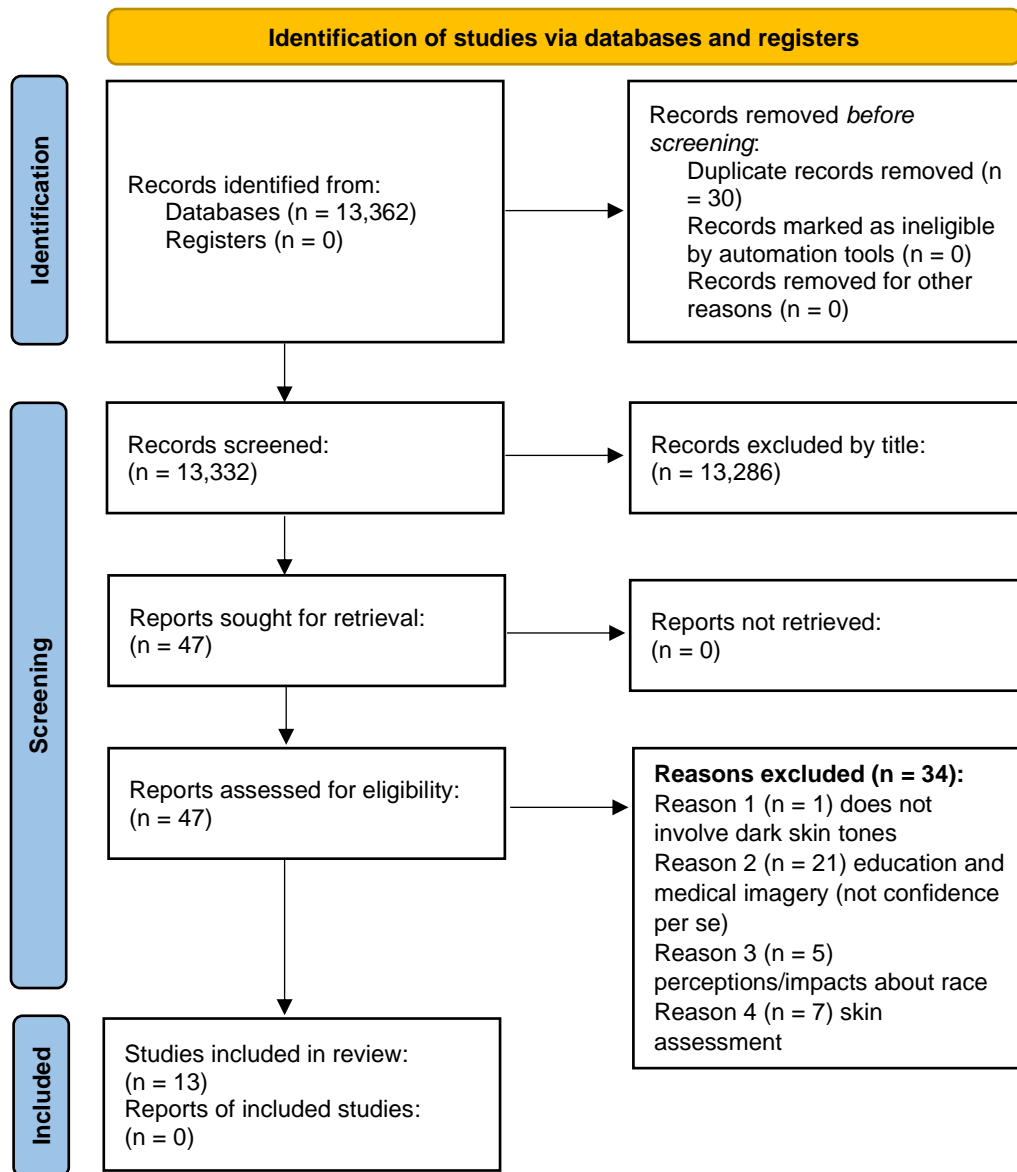
A further database search was undertaken between April and June 2022, using the e-database EBSCO, plus Google Scholar, NICE Evidence, ResearchGate, Opengrey and The British Association of Dermatologists. Each paper was searched forwards and backwards for relevant studies. EndNote 20 software was used to store all references, and any duplicates not already removed during the search were eliminated manually.

