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DEVELOPING AN INSTRUMENT FOR DETERMINANTS OF INFANT AND YOUNG CHILD FEEDING (IYCF) PRACTICES USING THEORETICAL INTEGRATION APPROACH

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ABSTRACT

Background: *Inadequate Infant and Young Child Feeding (IYCF) practices significantly contribute to malnutrition and health complications, particularly in developing countries. In Indonesia, challenges such as cultural barriers, inconsistent maternal knowledge, and insufficient social support hinder effective IYCF implementation. Addressing these issues is crucial for improving child nutrition and health outcomes.*

Objectives: *This study aimed to evaluate the psychometric properties, including validity and internal consistency, of a structured questionnaire assessing factors influencing IYCF practices.*

Methods: *Thirty mothers of children aged 6 to 23 months in Sedati, Sidoarjo, East Java, Indonesia, participated in the study from May to July 2024. Data were collected using a structured questionnaire focusing on maternal characteristics, social support, observational learning, cognitive factors, and perceptions related to IYCF practices. The validity process were consisted of stage 1- Literature review, stage 2-Back translation and stage 3-Expert content validity then pilot study were conducted to 5 respondents. The questionnaire's construct validity was assessed from 30 respondents using Pearson correlations, and internal consistency was evaluated using Cronbach's alpha, with data analysis performed using SPSS version 27.0.*

Results: *The study found strong correlations in family support ($r = 0.915$-0.920, $p < 0.01$), community support ($r = 0.484$-0.763, $p < 0.01$), and observational learning ($r = 0.489$-0.515, $p < 0.01$). Motivation showed a range of correlations ($r = -0.190$ to 0.696), and knowledge correlations ranged from ($r = -0.371$ to 0.210). Perceived barriers had negative correlations ($r = -0.331$ to -0.296).*

Conclusion: *The questionnaire demonstrated strong validity and internal consistency for measuring family support, community support, and observational learning related to IYCF. However, items related to motivation, knowledge, and perceived barriers showed weaker or negative correlations. Refining the questionnaire to address these issues and incorporating culturally sensitive approaches could enhance IYCF practices and improve child nutrition and health outcomes.*

Keywords *: IYCF; HBM; SCT; complementary feeding; infant*

INTRODUCTION

Infant and Young Child Feeding Practices (IYCF) include exclusive breastfeeding for 6 months (180 days) and adequate and safe complementary feeding (CF) starting at 6 months until 2 years or beyond (UNICEF, 2020). Proper IYCF practices during the first two years of life are crucial to support optimal growth and development of infants and children.[1] Poor IYCF practices are underlying determinants of malnutrition in children, which can increase the risk of mortality, morbidity, chronic diseases, and hinder future growth and development.[2,3]

In Indonesia, data from the 2017 IDHS showed that the percentages of children aged 6-23 months meeting Minimum Dietary Diversity (MDD), Minimum Meal Frequency (MMF), and Minimum Acceptable Diet (MAD) criteria were 54.3%, 71.8%, and 37.6%, respectively.[4] The 2022 SSGI data indicated that 48.9% of children received Complementary Feeding (CF) before 6 months of age, and 51.1% after 6 months. Additionally, 23.1% of children consumed diverse foods, 69.9% consumed animal protein sources, 58.9% consumed dairy and its products, and 35.8% consumed vitamin A-rich fruits and vegetables. Furthermore, 76.7% of children received supplementary food from the government.[5]

Mothers play a crucial role in providing complementary feeding for infants. Several

determinants influence complementary feeding practices. Mothers face barriers such as children preferring low-nutrient foods, causing confusion in providing appropriate meals. Additionally, mothers' vulnerability to myths or cultural practices that prohibit certain foods like eggs and fish, fearing adverse effects on their children's health. [6] Mothers perceive the benefits of breastfeeding and complementary feeding for their child's healthy growth. They believe that proper IYCF practices can prevent malnutrition in children.[7] Self-efficacy, the belief that mothers can implement appropriate IYCF practices, can motivate or hinder adherence to recommended practices.[1] Cues to action, such as external signals from media, can motivate mothers to improve IYCF practices.[8]

Support from husbands, family, the community, and health workers influences the quality of breastfeeding and complementary feeding practices. Husbands' support, such as buying food for the family and helping with complementary feeding, impacts the success of breastfeeding and complementary feeding. Support from the community, particularly relatives, friends, parents, and neighbors, includes providing food, assisting in childcare, and sharing information or knowledge about breastfeeding and complementary feeding.[2] Support from health workers, through accurate information and health education, can also influence appropriate IYCF practices.[9]

Behavioral theories have been used by many researchers to understand predictors of human behavior and to create conditions that facilitate healthier choices. Existing structured questionnaire have been developed to assess determinants of IYCF practices, such as maternal knowledge, attitudes, and practices. However, they often lack comprehensiveness in addressing multidimensional factors in individual and community factors.[10] The objective of this study was to evaluate the psychometric properties, including validity and internal consistency, of a structured questionnaire assessing factors influencing IYCF practices among mothers. The study specifically focused on how social support from family, community, and health workers, as well as the roles of self-efficacy and self-regulation, affect IYCF practices, using an integrated framework based on SCT and the HBM to provide a comprehensive understanding of individual and community-level determinants impacting these practices.

