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MATERNAL PERCEPTION OF CHILD'S SHORT STATURE: A VALIDITY CHECK

Original Research

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ABSTRACT

Background: Short stature in children is a significant pediatric concern, often indicating underlying nutritional, endocrine, or chronic health issues. Early recognition is essential for timely diagnosis and intervention, particularly in low- and middle-income countries like Pakistan, where access to healthcare and maternal awareness remains inconsistent. Maternal perception plays a vital role in early detection, yet socio-economic disparities and limited health literacy frequently hinder accurate identification and delay care-seeking behavior.

Objective: To validate maternal identification and self-assessment of short stature and assess maternal knowledge and perceptions regarding the condition.

Methods: This cross-sectional study was conducted at Combined Military Hospital (CMH) Kharian, Pakistan, from January 2 to July 21, 2024. A total of 363 mothers of children aged 2 to 12 years were recruited. Height measurements were taken using a calibrated stadiometer and plotted against WHO growth charts. Data were collected through three validated instruments: a Demographic and Clinical Information Form, a structured Knowledge Questionnaire, and a Perception Questionnaire. Knowledge was categorized as poor (<50%), fair (50–75%), or good (>75%). Perception accuracy was compared against confirmed clinical diagnoses. Statistical analysis was conducted using SPSS version 26.

Results: Among the 363 children, 274 (75.5%) were clinically confirmed to have short stature, with 199 (72.6%) falling below the 3rd percentile. Poor maternal knowledge was found in 144 (43.2%) participants and was significantly associated with the child's age ($p = 0.032$), maternal education ($p = 0.012$), and employment status ($p = 0.029$). Perception analysis showed that 195 (57.7%) mothers underestimated their child's height status, while 143 (42.3%) demonstrated accurate perception. Sensitivity and PPV of maternal perception were 57.4% and 61.6%, respectively, whereas specificity and NPV were 0%.

Conclusion: While maternal perception shows moderate sensitivity in detecting short stature, substantial knowledge gaps and frequent misperceptions emphasize the need for targeted maternal education and structured child growth monitoring strategies.

Keywords: Anthropometry, Child Development, Growth Disorders, Maternal Education, Malnutrition, Short Stature, Socioeconomic Factors.

INTRODUCTION

Short stature among children presents a significant global health challenge, particularly in the context of developing nations where healthcare access and nutritional resources are often limited. Defined clinically as a height that is at least two standard deviations below the mean for a child's age and sex or falling below the third percentile on standardized growth charts, short stature may be an early sign of underlying health conditions that frequently go unnoticed during infancy and early childhood (1). The early identification and timely intervention of growth issues are crucial to improving long-term health outcomes, yet many children remain undiagnosed until later stages of development, by which time optimal treatment windows may have already narrowed. Multiple interrelated factors contribute to short stature, ranging from non-pathological familial traits to more complex genetic, endocrine, and systemic causes. Conditions such as Turner syndrome, growth hormone deficiency, and chronic illnesses like renal disease can all impair linear growth (2). Furthermore, socioeconomic disparities, poor dietary intake, recurrent infections, and limited healthcare infrastructure significantly affect children's physical development, particularly in lower- and middle-income countries (3). In addition to organic causes, psychosocial deprivation and emotional stress are now increasingly recognized as influential determinants of growth failure in pediatric populations.

The classification of short stature generally includes three categories: variant restricted growth (e.g., familial or constitutional delay), proportionate short stature—typically linked to systemic or endocrine disorders, and disproportionate short stature which may indicate skeletal dysplasias or syndromic conditions (2,3). Regardless of etiology, a child's growth trajectory is a powerful indicator of overall health and well-being, and deviations from expected patterns should prompt thorough clinical evaluation including growth charts, bone age assessment, and relevant hormonal and biochemical testing (4). In Pakistan, the prevalence of short stature among children is notably high, reflecting broader systemic issues such as chronic malnutrition, poverty, and inconsistent access to healthcare services. National data estimate that nearly 38% of children under five years of age are stunted, a condition often resulting from prolonged nutritional deficiency (5). This burden is particularly pronounced in rural and underserved areas, where food insecurity and maternal illiteracy further compound the risk (6). Despite the availability of diagnostic tools and treatment options, delayed recognition remains common due to widespread lack of awareness and the cultural stigma attached to growth disorders (7,8). In many communities, short children may experience social marginalization, bullying, and reduced self-esteem, further undermining their psychological health and quality of life (9,10).

