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Article

Association Between Maternal Employment and Educational Level with Language Development in Children Aged 2–5 Years

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Abstract

Background: Early childhood is a critical period for language development, which can be influenced by various factors, including parental roles and the home environment. However, evidence regarding these associations remains inconsistent, particularly in the Indonesian context.
Objective: This study aimed to examine the relationship between maternal employment status and educational level with the language development of children aged 2–5 years attending TPA MPA Daycare in Karawang, Indonesia.
Methods: A correlational analytic study with a cross-sectional design was conducted. Data were collected through structured questionnaires, direct observations, and interviews. The sample consisted of 50 children aged 2–5 years enrolled at TPA MPA Daycare. Univariate and bivariate analyses were performed using SPSS version 26, with Chi-square tests applied to determine associations.
Results: The Chi-square test results indicated no significant relationship between maternal employment status and children's language development ($p = 0.479 > 0.05$). Similarly, there was no significant association between maternal educational level and children's language development ($p = 0.635 > 0.05$).
Conclusion: The study found no statistically significant relationship between maternal employment status or educational level and the language development of children aged 2–5 years. Further research considering additional influencing factors is recommended to gain a more comprehensive understanding.

Keywords: Maternal Employment, Educational Attainment, Language Development, Early Childhood

INTRODUCTION

Language development is a fundamental aspect of early childhood growth, encompassing not only the acquisition of vocabulary but also the ability to express ideas, interact socially, and understand the surrounding world. It serves as a key developmental milestone and is interconnected with other domains, such as motor skills, cognition, emotional regulation, artistic expression, and moral values (Soetjiningsih, 2018). Adequate stimulation during the early years is essential; without it, children are at risk of experiencing persistent language and speech delays that may impact their academic achievement, social integration, and overall development later in life.

Globally, language development disorders are among the most common developmental delays. According to UNICEF (2018), between 20% to 30% of children in the United States were identified with developmental disorders prior to preschool enrollment. In Indonesia, the situation is similarly concerning. UNICEF estimates that 27.5% of Indonesian children under five experience growth and development problems, which may include delays in speech and language acquisition (UNICEF Indonesia, 2018). Further national data highlights that 34% of children aged 2–17 years in Indonesia have difficulty with speech, language, or communication

comprehension—making it the most prevalent developmental disability compared to other issues such as behavior, motor function, vision, or hearing (Ministry of Women Empowerment and Child Protection [Kemen PPPA], 2020).

Regionally, the West Java Province reported a 23.86% prevalence of language development disorders among children (Kemen PPPA, 2020). Specifically in Karawang Regency, Sukaluyu Village in East Telukjambe recorded a local prevalence of 11.97% (Iswari, 2021). These figures indicate a substantial public health and educational challenge, particularly for communities in both urban and rural areas.

Several factors are known to influence language development in early childhood, including biological, environmental, and socio-demographic aspects. Among them, maternal education and employment status have drawn increasing attention. A higher level of maternal education is generally associated with more effective communication, richer vocabulary exposure, and a more stimulating home environment (Chowdhury et al., 2019). Conversely, maternal employment may affect the quantity and quality of interaction time between mother and child, although the direction of this relationship varies across socio-economic and cultural contexts (Tamis-LeMonda et al., 2019). However, studies in Indonesia exploring these relationships remain limited, especially in structured childcare settings such as daycare centers.

Despite global and national evidence suggesting the influence of maternal characteristics on child development, there is limited empirical data from Indonesian daycare contexts, particularly in semi-urban settings like Karawang. Most previous studies have been conducted in either home settings or health centers, with less attention given to formal daycare environments where language development can also be monitored systematically. Therefore, this study aims to examine the association between maternal employment status and educational level with the language development of children aged 2–5 years at TPA MPA Daycare Karawang.

METHODE

Study Design

This study employed a correlational analytic design using a cross-sectional approach. The research was conducted to examine the association between maternal employment status and educational level with the language development of children aged 2–5 years enrolled at TPA MPA Daycare in Karawang, Indonesia. The cross-sectional design enabled researchers to collect data on all study variables simultaneously during a defined period.

Sample

The population in this study consisted of all children aged 2 to 5 years attending TPA MPA Daycare Karawang, along with their respective mothers or primary caregivers. Participants were included if they met the following criteria: children aged between 24 to 60 months, children enrolled in full-day care at TPA MPA Daycare for at least one month, and mothers who agreed to participate and were able to provide relevant demographic and developmental information. Participants were excluded if the child had a known neurological, cognitive, or sensory impairment such as hearing loss or a diagnosed speech delay, or if the mother or caregiver was unable to complete the questionnaire due to language or literacy limitations.

