

A Deep Dive Exclusive Breastfeeding

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This presentation begins with a broad retrospective of Ethiopia's quarter-century of demographic and health change, then narrows to a focused deep dive on exclusive breastfeeding (EBF)—an indicator singled out because of its persistent stagnation despite strong progress in other domains. It establishes why EBF matters by outlining its substantial benefits for infant survival, nutrition, and development, as well as maternal health, and the corresponding risks when exclusivity is not maintained.

The analysis then reframes EBF as a behavioral system rather than a structural outcome, demonstrating that the commonly cited national average (~58%) obscures a steep age-driven decline. The core empirical insight is clear: initiation is high, but continuation fails, with a sharp drop between months 2 and 5. Subsequent slides unpack this dynamic further by examining regional variation, which reflects context-specific social and cultural environments rather than simple geographic or structural patterns, and socioeconomic gradients, which are weak, non-linear, and sometimes counterintuitive—reinforcing that EBF is not primarily determined by education or wealth, but by time-sensitive behavioral and contextual factors.

Building on these findings, the presentation shifts from analysis to action, outlining a policy pivot from initiation to sustained continuation, with a focus on the critical months 2–5 and the need for context-specific interventions. It then presents a coordinated institutional framework for ownership and implementation, spanning academic, policy, and community systems: the AAU Department of Sociology to lead behavioral and contextual understanding; the Ministry of Health to realign program delivery and performance metrics; the Health Extension Program to operationalize sustained support at the household level; and the Schools of Public Health (ACIPH and AAU SPH) to design, test, and scale effective interventions through implementation science.

The presentation concludes with analytical guardrails, emphasizing the importance of avoiding common methodological pitfalls—particularly the misapplication of regression models—and advocating for descriptive, stratified, and context-sensitive approaches. Together, these elements form a coherent argument: improving EBF in Ethiopia requires not just awareness or access, but a system-wide shift toward supporting sustained behavior over time.

From Broad Trends to Deep Dive Trends in Exclusive Breastfeeding –EBF

- ❑ Started with 8 domains of demographic & health change (25 years)
- ❑ Identified EBF as a priority for deeper analysis
- ❑ Conducted in-depth analysis of EDHS 2016 (R-based workflow)
- ❑ Applied descriptive, stratified, behavior-focused approach
- ❑ Synthesized findings into this presentation for policy action

1. This work began as part of a broader effort to examine **long-term demographic and health change in Ethiopia over roughly the past 25 years.**

The analysis covered **eight major domains**, including:

- Fertility
- Child mortality
- Maternal health
- Nutrition
- Immunization
- Family planning
- Women's education
- And breastfeeding practices

The goal at that stage was to:

Take stock of progress over time and identify where change has been strong, uneven, or stalled

2. Why EBF was singled out

Within the broader multi-domain analysis of demographic and health change over the past 25 years, **exclusive breastfeeding (EBF) was singled out primarily**

because of its relative stagnation over time.

Unlike other domains—such as child mortality, immunization, or aspects of maternal health—which showed **clear and sustained improvement**, EBF exhibited:

Limited upward movement over the quarter century

A pattern of **plateauing rather than continuous progress**

This raised a critical question:

Why has a high-impact, low-cost intervention with well-established benefits not improved at the same pace as other indicators?

This stagnation made EBF analytically important—not just as an outcome, but as a **potential constraint on further gains in child survival and nutrition.**

A closer look at the data then revealed something even more interesting.

Unlike more structural domains such as education or mortality decline, EBF displayed:

Strong short-term variation driven by infant age

Weak and non-linear socioeconomic gradients

And patterns consistent with a **time-sensitive, behaviorally driven process**

This combination of:

Long-term stagnation, and

Short-term behavioral dynamics

made EBF a strong candidate for:

A focused, in-depth analysis to better understand why progress has stalled and what type of interventions are required to accelerate it.

3. In-depth analysis using EDHS 2016 and R

The deep dive was conducted using the **Ethiopia Demographic and Health Survey (EDHS) 2016**, specifically:

The **Children’s Recode (KR) dataset**

Restricted to **living infants aged 0–5 months**, consistent with the definition of EBF

The analysis was implemented using **R programming**, with particular attention to:

Proper handling of **survey design (weights, clustering, stratification)**

Construction of the **EBF variable from feeding indicators**

Generation of:

National estimates

Age-specific patterns

Regional variation

Socioeconomic gradients

Importantly, the analytical approach emphasized:

Descriptive and stratified analysis, rather than reliance on regression

models

This was intentional, given the behavioral and time-sensitive nature of EBF.

4. Role of literature review: identifying methodological concerns

A parallel review of the EBF literature—particularly DHS-based studies—revealed **recurring methodological challenges**, especially in the application and interpretation of regression models.

A notable example is Muluneh (2023), which illustrates several common issues:

Use of **causal language (“determinants”)** based on cross-sectional data

Inclusion of **highly correlated variables** (e.g., education, wealth, media exposure, residence) without explicit assessment of multicollinearity

Reporting of **implausibly large odds ratios**, particularly for regional effects, suggesting model instability or sparse data problems

Interpretation of coefficients as **independent drivers**, despite overlapping underlying mechanisms

These patterns are not unique to a single study, but reflect a broader tendency to:

Impose global, model-driven explanations on phenomena that are highly context-specific and behaviorally dynamic

5. From analysis to synthesis: Developing this presentation

The final step was to translate the analytical findings into a form that is:

Accessible

Policy-relevant

And **actionable**

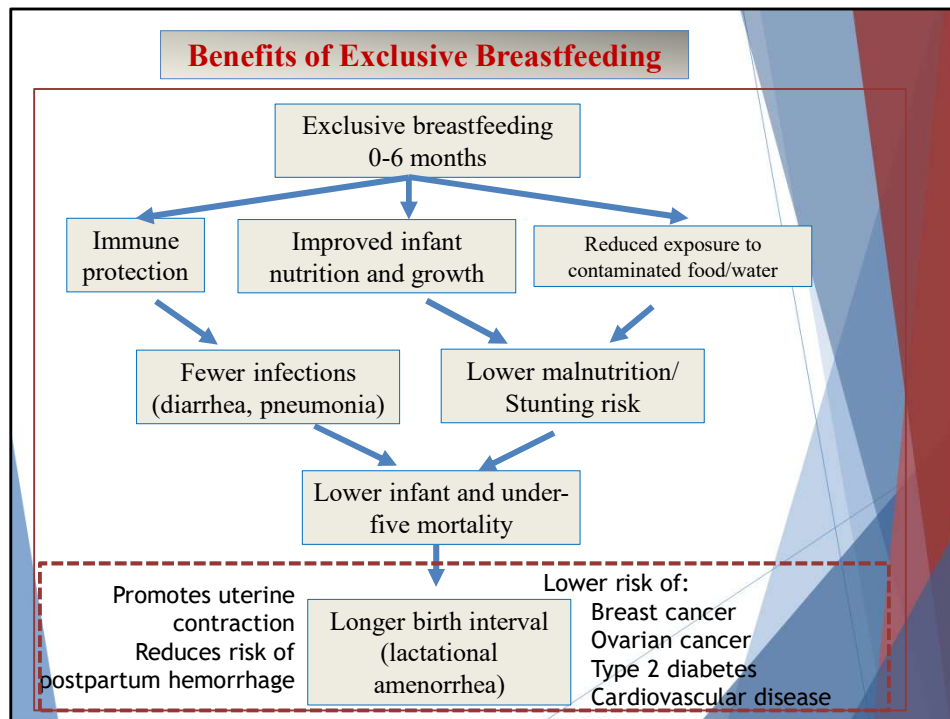
That process resulted in the preparation of this **10-slide presentation deck**, which:

Distills the key empirical patterns

Reframes EBF as a **behavioral system**

And outlines **institutional roles and policy directions**

In closing, this work moves from broad trend analysis to focused insight—using data, method, and interpretation to inform practical action on exclusive breastfeeding.



