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Factors Associated with Maternal Preference for Soy-Based Complementary Infant Feeding in Yaounde: A Study of 406 Mother-Infant Pairs

Déterminants de la Préférence des Mères pour le Soja dans l'Alimentation Complémentaire des Nourrissons à Yaoundé : Une étude de 406 Couples Mère-Enfant

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ABSTRACT

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Introduction. Nutrition during the first 1,000 days is essential for child growth and development. In Cameroon, where child malnutrition causes high morbidity and mortality, complementary feeding choices significantly impact health outcomes. While soy-based porridge ("soy pap") is a common local complementary food, the determinants driving maternal preference for it are not well understood. This study examined sociodemographic and feeding-practice factors associated with preference for soy-based complementary feeding among mother-infant pairs in Yaoundé. **Method.** A cross-sectional study of 406 mother-infant pairs at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital (April–June 2018) reanalyzed structured questionnaire data on socio-demographic, health, and dietary variables. Factors associated with soy-based feeding preference were identified using bivariate tests (Chi-squared/Fisher's exact) and confirmed through multivariable logistic regression and an ordinal sensitivity model in R. **Results.** Soy-based complementary feeding was used by 77.3% of infants. Household education was the strongest independent predictor of soy preference (adjusted OR = 3.35, 95% CI 1.52–7.42, $p = 0.003$). Maternal age showed a borderline inverse association (adjusted OR = 0.95 per year, $p = 0.060$), which strengthened in the ordinal sensitivity model ($p = 0.003$). Household socio-economic status, breastfeeding practices, hygiene, vitamin A supplementation, and attendance at nutrition education were not independently associated with soy preference. Model discrimination was modest (AUC = 0.64). **Conclusion.** In this urban Cameroonian population, a preference for soy-based complementary feeding was driven independently by higher household education and younger maternal age, suggesting that nutritional awareness rather than household wealth shapes food choices and can guide targeted nutrition counseling.

RÉSUMÉ

Introduction. La nutrition durant les 1 000 premiers jours de vie est essentielle pour la croissance et le développement de l'enfant. Au Cameroun, où la malnutrition infantile entraîne une morbidité et une mortalité élevées, le choix des aliments complémentaires influence significativement les résultats de santé. Bien que la bouillie de soja soit un aliment complémentaire local courant, les facteurs déterminant la préférence des mères à son égard restent peu compris. Cette étude a examiné les facteurs sociodémographiques et les pratiques alimentaires associés à la préférence pour l'alimentation complémentaire à base de soja au sein de couples mère-enfant à Yaoundé. **Méthode.** Une étude transversale menée auprès de 406 couples mère-enfant à l'Hôpital Gynéco-Obstétrique et Pédiatrique de Yaoundé (avril–juin 2018) a réanalysé les données d'un questionnaire structuré portant sur les variables sociodémographiques, sanitaires et alimentaires. Les facteurs associés à la préférence pour l'alimentation au soja ont été identifiés par des tests bivariés (Chi²/Fisher) puis confirmés par régression logistique multivariée et modèle d'analyse de sensibilité ordinal sous R. **Résultats.** L'alimentation complémentaire à base de soja était utilisée chez 77,3 % des nourrissons. Le niveau d'instruction du ménage s'est révélé être le principal facteur prédictif indépendant de cette préférence (OR ajusté = 3,35 ; IC 95 % 1,52–7,42 ; $p = 0,003$). L'âge maternel a montré une association inverse à la limite de la significativité (OR ajusté = 0,95 par an ; $p = 0,060$), qui s'est renforcée dans le modèle ordinal ($p = 0,003$). Le niveau socio-économique du ménage, les pratiques d'allaitement, l'hygiène, la supplémentation en vitamine A et la participation à des séances d'éducation nutritionnelle n'étaient pas associés de manière indépendante à la préférence pour le soja. La capacité discriminante du modèle était modeste (AUC = 0,64). **Conclusion.** Dans cette population urbaine camerounaise, la préférence pour le soja était liée au niveau d'instruction plus élevé du ménage et au jeune âge maternel, montrant que la sensibilisation nutritionnelle, plus que les revenus, guide les choix alimentaires.

HIGHLIGHTS

What is known about the subject. Soy-based porridge is a traditional Cameroonian complementary food, yet the factors driving mothers' preference for it remain poorly understood despite the crucial role of infant nutrition in preventing child malnutrition.