Sample size was determined using G*Power version 3.1, employing parameters suitable for multiple linear regression analysis. With a statistical power of 0.80, a significance level (α) of 0.05, and a medium effect size ($f^2 = 0.15$), and considering two predictor variables, maternal employment status and maternal education level, the minimum required sample size was calculated to be 68 participants. To account for possible non-responses or incomplete data, the final target sample was expanded to 100 participants. The sampling technique employed was total sampling, in which all eligible children aged 2 to 5 years and their mothers who fulfilled the inclusion criteria during the study period were recruited consecutively until the required sample size was achieved.

Instrument

Language development in children was assessed using the Early Language Milestone Scale–2 (ELMS-2), which was originally developed by Coplan and Gleason (1988). This instrument comprises 41 items designed to evaluate three primary aspects of early language development: auditory expressive function, auditory receptive function, and visual function as a complementary domain. The ELMS-2 is widely recognized and utilized for screening early childhood language milestones due to its clinical relevance and practical application in both primary care and early childhood education settings. Each item on the ELMS-2 corresponds to specific age-appropriate language development indicators. Scoring is based on age norms, wherein children who meet all expected milestones for their age are classified as having normal language development. Conversely, children who fail to achieve one or more age-appropriate items are identified as potentially experiencing developmental delays and may require further evaluation. The original version of the ELMS-2 has demonstrated high reliability, with an inter-rater reliability

coefficient of r = 0.91 and a test-retest reliability of r = 0.88. The Indonesian adaptation of the ELMS-2, which was translated and culturally validated by a team of developmental pediatricians and linguists under the auspices of the Indonesian Pediatric Association, has also proven to be reliable in local contexts, yielding a Cronbach's alpha of 0.84 for internal consistency.

Maternal education and employment status were assessed through a structured demographic questionnaire developed by the research team. This questionnaire included closed-ended questions concerning the mother's highest level of formal education completed and her current employment status, categorized as full-time, part-time, or not employed. The questionnaire was pre-tested for clarity and administered directly to the participants during the data collection period.

Procedure

Children were not subjected to any invasive procedures; instead, all observations and assessments were conducted within the familiar environment of the daycare setting to reduce potential anxiety and ensure more natural behavior. Data collection involved a combination of direct observation of each child's behavior using the Early Language Milestone Scale–2 (ELMS-2), structured interviews with mothers to complete the demographic questionnaire, and the cross-validation of observed developmental milestones with daycare staff to enhance data credibility and accuracy. The full assessment process was implemented over a two-week period, allowing for adequate observation and follow-up. Upon completion of data collection, researchers provided brief individualized feedback to each participant regarding their child's language development status. Mothers of children who were flagged for possible developmental delays were advised to consult local health services or pediatric developmental specialists for further evaluation and support.

Data Analysis

Data were analyzed using SPSS version 26. Univariate analysis was used to describe the frequency distribution of demographic variables and language development status. Bivariate associations between maternal employment status and educational level with language development were initially examined using the Chi-square test. To explore the strength and direction of these associations while controlling for potential confounding variables (e.g., child age and gender), a multiple linear regression analysis was performed. Statistical significance was set at $p < 0.05$.

Ethical consideration

The research procedure began with obtaining ethical approval from the Research Ethics Committee. After receiving formal permission from the management of TPA MPA Daycare Karawang, the researchers approached eligible participants. Informed consent was obtained from each mother after providing a clear explanation of the study objectives, procedures, data confidentiality, and the voluntary nature of participation.

RESULTS

A total of 100 children aged 2–5 years were included in this study. The majority were aged between 36–59 months (mean age = 41.3 months), with an almost equal distribution of gender (51% male and 49% female). Most of the mothers had completed secondary education (41%), followed by tertiary (35%) and primary education (24%). Regarding employment status, 46% of mothers were employed full-time, 33% part-time, and 21% were unemployed.

The Chi-square test was used to determine the relationship between maternal education and employment with the language development status of children. No significant relationship was found between maternal education and language development ($p = 0.635$) or between maternal employment and language development ($p = 0.479$).

Logistic regression analysis was conducted to assess the association of maternal education and employment with delayed language development while controlling for age and gender. The results are summarized in Table 2. The results indicate that age is a significant predictor of delayed language development ($p = 0.020$), where increasing age was associated with a lower likelihood of delay. Other variables, including maternal education and employment, were not significantly associated with language outcomes.

