

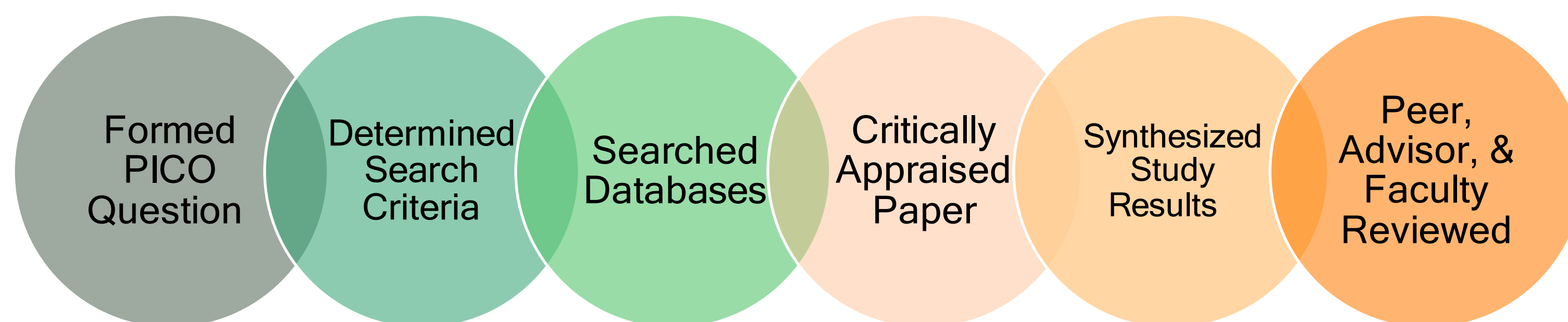
RATIONALE

- 1 in 10 infants in the U.S. were born prematurely in 2020 (Centers for Disease Control and Prevention, 2021).
- Premature infants are often faced with an environment for which they are not developmentally prepared.
- This is a vulnerable population in an overwhelming environment.

NEUROLOGICAL DEVELOPMENT

An umbrella term we are using to refer to the brain's development and the observed and measured functioning as a result. This may encompass neuromaturation as well as neurobehavioral, neuromuscular, and neuromotor development.

REVIEW PROCESS



PICO QUESTION

For premature babies in the Neonatal Intensive Care Unit (NICU), are sensory interventions effective for improving neurological development?

SEARCH METHODS

Databases Searched

CINAHL, Embase, Google Scholar, PubMed

Search Terms

NICU, Neonatal Intensive Care Unit, premature infants, sensory experiences, sensory input, sensory program, sensory stimulation, neurobehavior, developmental, brain development

+ INCLUSION CRITERIA

- Premature infants in NICU
- Sensory interventions
- Neurological development
- Academic journals
- Age (all infants 0-23 mon.)

- EXCLUSION CRITERIA

- Studies published before 2010
- Non-English

MAIN FINDINGS

Study, Design, & Quality	Interventions	Outcomes	Limitation
LEVEL I			
Aita et al. (2021) • Systematic Review & Meta-Analysis • Quality Score: 88%	• Newborn Individualized Developmental Care & Assessment Program • Positioning & incubators covers • Alternative positioning • Tactile stimulation • Multisensory stimulation • Music	Statistically significant: • Multisensory intervention on neuromotor & neuromuscular development • Music on neuromotor development Statistically non-significant: • Tactile intervention on neurobehavioral development	• Operationalization of standard care varied
Pineda et al. (2016) • Integrative Review • Quality Score: 90%	• Manualized Multisensory Program (SENSE)	• Little evidence for improved long-term outcomes • Some evidence support use of kangaroo care, music & language exposure, & multimodal interventions	• Excludes non-English studies • Sample sizes < 30 • Participants between ages of 33-36 wks. gestation • Studies > 20 yrs. old • One reviewer • Lack of cohesion in interventions
LEVEL II			
Lecuona et al. (2017) • Small scale RCT • Quality Score: 58%	• Ayres Sensory Intervention	• No statistically significant difference reported • Authors report positive effects	• Participants from only low SES areas
Pineda et al. (2021) • RCT • Quality Score: 76%	• SENSE Program	• > lethargy at term age	• Small sample size • Participant selection bias • Sensory logs may suggest need for sensory experiences • Type I errors due to multiple measures of constructs over time