Before we move into the analysis, I would like to briefly ground our discussion in **why exclusive breastfeeding—EBF—matters so fundamentally**, both for infants and for mothers.

A. Benefits of Exclusive Breastfeeding For the Infant

Exclusive breastfeeding during the first six months of life provides:

1. Optimal nutrition

Breast milk is uniquely tailored to the infant's needs

It contains the right balance of nutrients for growth and development

It adapts over time as the infant grows

2. Immune protection

Breast milk contains antibodies and bioactive compounds

It protects against:

- Diarrheal diseases

- Acute respiratory infections

These are leading causes of infant morbidity and mortality

3. Reduced risk of malnutrition

Helps prevent:

Stunting

Wasting

Underweight

4. Long-term developmental benefits

Associated with improved:

Cognitive development

School performance

Reduced risk later in life of:

Obesity

Diabetes

Chronic disease

For the Mother

Exclusive breastfeeding also confers important maternal benefits:

1. Postpartum recovery

Promotes uterine contraction

Reduces risk of postpartum hemorrhage

2. Birth spacing

Delays return of fertility through lactational amenorrhea

3. Reduced long-term disease risk

Lower risk of:

Breast cancer

Ovarian cancer

Emerging evidence for reduced risk of:

Type 2 diabetes

Cardiovascular disease

4. Psychosocial benefits

Strengthens mother–child bonding

Can support maternal well-being

B. Risks of Non-Exclusive Breastfeeding

For the Infant

When exclusive breastfeeding is not maintained:

1. Increased exposure to infection

Early introduction of:

Water

Other liquids

Foods

Increases risk of contamination

Leads to higher rates of:

Diarrhea

Respiratory illness

2. Increased mortality risk

Non-exclusively breastfed infants are significantly more likely to die in the first months of life, especially in low-resource settings

3. Nutritional compromise

Breast milk is displaced by less optimal substitutes

Risk of undernutrition and impaired growth

For the Mother

The risks are less direct but still important:

1. Loss of protective health effects

Reduced duration of breastfeeding is associated with:

Higher risk of breast and ovarian cancers

Reduced metabolic protection

2. Shorter birth intervals

Earlier return to fertility

Potential implications for maternal and child health

Transition to the Analysis

So, when we talk about exclusive breastfeeding, we are not discussing a marginal behavior.

We are discussing one of the most powerful interventions for improving both **child survival and maternal health**.

And yet—despite its benefits—progress in Ethiopia has been **limited over time**.

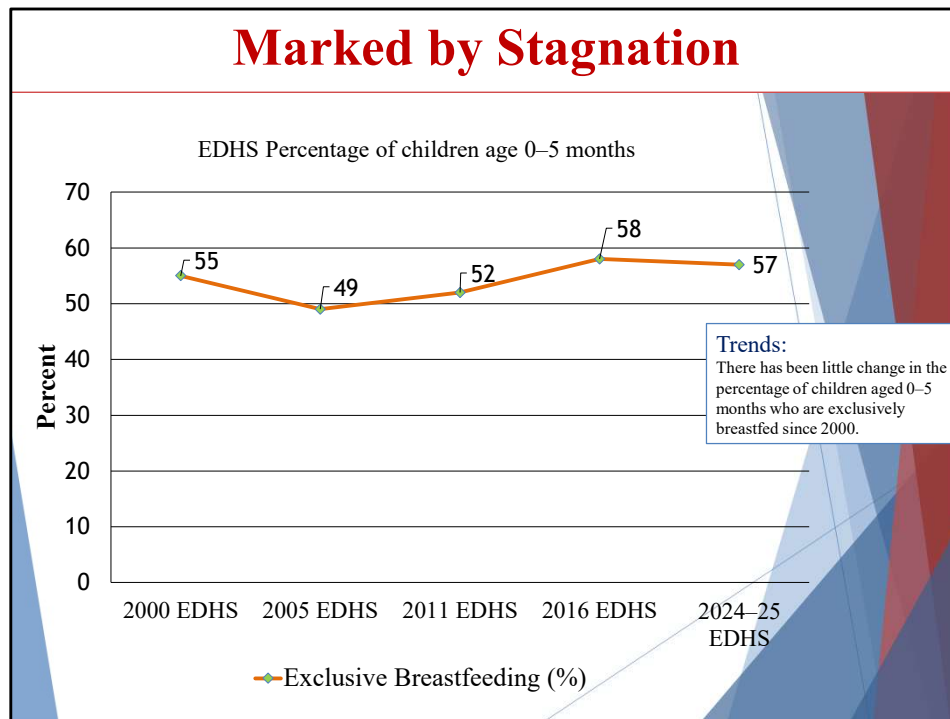
That is what motivated this deep dive.

The question we will now turn to is:

If the benefits are so clear, why is exclusive breastfeeding not being sustained—and what does the data tell us about how to change that?

Exclusive Breastfeeding (new study)

Breastfeeding leaves
mark on baby's DNA
for years, study finds



Three ways to sum up EBF in Ethiopia over the last 25 years: 1. High-impact, 2. low-cost, 3, underutilized

Exclusive breastfeeding is one of the **most powerful and cost-effective public health interventions**, yet it has **stagnated at around 50–60%** in Ethiopia over the past quarter century.

This stagnation represents a **missed opportunity** to accelerate progress across multiple domains.

This slide presents trends in **exclusive breastfeeding (EBF)** among children aged **0–5 months** across five EDHS surveys.

Exclusive breastfeeding means:

Infants receive **only breast milk**

No water, other liquids, or foods

It is one of the **most effective, low-cost public health interventions** for improving child survival and development.

Key Trend 1:

Exclusive breastfeeding rates have remained relatively stable. No sustained upward trend over 25 years

Despite overall improvements in other child health indicators, EBF has **plateaued around 50–60%**.

Key Trend 2: Missed opportunity for high-impact gains

Unlike other indicators (e.g., mortality, skilled birth attendance), exclusive breastfeeding has **not experienced transformational improvement**.

This is important because EBF directly affects:

Infant immunity

Infection risk (diarrhea, pneumonia)

Nutritional status

Early growth and development

The plateau suggests:

Behavioral and cultural barriers

Gaps in **counseling and support**

Limited system emphasis relative to other interventions

Key Trend 3: EBF as a cross-cutting determinant

Exclusive breastfeeding is uniquely positioned because it influences **multiple domains simultaneously**:

Reduces **child mortality**

Improves **nutrition outcomes**

Supports **birth spacing** (via lactational amenorrhea)

Enhances **cognitive development**

This makes it one of the **highest-return interventions** in public health.

Key Trend 4: Gap between current levels and global recommendations

WHO recommends EBF rates of **at least 70%**.

Ethiopia's current level (~57%) indicates:

Progress, but

Significant room for improvement

This gap represents a **missed opportunity for accelerating gains in multiple indicators**.

Ethiopia has achieved major gains in:

Child survival

Maternal health

Immunization

But exclusive breastfeeding represents a **“stalled indicator”**:

A high-impact intervention that has not kept pace with broader system

improvements

This highlights the need to address:

Behavioral determinants

Health system counseling practices

Social and workplace constraints

Looking Ahead to 2050 (Breastfeeding Outlook)

Exclusive breastfeeding represents one of the **clearest opportunities for accelerated progress**.

