[REVIEW]

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A Rapid Review of occupational therapy intervention for neonatal care

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ABSTRACT

Introduction: This rapid review synthesised global evidence on occupational therapy intervention practices for neonatal care to inform occupational therapy practice within national health policies. Neonatal care refers to early intervention for premature or at-risk newborn infants.
Methods: Searches were conducted of the Cochrane, Medline, CINAHL, and Academic OneFile databases through keyword searches. Systematic reviews and randomised controlled trials (RCTs) that qualified as Level I and II studies, published in peer-reviewed journals from January 2015 to August 2025, were included for screening. Screenings took place in Rayyan.ai first by title and abstract by two reviewers, and then by full text. Conflicts were resolved by a third reviewer. The Critical Appraisal Skills Programme checklists for systematic reviews and RCTs were used for bias and quality control. The records included in the study were systematically analysed, and the resulting data were plotted using a customised Excel worksheet.
Results: Nine records were included for analysis, focusing on the following interventions: family-focused care, sensory-focused oral-motor interventions, management of tone, interventions for obstetric brachial plexus injuries, multisensory stimulation and priming, and the effects of neonatal therapy interventions on the development of premature infants. A strong focus on family involvement was present. Intervention took place on a primary, secondary, and tertiary healthcare level where the occupational therapist was part of a specialised team. Short and possible long-term outcomes were described for all developmental domains.
Conclusion: Evidence from this rapid review confirms that occupational therapists are vital members of specialist neonatal teams at all levels of healthcare. They contribute to the early care of infants for overall development and support families through education and training.

Implications for practice:
- Occupational therapists' unique skill set enables them to provide a specialised yet holistic approach within a multidisciplinary neonatal care team
- Occupational therapy intervention in neonatal care is required in tertiary, secondary, and primary health settings
- A family-focused approach is recommended across different interventions and diagnoses and provides possible cost-effective quality intervention for neonatal care

INTRODUCTION

The World Health Organisation defines neonatal care as "caring for a newborn" in the first 28 days of their life [1]. The neonatal phase is divided into the subcategories of early neonatal stage (0 – 6 days) and late neonatal stage (7 – 27 day)[1,2]. Proper intervention during labour, birth, the first week of life, and for sick or very small infants is essential to lower neonatal mortality. When there are concerns about a neonate's health, they are often admitted to a neonatal ward or a Neonatal Intensive Care Unit (NICU) with four different levels of NICU: from level one, which is for mostly healthy babies with low risk of

complications and born at over 35 weeks' gestation; level 2 for babies born at a minimum of 32 weeks, with moderate illness who are expected to heal without need for specialty care, or who can be transferred from a higher level of care; level three for babies of any prematurity or with congenital malformations, and finally level four, the highest level of support for critically ill infants [3].

The multi-disciplinary team involved in neonatal care includes a variety of medical providers, support workers, and family members of the infant. The medical team may consist of neonatologists, nurses and neonatal nurse practitioners, physicians, nutritionists and respiratory therapists[4]. Advances in the medical and technological field of neonatal care have prompted rehabilitation professionals to become an integral part of the team as supportive developmental services including occupational therapists, physiotherapists, psychologists, speech and language therapists, social workers and lactation consultants[5].

As occupational therapy education includes both physical and mental health care models, occupational therapists provide a holistic approach to supporting the infant and their family from birth to post-discharge. Specialised occupational therapy input may also be needed as pre-term infants are at risk of sensory processing difficulties[6]. The specialised and crucial role of occupational therapy in neonatal care is confirmed in a position paper by the Occupational Therapy Association of South Africa (OTASA)[7], and reflected in practice guidelines from the Royal College of Occupational Therapy (RCOT)[8]. The OTASA position statement defines the role of the occupational therapist in neonatal care, according to professional knowledge and skills required, areas of assessment, and areas of intervention, while the RCOT's practice guidelines is a comprehensive document aiming to guide occupational therapists in neonatal care and early intervention by defining the best and most effective practice methods.

In their position paper, OTASA recommended that the seven core measures of neuroprotective care guide occupational therapy practice in neonatal care, namely: a healing environment, partnering with parents, positioning and handling, safeguarding sleep, minimising stress and pain, protecting skin, and optimising nutrition[7].The RCOT guidelines, in turn, include the following areas of intervention: occupation-based assessments, developmental supportive care, pain management, skin-to-skin care, feeding, postural support, sensory processing interventions related to touch, and parental support[8].