Effective management of short stature in children requires not only clinical interventions but also community-based educational initiatives that empower caregivers—particularly mothers—with knowledge regarding normal growth patterns and red flags for delay. Parental insight, especially maternal observation and concern, often serves as the first point of recognition for deviations in growth. However, the reliability and accuracy of maternal self-assessment in identifying short stature has not been extensively validated in local contexts. Given these concerns, the present study was designed to validate maternal perceptions and assessments of their children's growth and to evaluate the level of maternal knowledge regarding short stature. Understanding the accuracy of maternal recognition and associated beliefs is vital for developing early intervention strategies, enhancing public health outreach, and ultimately improving growth outcomes in at-risk pediatric populations.

METHODS

This cross-sectional validation study was conducted at the pediatric outpatient department (OPD) of Combined Military Hospital (CMH), Kharian, Pakistan, from January 2 to July 21, 2024. CMH Kharian is a tertiary care facility that serves both urban and rural populations, making it an appropriate setting to assess maternal knowledge and perceptions related to short stature in children. The study aimed to recruit mothers of children aged 2 to 12 years presenting to the OPD for general pediatric consultations. The inclusion criteria encompassed mothers aged 18 to 45 years who consented to participate and whose children were undergoing routine height assessments during their visit. To determine eligibility, all children visiting the OPD within the specified age range underwent anthropometric screening using WHO Height-for-Age Growth Charts. Those identified with a height below the third percentile for age and sex were classified as having short stature and were included in the study. Children with previously diagnosed chronic medical, endocrine, or genetic conditions such as hypothyroidism, Turner syndrome, or Down syndrome were excluded. Additionally, children already under

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treatment for growth disorders or those whose anthropometric measurements placed them within the normal height range were excluded after objective assessment.

A sample size of 363 was calculated using an online sample size calculator based on a 38% prevalence of chronic malnutrition in Pakistani children, as reported by the Pakistan Demographic and Health Survey (7). This ensured sufficient statistical power to detect meaningful associations. Data collection utilized three primary tools. The first was a Demographic and Clinical Information Form that recorded maternal and child demographic data, socioeconomic background, and clinical factors such as birth history and nutritional status. The second tool was a structured Knowledge Questionnaire evaluating maternal understanding of the causes, implications, and treatment of short stature. Knowledge scores were categorized as good (>75%), fair (50–75%), or poor (<50%). The third was a Perception Questionnaire exploring maternal concern, emotional responses, and beliefs about their child's height, capturing both cognitive and emotional dimensions of perception.

Children's height was measured using a calibrated stadiometer with two readings taken by a trained nurse and averaged for accuracy. Measurements were plotted on WHO growth charts to determine height percentiles. Inter-observer reliability was assessed using a sub-sample of 15 children, independently measured by two nurses, to ensure consistency. Daily calibration of the stadiometer was performed throughout the data collection period.

The questionnaires were developed through an extensive literature review and validated by a panel of three public health and pediatric experts for content relevance and clarity. Reliability testing of the tools via test-retest among 10 participants showed strong internal consistency with a reliability coefficient of 0.80. A pilot study involving 10 mothers from a separate OPD clinic was conducted to test usability and comprehension; these participants were excluded from the main study. Data collection occurred in the OPD waiting area, where eligible mothers were approached, briefed about the study, and asked to provide written informed consent. Upon enrollment, they completed the demographic, knowledge, and perception questionnaires, followed by anthropometric assessment of their children. Data were entered and analyzed using IBM SPSS version 26. Descriptive statistics summarized demographic and clinical characteristics. Chi-square tests were used to explore associations between maternal knowledge and demographic variables. Ethical approval was obtained from the Institutional Review Board of CMH Kharian. All participants were assured of confidentiality, voluntary participation, and the right to withdraw at any time without affecting their child's care.