If EBF increases from ~57% to **70% or higher**, Ethiopia could achieve:

Further reductions in **infant mortality**

Lower rates of **diarrheal and respiratory disease**

Improvements in **nutrition and growth**

Better **cognitive and developmental outcomes**

Future progress will depend on:

Strengthening **facility-based counseling at birth**

Expanding **community-based education**

Supporting mothers through **postnatal care systems**

Addressing **social and workplace barriers**

Unlike many interventions, EBF improvements are:

Low-cost, high-impact, and immediately scalable

Policy Takeaways — Exclusive Breastfeeding

1. Elevate EBF as a national priority

Treat breastfeeding as a **core public health intervention**, not a secondary behavior.

2. Strengthen counseling at birth and postnatal care

Ensure every mother receives **practical, hands-on breastfeeding support**.

3. Integrate EBF into maternal and child health services

Link breastfeeding promotion with:

Antenatal care

Delivery care

Postnatal visits

4. Expand community-based education and support

Leverage the **Health Extension Program** to reinforce practices at the household level.

5. Address social and structural barriers

Consider policies that support:

Maternity leave

Workplace accommodations

6. Target early initiation and continuity

Focus on:

Immediate breastfeeding after birth

Sustained EBF for 6 months

7. Use EBF as a multiplier intervention

Recognize its role in improving:

Nutrition

Immunity

Birth spacing

Survival

Exclusive Breastfeeding (EBS) in Ethiopia

- ▶ A behavioral system, not a structural outcome
- ▶ EDHS 2016 Analysis

What “A behavioral system, not a structural outcome” means (in your EBF analysis)

1. What is a “structural outcome”?

A **structural outcome** is something primarily determined by **long-run, slowly changing conditions**, such as:

- Education systems
- Income/wealth
- Infrastructure
- Institutional access

Examples:

- Women’s education levels
- Poverty rates
- Health service coverage

These outcomes:

Change **gradually over years or decades**

Show **clear, monotonic gradients** (e.g., higher education → better outcomes)

Are relatively **stable across short time horizons**

2. What is a “behavioral system”?

A **behavioral system**, by contrast, is:

Time-sensitive (changes quickly)

Context-dependent (varies by local norms and situations)

Shaped by **daily decisions and constraints**

Influenced by **social interactions and perceptions**

It is not fixed—it **evolves over days, weeks, and months.**

Before turning to the analysis itself, it is important to briefly ground this discussion in **why exclusive breastfeeding—EBF—matters from a public health perspective.**

Exclusive breastfeeding during the first six months of life is widely recognized—by the World Health Organization and UNICEF, among others—as one of the **most effective, low-cost interventions for improving child survival and health outcomes.**

From an infant health standpoint, EBF provides:

Optimal nutrition tailored to the infant’s developmental needs

Immune protection significantly reduces the risk of infectious diseases such as diarrhea and acute respiratory infections

Protection against **malnutrition, stunting, and underweight**

Long-term benefits, including improved cognitive development and reduced risk of chronic disease later in life

Critically, inadequate or non-exclusive breastfeeding is associated with **substantially higher risks of morbidity and mortality**, particularly in low- and middle-income settings. Infants who are not exclusively breastfed are:

More likely to be exposed to **contaminated water and food**

More vulnerable to **infection and illness**

At significantly higher risk of **early-life mortality**, especially in the neonatal and post-neonatal periods

But the benefits are not limited to infants.

From a maternal health perspective, exclusive breastfeeding is associated with:

Reduced risk of **postpartum hemorrhage** through uterine contraction

Delayed return of fertility through **lactational amenorrhea**

Lower long-term risk of **breast and ovarian cancers**

Potential protective effects against **type 2 diabetes and cardiovascular disease**

So, when we talk about exclusive breastfeeding, we are not discussing a narrow behavioral indicator.

We are discussing an intervention that sits at the intersection of:

Child survival

**Maternal health
Nutrition systems
And health equity**

This makes EBF a cornerstone indicator within broader maternal and child health strategies.

Now, turning specifically to Ethiopia:

This presentation examines **exclusive breastfeeding—EBF—in Ethiopia**, using nationally representative data from the 2016 Ethiopia Demographic and Health Survey.

The central argument of this analysis is that **EBF in Ethiopia is best understood not as a structural outcome—like education or income—but as a behavioral system that unfolds over a very short time horizon**, specifically the first six months of life.

This distinction is critical.

Unlike long-term indicators such as women’s education, which reflect accumulated investments and stable structural conditions, EBF is **time-sensitive, dynamic, and highly responsive to immediate context**—including maternal workload, social norms, perceived milk sufficiency, and access to support.

As a result, the key analytical question is not simply: *What proportion of infants are exclusively breastfed?*

But rather:

How does exclusive breastfeeding change over time, across place, and across contexts—and what does that imply for policy?

The core finding we will build toward is this:

Initiation of breastfeeding in Ethiopia is high

The main challenge is not starting—but sustaining exclusive breastfeeding over time

And that shift—from initiation to continuation—is where policy and program design need to focus.

The rest of the presentation will walk through this argument step by step, beginning with what the national average hides, and then unpacking the roles of **infant age, regional context, and socioeconomic factors**.

Core Message

- ▶ EBF \approx 58% nationally
- ▶ But this is misleading
- ▶ The real story is a rapid decline with age

This slide presents what appears to be the **headline finding**: that approximately **58 percent of infants under six months in Ethiopia are exclusively breastfed**.

At face value, this suggests that Ethiopia is performing reasonably well.

A majority of infants are receiving exclusive breastfeeding, and by global standards, this is not a weak outcome.

However, the key point—and the reason this slide is titled *Core Message*—is that **this national average is analytically incomplete and potentially misleading**.

It compresses a highly dynamic process into a single number.

To put it differently:

This 58 percent is not a stable condition—it is an average across very different moments in an infant's early life.

What the national figure does is:

Combine infants who are **just born**, where EBF rates are very high

With infants who are **approaching six months**, where EBF rates drop sharply

So the average masks a **steep internal gradient**.

This is a classic case of what we might call **aggregation bias**:

The summary statistic looks moderate and stable

But the underlying process is **rapidly changing over time**

And that matters enormously for interpretation.

If we take the 58 percent at face value, we might conclude:

“EBF is moderately strong—perhaps we need incremental improvements.”

But once we disaggregate—and this is what we will do in the next slide—we see that:

The system is not stable at all; it is characterized by rapid drop-off.

So the takeaway from this slide is very precise:

The national estimate is **correct**

But it is **not sufficient for understanding the problem**

And if used alone, it can **misdirect policy attention**

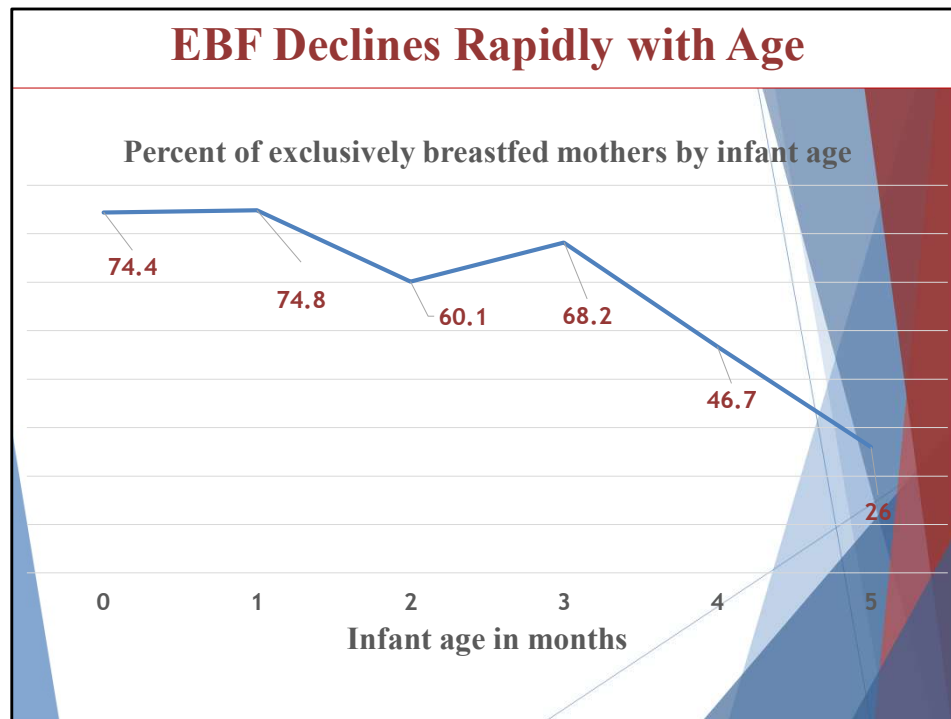
This is why the rest of the analysis shifts from:

levels → to trajectories

averages → to patterns over time

And specifically, we now turn to the most important driver in the entire analysis:

infant age.



