Paternal Participation in Optimal Infant and Young Child Feeding Practice and Associated Factors: A Community-Based Analytical Cross-Sectional Study from Chronically Food-Insecure Communities, Ethiopia

Negga Shimelis, Sisay Gere, Daniel Geberetsadik and Bedasa Woldemichael

Abstract

Evidence shows that paternal participation helps to improve the utilization of optimal infant and young child feeding (IYCF) practices. However, little has been known about chronically food-insecure (CFI) communities. The aim of this study to assess paternal participation in optimal IYCF practice and associated factors in the Dodota district of the Arsi zone, Ethiopia, 2022. A community-based cross-sectional study involving 1152 fathers was conducted after ethical clearance was obtained. Measures of optimal IYCF are based on criteria established by the World Health Organization. We analyzed the data using bivariate and multivariate logistic regression models. Results indicated that paternal participation in optimal IYCF practice was 26.2%. The percentages of early initiation of breastfeeding (EIBF), exclusive breastfeeding (EBF), and minimum acceptable diet (MAD) were respectively 72.9%, 66.1%, and 37.3%. Paternal knowledge of IYCF (AOR:3.2, P<0.01), education (AOR:2.1, P<0.05), income (AOR:1.8, P<0.05), child’s age (AOR 1.7, P<0.05), and the number of children (AOR:2.1, P<0.05) were the predictors of the outcome. Large-scale, in-depth studies should be required to justify the result unequivocally.

Keywords: paternal participation, optimal infant and young child feeding practice, chronically food-insecure communities
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**Introduction**

The World Health Organization (WHO) defines optimal IYCF as the initiation of breastfeeding within one hour of birth, exclusive breastfeeding for the first six months of a child’s life, and continued breastfeeding up to two years or beyond, together with safe age-appropriate complementary foods starting at 6 months of age (WHO-UNICEF, 2003; WHO, 2021). Improved Optimal IYCF enables improved nutrition, development, and survival requirements for newborns, infants, and young children. Development and survival requirements for newborns, infants, and young children are made possible by optimal IYCF (India, 2015; WHO, 2021). It contributes to the reduction of roughly a fifth of all under-five mortalities nationwide (Bhutta et al., 2008; Saha et al., 2008). Thus, the science underpinning optimal IYCF is sound. But most low-income countries (LICs), including Ethiopia, continue to use it seldom. The rates of stunting and wasting are significant in these countries (Remans et al., 2011; Wuehler et al., 2011). For instance, nearly 46% of children in Ethiopia are stunted, 25% are wasting, and 39% are underweight (Health, 2019; International, 2019). This is particularly excessive in areas that have experienced chronic food insecurity (Betebo et al., 2017; Mulu et al., 2017); a prime example is the Dodota district of Ethiopia’s Arsi Zone. The majority of acute and chronic illnesses, as well as under-five mortality cases, are related to these nutritional issues in Dodota (Bureau, 2022; District, 2022; D. D. A. Office, 2021).

A growing body of evidence indicates that fathers’ participation in the IYCF can boost its utilization (Aubel, 2011; Bilal et al., 2016; Lusambili et al., 2021). The primary provider of resources for a family, including food, is the father (Aubel, 2011; Greene et al., 2006; Martin et al., 2021). Fathers have greater cultural dominance than mothers, giving them constant influence over optimal IYCF utilization (Greene et al., 2006; Han et al., 2019; Yourkavitch et al., 2017). However, there is little evidence of father engagement in the IYCF issue in areas where there is chronic food insecurity (Dearden et al., 2013; Han et al., 2019; Yourkavitch et al., 2017). The absence of data from such situations may lead to bias in policymaking and decision-making (Aubel, 2011). For this purpose, we assessed paternal participation in optimal IYCF and associated factors in Ethiopia's Dodota district in the Arsi zone.

**Materials and Methods**

**Study Design, Setting and Population**

From February 1 to May 30, 2022, community-based analytical cross-sectional research was carried out in the Dodota district of Arsi Zone, Oromia Regional State of Ethiopia. This district suffers from drought and has a history of food insecurity (District, 2022). There are 12 rural and 3 urban Kebeles in the district (D. D. A. Office, 2021). The 'Kebele' is the country's lowest administrative structure. For every kebele, there are roughly 1000 households (HH). A HH has an average of 4.8 family members (Bureau, 2022). Out of the total Kebeles in Dodota, 80% of them had chronic food insecurity (District, 2022). We chose the district purposely. The study's source
population are all HHs with children under the age of two years who live in the Dodota district. Fathers with ages more than or equal to 18 years who met the following inclusion criteria were our study subjects. The husband and wife have to live together. The couple has to have at least one child aged 6 to 23 months in the home. It is necessary to have a Kebele ID card. Medically ill or disabled subjects were excluded from the study.