CONCLUSIONS

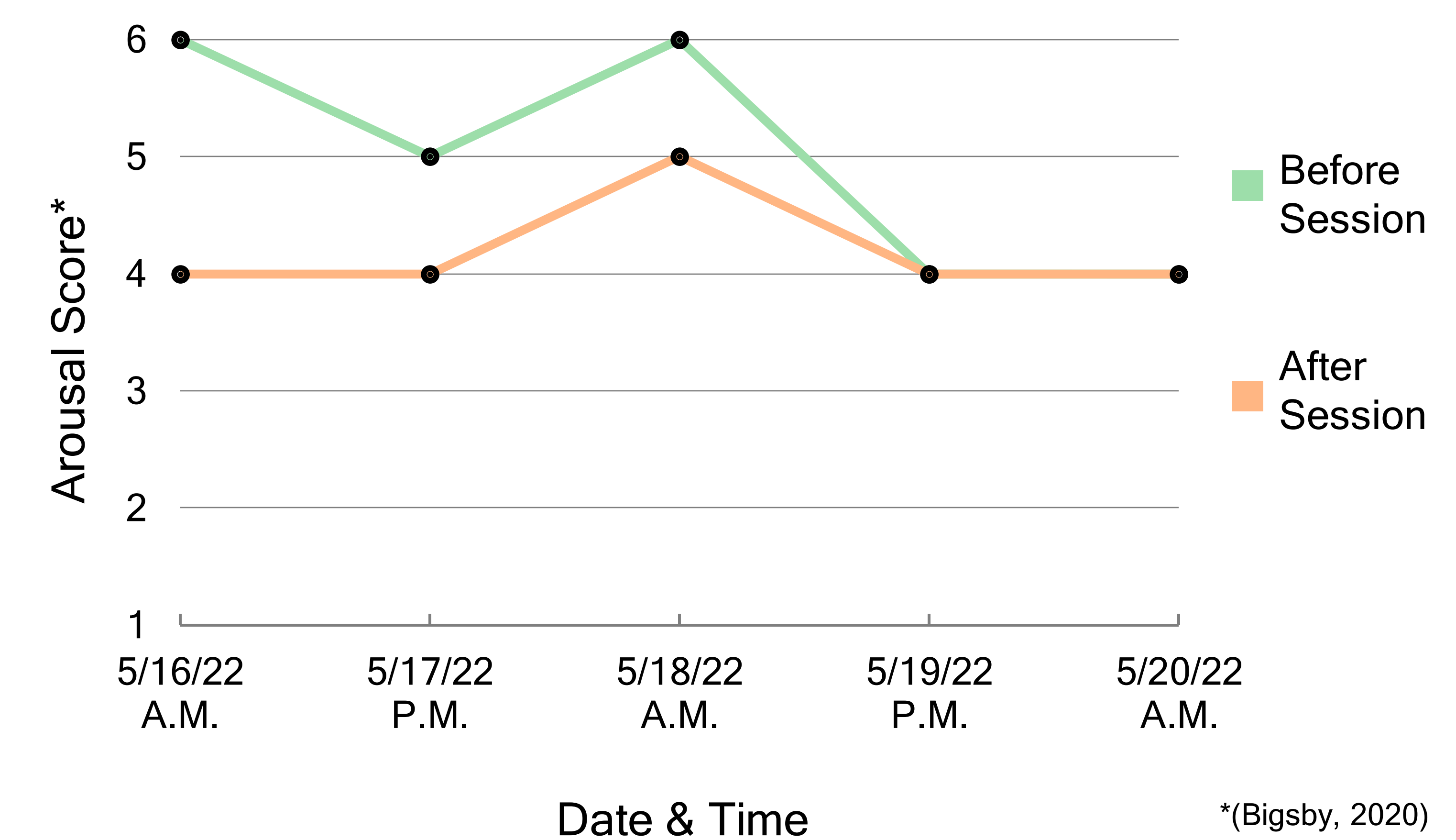
Clinical Bottom Line

- Use with caution and monitoring with this vulnerable population
- Some statistically significant evidence
- Positive trends, but lack of long-term follow up

Recommendations

- More research needed
- Long-term follow up
- Caregiver and interdisciplinary education on sensory intervention & documentation

EXAMPLE FOR MONITORING CLINICAL APPLICATION



CAREGIVER SENSORY LOG



REFERENCES