This slide is the **analytical core of the entire presentation**.

What you see here is exclusive breastfeeding plotted by **infant age in completed months**, from birth through month five.

And the pattern is immediately clear—and quite striking.

In the **first months of life**, EBF levels are very high—around **74 to 75 percent**

By **month two**, we already begin to see a decline

By **month four**, EBF has dropped to below 50 percent

And by **month five**, it falls to approximately **26 percent**

So what appears, at the national level, as a **moderate 58 percent**, is actually the result of averaging:

Very high adherence early on

With very low adherence just a few months later

This is not a gradual decline—it is a **steep behavioral drop-off over a very short time window**.

Substantively, this is the most important finding in the analysis.

It tells us that:

Mothers overwhelmingly initiate exclusive breastfeeding

But **continuation becomes increasingly difficult as the infant ages**

This fundamentally reframes the problem.

The issue is not lack of awareness or failure to start breastfeeding.

The issue is **attrition—loss of exclusivity over time.**

Now, it is also important to interpret this curve correctly.

This is not just a statistical pattern—it reflects a **behavioral trajectory shaped by real-world pressures**, including:

Perceptions that breast milk alone is no longer sufficient as the infant grows

Early introduction of water or other liquids due to cultural norms

Increasing maternal workload or return to employment

Influence of family members or community practices around feeding

You may also notice a slight fluctuation around month three.

This should not be over-interpreted—it likely reflects **sampling variability**, not a true behavioral reversal.

The dominant pattern remains unequivocal:

Exclusive breastfeeding declines sharply with infant age

From a policy standpoint, this is where the implications become very concrete.

If we want to improve EBF outcomes, the priority is not:

Broad messaging about starting breastfeeding

But rather:

Targeted support to sustain exclusivity, especially between **months two and five**, where the drop-off is most pronounced

So, to summarize this slide in one sentence:

EBF in Ethiopia is not failing at the start—it is failing over time.

And that insight will help us reinterpret everything that follows, including regional variation and socioeconomic patterns.

Interpretation

- ▶ **Initiation is not the problem**
- ▶ **Continuation is the problem**
- ▶ **Critical drop after month 2–3**

This slide translates the empirical pattern we just saw into a **clear analytical interpretation**.

The key distinction here is between:

**Initiation of exclusive breastfeeding, and
Continuation of exclusive breastfeeding**

And the evidence from the previous slide allows us to make a very strong statement:

In Ethiopia, initiation is not the problem—continuation is.

In the first one to two months of life, EBF levels are very high—around 75 percent.

This tells us that:

Mothers are **starting breastfeeding appropriately**

Early postnatal practices are, in general, aligned with recommended guidance

So from a policy standpoint, this is important:

We are **not dealing with a failure of awareness or initial uptake.**

However, as infants age, we observe a **systematic and rapid drop-off.**

This means that the real challenge lies in:

Sustaining exclusive breastfeeding under changing conditions

And those changing conditions are critical to understand.

Between months two and five, several pressures begin to intensify:

Biological perceptions:

Mothers may perceive that breast milk alone is no longer sufficient as the child grows

Cultural practices:

Early introduction of water, herbal liquids, or other supplements may be encouraged

Household dynamics:

Advice from older family members—especially grandmothers—can influence feeding decisions

Economic and time constraints:

Mothers may return to work or face increasing workload demands, making exclusive breastfeeding more difficult

Service gaps:

Postnatal care and breastfeeding support often decline after the early weeks, precisely when support is most needed

So what we are observing is not random decline—it is a **structured transition from a supported early phase to a less-supported later phase.**

This is why framing EBF as a **behavioral system** is so important.

Unlike structural indicators:

It evolves quickly

It is sensitive to daily constraints

And it requires **continuous reinforcement**, not one-time intervention

Now, from a programmatic perspective, this leads to a very clear implication:

If interventions focus primarily on **initiation—such as facility delivery or early breastfeeding counseling—they will miss the point.**

Instead, the critical window for intervention is:

After the first month

Especially **months two through five**, where we see the steepest decline

So the policy pivot is:

From **“Start breastfeeding.”**

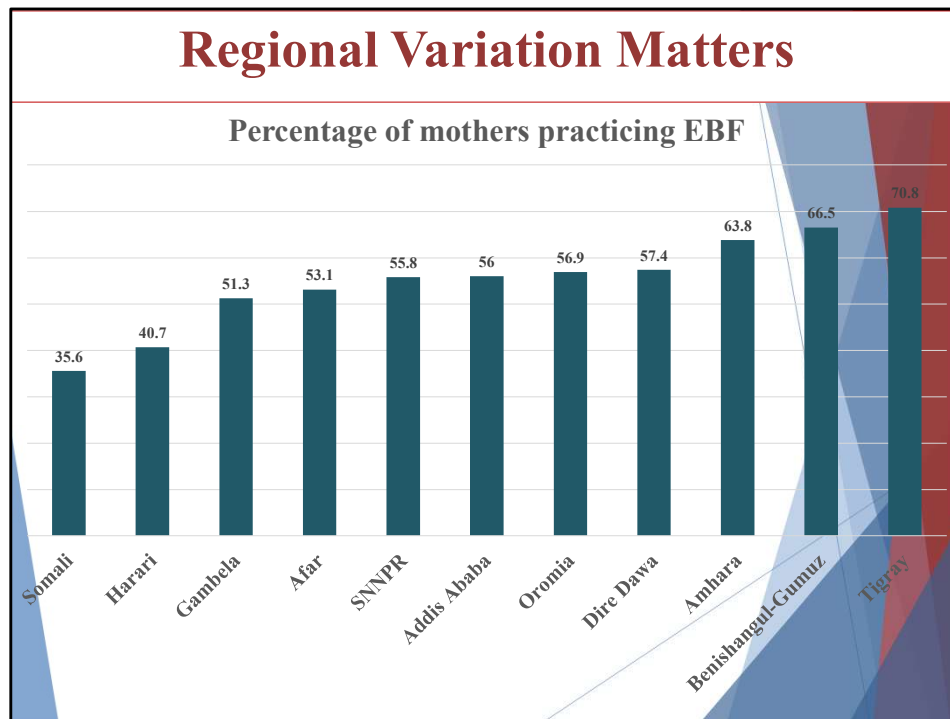
→ to

“Help mothers continue exclusive breastfeeding under real-life conditions.”

This reframing is essential because it shifts both:

Where we intervene, and

How do we design those interventions



This slide shifts the focus from time—infant age—to **place**, specifically regional variation in exclusive breastfeeding across Ethiopia.

