

# A Scoping Review on Determining Australian Nurse Engagement in Eye Care Settings

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**Purpose:** As the Australian population grows and ages, the demand for eye care services, and nurses to provide the services, is expected to increase. This will impact nurses, who are Australia's largest health-care provider group. Understanding and mapping the current role and use of nurses in eye care is an essential first step for future health workforce planning and development. To map their engagement, we undertook a scoping review to gain an understanding of the current Australian nurse eye care workforce landscape, to help guide and support future workforce development activities. Secondly, we evaluated if publications in this field incorporated or mentioned the Australian Ophthalmic Nursing Association's National Standards (Practice standards) in their publication. This review also offers other nations and eye care providers the opportunity to evaluate their own health workforce plan and nurse utility.

**Study Design and Methods:** We conducted a review of academic and grey literature, via various search engines, and an inclusion and exclusion criteria.

**Results:** We uncovered 11 publications. Of those, five were academic papers examining extended and advanced nursing practice, one was a letter to the editor, two were industry feature reviews, two were industry reports and the final was the Practice Standards. Key themes throughout indicated the benefit of nurse training and nurse involvement in eye care. Overall, there was insufficient information or data to describe nurse deployment, practice and utility. Finally, the Practice Standards were not referenced in any publication.

**Conclusion:** There is insufficient published information to calculate the level and involvement of nurses, or describe their existing role, advancement or future deployment in eye care in Australia. Without clear information, Australia is unable to develop effective health workforce strategies to attract, train, retain, and appropriately deploy nurses to meet future eye care needs.

**Keywords:** ophthalmic nurses, Australia, health workforce, eye care, nurse specialists

## Introduction

Nurses account for an estimated 57% of the Australian health-care workforce,<sup>1</sup> making them the nation's largest group of health-care providers.<sup>2</sup>

With an estimated 13 million Australians having one or more chronic (long-term) eye condition,<sup>3</sup> the prevalence of eye disease is predicted to increase from 6.7% to 7.5% by 2050. This increase is due to a growing and ageing population.<sup>4</sup> With health-care provision largely represented by nurses, the need for nursing engagement in future eye care is unavoidable. To prepare for the increase in demand, it is imperative to understand the current role and deployment of nurses in eye care in Australia, and how they could potentially extend their scope of practice in the future. Additional information on their numbers, eye care specific training, use of professional standards, how they enter and exit the speciality and their use in general eye care and extended roles would provide valuable information to strengthen and support eye care workforce planning.

## About Eye Care

The field of eye care involves the prevention and/or treatment of a range of lifestyle acquired, hereditary, and age-related conditions that reduce or hinder vision throughout any stage of a person's life (for example: refractive error, cataract, glaucoma, diabetic retinopathy and age related macular degeneration<sup>5</sup>). While limited or no vision can impact on the day-to-day activities of those inflicted with an ocular condition, the field can also teach and support those with untreatable conditions how to complete their daily activities and flourish in life. Eye care can occur in the community, within primary care, aged care, clinic, emergency and surgical facilities – across public and private, and rural, remote and urban settings. Services can also be mobile or within a traditional building setting, and developed as standalone ophthalmic centres or integrated into multi-speciality or general health-care systems. The field engages a range of professionals including, but not limited to: ophthalmologists, orthoptists, optometrists, ocularists, low-vision experts, spectacle dispensers, technicians, eye bankers, general practitioners, emergency practitioners, carers, disability workers, practice managers, and operating theatre experts such as anaesthetists, and finally, nurses.

## Australia's Commitment

As Australia is a World Health Organization (WHO) Member State, the nation is committed to meeting the recommendations outlined in the WHO World Report on Vision,<sup>6</sup> whereby Member States are urged to progressively implement a National Health Workforce Account, to capture information necessary to understand eye care workforce dynamics and assess supply and demand. The World Report on Vision is supported by the launch of the International Agency for the Prevention of Blindness 2030 in-Sight campaign that aims to accelerate efforts to meet the United Nation's Sustainable Development Goals (SDG) by 2030<sup>7</sup> – including those to address health workforce shortage (SDG#3), and the UN's General Assembly Resolution on Vision, for which Australia is also a signatory.<sup>8</sup> If Australia is to meet these international goals, then understanding how and where nurses are deployed or could be deployed into eye care is vital. Therefore, this review contributes toward those initiatives.