Neonatal care is seen as a specialised area requiring skill sets in infant evaluation and intervention, standardised tools for both parents and infants, as well as in-depth knowledge about factors that may influence development at pre-, peri-, and post-natal level. These may include neuro-behaviour, sensory processing, motor- function, and occupation-based theories and approaches that may assist with nurturing and emerging self-care activities[7].

Neonatal care in sub-Saharan Africa

Research related to neonatal care in sub-Saharan Africa is limited[9]. In their systematic review of quantitative and qualitative research, Bee et al found variable newborn care practices between African countries with no mention of occupational therapy or other rehabilitation input. Staff shortages, inadequate infrastructure, work overload and lack of supplies and equipment are challenges described by neonatal care staff at a South African government hospital[10]. A scoping review on occupational therapy intervention effectiveness studies in Africa included two studies referring to infant care focussing on postural support and sensory processing[11].

This review contributes to a sequence of rapid reviews commissioned by OTASA, to produce evidence of occupational therapy intervention, with the aim of informing upcoming National Health Insurance policies.

METHODOLOGY

Research Design

The OTASA rapid review task team includes four occupational therapists with clinical and academic expertise across different practice areas. The primary researcher (PR) led the neonatal care review, supported by co-authors throughout all review phases. The South African Department of Health method guide for rapid reviews[12] and its protocol template for rapid reviews, and the Cochrane Rapid Reviews [13] Method Guide were used to inform the review.

Search strategy

Step 1: Topic and review refinement

The research question was: What evidence exists for occupational therapy interventions for neonatal care? The research population was defined as neonates, thus, infants younger than 28 days[1]. Intervention referred to any form of occupational therapy input but excluded specific assessment methods.

Studies were included in this review if they were recognised as Level I or II evidence. Level I refers to randomized controlled trials (RCTs) and systematic reviews of RCTs with or without meta-analysis. Level II refers to systematic reviews of a combination of RCT's and quasi-experimental studies with or without meta-analysis [14]. High-level evidence was considered fit for the purpose of providing evidence supporting the role of occupational therapy in upcoming National Health Insurance policies. Only records from the past ten years (January 2015 – August 2025) published in peer-reviewed journals, reasonably available, and in the English language, were eligible to be included.

Step2: Strategy and search

Searches were carried out by the PR online on the Stellenbosch University library website, using the Cochrane, Medline, CINAHL and Academic Onefile databases. The following search string was used: occupational therapy AND intervention OR treatment AND neonatal care OR NICU OR prematurity OR low birth weight. Relevant filters and Boolean markers were applied.

Step 3: Screening and selection

Records identified by the search engines according to the inclusion criteria were stored in the online reference tool EndNote[15] and database Rayyann.ai[6], where duplicates were removed. Records were screened by title and abstract by two researchers, while a third researcher resolved any conflicts. Full text screening was then completed by the PR while two co-researchers reviewed records where there was uncertainty. Conflicts were resolved through research team discussions.

Step 4: Risk of bias assessment, quality appraisal and data extraction

The Critical Appraisals Skills Program (CASP) was used to appraise the quality of the studies, with separate checklists for RCTs and systematic reviews[17].

Data extraction was completed by the PR making use of a custom MS Excel spreadsheet containing headings as determined by the research team to include data about the study methods, participants, data collection tools, intervention (method, logistics and outcomes), occupational therapy skill levels, and cost.

Step 5: Synthesis

Quantitative and qualitative information extracted were summarised through inductive reasoning to carefully consider and group together commonalities and differences. Quantitative data were reported and, where appropriate, configured to means and ranges.

Step 6: Reporting and dissemination of results

Key information was reported in table format for easy access and readability, while further dissemination occurred narratively.

RESULTS

Search results

A total of 1894 records were identified through database searches. The screening process is summarised in Figure 1 (below), resulting in nine records finally included in this rapid review for analysis.

