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Maternal Knowledge, Economic Status, and Family Support Associated with Stunting Status Among Children Aged 41-60 Months in the Gunungguruh Community Health Center Working Area

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ABSTRACT

Background: *Stunting affected an estimated 150.2 million children under 5 years (23.2%) globally in 2024, while Indonesia reported a national prevalence of 19.8% in 2024. Routine 2024 nutrition records in the Gunungguruh Community Health Center working area listed 462 toddlers, including 68 recorded stunting cases (14.7%). The study sample, however, came from a separate 2025 register and should not be interpreted as a prevalence sample.* ***Objective****: To assess the associations of maternal knowledge, household economic status, and family support with stunting status among children aged 41-60 months in the Gunungguruh Community Health Center working area.* ***Methods:*** *This analytical cross-sectional study included all 68 eligible mother-child pairs in the defined 2025 accessible population using total sampling. Maternal knowledge was assessed with a 20-item true/false questionnaire; economic status with a 10-item four-point questionnaire; family support with a 20-item study-specific questionnaire; and stunting from height-for-age z-scores using WHO Child Growth Standards. Because some 3 x 2 tables had sparse expected counts or zero observed cells, Fisher-Freeman-Halton exact tests were used. Cramer's V with bootstrap 95% confidence intervals quantified association strength.* ***Results:*** *Forty-seven of 68 children (69.1%) in the analytical sample were classified as stunted; this proportion is not an estimate of prevalence in the wider health-center population. Maternal knowledge was associated with stunting status (exact p = 0.006; Cramer's V = 0.402, 95% CI 0.181-0.617), as were economic status (p < 0.001; V = 0.657, 95% CI 0.496-0.825) and family support (p < 0.001; V = 0.932, 95% CI 0.831-1.000).* ***Conclusion****: The three family-level variables were associated with stunting status in this sample, but the findings are unadjusted and cross-sectional. They do not establish independent determinants, temporal direction, causality, or intervention effectiveness.*

Keywords: Maternal knowledge; Economic status; Family support; Stunting; Toddlers

Introduction

Stunting is defined as a height-for-age z-score (HAZ) below -2 standard deviations from the median of the WHO Child Growth Standards. It reflects impaired linear growth accumulated over time rather than an isolated short-term nutritional event (Djogo, 2024). Stunting is associated with adverse developmental, educational, metabolic, and social consequences, although the pathways are multifactorial and involve nutrition, infection, caregiving, household resources, and access to health services (Zakaria et al., 2023) (Novitasari & Wanda, 2020).

The public-health burden remains substantial. The 2025 UNICEF/WHO/World Bank Joint Child Malnutrition Estimates reported that 150.2 million children under 5 years, equivalent to 23.2%, were stunted globally in 2024 (Chairiyah et al., 2024). Indonesia's 2024 Nutritional Status Survey reported a national stunting prevalence of 19.8% (Sunarmi et al., 2023). These surveillance estimates provide national and global context but should not be treated as directly comparable with local routine-service records because denominators, sampling procedures, and case ascertainment differ (De Amorim et al., 2014) (Loihala et al., 2024).

In the Gunungguruh Community Health Center working area, routine nutrition records for 2024 listed 462 toddlers, of whom 68 were recorded as stunted, corresponding to 14.7%. This historical service-register figure is distinct from the present study's 2025 accessible population. The study protocol identified 68 eligible mother-child pairs recorded during May-October 2025, and all 68 were included by total sampling. Thus, the number 68 in the historical 2024 stunting register and the number 68 in the 2025 study population refer to different time frames and

denominators. The 69.1% stunting proportion observed in the analytical sample must therefore not be interpreted as the prevalence of stunting among all toddlers served by the health center.

Maternal knowledge is one potential family-level correlate of child growth because mothers commonly make or influence decisions about feeding, hygiene, illness management, and use of growth-monitoring services (Serli et al., 2021). Knowledge is not equivalent to formal education: a mother may have limited schooling but substantial health knowledge, or conversely higher schooling but incomplete understanding of stunting prevention (Areva et al., 2025). Recent studies have linked maternal knowledge and education with child nutritional status, but the magnitude and direction of associations vary across populations and measurement approaches (Herawati et al., 2024) (Hamzah, 2021).

Household economic status may shape the resources available for nutritious food, transportation, sanitation, health care, and other conditions relevant to child growth (Noerhidaya et al., 2024). Indonesian evidence has associated household income, expenditure, employment, and related socioeconomic indicators with stunting, although these relationships may be modified by food assistance, local services, and household composition (Umar, 2021). Economic status is therefore best interpreted as a contextual exposure rather than a direct biological cause (Win et al., 2022).