Data charting was used to identify concepts, as per the Joanna Briggs Institute guidance (Peters et al., 2020). The charting was undertaken twice by one researcher, to limit inconsistencies. It mapped the paper's origin, sample size, profession and confidence levels to identify where, why and for who confidence might vary, with context around the size of study. Narrative synthesis was conducted by

the author to synthesise included papers, following guidance obtained from the 'Cochrane consumers and communication review group' (Ryan, 2013).

Figure 1.

PRISMA 2020 flow diagram (Page et al., 2021).



## Results

The database searches revealed 13,362 records, of which 13,286 were excluded by title, and 47 after full-text review (see Figure 1). Thirteen final papers were included in the final analysis. All papers were published in the last five years, potentially suggesting the emergence of a fairly new area in literature. Characteristics of all included papers are shown in Table 3.

**Table 3.**

Data charting of papers.

Author, methodology	Study aim	Country	Profession involved	Sample size	Confidence levels and context (knowledge/ training)
Bellicoso et al. (2021) Quantitative cross-sectional case study	To assess accuracy in diagnostics and student confidence when viewing five common skin lesions in a range of skin tones.	US (Toronto)	Medical students	Cohorts Year 1: <i>n</i> = 101 Year 3: <i>n</i> = 76	Higher confidence in year 1 students than year 3.  Less confidence when assessing dark skin tones for both cohorts.  Accuracy in diagnosis was > 70% in both groups for all skin tones.
Buonsenso et al. (2022) Quantitative cross-sectional case study	To explore the content of learning resources for clinicians and their self-confidence in skin condition diagnosis in a range of skin tones.	Global (via website)	Any healthcare professional or healthcare student	<i>n</i> = 600	Confidence higher if <ul style="list-style-type: none"> <li>• training had involved diversity in skin tones,</li> <li>• participant had more clinical experience,</li> <li>• participant lived in Africa and Latin America.</li> </ul> Dermatologists had highest confidence.  Low confidence across a range of skin tones.  Clinician ethnicity did not affect confidence.



Fenton et al. (2020) Letter to <i>Journal of the American Academy of Dermatology</i> describing small quantitative primary study	To establish accuracy in skin condition diagnosis in a range of skin tones (as per Fitzpatrick phototypes).	US (Tulane and Oklahoma)	Medical students (years 1 to 4)	$n = 177$	Experience improved accuracy in diagnosis.  For improved training, all skin conditions need to be shown in all skin tones.  Newer students achieved lower levels of accuracy in diagnosis.  Reduced accuracy in diagnosis in dark skin tones for certain skin conditions.
Fourniquet et al. (2019) Abstract only. Small primary quantitative study	To evaluate self-efficacy in medical students before and after a training module covering pathology in dark skin tones.	US	Medical students	$n = 14$	Educational module about different skin tones increased confidence in specific skin related diagnoses.
Gupta et al. (2021) Quantitative cross-sectional case study	To determine confidence in dermatology residents when assessing and diagnosing skin of all tones.	US	Dermatologists	$n = 125$ (from 46 different residency programmes)	Confidence increase with <ul style="list-style-type: none"> <li>• clinical experience</li> <li>• more years of training</li> <li>• teaching involving a range of skin tones especially if taught by an expert.</li> </ul> More confidence when assessing and managing patients with white skin in all aspects.
Kannuthurai et al. (2021)	To establish the level of confidence of healthcare professionals in diagnosing	US (Missouri)	Healthcare professionals (in rheumatology,	$n = 132$	Confidence increases with experience.

Quantitative cross-sectional case study	patients with lupus related rashes in dark skin tones.		dermatology and internal medicine)		Confidence tends to be higher in all rash assessments, if higher in one.  Reduced confidence in diagnosing those with dark skin tones.
Lyman et al. (2017) Primary pilot quantitative study	To establish the accuracy of diagnosis of melanomas by general practitioners in White and Black ethnicities.	England	General practitioners	<i>n</i> = 287	Incorrect melanoma diagnosis: <ul style="list-style-type: none"> <li>• 1:2 risk black skin.</li> <li>• 1:5 risk white skin.</li> </ul> Geographical regions with a higher percentage of Black patients did not alter results.
Mhbala et al. (2021) Quantitative cross-sectional case study	To pilot a short series of lectures on dermatology to improve the 'comfort level' of treating patients with a range of skin tones.	US (Midwest)	Dermatology residents	<i>n</i> = 13	Identifying gaps in educational programmes and providing tailored education improves confidence.  Experience needed to build from the training.
O'Connor et al. (2022) Letter to <i>Clinical and Experimental Dermatology</i>	To explore confidence in Irish dermatologists in diagnosing and managing patients with a range of skin tones.	Ireland	Dermatologists	<i>n</i> = 56	Confidence in diagnosis and management of skin conditions in dark skin tones was reduced in comparison to white skin tones.  Limited training in all skin tones with low level of clinical exposure.
Oozageer Gunowa et al. (2020)	To analyse both teaching and education material on pressure injuries used in nursing education from five HEIs.	United Kingdom	Student nurses and lecturers	5 HEIs	Teaching biased towards pressure injuries in light skin tones.