The question addressed in this study. This cross-sectional study evaluated 406 mother-infant pairs at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital using bivariate tests and multivariable regression models in R to identify sociodemographic and practice-related factors associated with preference for soy-based complementary feeding.

What this study adds to our knowledge. Soy-based complementary feeding was prevalent, with higher household education and younger maternal age emerging as the key independent predictors of maternal preference, while marital status and feeding frequency lost significance after adjustment.

Implications for practice. Nutrition counseling should target older or less-educated mothers with tailored educational messaging to improve the adoption of nutrient-dense complementary foods like soy-based porridge.

INTRODUCTION

Nutrition is a fundamental pillar of life and, therefore, is important for health and development throughout the entire lifespan [1]. According to the World Health Organization (WHO), adequate nutrition is vital during the first 1000 days of life. It drives physical growth and mental development and prevents the future development of diseases [2]. Inadequate nutrition would lead to nutritional deficiencies and malnutrition [3–5]. Infants and children are the most vulnerable group, due to their low level of immunity, small size, and dependence on parents [4]. Although the global under-five mortality rate decreased between 1990 and 2020 from 93 to 37 deaths per 1000 live births, respectively, Sub-Saharan Africa still registers high death rates [6]. In Cameroon, malnutrition is a major contributor to infant morbidity and mortality [7,8]. However, there is a gap in recent data about the mortality related to malnutrition among children under five in Cameroon. In 2013, about 38% of deaths in children under five years old in Cameroon were linked to malnutrition, and one out of three children was stunted [9].

Meanwhile, it is well known that child malnutrition, especially in vulnerable groups, is caused not only by food insecurity and poor nutritional habits but also by socio-demographic factors related to the nutrition of the mother during gestation, breastfeeding, poor weaning methods, lack of adequate food hygiene, lack of nutritional knowledge of mothers during and after gestation, and initiation and /or type of complementary feeding [5,10–12].

Complementary feeding is the most effective intervention for child growth [11]. According to the WHO and the American Academy of Pediatrics, mothers are encouraged to practice exclusive breastfeeding for at least 6 months before introducing complementary feeding, and not before 4 months of age, with continued breastfeeding until

2 years of age or older [13,14]. Cameroon is not an exception to this recommendation. Thus, women in Cameroon receive nutrition education during antenatal care, during gestation, and after delivery: Sessions usually include instruction on exclusive breastfeeding for at least 06 months before introducing complementary feeding, when to start complementary feeding, types of complementary food, and appropriate weaning practices. Complementary feeding is the process of giving infants other foods or drinks to complement breast milk, due to the inability of breast milk alone to meet the nutritional needs of the growing infants [13].

Previous and recent studies show that early initiation of complementary foods and/or the type of food could aggravate child malnutrition [15–19]. Thus, the need to investigate the type of complementary food, as well as factors that could influence the choice of a complementary food, becomes pressing.

METHODOLOGY

Study design and data source

A cross-sectional study was conducted between April and June, 2018 at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital.

This study draws on data from the same cross-sectional survey conducted at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital (YGOPH), previously used to examine maternal beliefs, attitudes, and practices toward colostrum feeding and their associated factors [4]. The present analysis is a distinct, secondary investigation using the same study population, setting, and data collection methodology, but focused on a different outcome and set of variables, namely, the factors associated with maternal preference for soy-based complementary infant feeding, which was not examined in the earlier publication.

Study site and population

The YGOPH is a reference health facility created in 2002 and specializes in the care of mothers and children. It is situated at Djoungolo District, Ngousso, in Yaounde 5, Mfoundi Division, Center region. Study participants were mothers at the antenatal care unit and the maternity ward who either came to the hospital for routine vaccination of their child or for a pediatric consultation and who provided signed informed consent. Mothers were excluded from the study if they were pregnant, in a critical condition, or had difficulty completing the questionnaire.