METHODS

A preliminary qualitative study was conducted between June and August 2023 in the Sedati District, Sidoarjo Regency, East Java, before the development of a structured questionnaire. The objective of this phase was to identify the key determinants influencing IYCF practices among mothers with children aged 6-23 months. Using purposive sampling, ten mothers from Sedati District were selected for in-depth interviews, providing a comprehensive understanding of the factors shaping IYCF practices, particularly from the perspectives of SCT and the HBM. The findings from this qualitative phase were used for shaping the subsequent questionnaire. Themes such as individual perspectives on perceived benefits, barriers, confidence in complementary feeding preparation, and social support were identified and later used to develop targeted questions for the structured survey.[11]

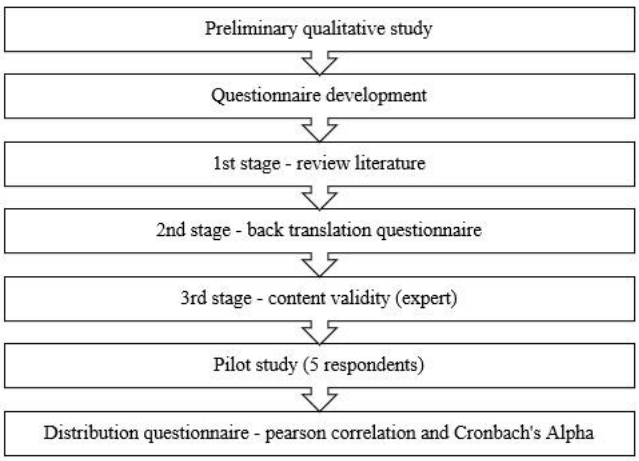

Figure 1. Flow chart of study

The structured questionnaire development took place between May and July 2024, utilizing a cross-sectional design and a basic random sampling technique. The variable were based on integration of behavioral theory in Figure 2. The questions were collected from various validated source to ensure the

comprehensive questionnaire.[12–18] Quantitative data were collected via a structured questionnaire administered to the total 30 respondents. Descriptive analysis was employed to gather information about maternal characteristics (age, education, occupation, economic status, and number of children under five), social support (from family, community, and health workers), observational learning, personal cognitive factors (self-efficacy, self-regulation, outcome expectations, motivation, and knowledge), as well as perceived benefits, barriers, severity, vulnerability, and cues to action concerning IYCF practices for children aged 6-23 months. The operational definition were shown in Table 1.

The first stage a comprehensive review of existing literature on IYCF was conducted using conceptual framework of integrating the SCT and HBM (Figure 1). This review focused on previously validated questionnaires in the domain, providing a foundation for content validity assessment and aiding in identifying relevant constructs and factors. Stage 2, a language expert performed a back translation into Bahasa Indonesia. Stage 3, two expert panel consisting of professionals with expertise in maternal and child nutrition, questionnaire development, and validation methods was assembled. This panel evaluated the content validity of the questionnaire using a four-point Likert scale, offering insights into its relevance (1 = not relevant; 2 = relevant but needs major revision; 3 = relevant but needs minor revision; and 4 = very relevant) , clarity ((1 = not simple; 2 = simple but needs major revision; 3 = simple but needs minor revision; and 4 = very simple), and comprehensiveness ((1 = unclear; 2 = clear but needs major revision; 3 = clear but needs minor revision; and 4 = very clear). A pilot test was conducted using a small sample of mothers (5 mothers). Feedback was gathered regarding the clarity of the questions and any potential challenges in understanding or interpreting them.

Participants were recruited directly during their visits to the monthly Posyandu. The trained research assistant (enumerator) explained the research protocols, providing brief overview of the study, including its significance, objectives, and the importance of the involvement of respondents. The explanation also covered respondent rights and emphasized the voluntary nature of participation. Upon receiving consent from the respondent, they were invited to proceed to the next step. The data analyses for this investigation were calculated using SPSS version 27.0. The percentage, mean, and SD were utilized for the demographic characteristics of the respondents. Pearson correlation were employed to assess the construct validity of the questionnaire. Internal consistency of the questionnaire was evaluated using measures such as Cronbach's alpha. This assessment determined the extent to which items within each construct are correlated, providing a measure of reliability (Supplemetary Table 1.)

