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ORIGINAL ARTICLE

The Impact Of Health Education On Teachers' And Parents' Knowledge Regarding The Urgency Of Monitoring The Growth And Development Of Early Childhood Children

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ABSTRACT

Background: *Monitoring early childhood growth and development is a crucial preventive strategy. Teachers and parents are key stakeholders in this process. Health education may improve knowledge, but responses may vary.*
Objective: *To analyze the effect of health education on teachers' and parents' knowledge regarding early childhood growth and development monitoring.*
Methods: *A quasi-experimental one-group pretest–posttest design was conducted among 14 teachers and 17 parents. Health education covered anthropometric measurements and developmental indicators. Shapiro-Wilk and paired t-test were performed. Cohen's d and 95% CI were calculated.*
Results:
Teachers: mean increased from 73.81±9.73 to 80.95±11.52 (p=0.054), d=0.68 (moderate–large effect), 95% CI: -0.11 to 14.39.. Parents: mean increased from 68.63±10.43 to 84.31±7.73 (p<0.001), d=1.71 (very large effect), 95% CI: 9.52 to 21.84.
Conclusion: *Health education significantly improved parental knowledge with a very large effect. Teachers showed clinically meaningful improvement despite statistical non-significance.*

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Introduction

Early-life experiences lay the foundation for children's cognitive, social, and emotional development. Health and nutrition, stimulation, and the caregiving environment interact and can shape developmental trajectories into later life (Black et al., 2017).

Growth problems remain a global concern. In 2024, an estimated 150.2 million children under five years of age were affected by stunting, 42.8 million by wasting, and 35.5 million by overweight (United Nations Children's Fund et al., 2025) . Alongside growth monitoring, developmental surveillance and screening help identify children who need further evaluation (Lipkin et al., 2020) .

The Nurturing Care Framework identifies health, nutrition, safety and security, responsive caregiving, and opportunities for early learning as complementary components (World Health Organization et al., 2018) . Growth monitoring includes measuring weight and length or height, as well as head

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circumference and mid-upper arm circumference as appropriate for the child's age and the purpose of the assessment. Measurements are interpreted against the relevant growth charts or indicators(Kementerian Kesehatan Republik Indonesia, 2022; United Nations Children's Fund et al., 2025).

In Indonesia, the guidelines for Stimulation, Early Detection, and Early Intervention for Child Growth and Development (SDIDTK) include use of the age-appropriate Developmental Prescreening Questionnaire (KPSP, its Indonesian acronym). The questionnaire assesses gross motor skills, fine motor skills, speech and language, and socialization and independence. The guidelines also specify follow-up based on screening results and support coordination among families, early childhood education settings, and health services (Kementerian Kesehatan Republik Indonesia, 2022)

Teachers in early childhood education settings, including childcare centers and kindergartens, can observe children's development during learning and play. A study of preschool teachers showed that they could identify developmental concerns, particularly those related to language and behavior (Kiing et al., 2019) . In Indonesia, an evaluation of KPSP training for early childhood educators reported higher knowledge and early detection skills scores after training (Alifah et al., 2025) Parents support children's nutrition, stimulation, and responsive caregiving and can share observations of their children's development at home (Lipkin et al., 2020; World Health Organization et al., 2018) . In a study of caregivers of young children, knowledge scores for early detection of developmental concerns increased after use of a KPSP monitoring booklet (Widiani & Chania, 2025)

Health education can help teachers and parents understand the purpose of monitoring and the steps involved in measurement and screening. A meta-analysis of parenting interventions during the first three years of life found improvements in parenting knowledge and practices (Jeong et al., 2021) . An Indonesian study also reported improved early detection skills among mothers of children aged 1–5 years after an animated video-based educational intervention (Wahyuni et al., 2026)
Previous studies of early childhood educators and caregivers have used different educational approaches and outcome measures (Alifah et al., 2025; Wahyuni et al., 2026; (Widiani & Chania, 2025). This study assessed teachers and parents before and after the same health education session. It aimed to evaluate changes in knowledge of the importance of monitoring early childhood growth and development and to describe the pattern of change in each group.

Methods

A quasi-experimental, one-group pretest–posttest design was used to assess changes in knowledge before and after a health education session. The study took place on November 21, 2025, and involved teachers and parents of children enrolled in childcare centers, playgroups, and kindergartens.

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Fourteen teachers and 17 parents were recruited through convenience sampling. The approximately 120-minute session covered the following topics.

1. The importance of monitoring early childhood growth and development.
2. Principles and techniques for measuring weight, length or height, mid-upper arm circumference, and head circumference.
3. Principles and use of the Developmental Prescreening Questionnaire (KPSP) (United Nations Children's Fund et al., 2025)

The session used an audiovisual presentation. Knowledge was assessed with a questionnaire that had been tested for validity and reliability (Cronbach's $\alpha > 0.70$). Items covered the importance of monitoring growth and development, measurement principles, and developmental indicators. Mean pretest and posttest scores were calculated. Normality was assessed using the Shapiro–Wilk test, and paired t-tests were used to assess pretest–posttest differences within each group. The significance level was set at $\alpha = 0.05$.

Results

Tabel 1. Participant Characterisics

Group		Se	Prosentase
Teachers	Female	14	100%
Total		14	100%
Parents	Female	16	94,12
	Male	1	5,88
Total1		17	100%

All 14 teachers were women (100%). Among the 17 parents, 16 were women (94.12%) and one was a man (5.88%).