Qualitative case study (multiple method collective)					<p>Insufficient preparation (knowledge) for student nurses to be managing a range of skin tones in the future.</p> <p>Terminology used related to white skin: 'pinkness, redness, blanching, mottling'.</p> <p>Mannikins used represented White ethnicities.</p>
<p>Oozageer Gunowa et al. (2021)</p> <p>Qualitative case study (multiple method collective)</p>	To explore perceptions of teaching around assessing and identifying skin pressure injuries in a range of skin tones for nursing students to identify knowledge gaps.	United Kingdom	Student nurses and lecturers	<i>n</i> = 31 and nurse lecturer	<p>Dilemmas in clinical practice due to lack of training (knowledge).</p> <p>Nurse lecturers lack confidence in all skin tones, so teaching on pressure injuries reflects this.</p> <p>Students with dark skin tones did not feel able to question the lack of diversity in teaching.</p> <p>The lack of diversity created a 'taken for granted norm' in assessing white skin, including the associated clinical terminology used.</p>
<p>Rodrigues et al. (2018)</p> <p>Quantitative cross-sectional case study</p>	To explore the confidence in Australian dermatologists in diagnosing and managing patients with a range of skin tones.	Australia	Dermatologists	<i>n</i> = 136	<p>Increased experience improved confidence.</p> <p>More training requested on managing, treating and</p>

					<p>undertaking procedures on skin of all tones.</p> <p>Reduced confidence in cosmetic and procedural dermatology in comparison with common skin conditions (in dark skin tones).</p>
Shango et al. (2022) Quantitative cross-sectional case study	To establish if confidence in medical students' diagnosis increased after a training module intervention involving training about dark skin tones.	US (Detroit)	Medical students (year 2)	<i>n</i> = 77	<p>Increase in confidence in diagnosis of skin conditions and cancer in dark skin tones after training.</p> <p>Unknown if confidence improved with diagnosis accuracy (not evaluated).</p>

HEI: high education institute.

Pervasive themes around training and confidence levels in managing all skin tones were identified as part of the narrative synthesis. The primary theme was around the impact of training, with prior learning being orientated towards light skin tones. Four studies (Buonsenso et al., 2022; O'Connor et al., 2022; Oozageer Gunowa et al., 2020, 2021) reported a perceived or observed lack of training for clinicians in assessing and managing patients with dark skin tones. Buonsenso et al. (2022) found that 74% of training sources taught only about white skin when they surveyed a range of specialisms, including paediatrics, emergency medicine, primary care and dermatologists. There was further evidence of a white skin tone bias within nursing teaching where 'there is strong reinforcement of white being the norm' (Oozageer Gunowa et al., 2020). In a sample of dermatologists surveyed by Rodrigues et al. (2018), 91% felt they would like more training in medical conditions or surgical issues seen in dark skin tones. Offering tailored training packages on managing, assessing or diagnosing all skin tones did improve confidence in several studies (Buonsenso et al., 2022; Fourniquet et al., 2019; Gupta et al., 2021; Mhbala et al., 2021; Shango et al., 2022), but highlighted further nuances to consider. An example was Gupta et al. (2021), who found that training delivered by an expert in dark skin tones increased confidence, while Oozageer Gunowa et al. (2021) suggested that white-skinned lecturers presenting their training through a white lens viewpoint, detracted from the learning possibilities.