RESULTS

A total of 363 mothers participated in the study, of whom 201 (55.4%) had male children and 162 (44.6%) had female children. The children were predominantly between the ages of 5 and 7 years, accounting for 135 (37.2%) of the sample, followed by 91 (25.1%) aged 8–10 years, 88 (24.2%) aged 2–4 years, and 49 (13.5%) aged 11–12 years. Most mothers were aged between 30 and 39 years (202, 55.6%), while 78 (21.5%) were aged 20–29 years, 60 (16.5%) were 40–49 years, and 23 (6.3%) were under 20 years of age. In terms of education, 147 (40.5%) mothers had attained secondary education, 102 (28.1%) had completed primary education, 63 (17.4%) had higher education (college or university), while 51 (14.0%) had no formal education. A large proportion of the mothers were unemployed (254, 70.0%), and the majority resided in urban areas (219, 60.3%). Socioeconomically, 174 (47.9%) belonged to middle-income families, 125 (34.4%) were from low-income backgrounds, and 64 (17.6%) were from high-income households. Regarding family size, 149 (41.0%) had one or two children, 137 (37.7%) had three to four children, and 77 (21.2%) had five or more. Firstborn children comprised 139 (38.3%) of the sample, followed by second-born (115, 31.7%), third-born (69, 19.0%), and fourth or later-born (40, 11.0%). Out of 363 children, 274 were confirmed to have short stature based on WHO growth standards. Among them, 199 (72.6%) were below the 3rd percentile for height, and the remaining 75 (27.4%) were at or below the 10th percentile. The mean height in this group was 116.58 ± 13.78 cm with a median of 115.0 cm. Their weight was largely skewed toward lower percentiles, with 183 (66.8%) at or below the 25th percentile. The mean weight was 25.75 ± 8.89 kg, and the median was 24.5 kg. Conversely, among the 89 children wrongly suspected of short stature, 40.4% were above the 50th percentile for height with a mean of 133.75 ± 12.04 cm and a median of 135.0 cm. Most of these children (47.2%) had weight above the 75th percentile, with a mean of 32.34 ± 8.67 kg and median of 32.0 kg.

Analysis of maternal knowledge revealed that 144 mothers (43.2%) had poor knowledge about short stature, 116 (34.3%) had fair knowledge, and only 103 (30.0%) demonstrated good knowledge. Regarding maternal perception, 195 mothers (57.7%) underestimated their child's height status. Within this group, 106 children (29.2%) were correctly identified as having short stature, while 89 (24.5%) were falsely suspected. Accurate perception was reported in 143 mothers (42.3%), all of whose children were clinically confirmed to have short stature. Only 25 mothers (7.4%) overestimated short stature, all of whom had children clinically diagnosed with the condition,

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reflecting a valid over-perception. The association between maternal knowledge and sociodemographic characteristics revealed several statistically significant findings. Maternal knowledge varied significantly with the child's age ($p = 0.032$), with lower knowledge levels observed among mothers of younger children. Education was strongly associated with knowledge ($p = 0.012$), as mothers with no formal or primary education had poorer knowledge compared to those with secondary or higher education. Occupational status was significant ($p = 0.029$), with employed mothers more likely to demonstrate better knowledge. Similarly, knowledge was significantly related to socioeconomic status ($p = 0.036$), with higher knowledge among middle- and high-income families. Family size also influenced knowledge ($p = 0.039$), with mothers of larger families tending to have less knowledge. Birth order of the child showed significance ($p = 0.044$), as poorer knowledge was more prevalent among mothers of firstborn children. No significant associations were observed with child's gender, maternal age, or place of residence. Based on the statistical analysis of maternal perception accuracy compared to clinical confirmation, the sensitivity of maternal perception for identifying short stature was found to be 57.4%, indicating that slightly more than half of the mothers correctly identified their child as having short stature when it was clinically confirmed. The specificity was 0%, suggesting that no mothers accurately recognized their child as not having short stature among those who were clinically normal. The positive predictive value (PPV) was 61.6%, reflecting that a little over 60% of children perceived to be short were indeed confirmed as such upon clinical evaluation. However, the negative predictive value (NPV) was 0%, indicating that none of the children perceived as having normal height were actually free from short stature. These findings highlight the moderate diagnostic value of maternal perception in correctly identifying short stature, while also underlining the significant limitations of relying solely on maternal judgment for exclusion, emphasizing the need for clinical growth assessments to validate maternal concerns.