Family support represents another contextual factor. Emotional encouragement, information, practical help, shared caregiving, and appraisal may reduce the burden on mothers and facilitate attendance at growth-monitoring services or implementation of nutrition advice (Arulmohi et al., 2017). The thesis used a locally modified family-support questionnaire informed by an Indonesian MSPSS-related source; therefore, the construct in this study should be interpreted as study-specific perceived family support rather than the standard 12-item MSPSS itself (Hasan et al., 2019).

Previous studies have often examined maternal knowledge, socioeconomic factors, or family-related variables separately, and several have used different age groups, instruments, and sampling frames (Emamian et al., 2014). The present study evaluated all three family-level variables within the same health-center sample (Nasya, 2021). A preliminary 2025 interview with 10 mothers was used only as local reconnaissance; because the thesis did not document a formal sampling procedure or standardized interview instrument for that preliminary activity, it is not treated as prevalence evidence. The study aimed to assess the associations of maternal knowledge, economic status, and family support with stunting status among children aged 41-60 months in the Gunungguruh Community Health Center working area.

Methods

Study Design

This study used an analytical cross-sectional design (Nursalam., 2016). Maternal knowledge, household economic status, family support, and child stunting status were measured within the same study period. The design estimates contemporaneous associations and cannot determine whether the exposures preceded stunting or establish causal effects.

Setting

The study was conducted in the working area of Gunungguruh Community Health Center, Sukabumi Regency, Indonesia. The overall research period was October-December 2025. Administrative permission from the health center was dated 1 October 2025, and ethical approval was issued on 5 November 2025. Exact participant-level recruitment and anthropometric-measurement dates were not retained in the available research records; therefore, the precise timing of individual data collection relative to the ethics approval date cannot be independently reconstructed.

Research Subject

The target population comprised mother-child pairs in the Gunungguruh Community Health Center working area. Routine 2024 records described 462 toddlers and 68 recorded stunting cases. For the 2025 study, a separate accessible population of 68 mothers with children aged 41-

60 months was identified from health-center records covering May-October 2025. All 68 recorded members of the defined accessible population met the study criteria and were included using total sampling; all 68 were retained in the final analysis. This corresponds to complete inclusion of the defined accessible population, but it does not constitute a census of all 462 toddlers in the wider service area.

Inclusion criteria were: the mother had a child aged 41-60 months living in the health-center working area; the pair was registered during the May-October 2025 source-record period; the mother provided written informed consent; the mother could communicate and complete the questionnaire independently or with researcher assistance; and the child had complete age and height information for HAZ classification. Exclusion criteria were withdrawal, incomplete questionnaire data, congenital abnormalities or chronic/metabolic conditions that could affect linear growth, inability to obtain an accurate anthropometric measurement, or absence/unavailability during the data-collection period.

The available study records do not report refusals, exclusions after eligibility assessment, or missing analytical records and indicate that all 68 eligible participants completed the study. The narrow final age range is therefore a consequence of the eligibility criteria and should be considered when generalizing the findings to younger children.

Data Collection Procedure

Potential participants were identified with assistance from health-center staff and community health volunteers. Eligible mothers received oral and written explanations of the study and signed informed consent before completing the questionnaires. The researcher provided standardized instructions and remained available to clarify item wording without directing responses. Three questionnaires assessed maternal knowledge, economic status, and family support. After questionnaire completion, child age was verified from the Maternal and Child Health (KIA) book or birth record, and standing height was measured with assistance from nutrition staff. Study forms and anthropometric results were coded before analysis.

Instruments

Maternal knowledge. The questionnaire contained 20 true/false items addressing the definition, causes, consequences, and prevention of stunting. Correct responses were scored 1 and incorrect responses 0, giving a total range of 0-20. The prespecified analysis categorized knowledge as good (15-20), moderate/sufficient (8-14), and poor (0-7). Product-moment item testing reported $p < 0.05$ for all 20 items, and the study-specific Cronbach's alpha was 0.902, indicating high internal consistency in the validation reported in the study documentation. The questionnaire was based on the health-knowledge framework cited by Noor et al., (2022) and was administered in Indonesian.

Economic status. A 10-item study-specific household economic questionnaire was developed from indicators (Haryanti et al., 2024). Items covered family income adequacy, employment stability, household assets, food and health expenditure, transportation, savings, and related household resources. Each item used a four-point response scale (1-4), producing a theoretical score of 10-40. The prespecified categories were low (10-19), moderate (20-29), and high (30-40). The study documentation does not report a separate validity or reliability coefficient for this questionnaire; consequently, the measure is described as a study-specific composite rather than a validated national socioeconomic index (Nuriyana & Anggorowati, 2024).