The main theme of a reduced confidence when diagnosing skin conditions in dark skin tones was supported by Buonsenso et al. (2022), Gupta et al. (2021), Kannuthurai et al. (2021) and Rodrigues et al. (2018). Similarly, there was also generally more confidence shown when assessing or managing skin conditions in patients with light skin tones, than in dark skin tones (Bellicoso et al., 2021; Fourniquet et al., 2019; Gupta et al., 2021; Mhbala et al., 2021; O'Connor et al., 2022; Oozageer Gunowa et al., 2021). Only one study found that most participants (75%) felt confident in managing skin conditions in all skin tones (Rodrigues et al., 2018). However, many participants in this particular study worked routinely with patients of all skin tones due to the geographical area worked in. Buonsenso et al. (2022) similarly found that participants working in Africa and Latin America had higher confidence in diagnosis, but along with two other studies (Gupta et al., 2021; Kannuthurai et al., 2021) found that more years of clinical experience generally increased diagnostic confidence too. It was this nuance around location that suggested the actual content of the experience was more relevant than clinical experience per se, in increasing confidence. These outcomes together create a strong theme linking experience and confidence, but do not address diagnostic accuracy. This was found to be above 70% when medical students examined all skin tones (Bellicoso et al., 2021), but only 47% (year 1 medical students) and 62% (year 3 medical students) in a smaller study (Fenton et al., 2020). Similarly, a study with general

practitioners in England found a much higher incidence of misdiagnosed melanoma in a dark skin tone: one in two, compared to one in five in white skin (Lyman et al., 2017).

The literature suggests that clinical confidence is generally reduced when assessing patients with dark skin tones, but experiential knowledge is being gained in geographical areas with diversity in skin tones.

## Discussion

The findings suggest that healthcare professionals have poor clinical confidence in assessment, management and treatment of skin conditions in dark skin tones. This finding was specific to assessing skin conditions (rather than assessing patients for any clinical condition), so the review's question remains partially unanswered and highlights a significant gap in literature. There is limited training or experience in treating patients of all skin tones to develop the required knowledge from, suggesting that positive outcomes for patients with dark skin tones will be negatively impacted.

Confidence is underpinned by knowledge (Rotenstreich, 1972) and influenced by convictions of what is believed to be true (Bernecker & Duncan, 2011). Confidence is not necessarily indicative of competence (Burch & Gordon, 1974) and this scoping review did not seek to establish diagnostic accuracy. Participants' responses within the reviewed studies may have been influenced by personality or lived experience since confidence is changeable (Rotenstreich, 1972). The response is thus shaped from the individual context from which a participant views the world, which was demonstrated by students in Oozageer Gunowa et al.'s (2021) study. These participants were taught about assessing pressure injuries, but students of a light skin tone did not necessarily note the absence of diversity in teaching. This differed from those with a dark skin tone, who noticed and felt unable to question the inequality within their group. These individual perspectives demonstrate how group behaviours create a dominant culture where it is difficult for a student to challenge the inequity. When applying this concept to healthcare, it demonstrates how cultural norms determined by behaviour can continue unchecked (Michie et al., 2011; Waterson, 2014).

Group behaviours are shaped by beliefs, knowledge and shared values to create a culture (Spencer-Oatey, 2000). Healthcare professionals are taught to treat patients of white skin within a culture of other clinicians undertaking the same process, normalising the terminology and environment so that habits become engrained. Textbooks are a key part of training, but light skin tones are overrepresented when compared with dark skin tones (Lester et al., 2019; Louie & Wilkes, 2018). This

sets a precedent around the acquired knowledge when learning, which is embedded further by the routine under representation of manikins with varying skin tones in healthcare simulation training (Foronda et al., 2020). This bias has led to embedded behaviours around assessment, management and diagnosis, with a prioritisation towards patients with light skin tones. Behaviour is influenced by the three factors of motivation, opportunities and capabilities as part of the COM-B system (Michie et al., 2011). In the context of managing patients with dark skin tones, there is a lack of capability as displayed by the low confidence found in clinicians. Research into health inequalities (NHS Race and Health Observatory, 2022) demonstrates motivation, but at an individual level may be suppressed by the established culture (Spencer-Oatey, 2000). Patient safety is only achievable by a positive culture and the guiding healthcare systems in place (NHS England & NHS Improvement, 2019), but currently there is a lack of capability and limited training to provide opportunities for this behavioural and cultural change (Buonsenso et al., 2022; O'Connor et al., 2022; Oozageer Gunowa et al., 2020, 2021). Opportunities to learn about a range of skin tones are mainly arising via knowledge transfer from other healthcare professionals.

