



Women's Agency and Family Planning Counselor Roles in Child Nutrition: Semi-Urban Yogyakarta Survey

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HIGHLIGHTS

- Women's household agency predicted child nutrition practices ($\beta = 0.740$, $p = 0.008$).
- Family Planning Counselor roles had a significant positive effect ($\beta = 0.189$, $p = 0.043$).
- Women's agency and counselor roles were positively associated ($r = 0.309$, $p = 0.005$).
- Plant protein, dietary diversity, and micronutrient practices remained comparatively weak.

ARTICLE INFO

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ABSTRACT

Child nutrition in semi-urban settings depends not only on food access but also on household decision-making and community counseling. This study examined the effects of women's household agency and Family Planning Counselor roles on child nutrition practices among stunting-risk households in semi-urban Yogyakarta, Indonesia. A cross-sectional survey was conducted in 2025 with 182 households in Sleman Regency, Bantul Regency, and Yogyakarta City. Data were collected through structured interviews and analyzed using Structural Equation Modeling. Women's household agency had a strong positive effect on child nutrition practices ($\beta = 0.740$, $p = 0.008$), while counselor roles as educators, communicators, and facilitators had a smaller but significant positive effect ($\beta = 0.189$, $p = 0.043$). The two constructs were positively correlated ($r = 0.309$, $p = 0.005$), indicating that stronger household agency was associated with stronger counseling support rather than proving a causal interaction. Together, they explained 67.0% of the variance in child nutrition practices. Animal protein intake and energy adequacy were relatively stronger, whereas plant protein intake, dietary diversity, and micronutrient-related practices were weaker. The study concluded that extension-based nutrition support should combine household agency strengthening with practical counseling and facilitation for stunting-risk families.

INTRODUCTION

Child nutrition remains a critical issue in family welfare and human development because inadequate feeding practices during

early childhood can affect physical growth, cognitive development, educational achievement, and long-term productivity (Black et al., 2013; Keats et al., 2021). Stunting is particularly important because it reflects chronic nutritional deprivation and may produce long-

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term consequences for children's health, learning capacity, and human capital formation (Rezaeizadeh et al., 2024; Soliman et al., 2021). Therefore, child nutrition should not be understood only as a biomedical issue, but also as a family behavior, caregiving, and development communication issue (Ahmed et al., 2021; Keats et al., 2021).

In Indonesia, stunting has declined but remains a major public concern, with national data reporting a prevalence of 21.5 per cent in 2023 and 19.8 per cent in 2024 (Kemenkes, 2025). Yogyakarta provides an important empirical setting because the province has relatively high human development, yet several districts continue to experience nutrition vulnerability among children and families (BPS Indonesia, 2024; BPS Provinsi D.I. Yogyakarta, 2024). This condition suggests that child nutrition problems in semi-urban settings are not explained only by food availability or service access, but also by gaps in household practice, caregiving routines, and the adoption of recommended feeding behavior (Ahmed et al., 2021; Pienaaah et al., 2025). At the household level, women are central actors in childcare, food preparation, hygiene routines, and daily family welfare management (Komakech et al., 2022). Women's household agency is therefore important because nutrition information can influence child feeding only when women have the confidence, authority, and decision-making space to apply it in everyday family life (Komakech et al., 2022; Rezaeizadeh et al., 2024). At the community level, Family Planning Counselors can function as extension actors who support family welfare through education, communication, referral linkage, and facilitation (BKKBN, 2021). This role is consistent with evidence that infant and young child feeding interventions are more effective when nutrition education, interpersonal counseling, community delivery, and practical support are combined rather than delivered as single-message interventions (Ahmed et al., 2021; Keats et al., 2021). Child nutrition counseling has also been associated with higher child dietary diversity, especially when feeding decisions are supported by intra-household cooperation and gender-sensitive family dynamics (Pienaaah et al., 2025). Evidence from extension-based interventions further shows that meetings, lectures, discussions, counseling sessions, home visits, audio-visual aids, and mobile-based information can improve rural women's knowledge, attitudes, and practices related to maternal and child health (Singh & Bisht, 2021). Practical household-level interventions, such as nutri-gardens and small-scale vegetable production using grow bags and seeds, have also been shown to improve household food access, nutritional diversity, women's nutritional status, and food security (Kumari et al., 2019; Meenakshi et al., 2019). These findings indicate that nutrition improvement requires not only information delivery, but also practical extension support, women's participation, and household-level facilitation.