What we see here is a **wide range of EBF prevalence across regions**:

At the higher end, regions such as **Tigray** and **Benishangul-Gumuz** show levels above **65–70 percent**

At the lower end, regions such as **Somali** and **Harari** fall closer to **35–40 percent**

And several large regions—**Oromia**, **SNNPR**, **Addis Ababa**, **Dire Dawa**—cluster around the national average

So the first takeaway is straightforward:

EBF is not evenly distributed across Ethiopia—regional context clearly matters.

However—and this is where the analysis becomes more nuanced—**the pattern does not follow a simple or intuitive geographic logic.**

For example:

Urban vs. rural does not explain the variation:

Addis Ababa, the most urbanized region, is not at the top

Harari, also largely urban, is among the lowest

Pastoralist vs. non-pastoralist livelihoods do not explain it either:

Afar shows moderate EBF levels

Somali, with a broadly similar livelihood structure, shows much lower levels

This tells us something very important:

There is no single structural or geographic axis that explains regional differences in EBF.

Instead, what we are likely observing is the result of **localized combinations of factors**, including:

Cultural norms around infant feeding

Community-level beliefs about breast milk sufficiency

Access to and quality of maternal and child health services

Strength of community support systems

Local program implementation differences

In other words, **region is acting as a proxy for context**, not as a causal factor in itself.

This has two important implications.

First, analytically:

We should be cautious about interpreting regional differences as inherently “better” or “worse” without understanding the underlying mechanisms

Second, from a policy perspective:

One-size-fits-all national strategies are unlikely to be effective.

Interventions that work in:

Tigray or Benishangul-Gumuz

may not translate directly to:

Somali or Harari

Because the **drivers of behavior differ across contexts.**

So, to summarize this slide:

Regional variation in EBF is **real and substantial**

But it is **not explained by simple structural categories**

Instead, it reflects **context-specific behavioral environments**

And this reinforces the broader argument of the presentation:

EBF is shaped less by broad structural conditions and more by localized, context-sensitive dynamics.

At this point, an important analytical question arises:

When we observe a low overall EBF level in a region—such as Somali—what is driving it?

There are two conceptually distinct pathways:

Pathway 1: Lower initiation (Month 0–1 problem)

EBF starts **lower from the beginning**

The entire age curve is shifted downward

Interpretation:

Early breastfeeding practices are weaker

Possible drivers:

Delayed initiation

Prelacteal feeding (water, other liquids)

Cultural norms at birth

Pathway 2: Steeper decline (Continuation problem)

EBF starts relatively **high**, similar to other regions

But declines **more rapidly between months 2–5**

Interpretation:

Initiation is adequate

Retention is weak

Possible drivers:

Early introduction of water/foods

Maternal workload constraints

Reduced postnatal support

Why this distinction matters

These two scenarios produce the **same aggregate regional percentage**, but imply **very different policy responses**.

If the issue is **initiation** → focus on:

Facility-based counseling

Early breastfeeding support

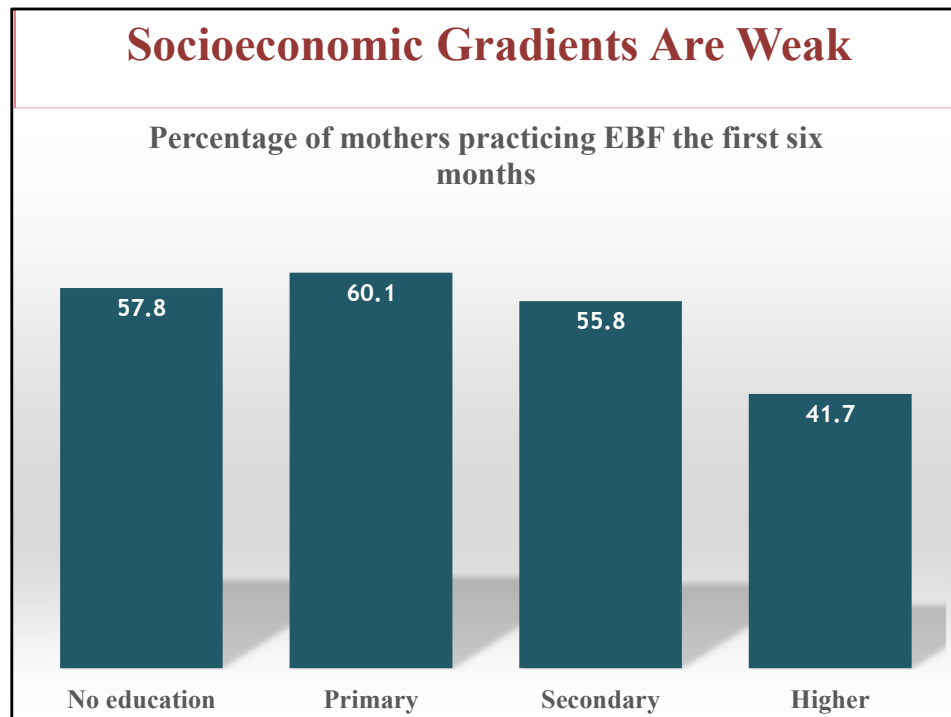
Immediate postnatal practices

If the issue is **continuation** → focus on:

Sustained counseling beyond month 1

Community and household-level interventions

Workplace and time-use constraints



This slide turns to a set of variables that are often assumed—almost by default—to be strong determinants of health behaviors:

maternal education and, by extension, socioeconomic status.

In many areas of public health, we expect to see a **clear, positive gradient**:

Higher education → better health behaviors

Lower education → poorer outcomes

But what we observe here for exclusive breastfeeding is quite different.

The pattern is **weak and non-linear**:

Mothers with **no education** and those with **primary education** show relatively similar—and even slightly higher—levels of EBF

As we move to **secondary education**, EBF does not increase—it declines slightly

And among mothers with **higher education**, EBF drops more noticeably

So instead of a steady upward gradient, what we see is:

A flattened—and even inverted—relationship

This is a critical finding, because it challenges a very common assumption:

That improving education alone will automatically improve breastfeeding outcomes.

Now, it is important to interpret this carefully.

This does **not** mean that education is unimportant.

Rather, it means that **education operates through competing pathways.**

On the one hand, higher education is associated with:

Better access to health information

Greater exposure to recommended practices

Increased interaction with health services

These would tend to **support EBF.**

But on the other hand, higher education is also associated with:

Greater likelihood of **formal employment**

Time constraints and earlier return to work

Urban lifestyles where alternatives to breastfeeding are more accessible

These factors tend to **undermine sustained exclusive breastfeeding.**

So what we are observing is the **net effect of opposing forces**, which results in:

A weak and non-linear overall pattern

This reinforces a central argument of the presentation:

EBF is not primarily structured by long-run socioeconomic position in the way many other health outcomes are.

Instead, it is shaped more strongly by:

Time dynamics (infant age)

Contextual and behavioral factors

From a policy perspective, this has important implications.

If we assume that:

Education alone will drive improvements in EBF

We risk missing the actual constraints that mothers face.