**Sample Size Determination and Sampling Procedure**

The proportion, design effect, alpha, and confidence interval (CI) were all set at 50%, 1.5, 0.05, and 95%, respectively, to calculate the sample size. This results in 576. A larger sample size increases the study's power by reducing the standard error of the predictors, according to studies (Machin et al., 2018; Mascha et al., 2011). Because of this, the sample size was doubled to 1152. We applied a multistage sampling technique (Figure 1). The distribution of kebles in the district was one to four (urban to rural). Dera-01 from the urban area and Dire Kiltu, Amigna Debeso, Dodota Alem, and Tedecha Guracha from the rural area were chosen at random. Each of these Kebeles had 2255, 1737, 1219, 1534, and 1255 households, respectively (D. D. A. Office, 2021). We divided 1152 in accordance with these Kebeles. Using the HH list of the kebele as a sampling frame, a father was chosen for every seven houses. A total of 325 urban fathers and 827 rural fathers were contacted (Figure 1).

**Data Collection Tools and Procedures**

The instrument was adapted from the EDHS, WHO, and LINKAGE IYCF assessment tools (Lusambili et al., 2021; Project, 2006; UNICEF-WHO, 2007). We conducted a face-to-face interview and observation to gather the data. The tool underwent expert review and pretesting on 5% of the sample size in the Arsi zone's "Zeway dugde'a" district, which shares the same characteristics as the study site (Z. D. D. F. S. Office, 2022). We tailored our data-gathering instrument to the Open Data Kit (ODK) platform (ODK, 2018). We held four days of training for our data collectors and supervisors. The face-to-face interviews were conducted privately to decrease the nonresponse rate and reporting biases. All IYCF parameters (EIBF, EBF, and MAD), including optimal IYCF, were measured in accordance with WHO recommendations (UNICEF-WHO, 2007; WHO, 2010). The recently updated criteria of WHO and UNICEF were used to measure MAD, which is made up of minimum dietary diversity (MDD) and minimum meal frequency (MMF) (WHO, 2021). For infants aged 6 to 8 months and over 9 months, MMF was specifically assessed. If the infant started eating at 6 months, complementary food was introduced at the appropriate time. Every exposure factor, including age, employment, education, knowledge, monthly income, number of children, and forms of marriage, was assessed using the original scale published in the literature (Geda et al., 2021; Tassew et al., 2019; Umugwaneza et al., 2021).

**Statistical Analysis**

It was analyzed using SPSS version 21 (Mehta et al., 2011). The prevalence was computed using frequencies and parentage. We used a multi-step methodology for the associated factors. In order to identify potential explanatory factors, a bivariate logistic regression model was built. A
multivariate logistic regression model was used to identify determinants for those with a p-value of 0.2 or higher. The model with the lowest Akaike Information Criteria (AIC) was ultimately selected. The variance inflation factor (VIF) was examined to see if there was any correlation between the explanatory variables (Hosmer et al., 1997). For each crude odds ratio (COR) and adjusted odd ratio (AOR) term, a 95% confidence interval (CI) and corresponding p-values were calculated.

Results

Participants’ Socio-demographics

The flow chart is displayed in Figure 1; a total of 1152 participants were analyzed. Table 1 shows the baseline characteristics of these participants. As can be seen, over two-thirds of the participants were in their early twenties. Nearly half of them (50%) had less than four children. Approximately 77% of them completed at least grade one. At most (95%), they earned less than 223 USD each month, or 7.4 USD every day. Polygamy was seen in 7% of the subjects (Table 1).

Paternal Participation in Optimal Infant and Young Child Feeding

Four-handed twenty-four fathers (37.3%) took part in MAD, while 26.2% of them took part in the optimal IYCF practices (Figure 2).

Factors Associated with Paternal Participation in Optimal IYCF

The multivariate logistic regression analysis model’s result is depicted in Table 2. Fathers who could read and write simple words or who had gone to school had higher participation rates than those who were unable to do so (P <0.05). Paternal participation in optimum IYCF practice improves thrice for every unit increase in paternal IYCF knowledge (95% CI: 2.2–4.3; P = 0.00). Similarly, as the child's age increases, so does paternal participation in optimum IYCF (AOR 1.7; 95% CI: 1.2–2.4; P<0.01). Men who earned 223 USD or more per month were more likely to participate than those who earned 31 USD or less per month (AOR = 2.9; 95% CI: 1.4–5; P = 0.00). Once again, fathers with 3 or fewer children in their households were more likely to participate than fathers with 7 or more children (AOR = 2.7; 95% CI: 1.4–4.5; P<0.01) (Table 2).
Discussion

In this work, we examined three things: each of the optimal IYCF parameters (EIBF, EBF, and MAD), the optimal IYCF, and its associated factors. We organized the discussion in that order.