Sample size

The sample size was determined using the Lorentz formula, based on the assumption from previous studies that 60% of mothers were not knowledgeable about breastfeeding colostrum to their babies as related to the first compound of the study [4], a 5% marginal error, a 95% CI, and a 10% non-response rate. Lorentz formula:

$$n = (Z_{\alpha})^2 p q / d^2$$

$$n = (1.96)^2 (0.6) (0.4) / 0.0025$$

$$n = 368.7936,$$

with 10% of 368.7936 = 36.87936, the final sample size was (n) = 368.7936 + 36.87936 = 406

Data collection and analysis

A pretested structured interviewer questionnaire was used for data collection. Data on socio-demographic characteristics, complementary feeding, soy-based food use, breastfeeding practices, etc., were used to compare mothers' soy-based complementary feeding and other characteristics. Before analysis, data were cleaned, coded, and entered into Excel 2016 and R Software version 4.5.3 (2026-03-11 ucrt) for statistical analysis. The Chi-Square test and multivariate analysis were used to identify factors associated with preferences for soy-based complementary foods.

Ethical consideration

Ethical clearance was obtained from the institutional ethics committee for human health research, with authorization n°744/CIERSH/DM/2018.

RESULTS

Socio-demographic characteristics of mother-infants

The sample comprised 406 mother–infant pairs. Mothers had a mean age of 28.1 years (SD 5.4), and the majority (61%) were aged 25–34 years. Infants had a mean age of 6.6 months (SD 6.0), with 81% under 9 months and 43% under 6 months. All caretakers in the sample were the infant's mother. Nearly all participants were Cameroonian (100%). Marital status was evenly distributed between single (46%) and married (41%) mothers, with a smaller proportion engaged (13%). By household education and socio-economic profile, most households had at least secondary education (95%), and over half (61%) had at least one parent with higher education; correspondingly, 54% of households were classified as higher socio-economic status. Fathers were predominantly formally employed (51%), while mothers were most commonly unemployed/housewives (41%) or formally employed (24%). Participants resided across several neighborhoods, most densely in Ngousso (21%). Table I presents more details of socio-demographic characteristics of the 406 mother–infant pairs included in the study, reported as frequencies (%) for categorical variables.

Table I: Socio-demographic characteristics of the study sample (N = 406)

Characteristic	N = 406 ¹
Mother's age, years	28.1 (5.4)
Mother's age group	
<=19	20 (5.0%)
20-24	82 (20%)
25-29	140 (35%)
30-34	103 (26%)
35+	56 (14%)
Infant's age, months	6.6 (6.0)
Infant's age group	
0-5m	162 (43%)
6-8m	140 (38%)
9-11m	47 (13%)
12-23m	6 (1.6%)
24m+	18 (4.8%)
Primary caretaker	
Mother	406 (100%)
Nationality	
Cameroonian	402 (100%)
Other	1 (0.2%)
Marital status	
Engaged	51 (13%)
Married	167 (41%)
Single	186 (46%)
Mother's occupation group	
Agriculture	3 (0.7%)
Formal/salaried	98 (24%)
Informal/self-employed	54 (13%)
Other	19 (4.7%)
Student	67 (17%)
Unemployed/housewife	165 (41%)
Father's occupation group	
Agriculture	17 (4.5%)
Formal/salaried	192 (51%)
Informal/self-employed	128 (34%)
Other	17 (4.5%)
Student	11 (2.9%)
Unemployed/housewife	15 (3.9%)
Household education level	
Primary	22 (5.5%)
Secondary	136 (34%)
Higher	243 (61%)
Household socio-economic status (SES)	
Lower SES	46 (11%)
Middle SES	139 (34%)
Higher SES	221 (54%)
Neighborhood of residence	
Emana	17 (4.8%)
Essos	10 (2.8%)
Etoudi	12 (3.4%)
Manguier	15 (4.2%)
Messassi	13 (3.7%)
Mimboman	12 (3.4%)
ngousso	9 (2.5%)
Ngousso	76 (21%)
Soa	8 (2.2%)
Other/rare	184 (52%)

¹Mean (SD); n (%)



Characteristics analysis of mother-infants by soy-based complementary feeding

Table II presents the distribution of socio-demographic, feeding-practice, and health-related characteristics by soy-based complementary feeding preference (No soy, $n = 92$; Any soy use, $n = 314$), with unadjusted p -values from Pearson's chi-squared or Fisher's exact test.