Instead, interventions need to address:

Practical feasibility

Workplace conditions

Time and support systems

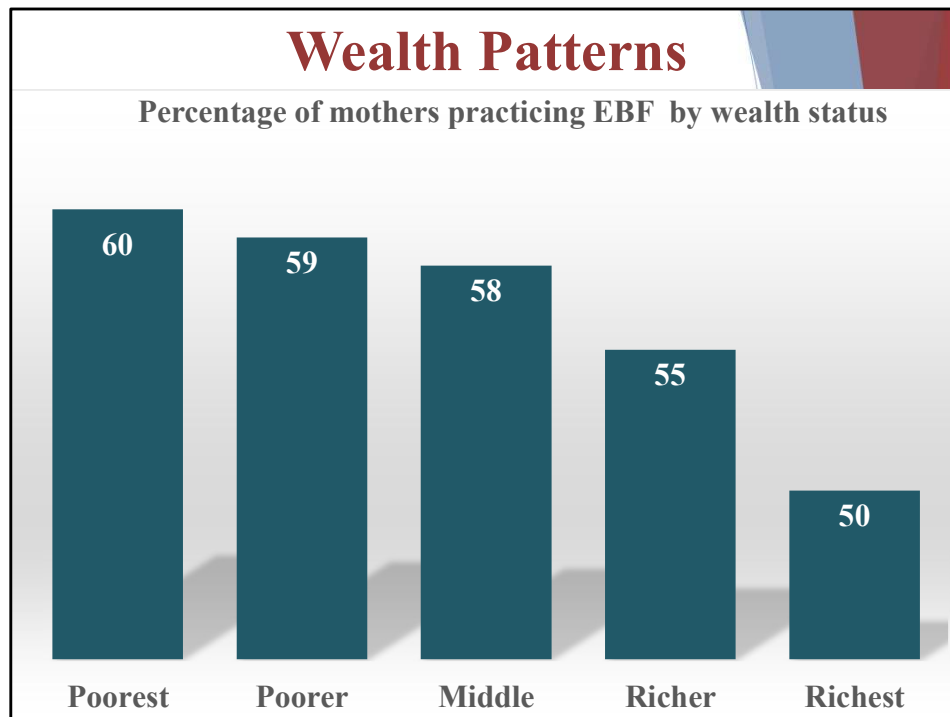
So to summarize this slide:

Socioeconomic gradients in EBF are **present but weak**

The relationship is **non-linear and sometimes counterintuitive**

And this further supports the conclusion that:

EBF is a behavioral system, not a structurally determined outcome



This slide extends the socioeconomic analysis by focusing specifically on **household wealth**.

Here again, if we were dealing with a typical health outcome, we would expect to see a **clear positive gradient**:

Higher wealth → better outcomes

Lower wealth → worse outcomes

But the pattern for exclusive breastfeeding is, once again, **surprisingly modest and somewhat counterintuitive**.

What we observe is:

EBF levels are **highest among the poorest households**, at around 60 percent

There is a **gradual decline** as we move up the wealth distribution

By the richest quintile, EBF falls to roughly **50 percent**

So the gradient exists—but it is:

Shallow, and in the opposite direction of what we might expect

Now, this does not mean that wealth negatively “causes” lower breastfeeding. Rather, it reflects the **different environments and choices available across wealth levels**.

Let’s unpack the mechanisms.

Among poorer households:

Breastfeeding is often the **default and necessary option**

Limited access to alternatives such as formula or other foods

Stronger reliance on traditional infant feeding practices

These conditions tend to **support continued exclusive breastfeeding**, even in the absence of formal knowledge or services.

Among wealthier households:

Greater access to **breastmilk substitutes and complementary foods**

Higher likelihood of **urban residence and formal employment**

Increased exposure to **marketing and social norms** that may favor early supplementation

These factors can **erode exclusivity over time**, even when knowledge levels are higher.

So, similar to education, wealth operates through **competing pathways**:

Enabling access and information on one side

Introducing constraints and alternatives on the other

The net result is:

A weak, slightly negative gradient

Why this matters analytically

Taken together with the education findings, this reinforces a key conclusion:

Socioeconomic status does not strongly structure EBF outcomes in Ethiopia.

This is very different from outcomes like:

Child mortality

Nutritional status

Educational attainment

Where wealth and education typically show **strong, monotonic gradients**.

Policy implications

This has direct implications for how we design interventions.

If we assume:

“Target the poorest” → we improve EBF

We may miss the fact that:

Drop-off is occurring across all groups, including the better-off

And that:

The mechanisms differ:

Among poorer groups → structural constraints

Among richer groups → substitution, time pressure, and lifestyle factors

So effective policy needs to be:

Differentiated, not uniform

Support for **continuation under workload constraints**

Regulation or guidance around **early introduction of substitutes**
Tailored messaging that addresses **different behavioral drivers across groups**

Bottom line for this slide

Wealth gradients exist but are **weak and slightly negative**

Higher wealth does not translate into better EBF outcomes

And this further strengthens the overarching conclusion:

Exclusive breastfeeding is shaped more by behavioral and contextual factors than by socioeconomic position alone

From Evidence to Practice: Policy Direction

- ▶ Shift focus from initiation to → continuation
- ▶ Target months 2–5
- ▶ Design context-specific interventions

This final policy slide brings the evidence together into a practical program direction.

The core message is simple:

Ethiopia should shift the policy emphasis from breastfeeding initiation to exclusive breastfeeding continuation.

The data show that many mothers begin exclusive breastfeeding successfully. In the first months of life, EBF levels are high. The real loss occurs later, especially between **months two and five**, when exclusivity declines sharply.

That means the policy question should change from:

“How do we get mothers to start breastfeeding?”

to:

“How do we help mothers sustain exclusive breastfeeding under real-life conditions?”

This shift matters because the interventions are different.

If the problem is initiation, we focus mostly on:

- facility delivery counseling,
- early postnatal advice,
- immediate breastfeeding support.

But if the problem is continuation, we must focus on:

follow-up counseling after the first month,
household and community norms,
maternal workload,
perceived milk insufficiency,
early introduction of water, liquids, or foods,
and practical support for mothers during the months when drop-off
accelerates.

The second policy direction is to **target months two through five.**

This is the critical window. By month five, EBF has fallen to about one-quarter of infants. Waiting until the six-month mark is too late. The intervention window must begin earlier, before mothers exit exclusive breastfeeding.

A stronger program model would include:

counseling at birth,
reinforcement at 1 month,
intensified follow-up at 2–3 months,
and continued support through months 4–5.

The third policy direction is to **design context-specific interventions.**

Regional differences show that EBF is not shaped by one simple national pattern. Somali, Harari, Afar, Addis Ababa, and Tigray likely require different strategies. In some regions, the issue may be lower early initiation. In others, it may be sharper decline over time.

So the recommended approach is not one national message repeated everywhere. It is a national framework with regional adaptation.

A concise way to close the slide is:

The goal is not only to persuade mothers to breastfeed. The goal is to build a support system that helps them continue exclusive breastfeeding through the full first six months of life.



Institutional Ownership/Leadership

Addis Ababa University (AAU), Department of Sociology

- Reframe EBF as a behavioral and social system
- Generate region-specific evidence (age × context)
- Lead community-based interventions (months 2–5)
- Train next-generation practitioners & researchers
- Convene policy dialogue (MoH, regions, NGOs)
- Monitor progress toward $\geq 70\%$ EBF

The starting point is alignment with the central finding of this analysis:

EBF is a behavioral and social system, not simply a clinical or informational issue.

That positioning places Sociology in a natural leadership role.

1. Reframing EBF as a Social System

The Department of Sociology can lead a national reframing of EBF:

Move the discourse from **individual choice** to **socially embedded behavior**

Examine how norms, household dynamics, gender roles, and informal advice networks shape feeding decisions

Identify how these factors change between **month 1 and months 2–5**, where the drop-off occurs

This reframing is essential for designing interventions that are **realistic and culturally grounded**.

2. Generating Region-Specific Evidence

A major contribution AAU Sociology can make is to deepen the analysis beyond

national averages:

Produce **region × age profiles of EBF**

Distinguish clearly between:

Initiation problems (low at month 0–1)

Continuation problems (steep decline after month 2)

Conduct **qualitative and mixed-method studies** in low-performing regions such as Somali and Harari to understand:

Beliefs about breast milk sufficiency

Norms around early supplementation

Decision-making within households

This evidence base becomes the foundation for **precision policy**, not generic messaging.