Family support. The administered form contained 20 four-point items (1 = never to 4 = always) covering emotional, informational, instrumental, and appraisal-related support from family members. The protocol linked the questionnaire to an Indonesian MSPSS-related source Aldatami et al., (2024) and cited the original MSPSS Suyanto et al., (2024); however, the administered 20-item form differs from the standard 12-item MSPSS. Recorded scoring documentation was internally inconsistent: one narrative section described a theoretical 20-80 range with cut-offs of 20-39, 40-59, and 60-80, whereas the operational-definition table and analytical category coding used lower thresholds (12-28, 29-44, and 45-60). The present manuscript therefore reports the

low/moderate/high categories exactly as recorded in the analytical output and does not represent them as standard MSPSS scoring. This inconsistency is considered a measurement limitation.

Anthropometry and stunting classification. Stunting was defined as HAZ < -2 SD using the WHO Child Growth Standards; HAZ >= -2 SD was classified as not stunted (Rahayuwati et al., 2023). The protocol specified a microtoise for children aged 24 months or older and a length board for younger children. Because all children in the final sample were 41-60 months, the relevant procedure was standing-height measurement with a microtoise. Child age was calculated in months from the date of birth recorded in the KIA book or birth certificate, and HAZ was converted using the WHO growth reference (Ahmad Munadi, Rijanti Abdurrachim, 2022). The available protocol does not document the microtoise model/precision, calibration schedule, duplicate measurements, formal measurer standardization, or software version used for HAZ calculation; these omissions are acknowledged as outcome-measurement limitations (Yani et al., 2023).

Instrument Validity, Reliability, and Scoring

The knowledge questionnaire had the clearest study-specific psychometric documentation (20 valid items and Cronbach's alpha = 0.902). For family support, the study documentation cites reliability of approximately 0.87 for the Indonesian source instrument, but no reliability estimate was reported for the modified 20-item form in the present 68 participants. No study-specific reliability coefficient was reported for the economic-status questionnaire. Because the family-support score range and cut-offs are internally inconsistent across the study narrative, operational table, and analytical file, results are interpreted at the recorded categorical level rather than as validated scale scores.

Data Analysis

Categorical characteristics were summarized with frequencies and percentages. Child and maternal ages were summarized using mean, standard deviation, median, interquartile range, and observed range. Bivariate associations between each three-level exposure and the binary stunting outcome were examined in 3 x 2 contingency tables. The original SPSS output showed that the maternal-knowledge table had 2 of 6 expected cells (33.3%) below 5 (minimum expected count 2.16), while the economic-status table had 1 of 6 cells (16.7%) below 5 (minimum 3.40); the family-support table had no expected cell below 5 but contained an observed zero cell. Therefore, the revised primary inference uses the Fisher-Freeman-Halton exact test for all three tables rather than relying only on asymptotic Pearson chi-square p-values. Cramer's V was calculated as a standardized association-strength measure. Percentile 95% confidence intervals for Cramer's V were obtained from 10,000 bootstrap resamples of the observed contingency-table counts. Statistical significance was set at alpha = 0.05. No multivariable model was fitted in the original study, so all associations are unadjusted and potentially confounded.

Ethical Consideration

Ethical approval was reported from the Health Research Ethics Committee, Faculty of Health, Universitas Muhammadiyah Sukabumi, approval number 122/KET/KE-FKES/I/2025, dated 5 November 2025. Administrative permission was obtained from Gunungguruh Community Health Center. Mothers received study information verbally and in writing and provided written informed consent. Participation was voluntary, withdrawal was permitted without consequence, and questionnaire and anthropometric data were coded to protect identity and confidentiality.

Results

All 68 mother-child pairs in the defined accessible population were included in the analysis. There were 37 boys (54.4%) and 31 girls (45.6%). Child age ranged from 41 to 60 months, with a mean of 55.34 months (SD 5.68), median 59 months, and IQR 51-60 months. Maternal age ranged from 30 to 45 years, with a mean of 36.13 years (SD 3.94), median 35 years, and IQR 34-38 years. Most mothers had elementary-school education (35.3%), most households were in the low economic

category (57.4%), and poor maternal knowledge was the largest knowledge category (64.7%). Forty-seven children (69.1%) in this analytical sample were classified as stunted. Because the sample was the separate 2025 eligible register rather than the full 2024 health-center population, this 69.1% must not be interpreted as local prevalence.