With no prior scoping reviews regarding nurse engagement in eye care in Australia, the primary objective of our literature review was to gain an understanding of the current Australian nurse eye care workforce landscape to help guide and support future workforce development activities. A secondary goal was to determine if publications in this field incorporated or mentioned the Ophthalmic Nursing Practice standards (Practice Standards)<sup>9</sup> in their publication.

## Study Design and Methods

We conducted an independent review, via two of our co-authors (HM and AH). They searched various search engines and grey literature search sites. They compared their results to ensure all publications relating to the search criteria were located and determined as either included or excluded. Once their review was completed, other members of the research team (JM, CH, HK, LE, MO) audited the results (which included resolving any disagreements between the two reviewers) against the search inclusion and exclusion criteria, prior to a final agreement to include or exclude publications from the review.

We reviewed English Language academic and grey literature from the years 1980 up until the date we commenced our review (being February 2021). We selected 1980 as the start date because the first Australian Ophthalmic Nurses Association (AONA) was established in 1982 and we hoped to find pre-association information that supported or discussed their development.

We searched via search engines PubMed/MEDLINE, CINAHL, Embase (OVID), Google-scholar, Web of Science, Scopus, as well as publisher site PloS, for academic publications. We searched grey literature via industry print and digital publications (being: Mivision and Insight magazines) and industry websites (being: the AONA National and state-based webpages, Australian Primary Nurses Association, Australian Day Surgery Nurses Association, Australian College of Perioperative Nurses, Australian College of Nursing, and the American Society of Ophthalmic Registered Nurses – as they hosted an ophthalmic nursing journal) and the eye care sector site Vision 2020 Australia. To narrow our search we used a comprehensive inclusion and exclusion criteria approach.

## Inclusion Criteria

We focused on publications that could provide relevant data sets (for example, information on nurse numbers), and those that discussed the use of nurses in eye care, for example the distribution of tasks to nurses, rather than the technical aspect of

**Table 1** Search Terms

(Australia\*) AND (nurs\*) AND (eye OR "eye care" OR "eyecare" OR ophthalm\*) AND/OR ("work force" OR workforce).

performing the task itself. We included nurse involvement in all areas of health where eye care takes place, such as community, primary, perioperative, ambulatory, clinic, etc., from nurse and non-nurse authors and organisations. Sources included: peer reviewed academic/journals, recognised peer/sector databases, published conference presentations, dissertations/thesis, empirical studies, government reports and reports from other bodies' and historical records, with key search inclusion words, specifically related to "ophthalmology" "eye care" "nurses" "workforce" and "Australia" used within our search criteria (Table 1).

## Exclusion Criteria

We excluded publications that focused on nursing awards, prizes or international volunteerism, other nations, other professional groups (for example: ophthalmologist, optometrists, orthoptist and ocularist), other nursing fields, course work advertisements or information, media/event launches and conferences, and nurse research about the technicalities of a procedure or skill.