3. Leading Community-Based Interventions (Months 2–5)

Given that the problem is a continuation, AAU Sociology can pilot and evaluate interventions focused on the **critical window (months 2–5)**:

Community dialogue models involving:

Mothers

Fathers

Grandmothers and elder women

Behavioral reinforcement strategies:

Peer support groups

Home-based counseling

Norm-shifting communication

Testing different models across regions to determine:

What works

For whom

Under what conditions

The goal is to move from **theory to → tested intervention packages.**

4. Training the Next Generation

AAU's long-term influence comes through **training**:

Integrate EBF as a case study in:

Social determinants of health

Behavioral science

Public health sociology

Train students in:

DHS data analysis

Mixed-methods research

Program evaluation

Develop a cohort of graduates who understand:

How to translate data into actionable, context-sensitive interventions

5. Convening Policy Dialogue

AAU Sociology can act as a **neutral convening platform**:

Bring together:

- Ministry of Health

- Regional health bureaus

- NGOs and development partners

Facilitate translation of research into:

- Policy guidance

- Program design

- Implementation strategies

This helps bridge the persistent gap between **evidence and practice**.

6. Monitoring Progress Toward $\geq 70\%$ EBF

Finally, AAU Sociology can support a national target:

Raising EBF to 70 percent or higher

This involves:

Establishing **monitoring frameworks**

Tracking:

- Age-specific EBF trends

- Regional performance

Providing an independent evaluation of program impact

In closing, AAU Sociology's role is not just to study breastfeeding—but to understand and reshape the social systems that determine whether exclusive breastfeeding is sustained.

Ministry of Health (MoH)

- Shift KPI: initiation to → 6-month continuation
- Build a months 2–5 service package
- Strengthen HEW-led follow-up & home support
- Enable facility → community continuity of care
- Address work/time constraints & substitutes
- Implement real-time monitoring (age × region)

The central directive is a programmatic pivot:

Reorient EBF policy from initiation metrics to sustained exclusivity through six months.

1. Shift the key performance indicator - KPI: From Initiation to Continuation

Current systems often emphasize:

Early initiation within 1 hour

Counseling at delivery

These remain important—but they are **insufficient**.

The MoH should adopt a **primary performance indicator** of:

EBF at 4–5 months and at 6 months, not just at birth or early weeks

This single shift will realign:

Supervision

Reporting

Incentives

Program focus

toward **where the losses actually occur**.

2. Build a “Months 2–5” Service Package

The data point to a clear intervention window.

MoH can formalize a **standardized continuation package**, including:

Scheduled **postnatal contacts at 1, 2, 3, and 4 months**

Focused counseling on:

Perceived milk insufficiency

Managing infant growth without supplementation

Practical guidance for:

Feeding during maternal workload

Expressing and storing breast milk (where feasible)

The key is **structured, repeated contact**, not one-time advice.

3. Strengthen Health Extension Worker (HEW) Follow-up

Ethiopia’s **Health Extension Program** is a major asset.

The MoH can leverage it by:

Prioritizing **home-based follow-up visits in months 2–5**

Using HEWs to:

Identify early signs of drop-off

Provide corrective counseling

Engage family members influencing feeding decisions

This shifts support **from facilities to households**, where behavior is actually determined.

4. Ensure Facility → Community Continuity of Care

One major gap is the drop in support after the immediate postnatal period.

MoH can institutionalize **handoffs**:

From **facility delivery** → to **HEW follow-up lists**

Ensure every newborn is **tracked and revisited** beyond the first weeks

This creates a **continuous care pathway**, rather than a front-loaded system.

5. Address Work, Time, and Substitution Pressures

Continuation fails not only because of knowledge gaps, but because of **practical constraints**.

MoH, in coordination with other sectors, can:

Promote **breastfeeding-friendly workplace practices**

Provide guidance on:

Feeding schedules under workload constraints

Strengthen regulation and messaging around:

early introduction of water and breastmilk substitutes

The goal is to **make continued EBF feasible**, not just recommended.

6. Implement Real-Time Monitoring (Age × Region)

Monitoring systems should move beyond a single national average.

MoH should track:

EBF by infant age (0–5 months)

EBF by region

This allows:

Early identification of **where drop-off is occurring**

Targeted program adjustments

Accountability at regional and district levels

Closing Line for the Slide

The Ministry’s role is to convert a high-initiation system into a high-continuation system—by building sustained support into routine service delivery.

When you’re ready, we can develop the third institutional slide—ideally the **frontline system (Health Extension Program) or community platform**, to complete the ecosystem:

Academia (AAU) → MoH (delivery) → Community/HEW (implementation).

What does KPI stand for in "Shift KPI: initiation → 6-month continuation "

KPI stands for Key Performance Indicator.

In this context, it refers to the **specific metric the Ministry of Health uses to track program success.**

So when the slide says:

“Shift KPI: initiation → 6-month continuation”

it means:

Current focus (typical KPI):

% of infants who **start** breastfeeding (e.g., early initiation)

Proposed focus (new KPI):

% of infants who are **still exclusively breastfed at 4–5 months or at 6 months**

Why this matters

A KPI is not just a measurement—it **drives behavior in the system:**

What gets **measured** gets **managed**

What gets **reported** gets **prioritized**

What gets **rewarded** gets **done**

So shifting the KPI:

Moves attention from **starting breastfeeding**

To **sustaining exclusive breastfeeding over time**

Plain-language alternative (if you prefer for the slide)

If “KPI” feels too technical for your audience, you could say:

“Shift program focus: from starting breastfeeding → to sustaining it through six months”

or

“Measure success by continuation, not just initiation”

Frontline Implementation — Health Extension Program (HEP)

- Prioritize months 2–5 home follow-up
- Use risk-based household tracking
- Deliver targeted counseling (continuation barriers)
- Engage family influencers (fathers, grandmothers)
- Activate peer support groups & model mothers
- Feed real-time data → woreda & MoH

This slide focuses on the **Health Extension Program as the frontline delivery platform**—the point where policy becomes **actual behavior change**.

If the Ministry sets direction, the Health Extension Program ensures that: **Mothers receive sustained, practical support in the settings where feeding decisions are made—at home and within the community.**

1. Prioritize Months 2–5 Through Home Follow-Up

The evidence is clear: the sharpest decline in exclusive breastfeeding occurs between **months two and five**.

So, the Health Extension Program should:

Move beyond early postnatal visits

Institutionalize **scheduled home visits during months 2, 3, 4, and 5**

This is the **critical window** where continuation either holds—or breaks down.

The emphasis shifts from:

“Did breastfeeding start?”

to

“Is exclusive breastfeeding still being maintained?”

2. Implement Risk-Based Household Tracking

Not all households face the same risks of early drop-off.

Health Extension Workers (HEWs) can use simple criteria to identify:

Mothers returning to work early

Households where:

- Water or other liquids are introduced early

- Family members influence feeding decisions

Infants showing signs of:

- Growth concerns

- Feeding difficulties

These households can be flagged for:

More frequent follow-up and targeted support

This ensures efficient use of limited frontline capacity.

3. Deliver Targeted Counseling on Continuation Barriers

At this stage, counseling must go beyond general messages.

HEWs should focus on **specific, common barriers**, including:

Perceived milk insufficiency (“the baby is still hungry”)

Managing breastfeeding alongside **maternal workload**

Addressing beliefs around:

- Water supplementation

- Early complementary feeding

The goal is:

Problem-solving, not just messaging

Each visit should help mothers **navigate real-life constraints**.

4. Engage Family Influencers

Breastfeeding decisions are rarely made by the mother alone.

Key influencers include:

Grandmothers and elder women

Fathers

Other household members

HEWs should:

- Include these individuals in counseling sessions

- Address their concerns directly

- Align household support with recommended practices

This is essential because:

Norms and advice within the household can either reinforce or undermine exclusive breastfeeding.