Table 1. Distribution of Participant Characteristics and Study Variables (n = 68)

Characteristic	Category	Frequency (n)	Percentage (%)
Toddler sex	Boys	37	54.4
	Girls	31	45.6
Maternal education	Elementary school	24	35.3
	Junior high school	19	27.9
	Senior high school	21	30.9
	Higher education	4	5.9
Husband's occupation	Entrepreneur	20	29.4
	Private employee	24	35.3
	Civil servant	24	35.3
Maternal knowledge	Good	7	10.3
	Moderate	17	25.0
	Poor	44	64.7
Economic status	Low	39	57.4
	Moderate	18	26.5
	High	11	16.2
Family support	Low	27	39.7
	Moderate	22	32.4
	High	19	27.9
Stunting status	Not stunted	21	30.9
	Stunted	47	69.1

Table 2. Descriptive Statistics for Toddler and Maternal Age (n = 68)

Variable	N	Mean (SD)	Median (IQR)	Range
Toddler age (months)	68	55.34 (5.68)	59 (51-60)	41-60
Maternal age (years)	68	36.13 (3.94)	35 (34-38)	30-45

Table 3. Maternal Knowledge and Stunting Status (n = 68; within-row percentages)

Maternal knowledge	Not stunted n (%)	Stunted n (%)	Total n (%)	Exact test; Cramer's V (95% CI)
Good	6 (85.7)	1 (14.3)	7 (100.0)	p = 0.006; V = 0.402 (95% CI 0.181-0.617)
Moderate	4 (23.5)	13 (76.5)	17 (100.0)	
Poor	11 (25.0)	33 (75.0)	44 (100.0)	
Total	21 (30.9)	47 (69.1)	68 (100.0)	

Table 4. Economic Status and Stunting Status (n = 68; within-row percentages)

Economic status	Not stunted n (%)	Stunted n (%)	Total n (%)	Exact test; Cramer's V (95% CI)
Low	7 (17.9)	32 (82.1)	39 (100.0)	p < 0.001; V = 0.657 (95% CI 0.496-0.825)
Moderate	3 (16.7)	15 (83.3)	18 (100.0)	
High	11 (100.0)	0 (0.0)	11 (100.0)	
Total	21 (30.9)	47 (69.1)	68 (100.0)	

Table 5. Family Support and Stunting Status (n = 68; within-row percentages)

Family support	Not stunted n (%)	Stunted n (%)	Total n (%)	Exact test; Cramer's V (95% CI)
Low	1 (3.7)	26 (96.3)	27 (100.0)	p < 0.001; V = 0.932 (95% CI 0.831-1.000)
Moderate	1 (4.5)	21 (95.5)	22 (100.0)	

Family support	Not stunted n (%)	Stunted n (%)	Total n (%)	Exact test; Cramer's V (95% CI)
High	19 (100.0)	0 (0.0)	19 (100.0)	
Total	21 (30.9)	47 (69.1)	68 (100.0)	

Maternal knowledge was associated with stunting status by Fisher-Freeman-Halton exact testing ($p = 0.006$), with Cramer's V = 0.402 (bootstrap 95% CI 0.181-0.617). Within the good-knowledge group, 1 of 7 children (14.3%) was stunted, compared with 13 of 17 (76.5%) in the moderate group and 33 of 44 (75.0%) in the poor-knowledge group. The pattern therefore largely reflected the small good-knowledge stratum compared with the two lower knowledge categories rather than a strictly graded dose-response relationship.

Economic status was also associated with stunting status (exact $p < 0.001$; Cramer's V = 0.657, 95% CI 0.496-0.825). Stunting occurred in 32 of 39 children (82.1%) in the low-economic group and 15 of 18 (83.3%) in the moderate group, whereas no stunting cases were recorded among the 11 children in the high-economic group. The zero cell and small high-economic subgroup require cautious interpretation and make category-specific comparative estimates unstable.

Family support showed the strongest bivariate separation (exact $p < 0.001$; Cramer's V = 0.932, 95% CI 0.831-1.000). Stunting was recorded in 26 of 27 children (96.3%) in the low-support group and 21 of 22 (95.5%) in the moderate-support group, compared with 0 of 19 in the high-support group. Although the exact test and association measure indicate strong statistical separation, the zero outcome cell and the unresolved scoring inconsistency in the modified family-support questionnaire limit causal or deterministic interpretation.

These three analyses are bivariate and unadjusted. Maternal education, child sex and age, household food security, sanitation, infection history, health-service access, and other household characteristics were not simultaneously controlled. Consequently, the reported association strengths should not be interpreted as independent effects of knowledge, economic status, or family support.

Discussion

The principal finding was that all three study-defined family-level exposures were associated with stunting status in the 68-pair analytical sample, but the pattern and uncertainty differed across variables. Maternal knowledge showed a moderate standardized association (V = 0.402), economic status a larger association (V = 0.657), and family support an unusually strong separation (V = 0.932). These estimates describe the observed bivariate tables; they do not establish independent determinants because the study did not use multivariable adjustment.