This study is informed by Social Cognitive Theory, which views health behavior as the result of interaction between personal agency, environmental support, and behavioral practice (Bandura, 2004). In this framework, women's household agency represents the personal and relational capacity to act within the family, while Family Planning Counselor roles represent the social and communicative support that may strengthen recommended feeding behavior (Bandura, 2004). Although previous studies have examined

women's empowerment, maternal education, nutrition counseling, and child dietary diversity, these factors are often analyzed separately rather than as connected household and community-level mechanisms (Komakech et al., 2022; Pienaaah et al., 2025; Rezaeizadeh et al., 2024).

METHODOLOGY

This study used an explanatory quantitative design with a cross-sectional household survey to analyze the relationships among women's household agency, Family Planning Counselor roles, and child nutrition practices among stunting-risk households (Creswell & Creswell, 2018). The study was conducted in Sleman Regency, Bantul Regency, and Yogyakarta City, Special Region of Yogyakarta, Indonesia. These locations were selected because they represent semi-urban areas in the Yogyakarta metropolitan region, characterized by urban-rural transition, access to public services and markets, and registered concentrations of stunting-risk households.

The sampling frame was obtained from the official database of stunting-risk households maintained by the National Population and Family Planning Agency. The three study locations were treated as sampling strata, and proportional stratified random sampling was applied according to the distribution of registered stunting-risk households in each district or city. A total of 200 households were initially selected to meet the sample adequacy requirement for Structural Equation Modeling with multiple latent constructs and observed indicators (Hair et al., 2021). After screening incomplete responses and multivariate outliers using Mahalanobis distance, 182 valid cases were retained for analysis.

Data were collected from January to July 2025 through face-to-face interviews using a structured questionnaire in Indonesian. The instrument measured three latent constructs. Women's household agency was measured through the roles of wife, mother, and household manager. Family Planning Counselor roles were measured through educator, communicator, and facilitator functions. Child nutrition practices were measured through animal protein intake, plant protein intake, dietary diversity, energy-related adequacy, and micronutrient-related adequacy. All items used a five-point Likert scale ranging from 1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, to 5 = very frequently. Higher scores indicated stronger household agency, more frequent counselor support, or better child nutrition practices.

Descriptive statistics were used to summarize the study variables. Reliability and convergent validity were assessed using Cronbach's alpha, composite reliability, standardized loading factors, and Average Variance Extracted (Hair et al., 2021). Structural Equation Modeling was conducted using IBM SPSS AMOS [insert version], while descriptive and reliability analyses were conducted using IBM SPSS Statistics [insert version]. Model fit was evaluated using Chi-square probability, Comparative Fit Index, Tucker-Lewis Index, Goodness of Fit Index, Adjusted Goodness of Fit Index, and Root Mean Square Error of Approximation. Procedural and post hoc remedies were applied to reduce common method bias (Podsakoff et al., 2003). Ethical approval was obtained before fieldwork from the Research Ethics Committee of the Academic Hospital of Universitas Gadjah Mada under clearance number [insert

correct clearance number and approval date], and informed consent was obtained from all respondents.

RESULTS

The analysis was based on 182 valid household cases. The achievement score (%) represents the observed score converted into a 0-100 scale by comparing the obtained score with the maximum possible score. The scores were interpreted using five categories: 0-20 = never, >20-40 = rarely, >40-60 = occasionally, >60-80 = frequent, and >80-100 = very frequent. Based on these criteria, the descriptive results showed an uneven pattern across the three study constructs.

Women's household agency was strongest in the roles of wife and mother, both of which were categorized as very frequent, while the household manager role was only categorized as occasional. Family Planning Counselor roles were more visible in educational and communication functions than in facilitation. For child nutrition practices, animal protein intake and energy-related adequacy were more frequently practiced than plant protein intake, dietary diversity, and micronutrient-related adequacy. This pattern indicates that family care and counselor support were present, but their implementation was not equally strong across all dimensions. The descriptive profile of the study variables is presented in Table 1.

The descriptive pattern suggests that women's household agency was more strongly expressed through caregiving and relational roles than through broader household management activities. Similarly, counselor support appeared stronger in information delivery than in practical facilitation, indicating that families may receive nutrition messages more often than follow-up assistance, referral linkage, or problem-solving support. In nutrition practices, the stronger performance of animal protein intake and energy adequacy indicates that households were more consistent in familiar

and routine feeding practices. However, the weaker scores for plant protein intake, dietary diversity, and micronutrient-related adequacy suggest partial adoption of recommended child feeding practices. These descriptive findings provide the basis for examining whether household agency and counselor roles explain child nutrition practices in the structural model.