Table 1. Operational definitions of Social Cognitive Theory and Health Belief Model for Infant and Young Child Feeding Practices

No.	Variables	Operational Definition
1	Social Support	Social support refers to mother's perception of assistance provided by family, community, and healthcare workers in supporting IYCF practices
2	Observational Learning	Observational learning is the process through which mothers observe, imitate, and replicacte the behaviors of others related to IYCF practice
3	Self - Efficacy	Self efficacy is the mother's belief in her ability to successfully implement appropriate IYC practices, such as preparing and providing proper meals for children aged 6-23 months.
4	Self - Regulation	Self regulation refers to the mother's ability to maintain commitment to health-related goals and to consistently perform recommended IYCF practices
5	Outcome Expectation	Outcome expectation is mother's belief about the health consequences resulting from specific IYCF practices, such as preventing malnutrition or supporting child growth
6	Motivation	Motivation is the driving force behind mother's adherence to IYCF practices.
7	Knowledge	Knowledge refers to mothers' understanding and awareness of appropriate IYCF practices for children aged 6-23 months, including nutritional requirements and feeding recommendations.
8	Perceived Benefits	Perceived benefits are the mothers' recognition of the positive outcomes of appropriate IYCF practices, such as improved child health and development.
9	Perceived Barriers	Perceived barriers are the challenges or obstacles mothers experience when implementing IYCF practices, such as cultural taboos or children's food preferences.
10	Perceived Severity	Perceived severity is the mothers' perception of the seriousness of potential health risks or illnesses associated with poor IYCF practices for children aged 6-23 months.
11	Perceived Vulnerability	Perceived vulnerability refers to mothers' sense of their child's susceptibility to health risks or illnesses related to inappropriate IYCF practices.
12	Cues to Action	Cues to action are external triggers, such as information from media, that encourage mothers to adopt or improve IYCF practices.

Ethical approval for the study was granted by the Ethical Committee of Universitas Nahdlatul Ulama Surabaya (No. 0171/EC/KEPK/UNUSA/2024), on April 17, 2024. The study targeted mothers with children aged 6-23 months who attended the Local Integrated Healthcare Center (Posyandu) in Sedati, Sidoarjo District, East Java, Indonesia.