For maternal knowledge, the stunting proportion was 14.3% in the good-knowledge group but approximately three-quarters in both the moderate and poor groups. This is compatible with literature suggesting that knowledge about feeding, illness prevention, and growth monitoring may be relevant to child nutritional status (Siagian & Ramschie, 2024) (Saleh et al., 2021). However, the present data do not show a clear monotonic gradient between moderate and poor knowledge, and the good-knowledge group contained only seven mothers (Ahmed et al., 2022). Maternal education was measured separately and could confound the relationship because formal schooling may influence access to information, but knowledge and education should not be treated as interchangeable constructs (Santosa et al., 2022).

Economic status showed a marked contrast between the high category and the lower two categories: 82.1% of children in low-economic households and 83.3% in moderate households were stunted, compared with 0 of 11 in the high group. Household resources may influence diet diversity, healthcare access, transportation, sanitation, and resilience to shocks, consistent with Indonesian and broader evidence on socioeconomic determinants of child growth (Laksono et al., 2022). Nevertheless, the high-economic subgroup was small and contained a zero stunting cell. The observed pattern should therefore be considered statistically striking but potentially

unstable, rather than evidence that high economic status deterministically prevents stunting (Beal et al., 2022).

Family support produced an even stronger separation: 96.3% of children in the low-support group and 95.5% in the moderate-support group were stunted, while none of the 19 children in the high-support group were classified as stunted. Prior studies suggest that emotional encouragement, information, practical assistance, and shared caregiving may facilitate nutrition-related practices and use of health services (Rezaeizadeh et al., 2024) (Abdillah, 2020). However, temporality cannot be established in a cross-sectional design. Family support could have preceded the child's nutritional status, could have changed in response to a child's health problems, or could be correlated with unmeasured socioeconomic and caregiving characteristics (Wilaga et al., 2024).

The magnitude of the family-support association also requires particular measurement caution. The study used a 20-item modified support questionnaire, but its scoring documentation contains inconsistent statements about the theoretical range and category cut-offs. The analytical categories nevertheless show nearly complete separation of stunting by support category. Such a pattern can be amplified by categorization thresholds, selection of the accessible sample, or correlated household characteristics. The association should therefore be interpreted cautiously and replicated using a clearly characterized and validated family-support instrument.

The three exposures are plausibly related at the household level, but the present study did not test mediation, interaction, or an integrated multivariable model. For example, maternal knowledge may be associated with education; economic conditions may influence both access to nutrition information and the amount of practical support available; and family support may vary by household structure, employment, and resource availability. Other established or plausible factors - including child sex and age, maternal nutritional status during pregnancy, dietary intake, recurrent infection, sanitation, water quality, and healthcare access - were not adjusted in the analysis (Mardhiyah et al., 2026). Residual confounding is therefore a major alternative explanation for part of the observed associations.

The restricted age range also affects interpretation. All children were 41-60 months old, with a mean age of 55.34 months, so the findings describe older preschool-aged children rather than the full under-five population. Stunting reflects cumulative growth constraints, and determinants operating during pregnancy, infancy, breastfeeding, and complementary feeding may have occurred well before the cross-sectional measurements in this study. The observed associations should therefore be understood as current family-level correlates of an established growth outcome, not necessarily exposures operating at the etiologically critical period (Hamidah et al., 2023).

From a nursing and primary-care perspective, the results can inform assessment priorities rather than prove intervention effectiveness. Community health teams may consider asking about caregiver understanding of stunting, household resource barriers, and availability of family assistance when planning counselling and growth-monitoring follow-up. Such actions are consistent with family-centred care, but this study did not evaluate whether education, economic assistance, or family-support interventions reduce stunting. Effectiveness should be tested prospectively using controlled or longitudinal designs.

Several limitations should be considered. First, the cross-sectional design prevents assessment of temporal sequence and causal direction. Second, total sampling covered the defined 68-pair accessible population but not the full health-center population of 462 toddlers, so selection into the accessible register may limit representativeness. Third, the small sample and small upper categories produced sparse or zero cells; exact inference reduces reliance on asymptotic assumptions but does not remove imprecision. Fourth, the analyses were bivariate and unadjusted, leaving substantial potential for confounding. Fifth, the knowledge questionnaire had documented study-specific reliability, but the economic questionnaire lacked reported psychometric coefficients and the modified family-support instrument contained inconsistent

scoring documentation. Sixth, the anthropometric protocol did not report device precision, calibration, duplicate measurements, formal measurer standardization, or the exact WHO software version. Finally, the study was conducted at a single health center and only among children aged 41-60 months, limiting generalizability to other age groups and settings.