Based on this descriptive pattern, the final structural model was estimated to test the relationships among women's household agency, Family Planning Counselor roles, and child nutrition practices, as presented in Figure 1.

The measurement model was evaluated before interpreting the structural paths. All constructs met the recommended reliability and convergent validity criteria, with composite reliability values above 0.70 and Average Variance Extracted values above 0.50. The standardized loading ranges also showed that the observed dimensions were sufficiently related to their respective latent constructs. Women's household agency showed adequate reliability, while Family Planning Counselor roles and child nutrition practices showed stronger internal consistency. The measurement quality statistics are summarized in Table 2.

The final structural model showed acceptable fit with the observed data. The model achieved Chi-square = 40.888, degrees of freedom = 33, Chi-square/degrees of freedom ratio = 1.239, $p = 0.163$, Root Mean Square Error of Approximation (RMSEA) = 0.036, Comparative Fit Index (CFI) = 0.994, Tucker-Lewis Index (TLI) = 0.989, Goodness of Fit Index (GFI) = 0.961, and Adjusted Goodness of Fit Index (AGFI) = 0.923. The non-significant Chi-square probability, low RMSEA, and high incremental fit indices indicate that the hypothesized model was suitable for interpreting the relationships among the latent constructs. The structural estimates are presented in Table 3.

Table 1. Descriptive summary and achievement categories of study variables

Variable / Dimension	Achievement (%)	Category
Women's household agency: Role as wife	84	Very frequent
Women's household agency: Role as mother	83	Very frequent
Women's household agency: Role as household manager	56	Occasionally
Family Planning Counselor roles: Educator	66	Frequent
Family Planning Counselor roles: Communicator	65	Frequent
Family Planning Counselor roles: Facilitator	56	Occasionally
Child nutrition practices: Animal protein intake	65	Frequent
Child nutrition practices: Plant protein intake	51	Occasionally
Child nutrition practices: Dietary diversity	59	Occasionally
Child nutrition practices: Energy-related adequacy	67	Frequent
Child nutrition practices: Micronutrient-related adequacy	57	Occasionally

Note: Achievement (%) was calculated by converting the obtained score to the maximum possible score on a 0-100 scale. Categories were defined as 0-20 = never, >20-40 = rarely, >40-60 = occasionally, >60-80 = frequent, and >80-100 = very frequent.

Table 2. Measurement quality of latent constructs

Latent construct	Standardized loading range	AVE	Composite reliability	Cronbach's alpha
Women's household agency	0.57-0.79	0.612	0.822	0.703
Family Planning Counselor roles	0.87-0.95	0.836	0.938	0.930
Child nutrition practices	0.70-0.83	0.610	0.970	0.871

Note: AVE = Average Variance Extracted. The standardized loading range refers to the range of factor loadings for observed dimensions in the measurement model.