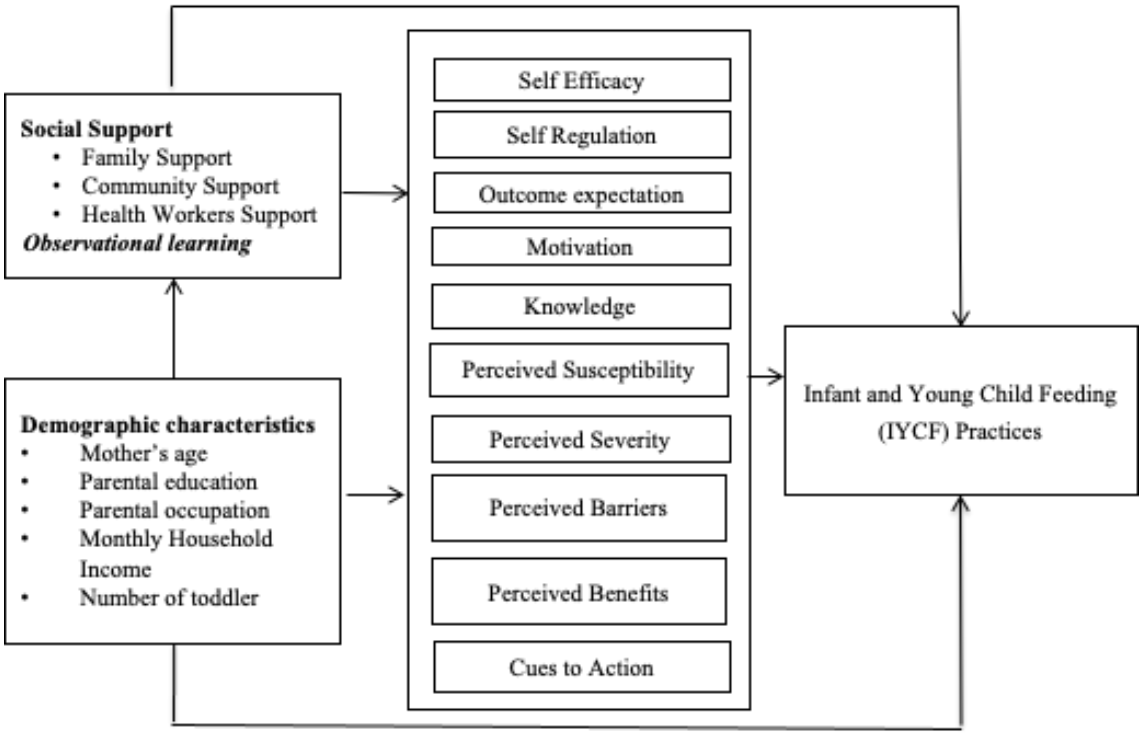

Figure 2. Conceptual Framework Integrating the Social Cognitive Theory and Health Belief Model for Infant and Young Child Feeding Practices

RESULTS

The participants in this study had a mean age of 30.5 years (SD ±7.3). In terms of educational background, a significant portion of the mothers (56.7%) had completed high school. The fathers also displayed a high level of education, with 66.7% having completed high school and 33.3% possessing a university degree or higher. Regarding employment, 60% of the mothers were not working, while the majority of the fathers (76.7%) were employed in the private sector. Household income was relatively balanced, with 56.7% of families earning above IDR 4,518,581 and 43.3% earning below this amount. Most families (90%) had one toddler, while 10% had two toddlers, and none had three or more.

Table 2. Demographic Characteristics

Demographic Characteristics	n (%)
Age, Mean ± SD	30,5 ±7,3
Mother Educational Level	
Primary school or below	0 (0)
Middle school	2 (6,7)
High school	17 (56,7)
University and above	11 (36,7)
Father Educational Level	
Primary school or below	0 (0)
Middle school	0 (0)
High school	20 (66,7)
University and above	10 (33,3)
Mother Occupation	
Not working	18 (60)
Private employee	9 (30)
Civil servants	1 (3,3)
Student	0 (0)
Entrepreneur	0 (0)
Retired	0 (0)
Others....	2 (6,7)

Table 2. Demographic Characteristics *(Lanjutan…)*

Demographic Characteristics	n (%)
Age, Mean ± SD	**30,5 ±7,3**
Father Occupation	
Not working	0 (0)
Private employee	23 (76,7)
Civil servants	1 (3,3)
Student	0 (0)
Entrepreneur	5 (16,7)
Retired	0 (0)
Others....	1 (3,3)
Monthly Household Income (IDR)	
< Rp 4.518.581	13 (43,3)
≥ Rp 4.518.581	17 (56,7)
Number of toddler (under five)	
One	27 (90)
Two	3 (10)
Three	0 (0)

Table 3 showed that family support subscale consisted of 8 items. The result of stage 2 were translation from English to Bahasa Indonesia. Revision were made to the translated version based on the feedback from back-translation process to ensure that the instrument accurately reflected the originial content. The mean score panel validity were 3.5-4 which means need minor revision before distributed to respondent (stage 3). The correlation coefficients for each item ranged from 0.915 to 0.920 if each item had been deleted. Items 1, 2, 5, 6, and 8 showed a high positive correlation with the overall scale, with significance levels ($p < 0.01$), while Item 3 showed a lower correlation ($p = 0.21$). The community support subscale included 6 items. The correlation coefficients ranged from 0.484 to 0.763, with all items significantly correlated with the overall scale ($p < 0.01$). Item 2 demonstrated the highest correlation ($r = 0.763$), whereas Item 7 had the lowest correlation ($r = 0.484$).

Weaker but still significant correlations ($r = 0.439$ and $r = 0.395$, respectively, $p < 0.05$). The self-regulation subscale consisted of 5 items. The item-level correlations with the overall scale ranged from 0.525 to 0.705, with all items showing significant positive correlations ($p < 0.01$). Items 3 and 2 demonstrated the highest correlations ($r = 0.705$ and $r = 0.679$, respectively), while Item 4 had the lowest correlation ($r = 0.525$).

The health workers Support subscale consisted of 8 items. The item-level correlations with the overall scale ranged from 0.296 to 0.787. Items 1, 2, and 5 showed the highest correlations with the overall scale ($r = 0.746$, $r = 0.787$, and $r = 0.720$, respectively, $p < 0.01$), while Item 7 had the lowest correlation ($r = 0.296$, not significant). Item 8 also had a lower but still significant correlation ($r = 0.431$, $p < 0.05$). The observational learning subscale comprised 4 items. The correlation coefficients for each item ranged from 0.489 to 0.515, with all items showing significant positive correlations with the overall scale ($p < 0.01$).