## Results

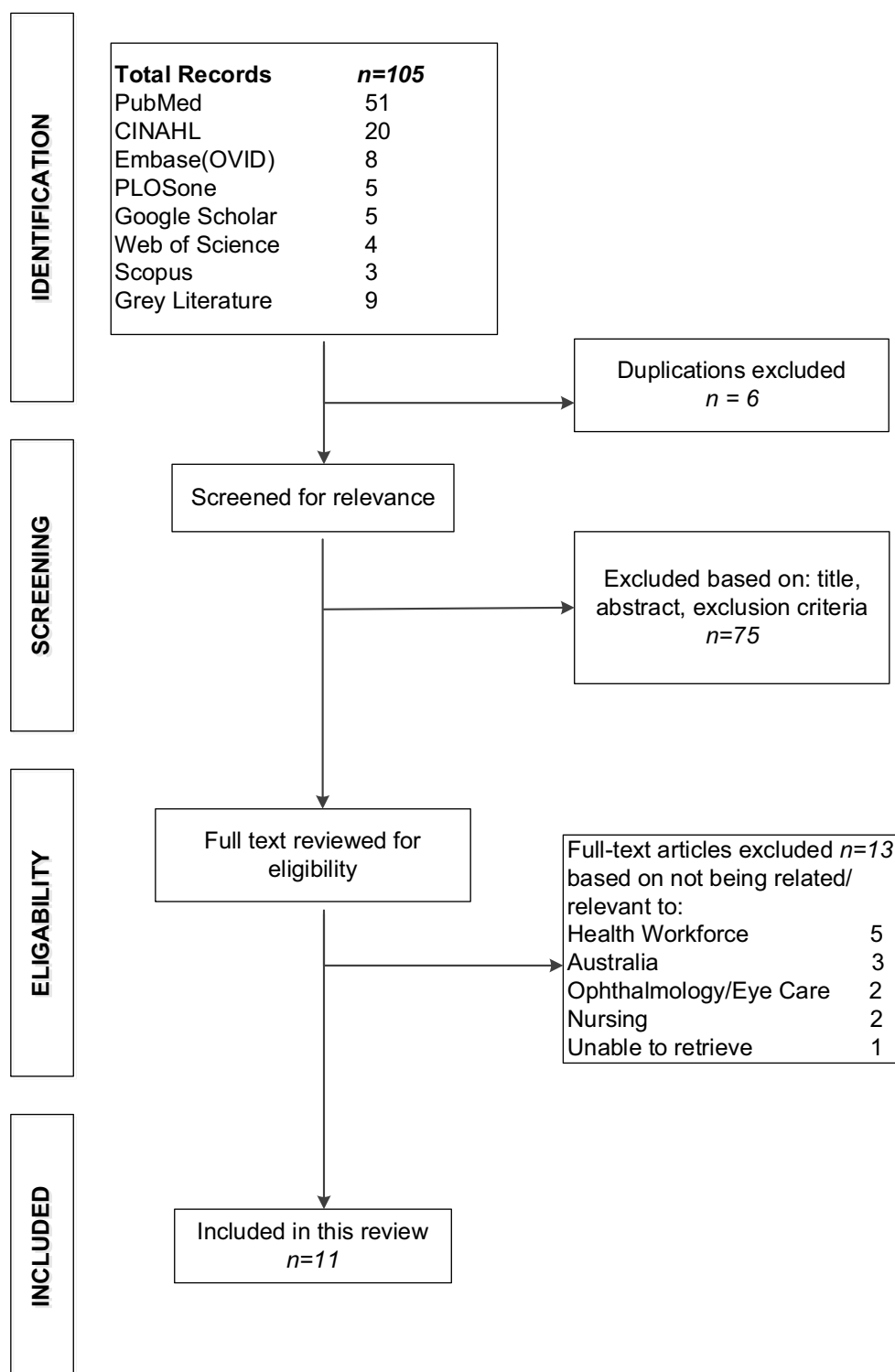
Our search took place in February 2021. It resulted in  $n = 96$  journal/academic publications and  $n = 9$  sector and industry publications (Figure 1), totalling  $n = 105$ . We excluded  $n = 6$  as they were duplications, and  $n = 88$  because they had insufficient content to meet our requirements. The remaining  $n = 11$  were retained in our review. Their dates ranged from 2005 to 2018. They comprised of:  $n = 5$  (45%) academic/journal papers,<sup>9–14</sup>  $n = 1$  (10%) letter to the editor,<sup>15</sup>  $n = 2$  (18%) industry feature pieces,<sup>16,17</sup> and  $n = 3$  (27%) industry reports and guidelines.<sup>1,18</sup> We reviewed the publications independently within these publication sub-categories, and present them below and in [Supplementary 1](#). We followed with our analysis, which aimed to determine the similarities, key themes and relevant data sets. Lastly we identified the quantity of publications that referenced the Australian Ophthalmic Nursing Practice Standards<sup>9</sup> (Practice standards) since they were published in 2018.