Table 1: Sociodemographic characteristics of mother and child

Variable	Category	Frequency (n)	Percentage (%)
Child's gender	Male	201	55.4%
	Female	162	44.6%
Child's age	2-4 years	88	24.2%
	5-7 years	135	37.2%
	8-10 years	91	25.1%
	11-12 years	49	13.5%
Mother's age	<20 years	23	6.3%
	20-29 years	78	21.5%
	30-39 years	202	55.6%
	40-49 years	60	16.5%
Mother's educational status	No formal education	51	14.0%
	Primary education	102	28.1%
	Secondary education	147	40.5%
	Higher education (college/university)	63	17.4%
Mother's occupational status	Employed	109	30.0%
	Unemployed	254	70.0%
Residence	Urban	219	60.3%
	Rural	144	39.7%
Family socio-economic status	Low income	125	34.4%
	Middle income	174	47.9%
	High income	64	17.6%
No. of children in the family	1-2 Children	149	41.0%
	3-4 Children	137	37.7%
	Five or more children	77	21.2%
Birth order	Firstborn	139	38.3%
	Second child	115	31.7%
	Third child	69	19.0%
	Fourth child or later	40	11.0%

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Table 2: Distribution of the weight and height of the children

Variable	Category	Confirmed Short Stature (n=274)	Wrongly Suspected (n=89)
Weight Percentile	3rd percentile	1 (0.4%)	0 (0.0%)
	5th percentile	47 (17.2%)	1 (1.1%)
	10th percentile	86 (31.4%)	4 (4.5%)
	25th percentile	89 (32.5%)	12 (13.5%)
	50th percentile	42 (15.3%)	30 (33.7%)
	75th percentile	9 (3.3%)	42 (47.2%)
Weight of the Child (kg)	Range	14.0 – 50.0	20.0 – 57.0
	Mean ± SD	25.75 ± 8.89	32.34 ± 8.67
	Median	24.5	32.0
Height Percentile	3rd percentile	199 (72.6%)	0 (0.0%)
	5th percentile	70 (25.5%)	2 (2.2%)
	10th percentile	5 (1.9%)	5 (5.6%)
	25th percentile	0 (0.0%)	10 (11.2%)
	50th percentile	0 (0.0%)	36 (40.4%)
	75th percentile	0 (0.0%)	36 (40.4%)
Height of the Child (cm)	Range	88.0 – 145.0	110.0 – 155.0
	Mean ± SD	116.58 ± 13.78	133.75 ± 12.04
	Median	115.0	135.0

Table 3: Association of Maternal knowledge of short stature and sociodemographic characteristics

Variable	Category	Poor Knowledge (n = 144)	Fair Knowledge (n = 116)	Good Knowledge (n = 103)	P-value
Child's Gender	Male	90	63	48	0.055
	Female	54	53	55	
Child's Age	2-4 years	34	30	24	0.032*
	5-7 years	52	42	41	
	8-10 years	36	30	25	
	11-12 years	22	14	13	
Mother's Age	<20 years	9	7	7	0.098
	20-29 years	27	26	25	
	30-39 years	77	60	65	
	40-49 years	31	23	6	
Mother's Educational Status	No formal education	30	13	8	0.012*
	Primary education	47	31	24	
	Secondary education	50	49	48	
	Higher education (college/university)	17	23	23	
Mother's Occupational Status	Employed	39	37	33	0.029*
	Unemployed	105	79	70	
Residence	Urban	92	75	52	0.10
	Rural	52	41	51	
Family Socio-economic Status	Low income	55	37	33	0.036*
	Middle income	67	56	51	
	High income	22	23	19	
No. of Children in the Family	1-2 Children	55	46	48	0.039*
	3-4 Children	61	49	27	