The self-efficacy subscale included 4 items. The item-level correlations with the overall scale ranged from 0.395 to 0.634, with Items 1 and 4 showing the strongest correlations ($r = 0.489$ and $r = 0.634$, respectively, $p < 0.01$). Items 2 and 3 had slightly The outcome expectation subscale consisted of 5 items. Item-level correlations showed wide variability, with Items 1 and 3 having moderate correlations ($r = 0.614$, $p < 0.01$; $r = 0.454$, $p < 0.05$), Item 2 having a weaker correlation ($r = 0.349$), and Items 4 and 5 showing negative correlations ($r = -0.194$ and $r = -0.159$, respectively). The motivation subscale included 8 items. The item-level correlations ranged from -0.190 to 0.696. Items 4, 6, and 2 showed the highest correlations ($r = 0.696$, $r = 0.650$, and $r = 0.561$, respectively, $p < 0.01$), while Items 1, 5, 7, and 8 had low or negative correlations, with Item 8 having the most negative correlation ($r = -0.190$).

The knowledge subscale consisted of 5 items. The item-level correlations were mostly low or negative, with Item 5 showing a significant negative correlation ($r = -0.371$, $p < 0.05$). Item 1 had a very weak positive correlation ($r = 0.210$), while Items 2 and 3 showed negligible or unclear correlations ($r = 0.150$ and $r = 0.010$, respectively). The perceived susceptibility subscale consisted of 2 items. Item-level correlations were modest, with Item 1 showing a correlation of $r = 0.390$ ($p < 0.05$) and Item 2 showing a weaker correlation of $r = 0.200$.

Table 3. Mean Score of Content Validity Expert, Construct Validity Measurement Pearson Correlation, Cronbach's Alpha If Item Deleted, and Cronbach's Alpha For Each Domain (65 Questions; N=30)

Subscale	Items	Relevance	Simplicity	Clarity	p	Cronbach's α if Item Deleted	Cronbach's α for each domain
Family Support	1	4	4	4	0.79**	0.915	0.903
	2	4	4	4	0.81**	0.916	
	3	4	4	3	0.21	0.920	
	4	4	4	3.5	0.70**	0.916	
	5	4	4	3.5	0.64**	0.917	
	6	3.5	4	3	0.68**	0.916	
	7	4	4	4	0.87**	0.915	
	8	4	4	4	0.80**	0.915	
Community Support	1	3.5	4	4	0.521**	0.917	0.904
	2	4	4	4	0.763**	0.917	
	3	4	4	4	0.571**	0.918	
	4	3	4	4	0.510**	0.918	
	5	4	4	4	0.616**	0.917	
	6	4	4	3.5	0.584**	0.917	
	7	4	4	4	0.484**	0.918	
	8	3.5	4	4	0.547**	0.917	
Health Workers Support	1	4	4	3.5	0.746**	0.916	0.886
	2	4	4	4	0.787**	0.916	
	3	4	4	3	0.514**	0.918	
	4	4	4	3.5	0.557**	0.917	
	5	4	4	4	0.720**	0.917	
	6	3.5	4	4	0.652**	0.917	
	7	3.5	4	4	0.296	0.919	
	8	4	4	4	0.431*	0.918	
Observational Learning	1	4	4	4	0.489**	0.918	0.951
	2	4	4	4	0.515**	0.918	
	3	4	4	4	0.515**	0.918	
	4	4	4	4	0.515**	0.918	
Self-efficacy	1	4	4	4	0.489**	0.918	0.811
	2	4	4	4	0.439*	0.918	
	3	4	4	4	0.395*	0.919	
	4	4	4	4	0.634**	0.917	
Self regulation	1	4	4	4	0.594**	0.917	0.943
	2	4	4	4	0.679**	0.916	
	3	4	4	4	0.705**	0.916	
	4	4	4	4	0.525**	0.918	
	5	4	4	4	0.649**	0.917	
Outcome Expectation	1	4	4	4	0.614**	0.917	0.507
	2	4	4	4	0.349	0.919	
	3	4	4	4	0.454*	0.918	
	4	4	4	4	-0.194	0.925	
	5	3	4	4	-0.159	0.925	
Motivation	1	4	4	4	0.285	0.920	0.543
	2	3	4	4	0.561**	0.917	
	3	4	4	4	0.549**	0.917	
	4	4	4	4	0.696**	0.916	
	5	3.5	4	4	0.121	0.922	
	6	4	4	4	0.650**	0.916	
	7	3.5	4	4	0.248	0.921	
	8	3	4	4	-0.190	0.926	
Knowledge	1	4	4	4	0.210	0.920	0.267
	2	4	4	4	.c	0.920	
	3	4	4	4	0.150	0.920	
	4	4	4	4	0.010	0.920	
	5	4	4	4	-0.371*	0.923	
Perceived Susceptibility	1	4	4	4	0.390*	0.919	0.526
	2	3	4	3.5	0.200	0.920	
Perceived Severity	1	3	4	3.5	0.029*	0.920	0.674
	2	4	4	3.5	0.134	0.920	
Perceived Barriers	1	4	4	4	-0.331	0.923	0.855
	2	4	4	3.5	-0.296	0.924	
Perceived Benefits	1	4	4	4	0.236	0.920	0.845
	2	3.5	4	3.5	0.084	0.921	
Cues to Action	1	4	4	4	0.668**	0.916	0.862
	2	4	4	3.5	0.652**	0.917	