## Sub-Category Results

### Journal/Academic Papers

Of the  $n = 5$  papers,  $n = 4$  contained original research, and  $n = 1$  provided a review. The most recent original research paper, published in 2020,<sup>10</sup> focused on a neonatal intensive care nurse's ability to screen patients in the Neonatal Intensive Care Unit (NICU). In this scenario, nurses were provided with extended training to allow them to use an indirect ophthalmoscope to perform image screening on Retinopathy of Prematurity (ROP) neonates, with the images subsequently transferred to ophthalmologists for telehealth analysis. This research was a single centre study from Western Australia. While small in sample size (due to the staffing size in the centres NICU) and without consideration of the time involved for nurses compared to other professionals to conduct the screening, the research concluded that with effective training, resources and screening tools, experienced neonatal nurses could effectively provide ROP screening services in the NICU. Athikarismy et al<sup>10</sup> indicated that this strategy could reduce the burden on ophthalmologists when meeting the increased demand for ROP screening. Furthermore, the research outlined plans to focus on credentialing neonatal nurses to interpret retinal images. The paper also indicated that this research and the use of nurses in NICU ROP screening could be replicated in other facilities.

There were  $n = 3$  other original research papers that examined the engagement of ophthalmic nurse practitioners.<sup>11–13</sup> The research took place within three areas of eye care service, being: diabetic retinopathy screening, emergency management, and pre- and post-operative cataract care clinics. They were all single-centre prospective studies conducted at Flinders Medical Centre, Adelaide, with the same lead author, Kirkwood, between 2005 and 2006. They each explored nurse practitioner viability, concluding that nurse-practitioner-led clinics provided effective care. Kirkwood's results indicated that having a nurse practitioner as part of the care team alongside ophthalmologists, increased capacity of the clinics to see more patients. Kirkwood also indicated that with specialist training and concise protocols, ophthalmic nurse



**Figure 1** Review method.

practitioners can safely and effectively manage non-urgent eye patients and that their engagement allowed extra time for ophthalmologists to manage the more complex ophthalmic cases.

The last paper was a review paper.<sup>14</sup> The author presented foundational information about an employer-led novice nurse ophthalmic training program. This paper presented the coursework available at the author's place of employment – Queensland

Eye Hospital, whereby the program attracted and retained nurses in the eye care workforce and within their organisation. The author (O'Sullivan) indicated that organisation-based training can be adapted to support registered nurses and endorsed enrolled nurses.

### Journal Letter to the Editor

The Letter to the Editor was submitted by ophthalmologists<sup>15</sup> in response to a Kirkwood paper included in our literature review that explored nurse-led clinics (outlined above<sup>13</sup>). The ophthalmologists (McKee and Gole) believed that the research was flawed, misleading and premature. The Letter indicated that the research had merit, but it did not highlight extended healthcare system issues, for example, wait times, resources and the usability of other providers, such as ophthalmology registrars. They recommended that these aspects be considered when examining how systems and new models of care can be improved.

### Industry Feature Reviews

Both industry feature papers were authored by the same author (Machin) between 2007 and 2008.<sup>16,17</sup> While these papers were not research papers, nor peer reviewed, they provided the only review of the Australian ophthalmic nursing sector. They described the similarities and differences across the country. For instance, the author touched on available course work at that time, and the role of the state-based ophthalmic nursing associations. Finally, they outlined the need to develop Practice standards/competencies - which were subsequently published in 2018.<sup>9</sup>

### Industry Reports

We located  $n = 2$  publications in this category. Both were eye care workforce reports published by Vision 2020 Australia, firstly in 2009 and then in 2016<sup>1,18</sup> (with the 2016 edition replacing the 2009 edition). The reports provided an overview of the wider eye care workforce in Australia including, but not limited to ophthalmologists and optometrists, and the workforce development steps necessary to meet the eye care needs of Australia today and in the future. Both reports repeatedly highlighted the lack of available information about nurses in eye care, for example, no information on their numbers, demographics, training level, skill set, workforce deployment, sector issues, challenges or developments underway. There was no indication in the reports of how the deficits in information could be addressed in the future.

### Guidelines

The final item in our review was the Practice standards<sup>9</sup> published by the AONA National Council. The Practice Standards present a peer agreement by Australian ophthalmic nurses. They indicate professional expectations of nurses, by nurses, when working within eye care and/or providing care to eye care patients elsewhere in the health system. They indicate how nurses must interact with the wider health-care workforce, respond to changing dynamics and challenges of the system, and support patients and community eye care needs and the wider health-care targets.