Variable	Category	Poor Knowledge (n = 144)	Fair Knowledge (n = 116)	Good Knowledge (n = 103)	P-value
	Five or more children	28	21	28	
Birth Order	Firstborn	57	47	35	0.044*
	Second child	43	37	35	
	Third child	29	22	18	
	Fourth child or later	15	10	15	

*=P<0.05

Table 4: Maternal Perception Validity Metrics

Metric	Value
Sensitivity	0.57
Specificity	0.00
Positive Predictive Value (PPV)	0.62
Negative Predictive Value (NPV)	0.00

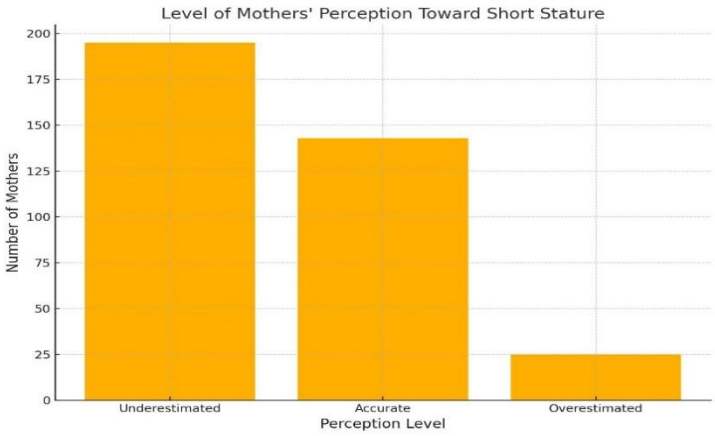

Figure 1 Level of Mothers Perception Toward Short Stature

Figure 2 Level of Mothers Knowledge Toward Short Stature

DISCUSSION

Maternal perception of a child's short stature plays a pivotal role in early identification and timely intervention, yet substantial evidence suggests persistent misperceptions among caregivers. The present study sought to validate the accuracy of maternal self-assessment and perception, as well as to evaluate maternal knowledge regarding short stature in children. Clinical confirmation revealed that 75.5% of the children suspected of short stature by their mothers indeed met the criteria for the condition. This confirmation rate is notably higher than that reported in prior research, which may be attributed to the study setting in a tertiary care hospital, where children were referred for evaluation after initial height and weight screening. The selection bias towards clinically suspicious cases may have influenced the elevated rate of confirmation, underscoring the context-specific nature of these findings. The analysis of maternal knowledge revealed considerable gaps, with 43.2% of mothers demonstrating poor knowledge regarding short stature. This finding echo results from earlier investigations that have consistently shown limited awareness among mothers, particularly those with lower levels of education, unemployment, and low-income backgrounds (11,12). The present study further reinforced that, sociodemographic variables such as maternal education, employment status, family income, and number of children significantly influenced knowledge levels. Notably, mothers of younger children and firstborns tended to have less understanding of the condition, aligning with prior literature suggesting that experience and exposure play a role in maternal competence in child health monitoring (13,14). These patterns suggest the need for comprehensive educational outreach tailored to vulnerable maternal subgroups, especially in resource-limited settings.