Conclusion

Among the 68 mother-child pairs aged 41-60 months in this study, maternal knowledge, study-defined economic status, and study-defined family support were associated with stunting status in unadjusted exact analyses. The standardized association was moderate for maternal knowledge and larger for economic status and family support, although the latter relationships included small strata and zero cells. Because the design was cross-sectional, the sample represented a restricted accessible population, and no multivariable adjustment was performed, the findings should be interpreted as setting-specific correlates rather than independent causes of stunting.

SUGGESTIONS

For practice, Gunungguruh Community Health Center may use the findings to support comprehensive family assessment during growth monitoring, including caregiver understanding, household resource constraints, and perceived family assistance. These are proposed programmatic considerations rather than interventions proven effective by this study. Future research should use a clearly documented population frame, probability-based sampling where feasible, verified scoring keys and validated Indonesian instruments, standardized anthropometry, and adequate sample-size planning. Because stunting was common in this sample, adjusted prevalence ratios from an appropriate multivariable model (for example, modified Poisson regression with robust standard errors) may be preferable in future analytical studies. Longitudinal or controlled intervention designs are needed to clarify temporality and determine whether nutrition education, family-support strategies, or socioeconomic interventions change growth-related outcomes.

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DECLARATION OF INTEREST

The authors declare that there are no financial, professional, personal, or institutional conflicts of interest that could have influenced the design, implementation, analysis, interpretation, or publication of this study.

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References

Abdillah, H. (2020). Penggunaan Komunikasi Terapeutik Oleh Perawat Terhadap Pasien Dengan Masalah Waham Di Psbl Phalamarta Kabupaten Sukabumi. *Jurnal Ilmu Kesehatan Immanuel*, *14*(1), 27–33. https://doi.org/10.36051/jiki.v14i1.113

Ahmad Munadi, Rijanti Abdurrachim, N. W. H. (2022). Relationship Between Maternal Knowledge, Family Income, and Low Birth Weight with Stunting Events in Toddlers. *Jurnal Riset Pangan Dan Gizi*, *4*(1), 1–8. https://doi.org/10.22435/pgm.v39i1.5972.45-53

Ahmed, M., Zepre, K., Lentero, K., Gebremariam, T., Jemal, Z., Wondimu, A., Bedewi, J., Melis, T., &

Gebremeskel, A. (2022). The relationship between maternal employment and stunting among 6-59 months old children in Gurage Zone Southern Nation Nationality People's region, Ethiopia: A comparative cross-sectional study. *Frontiers in Nutrition*, *9*(October), 1–11. https://doi.org/10.3389/fnut.2022.964124

Aldatami, R., Meity, N., & Zulfikar, M. (2024). Hubungan tingkat pengetahuan ibu tentang gizi dan status ekonomi keluarga terhadap kejadian stunting di wilayah kerja puskesmas Kabupaten Donggala Kecamatan Banawa tahun 2022. *Medika Alkhairat: Jurnal Penelitian Kedokteran Dan Kesehatan*, *5(3)*(April), 400–407. https://doi.org/10.3889/oamjms.2019.683.

Areva, Y., Abdillah, H., & Hamidah, E. (2025). The relationship of authoritarian parenting with social anxiety in college students. *Jurnal Keperawatan Priority*, *8*(2), 140–149. https://doi.org/https://doi.org/10.34012/jukep.v8i2.6397

Arulmohi, M., Vinayagamoorthy, V., & R., D. A. (2017). Physical Violence Against Doctors: A Content Analysis from Online Indian Newspapers. *Indian Journal of Community Medicine*, *42*(1), 147–150. https://doi.org/10.4103/ijcm.IJCM

Beal, T., Tumilowicz, A., Sutrisna, A., Izwardy, D., & Neufeld, L. M. (2022). A review of child stunting determinants in Indonesia. *Maternal and Child Nutrition*, *14*(4), 1–10. https://doi.org/10.1111/mcn.12617

Chairiyah, R., D P, P. N., Susanti, S., & Inayati, R. (2024). Analisis Kejadian Stunting Berdasarkan Pengetahuan, Karakteristik Ibu, dan Status Gizi. *Jurnal Ilmiah Kesehatan (JIKA)*, *6*(1), 187–195. https://doi.org/https://doi.org/10.36590/jika.v6i1.832

De Amorim, J. F., Cavalcante, C. G., De Amorim Santos, L. V., Solymos, G. M. B., Toledo Florêncio, T. M. de M., De Paffer, A. T., & De Miranda, C. T. (2014). Influence of family environment on childhood stunting. *Maternal and Child Nutrition*, *10*(2), 313–314. https://doi.org/10.1111/mcn.12121

Djogo, H. M. A. (2024). Women's empowerment and gender equality programs to support stunting elimination in South Central Timor Regency. *Journal of Community Empowerment for Health*, *7*(2), 92. https://doi.org/10.22146/jcoemph.90213