## Analysis

We compared the publications for similarities, key themes and relevant data.

### Similarities

While the sub-context of the publications changed, for example, examining nurse utility in ROP care<sup>10</sup> compared to nurse utility in cataract clinics or day surgery settings,<sup>11-14</sup> in terms of the professional level, Nurse Practitioners featured the highest ( $n = 3$ ),<sup>11-13</sup> followed by Registered Nurses ( $n = 3$ ),<sup>10,14,16</sup> and Enrolled Nurses ( $n = 1$ ).<sup>14</sup> While the Practice Standards<sup>9</sup> included all nursing levels, the letter to the editor,<sup>15</sup> industry features<sup>16,17</sup> and industry reports<sup>1,18</sup> did not specify. In terms of skills and experience, the publications mostly involved extended skills ( $n = 4$ ),<sup>10-13</sup> followed by general staff roles ( $n = 2$ )<sup>16,17</sup> and finally, novice-training ( $n = 1$ ).<sup>14</sup> Again, while the Practice Standards<sup>9</sup> covered the breadth of novice to advance engagement, the letter to the editor<sup>15</sup> and reports<sup>1,18</sup> did not specify (Please see [Supplementary 1](#)).

All academic papers were single-centre studies<sup>10-14</sup> with most published in South Australia ( $n = 3$ ),<sup>11-13</sup> followed by Western Australia ( $n = 1$ )<sup>10</sup> and Queensland ( $n = 1$ ).<sup>14</sup> The Letter to the Editor<sup>15</sup> and both industry features<sup>16,17</sup> were produced in Queensland ( $n = 2$ ). (Refer to [Supplementary 1](#)).

## Key Themes

Key themes identified include: the feasibility of nurses with extended skills working within ophthalmic sub-specialty areas; the effectiveness of nurse practitioners as clinic leads; and the need to increase nurse training.<sup>10–14,16,17</sup> Collectively, they emphasised the cost-effective benefits and efficacy of nurse engagement in sub-specialist eye care services – if trained appropriately, and how their utility freed-up ophthalmologists for more complex care patients and in turn reduced barriers to access for those seeking access to eye care services. While we were able to find some literature regarding nurse engagement in extended tasks<sup>10–14</sup> and within nurse led clinics,<sup>11–13</sup> overall there was insufficient information to effectively describe nor understand nurse deployment in eye care beyond the singular research area of the individual publication (being: ROP,<sup>10</sup> diabetic retinopathy,<sup>11</sup> emergency<sup>12</sup> and cataract<sup>13</sup>). There were no publications that identified the breadth and range of nursing engagement across the country.

Unfortunately, we were unable to extract further themes due to the limited volume of publications in this field and the limited array of content.

## Data

In terms of data sets, we did not uncover any relevant information. For example, there were no statistics to indicate the number of nurses in eye care, employment areas, skillsets, how they were trained, and how they worked alongside and/or independently from other eye care providers or within other areas of health.

## Practice Standards Reference

Finally, only one paper in our review<sup>10</sup> was published after the introduction of the Practice standards in 2018.<sup>9</sup> The paper did not mention the Practice Standards.

## Discussion

The strength of our nurse-led review is that, for the first time, we have been able to confirm that there is insufficient information available to describe and map nurse engagement in eye care in Australia or to understand their training, skill set, deployment, numbers, demographics and their practice level (for example: novice, staff-nurse, those with extended skills, and nurse practitioners). This indicates there are insufficient data available to Australian nurses, training institutions, employers and the wider health sector when attempting to develop appropriate and robust health workforce plans or alternatives, and prepare for future demand. Our search located some information describing how nurses with extended skills and nurse practitioners could be used to provide extended or advanced services.<sup>10–14,16,17</sup> We note with concern that other than the Practice Standards published in 2018,<sup>9</sup> there have been no preliminary publications researching or describing non-extended and non-practitioner level nursing practice or utility prior to moving to and evaluating extended or advanced roles. Therefore, there is no baseline to contextualise the roles, nor indicate the difference and benefit of extended skilled nurses and advanced nurses, compared to non-advanced nurses. There is no information to determine how and where nurses with various skill sets and experience levels are best used (for example, urban vs rural or to complement the availability or shortfall of other professionals in each location). We feel that capturing baseline information regarding current Australian nurse workforce patterns is an essential step alongside understanding extended and advanced roles.