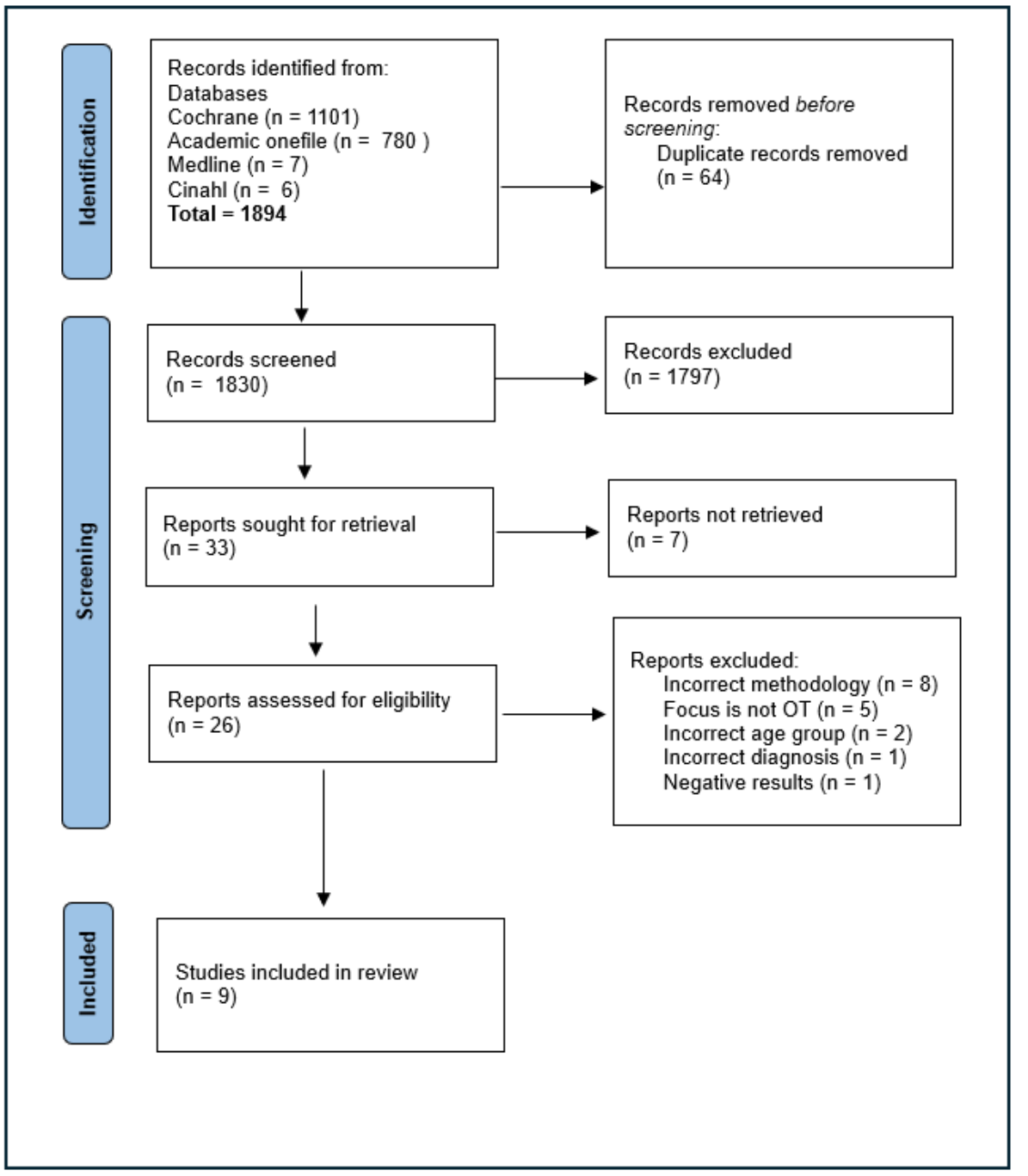

Figure 1. PRISMA diagram[18] - results of the search, screen and selection of articles Included records

Nine articles were included for review following the search and screening process. The articles are listed below in Table I.