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

c Cannot be computed because at least one of the variables is constant.

The perceived severity subscale, consisting of 2 items, had weak item-level correlations, with Item 1 showing a correlation of $r = 0.029$ ($p < 0.05$) and Item 2 showing a correlation of $r = 0.134$. The perceived barriers subscale, also consisting of 2 items, showed negative item-level correlations, with Item 1 showing a correlation of $r = -0.331$ and Item 2 showing $r = -0.296$. These negative correlations suggested that the items might not align well with the overall construct and could require revision. The perceived benefits subscale, consisting of 2 items, had relatively weak item-level correlations, with Item 1 showing $r = 0.236$ and Item 2 showing $r = 0.084$.

DISCUSSION

This study aimed to assess the construct validity of various subscales of a questionnaire designed to evaluate different domains of support and personal efficacy among a sample of 30 respondents. The results of this study highlight the construct validity and reliability of various subscales of the questionnaire, contributing to our understanding of support systems and personal efficacy. The high Cronbach's alpha values and significant Pearson correlations observed across most subscales align with findings from previous research. [19]

The Family Support and Community Support subscales exhibited strong internal consistency. These results are consistent with previous study mentioned that high reliability in scales measuring social support, emphasizing that well-developed scales can accurately capture various dimensions of support.[20] In the context of this study, these reliable measurements further underscore the importance of supportive environments—both familial and communal—in shaping feeding behaviors. As previous research on entertainment-education interventions has shown, caregivers benefit from continuous reinforcement of knowledge through community-based health promotion activities. Similarly, reliable scales measuring social support highlight the critical role of external support systems in promoting sustainable behavior change among caregivers.[21]

The Observational Learning subscale demonstrated that caregivers often adopt feeding behaviors by observing those around them, such as family members, healthcare professionals, and community leaders. Previous studies validating IYCF questionnaires also support the critical role of observational learning. For example, research that assessed child care providers' knowledge, attitudes, and practices related to IYCF found that the questionnaire was effective in capturing these domains. Similarly, the strong alpha score in this study highlights the reliability of the observational learning subscale, underscoring its value in understanding how caregivers acquire and implement IYCF practices.[19]

The high internal consistency of the Self-efficacy subscale highlighted its reliability in measuring maternal confidence in complementary feeding. Self-efficacy is a critical psychological factor that influences a mother's ability to prepare and provide nutritious food for her children. The strong relationship between self-efficacy and IYCF practices is well-supported by existing literature, including a study from Aceh, Indonesia, which emphasized the importance of education, emotional support, and particularly appraisal support in fostering self-efficacy.[22] This connection between self-efficacy and IYCF practices is significant, as it not only determines a mother's belief in her capacity to implement feeding recommendations but also impacts the actual behavior and persistence in the face of challenges. Mothers with high self-efficacy are more likely to maintain positive feeding practices, which leads to better child nutrition outcomes.[23]

The Outcome Expectation subscale, which revealed some variability in correlations is consistent with findings in other studies. Research has shown that outcome expectations—the perceived consequences of one's actions—are influenced by stress levels among caregivers. The study highlighted that higher stress levels in mothers are associated with greater concern about their infant's feeding outcomes, potentially leading to altered feeding practices. A stressed mother may have lower confidence in her ability to breastfeed exclusively, leading to premature introduction of complementary foods.[24]

The Motivation subscale were consistent with study demonstrated by a study which found that emotional support, an intrinsic motivator, was effective in enhancing mothers' confidence and practices. This correlation between theory and empirical evidence underscores the critical role of both intrinsic and extrinsic motivation in improving IYCF outcomes.[22,25] The Knowledge subscale reflects strong internal consistency in measuring maternal knowledge about IYCF, though the item correlations were somewhat lower. Knowledge plays a crucial role in determining feeding practices; mothers with a thorough understanding of IYCF recommendations tend to exhibit better feeding practices. For instance, a study in Ethiopia revealed that 93.8% of mothers with good knowledge demonstrated improved feeding practices. Factors such as education and antenatal care (ANC) follow-

up are significant predictors of this knowledge. Mothers with ANC follow-up are twelve times more knowledgeable about IYCF than those without, and those exposed to IYCF information are 3.66 times more knowledgeable than those not exposed. [26,27]