Knowledge can be acquired directly from experience (Zagzebski, 2017), but depending on the geographical area a clinician trains in, experience in assessing and managing all skin tones may vary. For example, the UK 2011 Census found that 40.2% of the residents in London identified in the categories of Asian, Black, Mixed or Other. The White British population in the same area was 44.9%, while the north east of the country had a population of 93.6% White British (GOV.UK, 2011). There may be regional variability in the expertise and confidence of clinicians in treating all skin tones, depending on experiential learning (Buonsenso et al., 2022; Rodrigues et al., 2018). In areas of low diversity, patients with dark skin tones may be at higher risk of poorer outcomes, but this is challenging to evidence. The Office for National Statistics (2021) does not currently provide data on patient outcomes, while linking ethnicity with small geographical locations. Ethnicity figures (GOV.UK, 2020) state that 87% of people in the United Kingdom identify as White, and 13% as Black, Asian, Mixed or Other. This may be one reason for the lack of capability displayed towards changing healthcare behaviours as part of the COM-B model, but does not match the need. By 2051, 30% of the population in England and Wales are predicted to have a skin tone with a range of increased pigmentation (Lievesley, 2010), and by 2044, the same is predicted to apply to over half the US population (Colby & Ortman, 2015). Knowledge is not in place to manage all skin tones equally. This discrepancy also affects the self-worth of healthcare students with a dark skin tone who train in a White orientated environment (Bedi, 2021) encountering this inequity as an unacknowledged bias. Experiences of discrimination when working as a healthcare professional

(Hennein et al., 2021) will compound the issue, while from a patient perspective, the expectation of racist treatment from NHS healthcare professionals (NHS Race and Health Observatory, 2022) creates barriers for patients to seek help. This factor not only worsens patient outcomes but lowers the experiential knowledge that might be gained in clinical practice to improve care. Evidence-based guidelines can be successfully used to improve behaviours, where strict adherence can improve the quality of care delivered in relation to race, ethnicity and sex (Trent et al., 2021). As these authors commented, 'when providers know their care is being monitored and reported, their implicit biases may be less likely to impact care' (Trent et al., 2021), but the minutiae of the relationship between patient and clinician may not be observed by others, or be documented in order to be addressed. Implicit bias can develop further from group cues to create systemic racism in an environment (Payne & Hannay, 2021), which could become the cultural norm in a healthcare setting. The evidence from COVID-19 showed an increased risk of mortality for affected patients within Black, Caribbean, Black African, Bangladeshi and Pakistani groups (Office for National Statistics, 2021), which could reflect implicit bias. However, clinicians have been taught to assess white skin, and without prior experiential knowledge, may have lacked the ability to identify the early signs of physiological deterioration in these patient groups. The outcomes would then be due to lack of awareness, rather than a culture of bias. There remains a multi-layered issue to explore, as delayed treatment in critically unwell patients will impact outcomes negatively (Padilla & Mayo, 2018). Further research from a solely pre-hospital perspective is needed to establish if treatment delays exist for patients with dark skin tones, due to a historic lack of inclusive clinical training. Diagnostic accuracy – for example, purpuric rash recognition – is a further area for exploration, along with confidence levels in assessing all skin tones. Research into ambulance culture may indicate if implicit bias is impacting on clinical decisions, but also how white skin-orientated terminology (e.g. terms like pale, pink, reddened) may unconsciously influence assessment skills.

This scoping review suggests that the confidence in management and treatment may be unequal for all skin tones, which is underpinned by the nuances of individual knowledge and beliefs as held by healthcare professionals. This suggests there is a safety issue for patients with dark skin tones.

## Limitations

This is a small review of 13 papers, undertaken by a solo White researcher in the United Kingdom, who provided one viewpoint from which to chart and synthesise the results. Charting was repeated to minimise error, but the findings were not independently reviewed. Diagnostic accuracy was not included as part of the search strategy, which may have offered insight into any links between accuracy and



confidence. The inclusion of papers solely written in English may have excluded key perspectives from other countries.

## Conclusions

Healthcare professionals have a generalised lack of confidence around managing and treating all ethnicities equally, with a historic lack of training at the root of this. Implicit bias may be furthering a culture of normalising inequality, which is influenced by healthcare terminology and guidelines. Experiential learning mitigates this effect by providing opportunities for behaviour change, but there remains a potential safety risk for patients with dark skin tones. Further research should explore clinical confidence, diagnostic accuracy, delays to treatment and implicit bias in the pre-hospital emergency setting, when assessing life-threatening unwell patients of dark skin tones. Establishing paramedic confidence nationally may highlight discrepancies in knowledge and culture, and provide an evidence base to inform curriculum and training changes to improve patient outcomes.

## Conflict of interest

None declared.

## Funding

None.

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