Table I: Articles included in this rapid review

#	Citation
1	Ferreira, R. d. C., C. R. L. Alves and L. d. C. Magalhães (2022). "Effects of family-focused early intervention on the neurodevelopment of children at biological and/or social risks: a quasi-experimental randomized controlled trial." Early Child Development & Care **192**(7): 1164-1177.
2	Fucile, S., L. Snider, K. O'Brien, L. Smith and K. Dow (2025). "A parent-administered sensorimotor intervention for oral feeding in infants born preterm: A randomized clinical study." Developmental Medicine & Child Neurology **67**(2): 208-215.
3	Jaywant, S. S., P. S. Dandavate and J. S. Kale (2020). "Premature Infant Oral Motor Intervention (PIOMI) with and without Massage Therapy on Social Emotional Development in Preterm Infants." Indian Journal of Occupational Therapy (Wolters Kluwer India Pvt Ltd) **52**(3): 95-100.
4	Khurana, S., A. E. Kane, S. E. Brown, T. Tarver and S. C. Dusing (2020). "Effect of neonatal therapy on the motor, cognitive, and behavioral development of infants born preterm: a systematic review." Developmental medicine and child neurology **62**(6): 684-692.

5	Martínez-Carlón-Reina, M., J. Hareau-Bonomi, M. P. Rodríguez-Pérez and E. Huertas-Hoyas (2024). "Systematic Review and Meta-Analysis of Intervention Techniques in Occupational Therapy for Babies and Children with Obstetric Brachial Plexus Palsy." Journal of Clinical Medicine **13**(20): 6186.
6	Paleg, G., M. Romness and R. Livingstone (2018). "Interventions to improve sensory and motor outcomes for young children with central hypotonia: A systematic review." Journal of Pediatric Rehabilitation Medicine **11**(1): 57-70.
7	Raghupathy, M. K., S. S. Parsekar, S. R. Nayak, K. M. Karun, S. Khurana, A. J. Spittle, L. E. S. Lewis and B. K. Rao (2025). "Effect of Family-Centered Care Interventions on Motor and Neurobehavior Development of Very Preterm Infants: A Systematic Review and Meta-Analysis." Physical & Occupational Therapy in Pediatrics: 1-30.
8	Verhaegh, A. P. M., B. E. Groen, P. B. M. Aarts, R. van Ee, M. A. A. P. Willemsen, M. L. A. Jongsma, M. W. G. Nijhuis-van der Sanden and K. L. Chen (2023). "Multisensory Stimulation and Priming (MuSSAP) in 4-10 Months Old Infants with a Unilateral Brain Lesion: A Pilot Randomised Clinical Trial." Occupational therapy international **2023**: 1-12.
9	Ward, R., J. E. Reynolds, N. Bear, C. Elliott and J. Valentine (2017). "What is the evidence for managing tone in young children with, or at risk of developing, cerebral palsy: a systematic review." Disability & Rehabilitation **39**(7): 619-630.

Quality appraisal

The records included were five systematic reviews[19-23] and four experimental studies or randomised controlled trials [24-27] that met the criteria for Level I and II evidence. All included studies had high CASP rating scores (86% – 100%). Sample sizes of experimental studies and RCT's varied between 16 and 490 while systematic reviews included 5 – 37 records. Table II (below) reports on individual articles, sample sizes and CASP ratings.

Table II: CASP rating of included articles

Article (author (year)	Type of evidence	Sample size	CASP rating %
Fereira et al (2022)	Quasi-experimental RCT	490	91
Fucile et al (2025)	RCT	94	91
Jaywant et al (2020)	Experimental study	60	100
Verhaeg het al (2023)	RCT	16	86
Khurana et al (2020)	SR	15	95
Martínez-Carlón-Reina (2024)	SR & MA	17	95
Paleg et al (2018)	SR	37	95
Raghupathy et al (2025)	SR & MA	17	100
Ward et al (2017)	SR	5	90

Abbreviations: MA: Meta Analysis; RCT: Randomised controlled trial; SR: Systematic Review

Study locations

Experimental studies and RCTs were carried out in Brazil[27], Canada[26], India [25] and the Netherlands [24]. Systematic reviews included studies from Australia[19,22], Canada[19], China[22], India[28], Iran[22,28], Japan [19], Korea[19,23], the Netherlands[19,22], Norway[19], Sweden[23], Switzerland[22], Taiwan[22], United Kingdom[19], and the United States of America (USA)[19,22,28]. Two systematic reviews did not report on the location of individual studies; however, the authors from Paleg et al.'s study originated from Spain [21], while the authors of Martínez-Carlón-Reina et al.'s review originate from Canada and the USA[20].