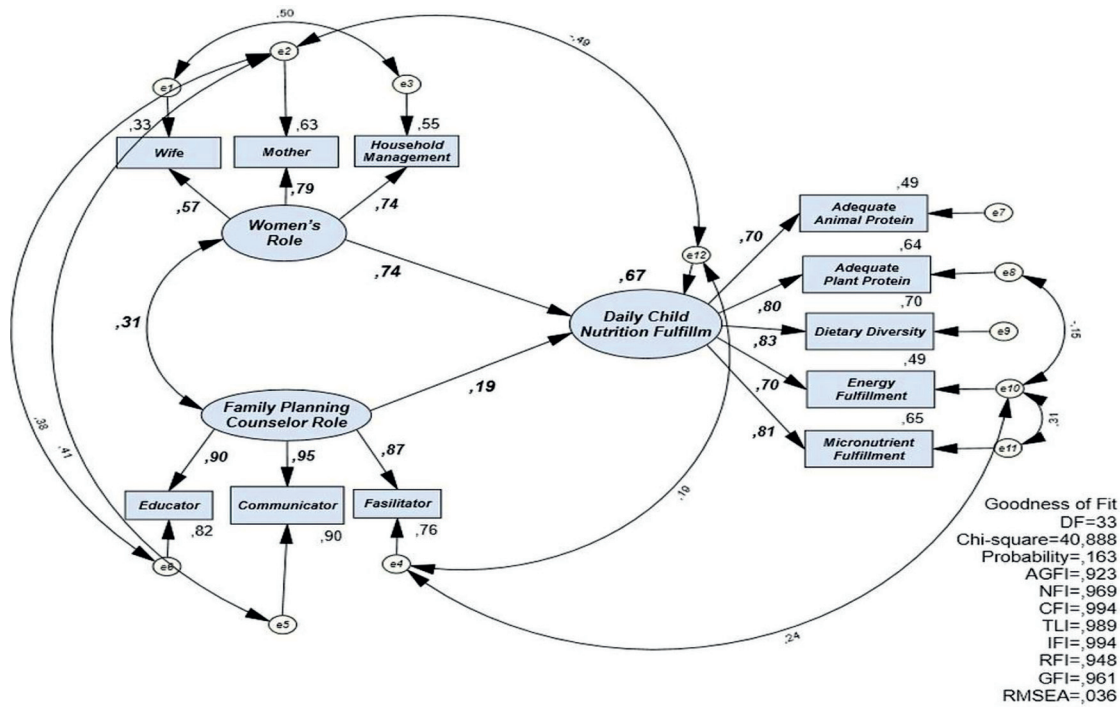


Figure 1. Final structural model with standardized estimates

Note: The model fit was Chi-square = 40.888, degrees of freedom = 33, Chi-square/degrees of freedom ratio = 1.239, p = 0.163, Root Mean Square Error of Approximation = 0.036, Comparative Fit Index = 0.994, Tucker-Lewis Index = 0.989, Goodness of Fit Index = 0.961, and Adjusted Goodness of Fit Index = 0.923.

Table 3. Structural relationships among study constructs

Relationship	Statistic	Estimate	p-value	Decision / interpretation
Women’s household agency -> Child nutrition practices	β	0.740	0.008	Accepted; strong positive effect
Family Planning Counselor roles -> Child nutrition practices	β	0.189	0.043	Accepted; smaller positive effect
Women’s household agency <-> Family Planning Counselor roles	r	0.309	0.005	Accepted; positive association
Explained variance in child nutrition practices	R ²	0.670	—	Large explanatory power

Note: β = standardized path coefficient; r = correlation coefficient; R² = coefficient of determination.

As presented in Table 3, women’s household agency had a strong positive effect on child nutrition practices ($\beta = 0.740$, $p = 0.008$). This means that households with stronger women’s agency were more likely to demonstrate better routine child feeding practices. Family Planning Counselor roles also had a positive and significant effect on child nutrition practices ($\beta = 0.189$, $p = 0.043$), but the effect was substantially smaller than that of women’s household agency. Thus, counselor support contributed to child nutrition practices as an external support factor, while women’s household agency remained the dominant explanatory factor.

The positive association between women’s household agency and Family Planning Counselor roles was also significant ($r = 0.309$, $p = 0.005$), indicating that stronger household agency was associated with stronger counseling support. However, because the study used a cross-sectional design, this association should be interpreted as a statistical relationship rather than evidence of causal complementarity. Together, women’s household agency and Family Planning Counselor roles explained 67.0 per cent of the variance in child nutrition practices ($R^2 = 0.670$). This large explained variance indicates that child nutrition practices in the study area were shaped

mainly by internal household capacity and, to a lesser extent, by external counseling support.

DISCUSSION

The findings show that child nutrition practices among stunting-risk households in semi-urban Yogyakarta were explained mainly by women’s household agency, while Family Planning Counselor roles provided a smaller but significant contribution. The standardized effect of women’s household agency ($\beta = 0.740$) was much larger than that of Family Planning Counselor roles ($\beta = 0.189$), indicating that daily feeding practices were more strongly shaped by internal household capacity than by external counseling support. This pattern is consistent with evidence that women’s empowerment, decision-making authority, and control over household resources are associated with child growth and dietary diversity (Komakech et al., 2022; Rezaeizadeh et al., 2024). In this study, women’s roles as wife and mother were stronger than their household management role, suggesting that caregiving and relational agency were more established than broader managerial control over family resources.