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Maternal perceptions of short stature were also found to be inconsistent with clinical findings in a substantial proportion of cases. While accurate perception correlated well with confirmed diagnoses, a considerable proportion of mothers underestimated or overestimated their child's height status. These findings are consistent with studies conducted in various sociocultural contexts, including urban slums and Middle Eastern settings, which report high levels of misjudgment in parental assessments of child growth (15-17). Underestimation, in particular, poses a significant barrier to timely intervention, as mothers may delay seeking care under the impression that their child's stature falls within a normal range. Contributing factors such as socioeconomic disadvantage, low birth weight, and inadequate awareness were found to be associated with higher rates of misperception in this study, further corroborating earlier findings (18,19). Importantly, this study went a step further by quantifying the diagnostic value of maternal perception. Statistical analysis showed a moderate sensitivity of 57.4% and a positive predictive value of 61.6%, indicating that while some mothers could accurately detect short stature, a significant proportion could not. The specificity and negative predictive value were notably low (0%), demonstrating that maternal perception alone is insufficient to rule out short stature when absent. This underscores the need to integrate objective growth assessments into routine pediatric check-ups and not rely solely on maternal concern as a trigger for evaluation (20,21). These metrics also highlight an important methodological strength of the study: the incorporation of perception validity indicators, which enhances its contribution to existing literature.

The study's strengths include a robust sample size, a clearly defined hospital-based population, and the use of validated instruments to assess both maternal knowledge and perception. Furthermore, the objective measurement of child height and its correlation with maternal insights provided a meaningful validation framework. However, several limitations warrant consideration. The study was conducted in a tertiary care setting, potentially limiting generalizability to community-based populations. The absence of data on fathers' perceptions, cultural beliefs about stature, or anthropometric trends over time restricts the broader applicability of the results. Moreover, the cross-sectional design precluded the assessment of changes in perception or knowledge following interventions. Future research should aim to replicate these findings in primary care and rural settings to better reflect the general population. Interventional studies assessing the impact of maternal education programs on perception accuracy and early detection rates would provide valuable insights. Incorporating the role of paternal involvement and evaluating growth perception using culturally sensitive tools could further refine future research. Overall, the findings support the development of targeted maternal education campaigns and underscore the indispensable role of routine growth surveillance in mitigating the long-term consequences of undetected short stature in children.

CONCLUSION

This study concluded that maternal perception and knowledge play a crucial role in the early identification of short stature in children, yet both remain influenced by a range of sociodemographic factors. While some mothers demonstrated accurate awareness, many underestimated their child's condition, highlighting the inconsistency of maternal assessments when used in isolation. Educational background, employment status, and family dynamics were strongly linked to knowledge gaps. These findings underscore the importance of integrating maternal education into pediatric care strategies and promoting routine growth monitoring as part of community health programs. Empowering mothers with accurate knowledge and tools for early recognition can significantly enhance timely interventions and improve growth outcomes in children.

AUTHOR CONTRIBUTION

Author	Contribution
Iqra Irfan*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Farooq Ikram	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Adeel Mehmood	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Basma Fatima	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Anum Pervaiz	Contributed to Data Collection and Analysis

Author	Contribution
	Has given Final Approval of the version to be published
Tariq Nadeem	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