Study participants

All studies included neonates, while four studies specifically focused on premature infants[19,22,25,26]. Conditions and diagnoses included infants at high risk, socially or biologically[27], infants with obstetric

brachial plexus palsy[20], infants with genetic syndromes such as Down's syndrome or Rett's[21] infants with unilateral brain lesions[24] and infants at risk for CP[23]. One study only included infants in a low-income area[27].

Occupational therapy interventions

The intervention-themes of the included articles were: family-focussed intervention (n = 2); sensory- focussed oral-motor interventions (n = 2); management of increased or decreased muscle tone (n = 2); interventions for obstetric brachial plexus injuries (n = 1); multisensory stimulation and priming (n = 1) and the effect of neonatal therapy interventions on the development of premature infants (n = 1). Interventions are described below and summarised in detail in Table III (page 6).

Family-focused intervention

Family-focused intervention for a Brazilian quasi-experimental RCT [27] included newborn behavioural observations, developmental stimulation and mother support groups. The low-cost interventions were offered over six weeks and coincided with clinic and paediatrician appointments. In their systematic review, Raghupathy et al report on the effect of family-centred interventions on the development of very preterm infants including kangaroo care, environmental modulation, massage, feeding support, routine activities, and developmental activities with the parents as active participants [22]. In both studies, occupational therapists formed part of a multi-disciplinary team and took on a teaching and supervisory role. Positive outcomes included reduced risk for receptive language delay for at-risk newborn infants [27] and a positive effect on the motor and cognitive development, as well as behavioural aspects of very preterm infants [22]. Another systematic review exploring the effect of neonatal therapy found positive outcomes for parent-directed motor interventions[19]. While focused on oral-motor interventions, the parent-administered sensori-motor intervention (PASI), examined in an RCT[26], similarly relies on family participation while the occupational therapist, as part of the MDT, contributes to training.

Sensory-focused oral-motor intervention

Occupational therapists, as part of an MDT, provided training for parents of premature infants in a Canadian neonatal intensive care unit to implement the parent-administered sensori-motor intervention (PASI) program[26]. It was found that infants in the experimental group of this RCT achieved oral feeds four days earlier than the control group, and that statistically significantly larger numbers of infants in the experimental group received breastfeeding than the control group. However, there was no significant difference in motor function. A study among preterm infants in India[25] explored the effect on their development of the Premature Infant Oral Motor Intervention (PIOMI) with and without massage therapy. The group that received PIOMI together with massage therapy achieved full oral feed in significantly less time than the group that only received PIOMI. Furthermore, the PIOMI and massage group showed significantly increased emotional and social development when compared to the PIOMI group[25].

Muscle tone management

Two systematic reviews explored interventions to manage tone [23] and associated sensory and motor concerns[21] in at-risk infants and infants with a diagnosis of Down syndrome. Both reviews included records that focused on older children, and thus, we only focussed on interventions applicable to neonates. Positive outcomes were recorded for massage, motor and sensory-motor interventions, positioning and mobility interventions, BoNT-A (Botox) and functional therapy. In these reviews, occupational therapists offered intervention as part of the MDT, either through direct intervention, or training and family support [2,28].

Interventions for brachial plexus injuries

Three studies focusing on neonates were included in a systematic review that explored techniques used in occupational therapy interventions for babies and children with obstetric brachial plexus palsy [20]. The outcomes highlighted the importance of early intervention with the most positive results achieved with infants under 3 months of age. Positive early intervention techniques included constraint-induced movement therapy (CIMT), splinting, joint manipulation, neuromuscular electrical stimulation (NMES), and early intervention family education.

Multisensory stimulation and priming

A pilot RCT examined the effect of multisensory stimulation and priming (MuSSAP) on preterm infants with unilateral acquired brain abnormalities, at risk of unilateral cerebral palsy in the Netherlands[24]. Preterm infants received the intervention at a corrected age of 4 – 10 months. While one group received only Early Intensive Upper Limb Intervention (EI-UL) the other group received EI-UL combined with multisensory intervention and priming. The results indicated positive outcomes for upper-limb goal-directed movements for both groups equally.