The significant but modest effect of Family Planning Counselor roles should be interpreted cautiously. Counselors contributed to child nutrition practices, but their influence was not as strong as women's household agency. This may be explained by the descriptive findings showing that educator and communicator roles were more frequent than facilitation. In practical terms, counselors may have been more active in delivering nutrition messages than in providing follow-up assistance, referral linkage, food planning support, or problem-solving guidance. This interpretation is consistent with evidence that nutrition counseling and community-based behavior change interventions are more effective when repeated interpersonal communication is combined with practical support and household-level decision-making (Ahmed et al., 2021; Keats et al., 2021; Pienaa et al., 2025). Extension education evidence further shows that maternal and child health interventions using home visits, focus group discussions, counseling sessions, lectures, brainstorming sessions, group meetings, audio-visual aids, and mobile-based information can improve rural women's knowledge, attitudes, and practices related to maternal and child health (Singh & Bisht, 2021). The weaker scores for dietary diversity and micronutrient-related practices in the present study also support the need for practical household-level facilitation, because nutri-garden interventions can improve household access to vegetables, food security, nutritional diversity, and the availability of macro- and micronutrients through the provision of bio-fortified vegetable seeds and saplings (Kumari et al., 2019). Similarly, small-scale organic farming support through grow bags and vegetable seeds can help improve women's nutritional status, income, and waste disposal practices (Meenakshi et al., 2019). Therefore, Family Planning Counselor roles should be strengthened not only as educators and communicators, but also as facilitators who provide practical guidance, family engagement, referral linkage, food planning support, and follow-up assistance.

The descriptive findings also show that child nutrition practices were not equally adopted across all dimensions. Animal protein intake and energy-related adequacy were stronger, while plant protein intake, dietary diversity, and micronutrient-related adequacy remained weaker. This pattern indicates partial adoption of recommended feeding practices rather than complete behavioral change. It also suggests that households may be more consistent in familiar and routine feeding behaviors, but less consistent in practices requiring dietary planning, food variation, and sustained attention to micronutrient quality. This finding is relevant to nutrition-sensitive extension because improving child feeding requires not only awareness, but also repeated learning, family negotiation, and practical support for daily food choices (Ahmed et al., 2021; Keats et al., 2021; Pienaa et al., 2025).

The positive association between women's household agency and Family Planning Counselor roles ($r = 0.309$) indicates that the two mechanisms were related, but it should not be interpreted as causal complementarity. Because the study used a cross-sectional design, the relationship only shows that households with stronger agency tended to report stronger counselor support. One possible interpretation is that women with stronger agency may be more able to use counseling information, while counselors may also interact more effectively with households that are more responsive

to guidance. However, longitudinal or intervention-based research is needed to confirm whether counseling strengthens agency or whether agency improves the uptake of counseling.

Overall, the study contributes to extension education by showing that child nutrition practices are behavioral outcomes shaped by both household capacity and community-based counseling. The large explained variance of child nutrition practices ($R^2 = 0.670$) indicates that the model captured important determinants, but other factors such as household income, food prices, family support, cultural preferences, and local food availability may also influence feeding behavior. For practice, stunting prevention in semi-urban families should prioritize women's agency strengthening, family engagement, repeated nutrition counseling, referral facilitation, and food demonstration, especially for dietary diversity, plant protein, and micronutrient-rich foods.

CONCLUSION

The child nutrition practices among stunting-risk households in semi-urban Yogyakarta were shaped more strongly by women's household agency than by Family Planning Counselor roles. Women's agency was the dominant factor in routine child feeding practices, while counselor support provided a smaller but significant contribution through education, communication, and facilitation. The nutrition improvement in semi-urban families cannot rely only on information delivery. It requires women's decision-making capacity, practical household guidance, and sustained community-based support. The extension strategies should prioritize household-level behavior change. Family Planning Counselors should strengthen follow-up counseling, referral linkage, food demonstration, and family-based problem solving rather than focusing only on nutrition messages. Particular attention should be given to the weakest behavioral areas, namely plant protein intake, dietary diversity, and micronutrient-related practices. Programs should combine women's agency strengthening, husband and family engagement, repeated counseling, and practical feeding guidance for stunting-risk households. These targeted strategies may help translate nutrition knowledge into more consistent daily child-feeding practices.

DECLARATIONS

Research ethics statement: Ethical approval for this study was granted by the Research Ethics Committee of the Academic Hospital of Universitas Gadjah Mada (RSA UGM) under Ethical Clearance Number 030/RSA/KEP/EC/2026. The study was conducted in accordance with the principles established by the National Research Ethics Committee and the Guidelines and Standards for Research Ethics and National Health Development issued by the Ministry of Health of the Republic of Indonesia. Informed consent was obtained from all participants prior to data collection.

Conflict of interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. The authors further declare that they carefully reviewed, revised, and finalized the manuscript and take full responsibility for the content of this publication.

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