Soy-based complementary feeding was used by 314 of 406 infants (77.3%). In unadjusted comparisons, soy use was more common among younger mothers (e.g., 90% among mothers ≤ 19 years vs. 70% among mothers ≥ 35 years; $p = 0.063$) and among engaged mothers (90%) compared with married (74%) or single (76%) mothers ($p = 0.055$). A higher proportion of infants meeting the WHO minimum meal-frequency benchmark used soy (64% vs. 35%; $p = 0.033$), although this comparison was based on a small subsample ($n = 81$) with an interpretable frequency response. No other characteristic, including infant age, nationality, occupation, household education or socio-economic status, breastfeeding practice, hygiene, vitamin A supplementation, nutrition-education attendance, timing of complementary feeding introduction, or recent diarrhea, reached statistical significance at the bivariate level.

Table II: Sample characteristics by soy preference

Characteristic	Overall N = 406 ¹	No N = 92 ¹	Yes N = 314 ¹	P
Mother age group				0.063
<=19	20 (5.0%)	2 (2.2%)	18 (5.8%)	
20-24	82 (20%)	15 (16%)	67 (22%)	
25-29	140 (35%)	26 (29%)	114 (37%)	
30-34	103 (26%)	31 (34%)	72 (23%)	
35+	56 (14%)	17 (19%)	39 (13%)	
Baby age group				0.5
0-5m	162 (43%)	38 (48%)	124 (42%)	
6-8m	140 (38%)	24 (30%)	116 (39%)	
9-11m	47 (13%)	12 (15%)	35 (12%)	
12-23m	6 (1.6%)	2 (2.5%)	4 (1.4%)	
24m+	18 (4.8%)	3 (3.8%)	15 (5.1%)	
Nationality				0.2
Cameroonian	402 (100%)	91 (99%)	311 (100%)	
Other	1 (0.2%)	1 (1.1%)	0 (0%)	
Marital status				0.055
Engaged	51 (13%)	5 (5.4%)	46 (15%)	
Married	167 (41%)	43 (47%)	124 (40%)	
Single	186 (46%)	44 (48%)	142 (46%)	
Mother occupation				0.4
Agriculture	3 (0.7%)	1 (1.1%)	2 (0.6%)	
Formal/salaried	98 (24%)	28 (30%)	70 (22%)	
Informal/self-employed	54 (13%)	14 (15%)	40 (13%)	
Other	19 (4.7%)	2 (2.2%)	17 (5.4%)	
Student	67 (17%)	15 (16%)	52 (17%)	
Unemployed/housewife	165 (41%)	32 (35%)	133 (42%)	
Household education				0.2
Primary	22 (5.5%)	8 (8.8%)	14 (4.5%)	
Secondary	136 (34%)	32 (35%)	104 (34%)	
Higher	243 (61%)	51 (56%)	192 (62%)	
Household SES				0.6
Lower SES	46 (11%)	8 (8.7%)	38 (12%)	
Middle SES	139 (34%)	31 (34%)	108 (34%)	
Higher SES	221 (54%)	53 (58%)	168 (54%)	
Exclusive breastfeeding practice				0.7
Adequate	310 (76%)	69 (75%)	241 (77%)	
Suboptimal	96 (24%)	23 (25%)	73 (23%)	
Hygiene adequate				0.4
Adequate	324 (82%)	70 (79%)	254 (83%)	
Suboptimal	72 (18%)	19 (21%)	53 (17%)	
Child received Vit A suppl.	306 (81%)	64 (75%)	242 (83%)	0.10
Attend a nutritional education meeting,	181 (45%)	45 (50%)	136 (44%)	0.3
Complementary feeding timing				0.12
Early (<6m)	197 (54%)	50 (62%)	147 (52%)	
Timely (at 6m)	167 (46%)	31 (38%)	136 (48%)	
Minimal meal freq. met	47 (58%)	6 (35%)	41 (64%)	0.033
Diarrhea during the past 2 weeks	33 (9.3%)	9 (10%)	24 (9.0%)	0.7

¹n (%)²Fisher's exact test; Pearson's Chi-squared test

Associations of mother-infant characteristics and soy-based complementary feeding

• Bivariable analysis

Table III presents a summary of unadjusted association tests (Pearson's chi-squared or Fisher's exact test, as appropriate) between each candidate predictor and soy-based complementary feeding preference, ranked by p-value, to guide variable selection for the multivariable model.