The effect of therapy on the development of premature infants

Khurana et al (2020) focused their systematic review on the effect of neonatal therapy on the development of preterm infants. Interventions were grouped as follow: parent-delivered motor interventions, therapist-delivered postural control intervention, developmental care, and oromotor interventions. Results indicated preliminary support for parent-delivered motor interventions for long-term and short-term cognitive and motor gains. Therapist-delivered postural control interventions showed positive effects for short-term motor gains, while developmental care programs indicated short-term behavioural gains. Oromotor interventions did not deliver evidence on gains in developmental outcomes.

Intervention structure

Across the included studies, the intervention process started in the NICU [19,22,26], premature care unit[25] or maternity hospital[19].
Interventions would often continue at home[19,22,24] or at a clinic[27]. One SR did not report on the settings[23].
Seven records reported on duration and/or session time and frequency of the intervention. There was a significant variation - from 6 sessions of family training and follow-up sessions[27], to 4 years follow-up and treatment for conditions such as obstetric brachial plexus palsy[20]. Table III (page 6) contains detailed information about the intervention time, duration and frequency as reported.

Table III: Summary of occupational therapy intervention in neonatal care

Intervention	Description of intervention	Conditions/diagnoses	Occupational Therapy required skill level	Intervention setting	Number of sessions and intervention duration	Outcome Efficacy of intervention	Cost
Family-focused intervention	Newborn Behavioral Observation (NBO) conducted after birth at the hospital and at 2 months, the baby book (developmental stimulation activities), and a mothers' support group. These took place during clinic appointments or paediatrician follow-ups[27]	At risk newborn infants	OT as part of specialised MDT	Maternity hospital, community clinics[27] [19,22] Hospital or hospital and home[19]	6 sessions	Significant reduction in the intervention groups' chance of developing receptive language delay	Low-cost intervention
	Family-centred care with parents as active participants, including kangaroo care, environmental modulation, massage, feeding support, routine activities, developmental activities [22]	Premature infants	OT in supervisory role, as part of specialised MDT	NICU, home environment or both	NR	Positive impact on motor cognitive and behavioural aspects of very preterm infants. Minimal impact on other aspects e.g. communication, and social skills	NR
	Parent-delivered motor interventions[19]: The supporting play exploration and early development intervention; and mother-infant transaction program and family centred practice.	Premature infants	NR	NICU, home, NICU & home, hospital and home	3 - 5 sessions in NICU followed provision of support to parents to carry out programs	Preliminary support that daily PDMI improves motor and cognitive outcomes in the short and possibly in the long term	NR
Sensory-focused oral-motor intervention	Parent administered sensori-motor intervention (PASI) program. Training provided by MDT[26]	Premature infants	OT in training role as part of MDT	NICU	PASI: 15 minutes, once a day for 10 days; (parent delivered) parents attended 2 x training sessions 45 - 60 minutes	Infants in experimental group achieved oral feeds 4 days earlier than Cin the control group. Statistically significant larger number of infants in experimental group received breastfeeding than in control group. No significant difference in motor function	Specialised training required
	Premature infant oral motor intervention (PIOMI) combined with infant massage (IM) vs only PIOMI [25]	Preterm infants	Special training required for PIOMI and IM	Premature care unit of a tertiary Hospital	PIOMI: 10 min twice daily. PIOMI ans IM: 5 min IM and 5min PIOMI twice a day. Intervention continues until full oral feed achieved	PIOMI and IM group able to achieve full oral feed in significantly less time than just POMI Both groups showed good social emotional development at age 2 months and 6mnts but PIOMI and IM group significantly more so	Specialised training required
Muscle tone management	Orthotic interventions, compression garments., massage, motor and sensori-motor interventions, positioning and mobility interventions[21]	Included infants with diagnoses of Down syndrome, Rett syndrome, Cerebral Palsy and developmental delay	NR	NR	NR	Strongest evidence found to support massage for Down syndrome for improving muscle tone, use of vision and gross motor skills.	NR