Emamian, M. H., Fateh, M., Gorgani, N., & Fotouhi, A. (2014). Mother's education is the most important factor in socio-economic inequality of child stunting in Iran. *Public Health Nutrition*, *17*(9), 2010–2015. https://doi.org/10.1017/S1368980013002280

Hamidah, E., Abdilah, H., & Alamsyah, M. S. (2023). Pengaruh relaksasi genggam jari terhadap kecemasan pasien preoperatif benigna prostat hiperplasia di Ruang Minajaya 1 RSUD Jampangkulon. *Journal of Public Health Innovation*, *4*(1), 110–118. https://doi.org/10.34305/jphi.v4i01.811

Hamzah, S. R. (2021). Hubungan Status Ekonomi Keluarga Dengan Kejadian Stunting Pada Balita Di Wilayah Kerja Puskesmas Onggunoi. *Borneo Student Research …*, *3*(1), 213–228. https://doi.org/10.4102/phcfm.v9i1.1456

Haryanti, F., Hartini, S., Akhmadi, Andarwati, F., Risnawati, H., Pratiwi, A. N., Kusumawati, A. S., Cahyani, R. D., & Lusmilasari, L. (2024). Maternal knowledge on nutritional-focused nurturing care and associated factors among women with stunted children aged 6-23 months in Yogyakarta, Indonesia: A cross-sectional study. *Belitung Nursing Journal*, *10*(4), 472–480. https://doi.org/10.33546/bnj.3481

Hasan, M., Islam, M. M., Mubarak, E., Haque, M. A., Choudhury, N., & Ahmed, T. (2019). Mother's dietary diversity and association with stunting among children <2 years old in a low socio-economic environment: A case–control study in an urban care setting in Dhaka, Bangladesh. *Maternal and Child Nutrition*, *15*(2), 1–8. https://doi.org/10.1111/mcn.12665

Herawati, W., Hadiyanto, H., & Abdillah, H. (2024). Hubungan Pengetahuan dan Sikap Ibu Dengan Upaya Penanganan Stunting Pada Anak di Wilayah Kerja Puskesmas Cireunghas Universitas Muhammadiyah Sukabumi yang dibutuhkan oleh anak . Ini dapat mengakibatkan peningkatan risiko kekurangan gizi pada. *Jurnal Ventilator*, *2*(1), 237–247. https://doi.org/https://doi.org/10.59680/ventilator.v2i1.998

Laksono, A. D., Sukoco, N. E. W., Rachmawati, T., & Wulandari, R. D. (2022). Factors Related to Stunting Incidence in Toddlers with Working Mothers in Indonesia. *International Journal of Environmental Research and Public Health*, *19*(17). https://doi.org/10.3390/ijerph191710654

Loihala, M., . I., Syam, A., Syafar, M., Abdullah, M. T., Muis, M., Unde, A. A., & Howay, N. N. (2024). The Effect of Economic Status and Mother's Knowledge in Stunting Cases: A Systematic Review. *International Journal of Religion*, *5*(11), 4936–4946. https://doi.org/10.61707/qebrng58

Mardhiyah, A., Yosep, I., Hikmat, R., Kurniawan, K., Abdillah, H., Tumanggor, R. D., Sukardin, S., & Novera, M. (2026). Artificial intelligence and machine learning for detecting suicidal ideation and related suicide outcomes among adolescents: A scoping review. *Acta Psychologica*, *268*(May), 107418. https://doi.org/10.1016/j.actpsy.2026.107418

Nasya, Z. (2021). Hubungan Pengetahuan Dan Status Ekonomi Keluarga Dengan Status Gizi Anak Balita. *Darussalam Indonesian Journal of Nursing*, *2*(1), 39–57. https://doi.org/10.4102/phcfm.v9i1.1456

Noerhidaya, N., Azis, S., & Andriani, A. L. (2024). Hubungan status sosial ekonomi dan pengetahuan ibu dengan status gizi balita di wilayah kerja Puskesmas Pekkabata. *Journal Peqguruang: Conference Series*, *6*(2), 788. https://doi.org/10.35329/jp.v6i2.5428

Noor, M. S., Andrestian, M. D., Dina, R. A., Ferdina, A. R., Dewi, Z., Hariati, N. W., Rachman, P. H., Setiawan, M. I., Yuana, W. T., & Khomsan, A. (2022). Services , and Toddler ' s Characteristics as Stunting Risk Factors. *Nutrient*, *14*(1), 1–12. https://doi.org/https://doi.org/10.3390/nu14204373

Novitasari, P. D., & Wanda, D. (2020). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*. https://doi.org/10.4081/pr.2020.8698

Nuriyana, D. A., & Anggorowati, Z. (2024). Breastfeeding Practice Associated with Stunting in Urban and Rural Areas, Scooping Review. *Indonesian Journal of Global Health Research*, *6*(S6), 309–318. https://doi.org/https://doi.org/10.37287/ijghr.v6iS6.4849.