Marital status ($p = 0.055$), maternal age group ($p = 0.063$), and minimum meal-frequency adequacy ($p = 0.063$) showed the strongest unadjusted associations with soy preference, followed by vitamin A supplementation ($p = 0.14$) and timing of complementary feeding introduction ($p = 0.15$).

Table III: Bivariate associations with soy preference

variable	p_value
Mother's age group	0.0627
Baby age group	0.4710
Nationality	0.2283
Marital status	0.0550
Mother occupation	0.3544
Household education	0.2465
Household SES	0.6191
Exclusive breastfeeding practice	0.8351
Hygiene adequate	0.4693
Child Vit A supplementation	0.1386
Attend the nutritional education meeting	0.3638
Complementary feeding timing	0.1522
Minimal meal frequency met	0.0629
Diarrhea during the past 2 weeks	0.8369

In unadjusted comparisons, three variables approached or reached conventional significance ($p < 10\%$): Marital status with $p = 0.055$, soy use was notably higher within engaged mothers (90.2%) than married (74.3%) or single caregivers (76.3%); maternal age group with $p = 0.063$, a decreasing gradient of soy use with increasing maternal age, from 90% in mothers ≤ 19 years to 69.6% in mothers ≥ 35 years); and meeting the WHO minimum meal-frequency adequacy with $p = 0.063$, met among 64% of soy users vs. 35% of non-users, though this comparison rests on a small subsample of 81 infants aged 6–23 months with an interpretable frequency response). Continuous maternal age was significantly lower among soy users (Wilcoxon $p = 0.005$), consistent with the categorical finding. Vitamin A supplementation ($p = 0.14$) and the timing of complementary feeding introduction ($p = 0.15$) showed weaker, non-significant trends in the same direction, which were subsequently confirmed in the adjusted model. Household education showed no bivariate association ($p = 0.2$) but, as described below, emerged as significant only after adjustment, consistent with confounding by other household characteristics at the bivariate level. All variables with $p < 0.2$ were retained as candidates for the multivariable model in Table IV.

Table IV: Multivariable logistic regression — adjusted odds ratios

Variables	OR	conf.low	conf.high	P
Mother age (years)	0.951	0.902	1.002	0.060
Baby age (months)	1.022	0.976	1.081	0.398
Household education: Linear	3.348	1.515	7.418	0.003
Household education: Quadratic	0.584	0.316	1.063	0.080
Household Middle SES	0.609	0.178	1.763	0.388
Household Higher SES	0.515	0.153	1.429	0.236
Exclusive breastfeeding practice: Suboptimal	1.249	0.619	2.586	0.541
Complementary feeding timing: at 6m	1.812	0.973	3.409	0.062
Attend the nutritional education meeting: Yes	0.791	0.450	1.386	0.412

Hosmer-Lemeshow goodness-of-fit: $\chi^2 = 11.590$, $df = 8$, $p = 0.170$. AUC = 0.644.

• Multivariable logistic regression adjusted odds ratios

Adjusted odds ratios (aOR) with 95% confidence intervals from a multivariable logistic regression model were fit for soy-based complementary feeding preference ($n = 325$ complete cases), including maternal age, infant age, household education, household socio-economic status, exclusive breastfeeding practice, timing of complementary feeding introduction, and nutritional-education attendance (Table 4).

Two factors stood out as independently associated with soy preference. Household education was the strongest and only statistically significant predictor: each step up the ordered education scale was associated with more than triple the odds of soy use (adjusted OR = 3.35, 95% CI 1.52–7.42, $p = 0.003$, linear trend term). Maternal age showed a borderline inverse association (adjusted OR = 0.95 per year; 95% CI, 0.90–1.00; $p = 0.060$). Each additional year of maternal age was associated with slightly lower odds of soy use, echoing the bivariate finding. Timely introduction of complementary foods at 6 months (vs. earlier) was associated with a borderline positive effect (adjusted OR = 1.81; 95% CI, 0.97–3.41; $p = 0.062$). Infant age, household socio-economic status, exclusive breastfeeding practice, and attendance at nutritional education were not independently associated with soy use after accounting for the above factors (all $p > 0.2$).

Multicollinearity was not a concern (all GVIF^{1/2} < 1.2). The model fit the data adequately (Hosmer-Lemeshow $\chi^2 = 11.6$, $df = 8$, $p = 0.17$, indicating no evidence of lack of fit). Still, discrimination was modest (AUC = 0.64), indicating that while these factors are meaningfully associated with soy preference, unmeasured

factors (e.g., taste, cost, product availability, or specific counseling received) likely also play a substantial role in individual feeding choices.