	BoNT-A (Botox), functional therapy, oral baclofen, NDT and neurofasclilitation of development action (NFDR)[28]	Included infants with Cerebral Palsy, hypertonicity, and traumatic brain injury	NR	NR	Varied from 15 - 90 minutes, daily - 2 weekly sessions, 3 - 6 months	Adequate evidence for functional therapy and BoNT-A in neonates, moderate evidence for positive effect of NFDR vs NDT and BoNT-A and stretching vs only stretching. Limited evidence for oral baclofen	NR
Interventions for brachial plexus injuries	CIMT, neuromuscular electrical stimulation (NMES), static and dynamic splinting, joint manipulation techniques, early intervention family education.[20]	Infants and children - birth to 12 years with Obstetric Brachial Plexus Palsy (OBPP)	NR	NR	4 weeks to 4 years	Most positive results observed under 3 months Including CIMT, splinting, NMES, joint manipulation linked to family management education.	NR
Multisensory stimulation and priming	8 infants received Early Intensive Upper Limb Intervention (EI-UL), and 8 infants received EI-UL with multisensory stimulation and priming (MuSAP) [24]	Preterm infants with unilateral acquired brain abnormalities, and infants at risk of unilateral Cerebral Palsy	OTs had over 10 years of experience in this study	Home-based program with video coaching	3 ten-minute sessions daily, seven days a week, over 8 weeks	No significant difference between the two groups. Mean improvement for hand function in both groups were larger than expected when compared to other studies. Either approach was recommended, based on feasibility, family preference, and clinical reasoning.	NR
The effect of therapy on the development of premature infants	Parent delivered motor interventions, therapist delivered postural control intervention, developmental care, oromotor intervention[19]	Preterm infants	NR	NICU, home, NICU and home, hospital and home	Daily, 10 - 20 minutes, 3 weeks to 3 months, weekly for 6 months and then montly for year. Oral twice a day for 10 days	Preliminary support that daily PDMI improves motor and cognitive outcomes in short and possibly in the long term	NR

Abbreviations: CIMT – constraint-induced movement therapy; IM – infant massage; MDT – multidisciplinary team; NMES - neuromuscular electrical stimulation; NICU – neonatal intensive care unit; NR – not reported; OT – Occupational Therapy; PASI - Parent administered sensori-motor intervention; PDMI – parent-directed motor intervention; PIOMI - premature infant oral motor intervention.

Intervention skill level and cost

Occupational therapists were most often described as part of a specialised multidisciplinary team [22,2,27]. Specific training is required for programmes such as the PIOMI and IM[25] and a high experience level for implementing interventions such as MuSSAP[24]. Only one study referred to the cost of the intervention, aiming to specifically deliver a low-cost intervention through family-focused intervention in a low-income area [27].

Data collection

Data collection strategies varied according to each study's particular aims and objectives. Standardised assessments such as the Bayley Scales of Infant and Toddler Development[22,24,27], Test of Infant Motor Performance [6], Gross Motor Function Measure[24] and Assessment of Preterm Infants' Behavior[22] was used to assess cognitive, behaviour and motor development. Primary assessment measures were used e.g. the Hand Assessment for Infants[24], Active Range of Motion and Active Motion Scale [20], and the Modified Ashworth Scale[28]. Parent reported questionnaires assisted in collecting data regarding feeding outcomes[25,26], parent satisfaction [22] and parent perceptions[22,24]. Time measurements were used to determine the effect of oral-motor interventions[25,26]. To investigate the influence of different neonatal therapies aspects such as age and weight of the infant, time of recruitment and follow-up, setting, intervention provider and intervention structure were considered along with more formal methods of assessment[19].

DISCUSSION

This rapid review reports on evidence of occupational therapy interventions for neonatal care from a high-level recent global evidence perspective. The four included RCTs and five SRs represent research across varied geographical and socio-economic areas. The findings of this review align with those of Bee et al., highlighting a notable limitation in the available research conducted within sub-Saharan Africa[9]. Research was, however, conducted in countries such as Brazil, China, and Iran. These nations, being classified as upper-middle-income countries, offer contexts that may be relatable to other settings with similar economic profiles, for example, South Africa [29] and similar challenges concerning neonatal care[10].

Regardless of a region's socio-economic status, it is imperative to provide high-quality neonatal care, especially for preterm or high-risk infants. While adequate infrastructure, equipment, and medical supplies are essential components of healthcare provision, the presence of a specialised multidisciplinary neonatal team remains paramount in delivering effective care[1]. Within such teams, the role of the occupational therapist is clearly articulated and recognised within this review[22,26,27].