Nursalam. (2016). *Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis.* Salemba Medika.

Rahayuwati, L., Komariah, M., Sari, C. W. M., Yani, D. I., Hermayanti, Y., Setiawan, A., Hastuti, H., Maulana, S., & Kohar, K. (2023). The Influence of Mother's Employment, Family Income, and Expenditure on Stunting Among Children Under Five: A Cross-Sectional Study in Indonesia. *Journal of Multidisciplinary Healthcare*, *16*(August), 2271–2278. https://doi.org/10.2147/JMDH.S417749

Rezaeizadeh, G., Mansournia, M. A., Keshtkar, A., Farahani, Z., Zarepour, F., Sharafkhah, M., Kelishadi, R., & Poustchi, H. (2024). Maternal education and its influence on child growth and nutritional status during the first two years of life: a systematic review and meta-analysis. *EClinical Medicine*, *71*, 102574. https://doi.org/10.1016/j.eclinm.2024.102574

Saleh, A., Syahrul, S., Hadju, V., Andriani, I., & Restika, I. (2021). Role of Maternal in Preventing Stunting: a Systematic Review. *Gaceta Sanitaria*, *35*, S576–S582. https://doi.org/10.1016/j.gaceta.2021.10.087

Santosa, A., Arif, E. N., & Ghoni, D. A. (2022). Effect of maternal and child factors on stunting:

partial least squares structural equation modeling. Clinical and experimental pediatrics, 65(2), 90. *Clin Exp Pediatr*, *65*(2), 90–97. https://doi.org/10.3345/cep.2021.00094

Serli, N., Ernawati, H., & Hadi, A. (2021). Hubungan komunikasi terapeutik perawat dengan kepuasan pasien di rawat inap. *Malahayati Nursing Journal*, *7*(4), 167–186. https://doi.org/https://doi.org/10.33024/mnj.v7i4.19033

Siagian, E., & Ramschie, P. A. (2024). The Influence of Mother's Knowledge of Toddler Nutrition on Their Knowledge and Attitudes Towards Stunting. *Jurnal Berita Ilmu Keperawatan*, *17*(2), 180–188. https://doi.org/10.23917/bik.v17i2.2835

Sunarmi, S., Agustina, F. F., Fuadi, F., Mulyono, A., & Sari, S. P. (2023). the Relationship Between Income and Family Support. *International Journal of Economics*, *3*(2), 1–6. https://doi.org/10.3345/cep.2021.00094

Suyanto, S., Wahyuni, S., Zulharman, Z., Restila, R., Irfansya, R., Aprillianty, E. N., & Adraf, N. W. (2024). Understanding stunting risk factors in Kampar Regency: Insights from mothers with stunted children (qualitative study). *Sage Open Medicine*, *12*(1). https://doi.org/10.1177/20503121241244662

Umar, F. (2021). Family Centered Approaches to Stunting Prevention. *Journal of Health Literacy and Qualitative Research*, *1*(2), 84–98. https://doi.org/10.61194/jhlqr.v1i2.532

Wilaga, A., Hamidah, E., Abdillah, H., & Basri, B. (2024). Pengaruh edukasi kesehatan terhadap perubahan perilaku hidup bersih dan sehat di sekolah dasar. *Journal of Nursing Practice and Education*, *5*(01), 86–92. https://doi.org/https://doi.org/10.34305/jnpe.v5i1.1444

Win, H., Shafique, S., Mizan, S., Wallenborn, J., Probst-Hensch, N., & Fink, G. (2022). Association between mother's work status and child stunting in urban slums: a cross-sectional assessment of 346 child-mother dyads in Dhaka, Bangladesh (2020). *Archives of Public Health*, *80*(1), 1–16. https://doi.org/10.1186/s13690-022-00948-6

Yani, D. I., Rahayuwati, L., Sari, C. W. M., Komariah, M., & Fauziah, S. R. (2023). Family Household Characteristics and Stunting: An Update Scoping Review. *Nutrients*, *15*(1), 1–17. https://doi.org/10.3390/nu15010233

Zakaria, M. A., Astuti, W. P., Nurimawati, E., & Agustia, D. (2023). Literature Review: the Correlation Between Family Support and Stunting Incidence. *MIKIA: Mimbar Ilmiah Kesehatan Ibu Dan Anak (Maternal and Neonatal Health Journal)*, *0825*, 10–20. https://doi.org/10.36696/mikia.v7i2.130