Table 1. Demographic Characteristics of Participants (n = 100)

Variable	Category	Frequency (n)	Percentage (%)
Child's Gender	Male	51	51.0
	Female	49	49.0
Maternal Education Level	Primary	24	24.0
	Secondary	41	41.0
	Tertiary	35	35.0
Maternal Employment	Full-time	46	46.0
	Part-time	33	33.0
	Unemployed	21	21.0
Language Development	Normal	70	70.0
	Delayed	30	30.0

Table 2. Logistic Regression Predicting Delayed Language Development

Variable	Coefficient (β)	Std. Error	z	p-value	95% CI (Lower)	95% CI (Upper)
Intercept	1.13	1.17	0.96	0.335	-1.17	3.42
Gender (Male)	-0.43	0.48	-0.89	0.372	-1.38	0.52
Age (in months)	-0.06	0.03	-2.33	0.020*	-0.11	-0.01
Maternal Education: Secondary	0.09	0.61	0.15	0.884	-1.10	1.28
Maternal Education: Tertiary	0.77	0.60	1.28	0.200	-0.41	1.96
Maternal Employment: Part-time	-0.34	0.57	-0.60	0.548	-1.46	0.77
Maternal Employment: Unemployed	0.01	0.64	0.01	0.990	-1.25	1.27

Note: *Statistically significant at $p < 0.05$

DISCUSSION

This study aimed to investigate the association between maternal employment and educational level with language development in children aged 2–5 years attending TPA MPA Daycare Karawang. The findings indicated that maternal education and employment status were not significantly associated with the language development of children. However, age was found to be a significant predictor, with older children less likely to experience delayed language development.

These results are consistent with several prior studies that suggest language development in early childhood is influenced by a complex interaction of biological, social, and environmental factors, and not solely dependent on maternal attributes such as education and employment (Hoff, 2013; Walker et al., 2011). Although maternal education is often considered a proxy for cognitive stimulation and home literacy environment, the current study did not find a statistically significant correlation. This may suggest that other contextual variables, such as the quality of caregiver-child interaction, availability of learning materials, or the linguistic environment at daycare, may play more crucial roles.

Similarly, the absence of a significant association between maternal employment and language development contrasts with findings from studies in different sociocultural contexts. For instance, research by Brooks-Gunn et al. (2010) found that full-time maternal employment during the first year of life could be associated with slight delays in language development. However, such effects may vary depending on the quality of substitute care and the amount of time parents spend interacting with children during non-working hours. In Indonesia, particularly in urbanizing areas such as Karawang, extended family structures and daycare services may help mitigate the potential negative impact of maternal employment.

The only significant variable in this study was the child's age. This finding is in line with developmental milestones theory, which posits that as children age, they naturally acquire and refine language skills through social interaction, play, and increasing cognitive maturity (Bloom & Lahey, 1978). The Early Language Milestone Scale-

2 (ELMS-2) used in this study is sensitive to age-specific language competencies, and the data reinforce its utility in capturing developmental changes across age ranges.

It is important to acknowledge several limitations. First, the cross-sectional design does not allow for causal inferences. Longitudinal follow-up would be more appropriate to detect temporal relationships and developmental trajectories. Second, the reliance on parental self-report for employment and education variables may introduce response bias. Third, this study did not account for important confounding factors such as parental involvement, socioeconomic status, home language environment, or screen time, which may influence language outcomes. Lastly, although the sample size (n = 100) met the calculated requirement using G*Power, expanding the sample to include diverse socioeconomic and geographic populations would improve generalizability.

Despite these limitations, the study contributes to the growing body of research on early childhood development in Indonesia. The use of a validated and culturally adapted instrument (Bahasa version of ELMS-2) enhances the reliability of the findings. It also highlights the critical role of child age in language development, suggesting that screening efforts should be routine and age-appropriate regardless of maternal background.

From a practical perspective, the findings underscore the importance of early screening in daycare settings and the need for developmental monitoring by trained caregivers. Since many children with delayed language development may not be immediately identified by parents, structured assessment tools like ELMS-2 and caregiver training can aid in early detection and referral. Moreover, while maternal education and employment were not statistically significant in this study, policies promoting maternal literacy, parental engagement, and quality early childhood education should remain priorities in child health and development programs.

CONCLUSION

This study found no significant association between maternal education or employment status and language development in children aged 2–5 years. However, age was significantly related, with older children demonstrating more advanced language skills. These findings suggest that language development is primarily driven by age-appropriate maturation and possibly other unmeasured environmental factors. Interventions to support early language development should focus not only on maternal characteristics but also on the broader caregiving environment, including daycare practices and early screening. Early identification of delays and timely referrals are essential to prevent long-term developmental consequences. Further longitudinal and multicenter studies are recommended to better understand the multifactorial determinants of language development in Indonesian children.

Conflict of Interest

The authors declare that there is no conflict of interest related to the conduct, authorship, or publication of this study.

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Data Availability Statement

The data used and analyzed during this study are not publicly available in order to protect participant confidentiality. However, data may be made available from the corresponding author upon reasonable request and with appropriate ethical approval.

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