We recognise the engagement and advancement of nurses, while essential, cannot be conducted in isolation and must be considered as one component of a wider sector evaluation, alongside examining the use of other health-care providers, population eye care needs, wait lists and resource management at each location and facility.<sup>19,20</sup> This supports the 2030-in-Sight recommendations that health workforce planning must be coordinated with other health services and other providers.<sup>7</sup> An economic analysis of nurse utility in eye care and their utility in comparison with or in conjunction to other care providers is also essential. Further evaluation of how nurses can work with peer professional associations, employers and other stakeholders to develop strategic initiatives that work to meet future need<sup>19</sup> and implement the Practice Standards<sup>9</sup> is essential.

The publications we found in our review were all single-centre studies.<sup>10–14</sup> Original research was predominantly produced in South Australia,<sup>11–13</sup> and one in Western Australia,<sup>10</sup> while the review and all non-research publications were produced in Queensland.<sup>14–17</sup> Therefore, our review, while thorough, highlighted that there is insufficient information to describe the use of nurses in the range of real-world Australian settings across urban, rural and remote locations, and the different health systems in each location, for example public, private, tertiary facility or doctor's own clinics. The

single-centre studies<sup>10–14</sup> had not been replicated elsewhere and there is no literature available to confirm their transferability to other locations and environments. We also note that the nurse practitioner research published in 2005–2006<sup>11–13</sup> had not been replicated or expanded upon since that time. Therefore, we are unclear of how those results relate to services and nurse practitioners in today's setting.

As the Practice Standards were published in 2018,<sup>9</sup> our secondary objective was to determine if publications, published post-2018, included the Practice Standards. For instance, indicating if their facility had implemented the Standards; how their research protocol incorporated the Standards; and/or how they recommended their research be used to meet the Standards in the future. Unfortunately, there was only one paper published post-2018,<sup>10</sup> and it did not mention the Practice Standards. While we are unable to effectively evaluate the use of the Practice Standards from one publication, it is our recommendation that going forward, original research publications which explore nurse engagement and practice in eye care, routinely incorporate the Practice Standards into their protocol design and discussion, and indicate if the facilities where the research or review is conducted, meet or incorporate the Practice Standards into policy and practice.

## Limitations

Our review and analysis of Australian nurse engagement in eye care, while thorough, did not necessarily capture all aspects of nurse engagement and deployment or data to indicate the number of nurses involved in this field. This was because of the limited publications available. We do not believe altering our enquiry question or inclusion and exclusion criteria would have increased the quantity of literature found during our review. Going forward, alternative forms of research (for example, surveys, forums, or field observations) may be required to capture previously unpublished data and unearth foundation information.

## Conclusion

We conducted a scoping review to understand the current status of Australian nurse engagement in eye care, and subsequently understand if the Practice Standards<sup>9</sup> for Australian nurses had been used to guide research and practice. Unfortunately, due to a paucity of published information, we were unable to effectively complete our evaluation. This meant we were unable to understand their value, map their deployment, and determine how they may be mobilised in the future to support the 2030 in-Sight targets.

Future studies must attempt to capture baseline data about the existing eye care nurse workforce, the advantage of various nursing professional levels, the effective use of nurses, and how these compare in the various settings in Australia. Further studies could examine how they compare internationally and/or complement and integrate with other health workforce providers such as ophthalmologists and optometrists, and how collectively they can work towards the 2030 in-Sight targets. Such studies must also evaluate policy and programs, and offer real world improvements for those that reside in Australia. Finally, determining how nursing organisations, training institutes, employers, and the eye care sector can attract, retain and deploy nurses within the health workforce to meet the future eye care demands in Australia is essential.

## Abbreviations

AONA, Australian Ophthalmic Nurses Association; NICU, Neonatal Intensive Care Unit; ROP, Retinopathy of Prematurity; SDG, Sustainable Development Goals; WHO, World Health Organization.

## Ethics/Consent

This is a review of the literature. It is exempt from ethics requirements.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically

reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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