According to the study, 73% of the fathers took part in EIBF. This appears to be comparable to previous research (Ali et al., 2020). According to the WHO classification, our result falls between 50 and 80 percent. This is a good range (WHO-UNICEF, 2003). Thus, the result reflects paternal participation in EIBF. Similar to the EIBF, our EBF result (66.1%) is identical to the former studies (Dasgupta et al., 2014; Yourkavitch et al., 2017). This suggests that the father assisted the women with EBF. The percentage of children aged 6–23 months who consumed at least 5 food items (47%) is similar to the study in Bangladesh (46.2%). However, the MAD result (37%) is lower than prior findings (Abebe et al., 2021; Solomon et al., 2017). The variation could result from variation in the research population (father vs. mother), the study context (food secured vs. food insecure), and how the measurements were conducted (WHO, 2021). As an illustration, the majority of prior studies addressed utilizing seven dietary groups (WHO, 2010). In contrast, we assessed MDD using eight food groups(WHO, 2021). Our findings, therefore, likely represent local paternal participation in MAD. Fathers who participated in optimal IYCF practice made up 26% of the population. This is higher than in former studies (Geda et al., 2021). The disagreement may result from the data source, demographic variation, measurement variation, or context.

Multiple associations between paternal participation and optimal IYCF practice have been observed in our study. Education had a positive effect on paternal participation. Education improves gender roles, intra-household interaction, communication, parental behavior, and income; thus, educated people can participate more effectively than those without education (Allen et al., 2007; Geda et al., 2021; Ickes et al., 2015). Paternal participation and monthly income had a favorable link as well. The family's purchasing power and access to a wide selection of food items to feed infants and young children at home increase along with monthly income (Geda et al., 2021; Kansiime et al., 2017; Senarath et al., 2010). This study concurs with other research that found paternal knowledge of IYCF had a positive effect on their adoption of optimal IYCF practices (Bilal et al., 2016; Dinga et al., 2018; Rakotomanana et al., 2017). Father participation in optimal IYCF increases as the number of children falls. The family planning principle that "children should be borne by choice, not by chance"(ODA, 1992) and the economic maxim that "limiting the number of children in the family frequently involves harmonizing between the wealth and health of a family"(Rakotomanana et al., 2017; Van et al., 2008) both support this. Paternal participation also grows as the child gets older. Literature also argues in favor of this (Tassew et al., 2019). However, the first two years of the child’s life are crucial for preventing or correcting stunting, wasting, and other nutritional problems (Bhandari et al., 2016; Georgieff, 2007; Victora et al., 2008). If we pass this period, it could be unlikely to get the promising effects of optimal IYCF (Bhandari et al., 2016; UNICEF/WHO, 2018). Men supply the majority of the food and other resources for the family in the majority of African countries, including Ethiopia (Aubel, 2011; Martin et al., 2021). Therefore, it is vital to involve all fathers in IYCF activities, especially in areas with a history of chronic food insecurity, and in particular, to do their best during the first two years of the child's age (Pruett, 1997; Salite et al., 2019).

Hence, the information gleaned from this study both the descriptive data and the related factors may have the potential benefit of filling that gap. It could broaden the work to environments
with chronic food insecurity and connect earlier studies with the most recent WHO recommendations for IYCF tools like the MDD tool (WHO, 2021). The study's scope and geographic coverage, however, were both limited. The limitations of cross-sectional research and social desirability biases may also impede the plausibility of determining cause-and-effect relationships. Therefore, future research should pay attention to having large-scale, multicenter, and robust designs, including theories and models, in order to create a finding that has obvious justification and that has important policy implications. Generally, one-fourth of fathers participated in optimal IYCF. The study also identified a number of socio-demographic factors that were associated with the outcome. However, large-scale and rigorous research could be required to justify the result unequivocally.

Abbreviations


Declarations

Ethical Consideration

The study was approved by the RVUCHS Ethical Review Committee. The Kebele Administrative Office and the district also provided ethical approval. Additionally, consent was acquired from the research subjects. It complied with both the Ethiopian National Ethical Guidelines and the Helsinki Declaration (EMOHT, 2014; WMA, 2013).

Consent for Publication

Verbal consent was obtained from the study participants after clarifying the aim of the study. The respondents had the right to respond fully or partially to the questionnaire. All the information given by the respondents was used for research purposes only, and confidentiality was maintained by omitting the name of the respondents.

