TREE STUDY RESULTS

TREE PROGRAM:
Promoting Positive Parent Child Interactions in Low Income Families with Children Ages 0-2 Years by Pediatric Providers During Well Child Visits

Maryland Chapter AAP and University of Maryland School of Social Work Institute for Innovation and Implementation
WHAT IS THE TREE PROGRAM?

Promotes positive interactions between parents and young children

Developmental coaching integrated into well child visits for children 0-2 years

Targets low-income families

Performed by the pediatric provider

TREE materials are available on the Maryland AAP website
BASIC TREE CONCEPTS

TALK: Bathe your baby in language descriptively and in all settings

READ: Read together regularly and enthusiastically

ENGAGE: Have fun together / Make your baby feel safe and loved

ENCOURAGE: Be your baby’s cheerleader
Why this program?

- Enhances pediatric practitioner role to provide developmental coaching in addition to surveillance and screening.
- Program is a universal tier one public health intervention to support early relational health as advocated by the AAP 2021 Toxic Stress Policy statement.
- Promotes health equity for children living in poverty at risk for developmental delay.
- Augments statewide force of Early Intervention services.
What fun things do you enjoy doing with your child?

Developmental Narrative
(where does your child fit in? where are they heading?)

Provide TREE tips

Can you try it out?

What fun things can you do with your child as they change in the next few months?

Provide parent with positive feedback
Quasi-experimental design in 2 pediatric training programs in Baltimore City (residents: intervention n=24, control n=42)

A convenience sample (n = 167 families) was recruited (79 intervention; 88 control)

Follow-up data was obtained from 45% of families due to COVID-19 (38 intervention; 38 control)
TREE STUDY: MEASURES

Parent STIMQ2
- Baseline at ages 4-6 months
- Post at ages 9-15 months after 2-3 well child visits with TREE

Pediatric Residents
- TREE Questionnaire at baseline and after 10 months of implementation
**TREE STUDY: DEMOGRAPHICS**

- **Child age:** 3-10 months old at baseline and 9-15 months at follow up
- **Child race:** Predominantly Black (76% intervention; 77% control)
- **Medicaid:** (81% intervention; 78% control)
- **Caregiver marital status:** Single (52% intervention; 53% control)
- **Caregiver Age:**
  - 21-30 yrs (48% intervention; 58% control)
  - 31-40 yrs (30% intervention; 19% control)
- **Caregiver Education:**
  - High School (42% intervention; 44% control)
  - College (29% intervention; 26% control)
- **Caregiver Employment:**
  - Full time (29% intervention; 43% control)
  - Unemployed (46% intervention; 38% control)
Significant differences noted *between* the intervention vs control group measured at follow up using independent samples t tests in:

**Parent Verbal Responsivity**

\( t = 2.71; d = .68; 95\% \text{ CI}, .17 \text{ to } 1.18; \ p = .009 \)
PVR BETWEEN INTERVENTION AND CONTROL GROUPS (AT FOLLOW UP)

Baseline
Followup

Mean Score

Intervention
Control

$p = .009$
Significant changes noted within the intervention vs control group measured at baseline and follow up using paired samples t tests in:

- **Parent Verbal Responsivity (PVR)**
  - \( t = -3.02; d = -0.54; 95\% \text{ CI}, -0.92 \text{ to } -0.16; p = 0.005 \)

- **PVR Everyday Routines**
  - \( t = -3.28; d = -0.53; 95\% \text{ CI}, -0.87 \text{ to } -0.19; p = 0.002 \)

- **PVR Play and Pretend**
  - \( t = -3.34; d = -0.54; 95\% \text{ CI}, -0.88 \text{ to } -0.20; p = 0.002 \)
TREE STUDY: CAREGIVER RESULTS

PVR Results Interpretation

- TREE program most closely aligns with the items measured on the PVR and Reading subscales
- TREE program helps to close parental knowledge and performance gaps and boosts confidence
- Pandemic effect?: cumulative effects in intervention group of TREE program plus increased time at home to implement
Trending changes noted within the intervention vs control group measured at baseline and follow up using paired samples t tests in:

**Bookreading Quality**

\[ t = -1.85; d = -0.34; 95\% \text{ CI, } -0.7 \text{ to } 0.03; \quad p = 0.07 \]
Both groups received ROR program at their health centers – but steeper change in the intervention group may reflect additive effect of TREE program.
Significant differences noted between the intervention vs control group measured at follow up using independent samples t tests in:

- Total TREE questionnaire score
  \[t = 2.96; d = .92; 95\% CI, .27 to 1.55; p = .005\]

- Self reported frequency of promoting talking to, reading to, and being positive and encouraging with young children
  (all p-values between .005 to .03)

- Self reported confidence in fostering positive interactions, conveying child development, and providing positive feedback to parents
  (all p-values between .005 to .03)
TREE QUESTIONNAIRE TOTAL SCORE

Mean Score

Baseline
Follow-up

Intervention Control

p = .005
Significant changes noted within groups measured at baseline and follow up using paired samples t tests in:

- **Intervention group** - 7 out of 10 TREE questionnaire (p-values between $p < .001$ to $p = .03$)
- **Control group** - 2 out of 10 items (fostering positive interactions and addressing psychosocial issues (p-values=.005 to .04)

**Satisfaction** with well child visits over time (intervention $p=.03$ vs control $p=.20$)
TREE STUDY SUMMARY

First tier universal public health intervention

Delivered *directly* by pediatric primary care providers during well child encounters

Cost effective (no additional staff required), brief, easily learned and replicated

Emphasizes *relational health* by enhancing caregiver-child interactions in low-income families
TREE STUDY SUMMARY

- Addresses gaps in parental knowledge, performance and confidence
- Increased caregiver-child interactions in verbal responsivity, play, and reading behaviors
- Increased pediatric resident self report of confidence and performance of relational health skills as endorsed by the AAP
TREE STUDY: LIMITATIONS

- Two different patient community groups chosen for study
- Loss of patient follow up due to COVID-19 pandemic
- Self-reported results in caretakers and pediatric residents introduces bias
- Resident intervention group was aware they were receiving TREE training
TREE STUDY: FUTURE DIRECTIONS

Follow up efficacy studies evaluating impact on child development in low-income populations using larger numbers of patients

TREEHOUSE: 30-minute dedicated telehealth developmental coaching sessions at ages 9 and 15 months (in addition to well child visits) to address child development more comprehensively
TREE STUDY TEAM

Ken Tellerman M.D., Chair, Emotional Health Committee Maryland Chapter AAP

University of Maryland School of Social Work Institute for Innovation and Implementation
  • Margo Candelaria Ph.D.
  • Heather Whitty M.A.
  • Katherine Endy MSW
  • Jenny Afkinich MSW, Ph.D.

Dana Silver M.D., Faculty Dept of Pediatrics, Sinai Hospital Lifebridge Health Center

Susan Feigelman M.D. Professor of Pediatrics, University of Maryland School of Medicine

Anna Maria Wilms Floet M.D. Faculty, Kennedy Krieger Institute, Johns Hopkins School of Medicine
TREE STUDY TEAM