The Perceived Susceptibility and Perceived Severity subscales, while demonstrating acceptable reliability, showed limited variability in item correlations. This implies that while these measures are reliable, their ability to capture the nuances of perceived susceptibility and severity may need further exploration. A study among adolescent mothers in India highlighted that that mothers who are more informed about health risks, potentially linked to perceived susceptibility, may be more motivated to adhere to recommended feeding practices. Previous research also has shown that mothers' perceptions of the severity of malnutrition can significantly impact their feeding practices. For example, a study in Ethiopia found that mothers who had ANC follow-up not only had better knowledge of IYCF recommendations but also a heightened perception of malnutrition's severity. This perception positively influenced their adherence to feeding recommendations.[28,29]

The lower reliability observed in the Perceived Benefits subscale compared to Perceived Barriers aligns with previous who noted that benefits and barriers may impact the reliability of measures differently. Finally, the Cues to Action subscale, also demonstrated vital in influencing health behavior change. The significant Pearson correlations across items validate the measurements and reflect the robust nature of the subscales, aligning well with theoretical frameworks such as the SCT and HBM. The high reliability of constructs like Self-regulation and Self-efficacy supports the HBM's emphasis on individual beliefs and perceived control in health behavior.[30,31]

However, weaknesses in the Outcome Expectation and Perceived Benefits subscales reveal variability in correlations and lower reliability, which may indicate challenges in measuring these constructs consistently. This is particularly relevant given the HBM's focus on perceived benefits and barriers. The small sample size of respondents also limits the generalizability of the findings, potentially affecting the applicability of the results to broader populations.

CONCLUSION

In conclusion, this study effectively demonstrated the construct validity and internal consistency of the questionnaire's subscales, revealing high reliability in measures such as Family Support, Community Support, Self-efficacy, and Self-regulation, which align with established theories such as the SCT and HBM. The strong psychometric properties of these subscales, evidenced by high Cronbach's alpha values and significant Pearson correlations, underscore the questionnaire's robustness in capturing various dimensions of support and personal efficacy. However, future research should address the variability observed in the Outcome Expectation and Perceived Benefits subscales and consider expanding the sample size to enhance the generalizability of the findings. Additionally, refining the measures and incorporating diverse populations could provide a more comprehensive understanding of these constructs and improve the applicability of the results to broader contexts.

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Supplementary Table 1. Mean score for SCT and HBM construction among 30 respondents

Construct	Items	Questions	Mean (SD)
Family Support	1	My family (husband, parents, mother-in-law, siblings) advised me to attend education regarding providing various complementary foods	3.27 (0.45)
	2	My family (husband, parents, mother-in-law, siblings) participates in getting information regarding providing various complementary foods	3.20 (0.40)
	3	My family (husband, parents, mother-in-law, siblings) provides the help and emotional support I need to prepare various complementary foods	3.20 (0.61)
	4	My family (husband, parents, mother-in-law, siblings) motivates me to prepare a variety of complementary foods	3.33 (0.47)
	5	My family (husband, parents, mother-in-law, siblings) appreciates my efforts to prepare a variety of MPASI	3.30 (0.46)
	6	My family (husband, parents, mother-in-law, siblings) respects my decision to prepare a variety of complementary foods	3.23 (0.50)
	7	My family is willing to help me make various complementary foods	3.23 (0.43)
	8	My family fully supports the costs of making various complementary foods	3.23 (0.50)
Community Support	1	My friends/neighbors helped me find information about the right complementary foods	3.00 (0.52)
	2	My friend/neighbor gave me advice when I had problems with complementary foods	3.13 (0.34)
	3	My friends/neighbors listen to my complaints when there are problems making the right complementary foods	3.07 (0.25)
	4	I can invite friends/neighbors to share stories about my child's complementary foods process	3.10 (0.48)
	5	My friends/neighbors praised my efforts to prepare a variety of complementary foods	3.10 (0.40)
	6	Friends/neighbors appreciate my decision to prepare a variety of complementary foods	3.13 (0.43)
	7	My friends/neighbors are willing to help by giving or lending items needed for complementary foods	2.83 (0.64)
	8	My friends/neighbors are willing to help look after my child while I prepare complementary foods	2.93 (0.52)
Health Workers Support	1	Health workers provide detailed explanations about the correct provision of complementary foods	3.23 (0.50)
	2	Health workers answered my questions regarding complementary foods wholeheartedly	3.27 (0.45)
	3	The health workers handled my emotions very well	3.20 (0.40)
	4	I feel that health workers care about me as a person	3.17 (0.46)
	5	Health workers believe that I am able to prepare the right complementary foods	3.10 (0.30)
	6	Health workers ensure that I really understand the benefits of preparing various complementary foods	3.13 (0.34)
	7	Health professionals accepted my choice to follow their recommendations or not	3.00 (0.37)
	8	Health workers listened to me about the complaints I experienced during the complementary foods process	3.07 (0.36)
Observational Learning	1	I have a role model for the practice of giving complementary foods on social media	3.17 (0.37)
	2	I observed the complementary foods food menu given by my role model on social media	3.07 (0.36)
	3	I started copying my role models' cooking menus on social media	3.07 (0.36)
	4	I want to present a variety of complementary foods like my role models on social media	3.07 (0.36)