5. Activate Peer Support and Model Mothers

Community-based reinforcement is critical.

The program can leverage:

Mother-to-mother support groups

Model mothers who successfully maintain EBF

These platforms:

Normalize sustained breastfeeding

Provide practical, experience-based advice

Reduce isolation and uncertainty among new mothers

This shifts support from **one-to-one counseling** → **to community reinforcement**.

6. Feed Real-Time Data Back into the System

Finally, the Health Extension Program plays a key role in **data generation and feedback**.

HEWs can:

Track EBF status by infant age during visits

Report simple indicators:

EBF at 2 months

EBF at 4–5 months

This information can be aggregated at:

Woreda level

Regional level

National level

Creating a **real-time picture of continuation performance**, not just national averages.

In closing, the Health Extension Program's role is to make exclusive breastfeeding sustainable—by supporting mothers where behavior is shaped: in households, over time, and within communities.

Public Health Leadership — Schools of Public Health (ACIPH & AAU SPH)

- Define national EBF continuation package (months 2–5)
- Lead implementation science & impact evaluation
- Build data systems (age × region dashboards)
- Train health workforce (HEWs, clinicians, managers)
- Guide quality improvement & supervision models
- Translate evidence → policy standards & scale-up

This slide positions the two schools of public health—the Addis Continental Institute of Public Health and the Addis Ababa University School of Public Health—as the **bridge between evidence and national scale**.

If Sociology helps us understand behavior, and the Ministry and Health Extension Program deliver services, then the Schools of Public Health ensure that:

What is delivered actually works—reliably, efficiently, and at scale.

The two institutions will:

1. Define the National “Continuation Package” (Months 2–5)

The first role is to **formalize what the system should deliver** during the critical drop-off period.

This includes designing a standardized, evidence-based package:

Timing and content of **follow-up contacts (1–5 months)**

Structured counseling protocols addressing:

Perceived milk insufficiency

Early supplementation pressures

Practical guidance for:

Breastfeeding under workload constraints

Household engagement

The goal is to move from:

General recommendations to → **Operational protocols that can be implemented nationwide**

2. Lead Implementation Science and Impact Evaluation

The two institutions are uniquely positioned to answer:

What works, for whom, and under what conditions?

They can:

Design and test **pilot interventions** across diverse regions

Compare different delivery models:

- HEW-led home visits

- Group-based counseling

- Facility-linked follow-up systems

Use rigorous methods:

- Quasi-experimental designs

- Randomized or stepped-wedge trials where feasible

This ensures that scale-up is based on:

Evidence of effectiveness—not assumptions

3. Build Data Systems (Age × Region Monitoring)

A major gap identified in this analysis is the reliance on **aggregate indicators**.

Schools of Public Health can support the MoH in developing:

Routine monitoring systems that track:

- EBF by infant age (0–5 months)

- EBF by region and woreda

Simple dashboards that allow:

- Early detection of drop-off

- Targeted response

This transforms monitoring from:

Static reporting to → **Dynamic program management**

4. Train the Health Workforce

Sustained improvement requires **capacity building at multiple levels**:

Health Extension Workers (HEWs):

- Practical counseling skills

- Identifying and addressing continuation barriers

Facility staff:

- Continuity of care from delivery to community follow-up

Program managers:

Using data for decision-making

Supervising continuation-focused programs

Training should emphasize:

Behavioral problem-solving, not just technical knowledge

5. Guide Quality Improvement and Supervision

Schools of Public Health can design and institutionalize:

Quality improvement (QI) cycles:

Identify drop-off points

Test small changes

Scale what works

Supportive supervision tools that focus on:

Continuation metrics

Counseling quality

Follow-up coverage

This ensures that programs **improve continuously**, not just operate.

6. Translate Evidence into Policy and Scale-Up

Finally, these institutions play a critical translation role:

Convert research findings into:

National guidelines

Training curricula

Standard operating procedures

Support the Ministry in:

Scaling proven interventions

Avoiding ineffective approaches

In this sense, they ensure that:

Innovation becomes institutionalized practice

In closing, the two Schools of Public Health ensure that Ethiopia not only promotes exclusive breastfeeding but also systematically learns how to sustain it and then scales what works.

Analytical Guardrails — What ACIPH & AAU SPH should train students not to do

- Equate association with causation
- Use regression as a default or sole method
- Ignore multicollinearity /variable interdependence
- Overinterpret large or unstable coefficients
- Replace patterns with model-driven narratives
- Ignore age dynamics and context-specific variations

This slide is deliberately framed as “**what not to do**”, and it speaks directly to the role of the two Schools of Public Health in maintaining **analytical integrity**. The point is not to dismiss regression methods altogether, but to ensure that analysis of exclusive breastfeeding—especially using DHS data—is **methodologically appropriate and substantively meaningful**.

1. Do not equate association with causation

A common problem in DHS-based studies is the use of causal language—terms like “*determinants*” or “*drivers*”—based on cross-sectional data.

But DHS data are:

Observational

Cross-sectional

Lacking temporal ordering

So regression coefficients represent:

Conditional associations—not causal effects

When this distinction is ignored, findings can be misinterpreted and misused in policy.

2. Do not use regression as a default or sole method

There is a tendency to treat multivariable regression as the **gold standard**, regardless of the research question.

But for a behavior like EBF—which:

Changes rapidly over time

Varies across context

Is influenced by unobserved social dynamics

A single regression model often **oversimplifies reality**.

Instead, analysis should begin with:

Descriptive patterns

Stratified analysis (e.g., age × region)

Exploration of **behavioral trajectories**

Regression, if used, should be **supplementary—not foundational**.

3. Do not ignore multicollinearity and variable interdependence

Variables commonly included in EBF models—such as:

Maternal education

Wealth

Media exposure

Urban/rural residence

are **not independent**.

They represent overlapping dimensions of socioeconomic position.

- When included together without diagnostics:
- Coefficients can become unstable
- Effects may be misallocated across variables
- Interpretation as “independent effects” becomes invalid

Schools of Public Health must insist on:

Explicit testing and reporting of variable interdependence

4. Do not overinterpret large or unstable coefficients

Extremely large odds ratios—especially for regional variables—often signal:

Small sample sizes

Sparse data

Model overfitting

Or quasi-separation in logistic models

When confidence intervals are wide and estimates are extreme, they should be interpreted as:

Indicators of model instability—not substantive effects

Failing to recognize this can lead to **misleading conclusions about regional**

differences.

5. Do not replace observed patterns with model-driven narratives

If descriptive analysis shows:

A strong **age-based decline**

Weak and non-linear **socioeconomic gradients**

But regression outputs suggest:

Strong, independent effects of education or wealth

Then the model may be:

Distorting rather than clarifying the underlying pattern

In such cases, priority should be given to:

What the data show directly, not what the model imposes

6. Do not ignore age dynamics and context-specific variation

Perhaps the most important omission in many studies is the failure to incorporate:

Infant age as a central variable

Context-specific differences across regions

Without these, models risk:

Masking the dominant driver (age-related decline)

Misattributing variation to secondary factors

For EBF, any credible analysis must treat:

Time (age) and context (region) as primary dimensions—not control variables

Positive Framing (What to Do Instead)

Taken together, these cautions point to a more appropriate analytical approach:

Maintain a **clear distinction between association and causation**

Explicitly assess **variable interdependence**

Prioritize **descriptive and stratified analyses**

Align methods with the **behavioral nature of EBF**

This approach yields results that are:

Statistically defensible

Substantively meaningful

And directly useful for **policy and program design**

Closing Line for the Slide

The role of the Schools of Public Health is not just to analyze data—but to ensure that the methods used lead to valid, interpretable, and actionable

insights.

THE END

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