Availability of Data and Materials

The datasets that used in this study for analysis and other information are available currently in the hands of corresponding author. Therefore, the information can be provided upon request.
Funding

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Author Contributions

NS & SG conceived and designed the study. NS, SG, BW & DG/T performed analysis and interpretation of the data. SG & BW prepared the manuscript. All authors read and approved the final manuscript.

Acknowledgment

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References


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### Legends

**Table 1: Baseline Characteristics of Participants**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Characteristics</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in year</td>
<td>18-39</td>
<td>826 (71.7)</td>
</tr>
<tr>
<td></td>
<td>40-64</td>
<td>326 (28.3)</td>
</tr>
<tr>
<td>Educational status</td>
<td>Cannot R/W SS</td>
<td>178 (15.5)</td>
</tr>
<tr>
<td></td>
<td>R/W SS without FEd</td>
<td>88 (7.6)</td>
</tr>
<tr>
<td></td>
<td>Primary (Grade 1-6)</td>
<td>460 (39.9)</td>
</tr>
<tr>
<td></td>
<td>Secondary (Grade 7-10)</td>
<td>346 (30)</td>
</tr>
<tr>
<td></td>
<td>Higher (Grade 11 &amp; above)</td>
<td>80 (6.9)</td>
</tr>
<tr>
<td>Type of marriage</td>
<td>Monogamy</td>
<td>1074 (93.2)</td>
</tr>
<tr>
<td></td>
<td>Polygamy</td>
<td>78 (6.8)</td>
</tr>
<tr>
<td>Occupation</td>
<td>Employees</td>
<td>186 (16.1)</td>
</tr>
<tr>
<td></td>
<td>Farmers</td>
<td>912 (79.2)</td>
</tr>
<tr>
<td></td>
<td>Daily laborers</td>
<td>54 (4.7)</td>
</tr>
<tr>
<td>Monthly income in USD</td>
<td>≤31</td>
<td>480 (41.7)</td>
</tr>
<tr>
<td></td>
<td>32-96</td>
<td>506 (43.9)</td>
</tr>
<tr>
<td></td>
<td>97-222</td>
<td>104 (9.0)</td>
</tr>
<tr>
<td></td>
<td>≥223</td>
<td>62 (5.4)</td>
</tr>
<tr>
<td>Number of living children in the family</td>
<td>1-3 Children</td>
<td>490 (43.5)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>4-6 Children</td>
<td>490 (43.5)</td>
<td></td>
</tr>
<tr>
<td>≥7 children</td>
<td>88 (7.6)</td>
<td></td>
</tr>
<tr>
<td>Cultural responsibility to feed infants &amp; young children</td>
<td>Mothers</td>
<td>525 (45.6)</td>
</tr>
<tr>
<td></td>
<td>Both parents</td>
<td>627 (54.4)</td>
</tr>
</tbody>
</table>

Key: R/W SS=Read or Write Simple Sentence; FEd= Formal Education

<table>
<thead>
<tr>
<th>Variable</th>
<th>Characteristics</th>
<th>Paternal Participation in Optimal IYCF</th>
<th>AOR (95% CI)</th>
<th>P-value</th>
</tr>
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<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Cannot R/WSS</td>
<td>12</td>
<td>166</td>
<td>RC</td>
</tr>
<tr>
<td></td>
<td>Can R/WSS WFEd</td>
<td>26</td>
<td>62</td>
<td>2.4 (1.2, 4.6)</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>108</td>
<td>352</td>
<td>2.5 (1.3, 4.7)</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>130</td>
<td>216</td>
<td>3.6 (2.1, 5.3)</td>
</tr>
<tr>
<td></td>
<td>Higher</td>
<td>26</td>
<td>54</td>
<td>2.1 (1.4, 3.7)</td>
</tr>
<tr>
<td>Knowledge to IYCF</td>
<td>Yes</td>
<td>276</td>
<td>484</td>
<td>3.2 (2.2, 4.3)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>26</td>
<td>366</td>
<td>RC</td>
</tr>
<tr>
<td>Baby’s age in months</td>
<td>6-11 =5</td>
<td>73</td>
<td>269</td>
<td>RC</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>----</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Family income in USD</td>
<td>&lt;31</td>
<td>62</td>
<td>418</td>
<td>RC</td>
</tr>
<tr>
<td></td>
<td>&gt;222</td>
<td>22</td>
<td>40</td>
<td>RC</td>
</tr>
<tr>
<td>Number of living children</td>
<td>1-3</td>
<td>170</td>
<td>404</td>
<td>2.7 (1.4, 4.5)</td>
</tr>
</tbody>
</table>
Figure 1: The Flow of Participants

Key: Dire Kiltu (DK), Amigna Debeso (AD), Dodota Alem (DA), Tedecha Guracha (TG), and Dera-01 (D01).
Figure 2: Depicts Fathers' Participation in the IYCF Parameters