• Sensitivity analysis: ordinal regression

To verify robustness, an ordinal logistic regression (proportional-odds model) was fitted to a 3-level outcome that distinguished no soy use, soy in one source (pap additive or oil), and soy in both sources, a rough proxy for the depth of soy preference (Table 5).

This model ($n = 366$) reproduced the same two key associations, with maternal age reaching clearer significance; each additional year of maternal age was associated with lower odds of a higher soy-preference category (OR = 0.94, coefficient = -0.063 , $p = 0.003$), and household education remaining directionally consistent (linear term OR = 2.47, coefficient = 0.90, $p = 0.010$). Household socio-economic status and exclusive breastfeeding practice remained non-significant, mirroring the primary model. The convergence of the binary and ordinal specifications strengthens confidence that household education and maternal age are genuine, rather than model-specific, correlates of soy-based complementary feeding preference in this population.

DISCUSSION

This study aimed to examine feeding practices among a sample of 406 mother–infant pairs at Yaoundé Gyneco-Obstetric and Pediatric Hospital, in the capital city of Cameroon. Complementary feeding with soy was highly prevalent (77.3%), and two factors emerged as strong, independent correlates of soy preference across both binary and ordinal specifications of the outcomes: higher household education levels and younger maternal age. These findings align with the broader literature on complementary feeding in sub-Saharan Africa and beyond, while diverging in one specific respect (Ref).

The finding that household education was the strongest independent predictor of soy-based complementary feeding preference (aOR = 3.35, 95% CI 1.52–7.42) is consistent with the broader complementary-feeding literature. In the largest comparable study identified, a multilevel analysis of Demographic and Health Survey data from 19 sub-Saharan African countries ($n = 60,266$) found that higher maternal education increased the odds of appropriate complementary feeding practices [20]. A more recent analysis, based on machine learning and using DHS data from eight sub-Saharan African countries, also identified maternal education level alongside household wealth as one of the key predictors of appropriate complementary feeding [21]. Outside of Africa, education and literacy have also been linked to improved dietary diversity in Sindh Province, Pakistan [22]. Similarly, a study of rural Indian households found that women's education level and their role in household decision-making were key factors influencing the diversity of protein sources [23].

Household poverty is a well-documented determinant of children's nutritional status in Cameroon, where multidimensional poverty increases the risk of both chronic and acute malnutrition more than fourfold in rural areas [12]. However, our study in Yaoundé, an urban area,

showed that household socioeconomic status (SES) was not significantly associated with preference for soy after accounting for education level, despite the two variables being correlated. This suggests that awareness or nutritional knowledge, often proxied by education level, may play a more important role than simple purchasing power in the decision to use soy specifically. This interpretation is at least partly consistent with regional data on food affordability: an analysis across six countries in Southern and Eastern Africa found that legumes such as soy and peanuts rank from the least expensive sources of dietary energy, far below most animal-source foods. However, the affordability of nutrient-rich foods overall varies by household wealth decile [24]. Data on the market accessibility of soy-based foods is scarce in Cameroon. On the other hand, soy may be more affordable on the Cameroonian market than animal proteins. Soy consumption patterns may also be more closely linked to gender and cultural factors than to socioeconomic status per se [25].

The inverse correlation between maternal age and preference for soy, where younger mothers were more likely to adopt soy-based complementary feeding, a relationship that strengthened in the ordinal sensitivity model ($p = 0.003$), represents a particularly interesting divergence from parts of the existing literature and warrants careful examination rather than being overlooked. In a study conducted in Sindh Province, Pakistan, mothers aged 25–29 were more likely to provide greater dietary diversity than younger mothers [22]. In a study conducted in Finote Selam, Ethiopia, married women, who were generally older and in more stable circumstances, were more likely to initiate timely complementary feeding than single women [26]. However, our study did not find a statistically significant association between marital status and soy-based preference in complementary feeding; only a weak trend was evident in the bivariate results, with working mothers having the highest soy use (90%). Yaoundé, the capital of Cameroon, is an urban area; consequently, young mothers may be more exposed to information from health workers in the health facilities, social media, or peer networks promoting non-animal protein sources for infants. This trend is consistent with findings from a sub-Saharan African study using DHS data, which also identified media exposure as an independent predictor of appropriate complementary feeding [20]. Young mothers may have more limited financial resources and thus turn to soy as a less expensive protein alternative to animal-source foods. This pattern corroborates broader research describing soy and legumes as accessible and affordable complementary foods in African contexts [27]. Younger, first-time mothers might be more receptive to new counseling messages than more experienced mothers [28]; unfortunately, our study didn't analyze mothers' parity in relation to soy-product use.