REFERENCES

1. Martinez-Monseny AF. Unraveling short stature in pediatrics: the crucial role of genetic perspective. Translational Pediatrics. 2024 May 5;13(5):864.
2. Wulandari I, Anggraeni ZE, Romadhoni RR, Wulandari PN, Damayanti NA, Maharani T, Rohmah N. The Relationship between Sociodemographic Factors and Short Stature in Toddlers. Adi Husada Nursing Journal. 2023 Sep 20;9(2):78-84.
3. Mavinkurve M, Azriyanti AZ, Jalaludin MY. The short child: importance of early detection and timely referrai. Malaysian Family Physician: the Official Journal of the Academy of Family Physicians of Malaysia. 2021 Nov 11;16(3):6.
4. Taylor M, Tapkigen J, Ali I, Liu Q, Long Q, Nabwera H. The impact of growth monitoring and promotion on health indicators in children under five years of age in low-and middle-income countries. Cochrane Database of Systematic Reviews. 2023(10).
5. Siddiqa M, Zubair A, Kamal A, Ijaz M, Abushal T. Prevalence and associated factors of stunting, wasting and underweight of children below five using quintile regression analysis (PDHS 2017–2018). Scientific Reports. 2022 Nov 25;12(1):20326.
6. Subratha HF, Pebriyani NP, Hary MI, Putri MD, Lionita NL. The Relationship Between Mothers Knowledge and Attitudes Related to The First 1000 Days of Life With The Incidence of Stunting. Babali Nursing Research. 2024 Apr 30;5(2):265-73.
7. Falah M, Sari NP, Lismayanti L. Stunting Knowledge among Mothers with Stunting Children in Tasikmalaya. HealthCare Nursing Journal. 2024 Jan 24;6(1):1-4.
8. Juhari NH, Suan WB. Mother's Knowledge, Attitude and Practices and its Influence toward Nutritional Status of Children in Terengganu. Jurnal Gizi dan Pangan. 2024 Jan 31;19(Supp. 1):137-44.
9. Wirawati D, Julaeha S, Rahayu ES. Maternal knowledge and family support for child food insecurity among households with stunting in young children. Malahayati International Journal of Nursing and Health Science. 2024 Jan 29;6(7):591-8.
10. Marita Z, Okinarum GY, Huda MH, Dwihestie LK. Analysis of Stunting Incidents Based on Mother's Knowledge. International Journal of Nursing Information. 2023 Dec 31;2(2):1-6.
11. Sarker T, Ahmed S, Rahman S, Chakraborty B. Maternal misperception of under-five children weight status and associated factors: A cross-sectional study. Maternal & Child Nutrition. 2024 May 28:e13674.
12. Alhumaidi KA, Alotaibi EA, Almansour S, Alharbi A, Alharbi NH, AlJameli SM, Aljateli GA, Alobaid NM, Almasoud RA. Parents' Knowledge and Perception Toward Short Stature in Saudi Arabia. Cureus. 2023 Dec;15(12).
13. Lee S. Impact of the child's birth weight on maternal misperceptions of young children's weight: A retrospective study with nationally representative data. Japan Journal of Nursing Science. 2024:e12610.
14. Devaguru A, Gada S, Potpalle D, Eshwar MD, Purwar D. The Prevalence of Low Birth Weight Among Newborn Babies and Its Associated Maternal Risk Factors: A Hospital-Based Cross-Sectional Study. Cureus. 2023 May;15(5).
15. Birungi A, Koita Y, Roopnaraine T, Matsiko E, Umugwaneza M. Behavioural drivers of suboptimal maternal and child feeding practices in Rwanda: An anthropological study. Matern Child Nutr. 2023;19(1):e13420.
16. Noviana U, Devy SR, Indriani D, Yasin Z. Determining factors affecting mother's behaviour in stunting prevention in rural Madura, Indonesia. Afr J Reprod Health. 2024;28(10s):100-10.
17. Khani Jeihooni A, Mohammadkhah F, Razmjouie F, Harsini PA, Sedghi Jahromi F. Effect of educational intervention based on health belief model on mothers monitoring growth of 6-12 months child with growth disorders. BMC Pediatr. 2022;22(1):561.
18. Sutinbuk D, Nugraheni SA, Rahfiludin MZ, Setyaningsih Y. Effectiveness of ERKADUTA model to increase stunting prevention behaviors among mothers with toddlers in Indonesia: A quasi-experiment. Narra J. 2024;4(1):e688.
19. Faridah F, Anies A, Kartasurya MI, Widjanarko B. Online educational intervention: Improving maternal knowledge and attitudes in providing developmental stimulation for stunting toddlers. Narra J. 2024;4(1):e591.
20. Athavale P, Hoeft K, Dalal RM, Bondre AP, Mukherjee P, Sokal-Gutierrez K. A qualitative assessment of barriers and facilitators to implementing recommended infant nutrition practices in Mumbai, India. J Health Popul Nutr. 2020;39(1):7.

21. Albin MQ, Igihozo G, Musemangezhi S, Namukanga EN, Uwizeyimana T, Alemayehu G, et al. "When we have served meat, my husband comes first": A qualitative analysis of child nutrition among urban and rural communities of Rwanda. PLoS One. 2024;19(7):e0306444.