Certain specialised intervention programmes, including the Premature Infant Oral Motor Intervention (PIOMI), Infant Massage (IM)[25], and Multisensory Stimulation and Priming (MuSSAP)[24], demand additional professional training and experience. While specialist input for neonatal care is recommended[7], the requirements to implement these programmes can potentially limit access to these

interventions, particularly in regions where resources or opportunities for specialised education may be limited[19,20]. The specific cost of these specialised interventions, training required, or specialists involved, was not mentioned. Furthermore, although infants in the neonatal phase require intensive and specific shorter-term input[25-27] they often require long-term intervention and follow-up[20].

Despite these challenges, it is encouraging to note that low-cost, family-focused early intervention programmes have demonstrated positive outcomes[22]. Furthermore, the contribution of high-quality randomised controlled trials conducted in low socio-economic areas has enriched the current evidence base for neonatal care practices, supporting the ongoing development and implementation of effective strategies in diverse settings.

Several interventions described in this review identify parents and families as essential contributors to the occupational therapy treatment regime, or to a therapeutic regime that includes occupational therapy. This aligns with the recommendations of Bell et al.[1], who emphasised the significance of family participation for achieving success in neonatal units[1]. This approach requires therapists to adopt and maintain a family-focused perspective and to provide family education and parent training as needed. Occupational therapy education equips students to deliver holistic, family-focused care, recognising the value of the family's role in treatment. Through their training, future occupational therapists are equipped to function as integral members of supportive multidisciplinary teams, addressing the needs of both the infant and their family[3].

The review reflects the importance of a holistic occupation-based approach within neonatal care[8] focusing on feeding[25,26] as an emerging self-care activity[7] incorporating specialised sensory, oral motor, and massage techniques. Researchers implemented sensory integration, neurodevelopmental, physical developmental and functional theories to achieve motor, cognitive, behavioural, socio-emotional and selfcare (feeding) outcomes. This aligns with the description of the occupational therapist's role in neonatal care as described by OTASA[7] and RCOT[8].

The review shows that occupational therapists participate in neonatal care from an infant's birth, in tertiary settings like NICUs, as well as in secondary and primary community clinics and infants' homes. The focus was on premature-born infants, infants at risk, and infants diagnosed with neurological conditions (cerebral palsy or traumatic brain injury), genetic disorders (Down's syndrome or Rett's syndrome) or physical conditions (obstetric brachial plexus palsy). The importance of early intervention and multidisciplinary collaboration for these infant groups is reflected in the positive outcomes achieved in the various developmental domains. Furthermore, possible positive long-term effects for cognitive and motor outcomes were described for parent-delivered motor interventions[19,22].

Limitations of the study

This review considered level I and II evidence only. Although scoping reviews, qualitative studies and case studies could have offered additional insights, it was not considered for inclusion.

Future research and recommendations

Considering the paucity of high-quality research from sub-Saharan Africa, future studies to describe current occupational therapy practices, but also any unique challenges such as resource limitations, infrastructure deficits, and workforce shortages in sub-Saharan Africa is recommended. Given the success of low-cost, family-focused interventions in low socio-economic contexts, further research should explore the adaptation, feasibility, and effectiveness of occupational therapy programmes in similar settings where there may be limited access to specialised training or advanced medical equipment.

Lower level reviews (e.g., scoping reviews) that include lower-level evidence, such as qualitative studies and case studies, could offer valuable insights into occupational therapy interventions delivered within sub-Saharan Africa.

Lastly, more research is needed on the cost-effectiveness of different occupational therapy interventions to inform policy and funding decisions, especially in resource-constrained environments.

Ethical consideration declaration

Ethical clearance was not required for this review as no primary data collection was done. The quality and bias of selected articles were tested to ensure quality results to inform the question of this review.

CONCLUSION

High-level global evidence supports the role of the occupational therapist as part of a specialist neonatal team on tertiary, secondary, and primary health care levels. Occupational therapists deliver essential specialised care to the infant to promote and enhance global development, but also to the family through education and training. Various early intervention treatment programmes require a high level of expertise and experience and/or additional training.

Conflict of interest declaration

The authors have no bias to declare.

The Microsoft AI tool, Copilot, was used to assist with the language editing and paraphrasing of the final article.

Author contributions

All authors planned and participated in the execution and writing of review. Shaheed Soeker initiated the review, and Janke van der Walt led the writing of the article.

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