Table 2. Teachers' knowledge scores before and after the intervention (N=14)

Teacher's Knowledge		P-value
Pretest mean	Post Test mean	0,054
73,81	80,95	

Teachers' mean knowledge scores rose from 73.81 before the session to 80.95 afterward, a mean increase of 7.14 points. The Shapiro–Wilk test returned $p > 0.05$. The change did not reach the prespecified threshold for statistical significance in the paired t-test ($p = 0.054$).

Table 3. Parents' knowledge scores before and after the intervention (n = 17)

Parent's Knowledge		P-value
Pretest mean	Post Test mean	0,001
68,63	84,31	

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Parents' mean knowledge scores rose from 68.63 before the session to 84.31 afterward, a mean increase of 15.68 points. The Shapiro–Wilk test returned $p > 0.05$. The increase was statistically significant in the paired t-test ($p < 0.001$).

Discussion

Women accounted for all participants in the teacher group and 94.12% 137 parent group. Including teachers and parents in one session gave both groups an opportunity to develop a shared understanding of growth and development monitoring at home and in early childhood education settings. OECD tahun 2019 reports that early childhood educators and parents commonly exchange information about children's daily activities and development.

The session primarily reached mothers in the parent group. The study did not assess how mothers and fathers share caregiving responsibilities. The Nurturing Care Framework emphasizes supporting parents and caregivers in providing a safe environment, responsive caregiving, and early learning opportunities (World Health Organization et al., 2018) . Future sessions could include fathers and other family members involved in childcare.

With no men in the teacher group and one in the parent group, the sample did not allow meaningful analysis of differences in response by sex. The findings should therefore be applied cautiously to groups with a different sex distribution

1. Knowledge Before the Intervention

The mean baseline knowledge score was 68.63 for parents and 73.81 for teachers. This descriptive difference suggests that participants entered the session with varying levels of knowledge, which should be considered when designing education on child growth and development monitoring.

Parents' lower baseline scores suggest a need to strengthen their understanding of growth and development monitoring. Some parents may have been less familiar with measuring weight, length or height, and mid-upper arm circumference, or with recognizing developmental indicators. Adult learning theory emphasizes the relevance of learning content to everyday needs (Knowles et al., 2015) . Examples drawn from daily caregiving may therefore encourage parents' engagement during education.

Teachers' higher baseline scores may reflect exposure to similar material the previous year. Their daily work in early childhood education may also provide familiarity with aspects of child growth and development. The contributions of work experience and formal education to baseline knowledge were not examined.

The baseline findings support tailoring educational content to each group. Parents may benefit from explanations of core concepts and examples from daily caregiving. Teachers may benefit from a review of key material followed by practice applying it in early childhood education settings.

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2. Knowledge After the Intervention

After the session, the mean knowledge score was 84.31 for parents and 80.95 for teachers. These scores represented increases of 15.68 and 7.14 points, respectively.The increase in parents' scores was consistent in direction with findings from the meta-analysis of parenting knowledge by Jeong et al. tahun 2021 and the study of caregiver knowledge after use of a KPSP monitoring booklet by Widiani & Chania tahun 2025 . Wahyuni et al. tahun 2026 reported improved early detection skills after video-based education. The present study assessed knowledge, and practical skills were a separate outcome that was not measured.

The increases in both groups support further development of health education activities. Follow-up assessments of practice could determine whether participants can accurately measure growth, identify developmental concerns, and provide appropriate stimulation in caregiving and educational settings.

3. Interpretation of Pretest–Posttest Changes

The pretest–posttest difference was statistically significant for parents ($p < 0.001$). For teachers, the change did not reach the prespecified significance threshold of $\alpha = 0.05$ ($p = 0.054$). Parents' larger observed score increase may relate to greater information needs, as suggested by their lower baseline scores. The relevance of the material to daily caregiving may also have supported learning. Effect sizes and confidence intervals are needed to interpret the magnitude and precision of the changes alongside the mean differences.

The result for teachers should be interpreted in light of the small sample of 14 and their previous exposure to similar material. The study did not test these factors as explanations. tahun Alifah et al., 2025 reported gains in teachers' knowledge and skills after KPSP training that included hands-on practice. Differences in training format and outcomes should be considered when comparing the two studies.

Teachers' higher baseline scores may be relevant to their smaller observed increase. Assessing a potential ceiling effect would require information on the instrument's maximum score and the distribution of participant scores, especially the proportion clustered near the upper limit.Establishing whether the two groups differed in their response would require a direct comparison of their score changes. The within-group analyses showed higher scores after the session in both groups and clearer statistical evidence of change among parents.

Education for parents could be offered regularly through early childhood education centers, childcare centers, and kindergartens, with an emphasis on applying basic monitoring concepts in everyday caregiving. Training for teachers could include measurement practice, interpretation of findings, and discussion of developmental cases. Collaboration between health professionals and educational institutions could support continued delivery and follow-up.

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The study was limited by the lack of a control group, a small sample, and the absence of long-term follow-up. Repeated testing or other sources of information may have influenced the results. Future studies should recruit adequate samples, include a comparison group, and use random allocation where feasible. Long-term follow-up could assess knowledge retention and the practical application of monitoring skills.

Conclusion

Knowledge of the importance and methods of monitoring early childhood growth and development increased after health education among both parents and teachers. The increase was statistically significant for parents ($p < 0.001$) and did not reach statistical significance for teachers ($p = 0.054$). The findings support tailoring subsequent education to each group's needs. The absence of a control group limits causal interpretation.

Ethics Statement

The study was not submitted to an ethics committee for review. It involved health education and assessment of teachers' and parents' knowledge of growth and development monitoring. It involved no medical interventions or invasive procedures. Before taking part, all participants received an explanation of the study and provided written informed consent.

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