Construct	Items	Questions	Mean (SD)
Self-efficacy	1	I know how to prepare various complementary foods	3.20 (0.40)
	2	I know how to give complementary foods according to signals of hunger and fullness in children	3.13 (0.50)
	3	I am able to provide hygienic complementary foods	3.20 (0.40)
	4	I am able to provide complementary foods with the appropriate frequency	3.20 (0.40)
Self regulation	1	I feel I have to be responsible for my child's growth and development	3.53 (0.50)
	2	I have always consistently not given unhealthy food to my children	3.43 (0.56)
	3	I always consistently provide a variety of complementary foods	3.43 (0.50)
	4	I always consistently give complementary foods according to the frequency	3.47 (0.50)
	5	I always consistently give complementary foods in appropriate portions	3.37 (0.49)
Outcome Expectation	1	If I provide a variety of complementary foods , my child will be able to grow and develop optimally	3.40 (0.49)
	2	If I give a variety of complementary foods , I feel like I am a good mother	3.27 (0.45)
	3	If I give a variety of complementary foods , I feel I have done the best for my child	3.33 (0.54)
	4	If I give a variety of complementary foods , my child is still hungry	2.20 (0.71)
	5	If I give a variety of complementary foods , my child will wake up more often at night	2.33 (0.75)
Motivation	1	I give complementary foods because breast milk alone is not enough	3.07 (0.78)
	2	I give children complementary foods so they can grow and develop	3.50 (0.50)
	3	I will continue to learn about how to give good complementary foods for babies	3.57 (0.50)
	4	My family's attention makes me enthusiastic about giving complementary foods to my child	3.40 (0.49)
	5	My husband was indifferent when I gave complementary foods because he thought it was a normal thing to do	2.30 (0.79)
	6	Health workers and Posyandu cadres in my area provides information about complementary foods and giving encouragement to breastfeeding mothers	3.23 (0.50)
	7	If I'm outside the house with environment of many people, then I delay giving complementary foods to my baby because it's a hassle	2.43 (0.77)
	8	I am interested in buying ready-to-eat baby porridge which is sold on the side of the road	2.37 (0.76)
Knowledge	1	Babies should continue to breastfeed until at least 2 years of age or beyond.	0.90 (0.30)
	2	Complementary foods should be introduced to babies starting at 6 months of age.	1.00 (0.00)
	3	Babies aged 6-23 months need to consume foods from 4 or more food groups.	0.97 (0.18)
	4	Babies require foods that are rich in iron.	0.97 (0.18)
	5	Sick babies need additional complementary foods for better recovery.	0.87 (0.34)
Perceived Susceptibility	1	I worry that my child will experience malnutrition if not provided with appropriate complementary foods	3.07 (0.45)
	2	I fear the possibility of my child experiencing malnutrition in the future.	3.03 (0.41)
Perceived Severity	1	I am scared at the thought of children suffering from malnutrition.	3.00 (0.26
	2		3.07 (0.45)

Construct	Items	Questions	Mean (SD)
		I believe my family's life will change if my child experiences malnutrition.	
Perceived Barriers	1	I feel that I don't have enough time to prepare complementary foods according to my child's needs.	2.10 (0.40)
	2	I feel that I have other problems that seem more important than preparing and feeding my child	1.97 (0.55)
Perceived Benefits	1	I believe that preparing hygienic MPASI can prevent infections in children.	3.20 (0.55)
	2	I believe that giving MPASI at the right frequency can reduce the risk of malnutrition.	3.10 (0.54
Cues to Action	1	Information from TV, radio, and the internet about Infant and Young Child Feeding (IYCF) is very helpful.	3.30 (0.46)
	2	Local governments are actively promoting improved IYCF practices.	3.20 (0.40)