The overall high prevalence of soy consumption in our sample (77.3%) is best understood in the context of local dietary traditions. A study of children aged 6 to 24 months in Yaoundé found that three-quarters of mothers introduced complementary foods using “pap,” the same

fermented cereal base to which soy was added in our study. However, earlier studies also showed that more than half of children did not receive animal-source foods, fruits, or vegetables, underscoring a long-standing reliance on cereal-based complementary feeding with limited protein diversity in urban and rural settings in Cameroon [11,29]. Recent scientific literature in food science explicitly cites “soy pap” (a porridge made from corn and soybeans) as one of the two dominant traditional complementary foods in Cameroon, alongside plain corn pap [30]. This directly confirms that soy-enriched pap is a recognized, pre-existing cultural practice rather than a new behavior, thereby strengthening the external validity of using soy preference as a significant outcome variable for this population.

Several factors that are often significant predictors of complementary feeding and infant nutrition outcomes in other regions did not emerge as significant in the adjusted models of our study: household socioeconomic status, exclusive breastfeeding, hygiene, vitamin A supplementation, and participation in nutrition education sessions. This finding diverges in part from DHS data in sub-Saharan Africa, where breastfeeding status, postnatal follow-up, and delivery in a health facility were all independently associated with appropriate complementary feeding [20,21]. It's important to explain that, in our study sample, ceiling effects limited the explanatory power: 76% of infants already met the composite “adequate” breastfeeding criterion, and 82% met the hygiene adequacy criterion. At the same time, outcome specificity further distinguished our analysis, since, unlike most studies modeling composite measures of complementary feeding adequacy, we isolated soy preference as a single-ingredient choice likely driven more by taste, availability, and price than by general feeding-quality predictors such as breastfeeding history or hygiene.

Limitations

The comparison for minimum meal-frequency adequacy was based on a small subsample ($n = 81$), limiting the reliability of that specific finding. The outcome was defined as a single ingredient feeding choice rather than a validated dietary diversity or complementary feeding adequacy index, and the modest model discrimination ($AUC = 0.64$) indicates that unmeasured factors such as taste, product cost, market availability, or specific counseling received likely contribute substantially to soy preference but were not captured in this dataset. Finally, the study was conducted at a single tertiary referral hospital in urban Yaoundé, which may limit generalizability to rural populations or other regions of Cameroon with different dietary traditions and socio-economic profiles.

CONCLUSION

This study found that soy-based complementary feeding was highly prevalent (77.3%) among mother-infant pairs at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital. Higher household education and younger maternal age emerged as the two factors most consistently and

independently associated with soy-based feeding preference, with both associations confirmed across binary and ordinal outcome models. Household socioeconomic status, breastfeeding practice, hygiene, vitamin A supplementation, and attendance at nutrition education were not independently associated with this preference after accounting for education and age. These findings suggest that nutritional awareness, rather than household wealth alone, may play a more important role in shaping complementary feeding choices in this urban setting. Given the model's modest predictive power, other unmeasured factors, such as taste, cost, and product availability, likely also influence maternal feeding decisions and warrant further investigation. These results may help inform maternal nutrition counseling strategies, particularly those targeting younger mothers and households with lower levels of education, to support appropriate complementary feeding practices in Cameroon.

DECLARATIONS

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Conflicts of interest

The authors declare no conflict of interest.

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The work was carried out with own funds.

Ethical considerations

All stages of the work were carried out in compliance with the Declaration of Helsinki. Ethical clearance was obtained from the institutional ethics committee for human health research, with authorization n°744/CIERSH/DM/2018. This work did not involve any experimentation on humans or animals and it does not contain any personal information that could identify the patients

Data availability

Data is available on reasonable request from the principal author.

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