



Evidence for Action: Coverage and Access Gaps in Integrated Management of Acute Malnutrition in Kapilvastu District of Nepal

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ABSTRACT

Background: Acute malnutrition remains a critical public health problem in Nepal, contributing substantially to under-five morbidity and mortality. Despite the nationwide expansion of the Integrated Management of Acute Malnutrition (IMAM) program, evidence on coverage and access gaps at the sub-national level is limited. This study assessed program coverage and explored barriers and boosters of Integrated Management of Acute Malnutrition (IMAM) program in Kapilvastu District.

Methods: A Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) was conducted between 10–22 November 2024 following the standard three-stage methodology. The study comprised children aged 6–59 months residing in the program catchment areas who met the criteria for severe acute malnutrition, including both those enrolled in and those not accessing IMAM services. Stage I involved analysis of routine IMAM data and qualitative inquiry to identify high- and low-coverage areas and to determine barriers and boosters to service uptake. Stage II tested hypotheses through small-area surveys, and Stage III conducted a wide-area Bayesian survey to estimate coverage. Data were analyzed thematically and triangulated across sources, methods, and locations.

Results: Routine program data revealed inconsistent admission trends and delayed case detection, with median length of stay of nine weeks among recovered cases. Fourteen boosters and twenty-four barriers were identified, including strong community trust in Female Community Health Volunteers (FCHVs) and adequate RUTF supply as key facilitators, and cultural restrictions, long travel distance, limited awareness, and stock-outs as major barriers. The Bayesian analysis estimated overall program coverage at 22.9% (95% CI: 14.3–34.8), with point coverage of 6.7% and period coverage of 12.5%. A gender gap was evident, with 86% of uncovered cases being female.

Conclusion: Despite a decade of IMAM implementation, program coverage in Kapilvastu remains below the Sphere minimum standard of 50%. Addressing systemic bottlenecks, particularly community awareness, gender and social inclusion, health worker capacity, and supply consistency—is critical to improving access and treatment uptake. Strengthened community engagement and sustained local government commitment are essential to close the coverage gap and advance progress toward national and SDG nutrition targets.

Keywords: Integrated Management of Acute Malnutrition, Coverage Assessment, SQUEAC, Access, Nutrition, Nepal

BACKGROUND

Acute malnutrition is a critical public health concern significantly contributing to increased child morbidity and mortality. Children

with severe wasting are 11 times more likely to die from common childhood illnesses compared to the well-nourished children (1). Although the prevalence of wasting declined from 10% in 2016 to 8% in 2022 (2), Nepal

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falls significantly short of achieving its national targets of reducing acute malnutrition below 5% as the goal set in the Second-Long Term Health Plan (1997-2017) and the Multi Sector Nutrition Plan (MSNP I and II). Sustainable Development Goals (SDG) have set even more ambitious target of less than 5% by 2025, and to 4% by 2030 (3).

To address acute malnutrition, Government of Nepal implemented IMAM program, previously known as Community Management of Acute Malnutrition (CMAM) program in 2008/9, expanding it from 5 districts to 38 districts by 2020 (4). Furthermore, the Government of Nepal endorsed the Comprehensive Nutrition Specific Intervention (CNSI) package and implemented across all 77 districts of Nepal. Despite these efforts, many acutely malnourished children remain undetected within the community hindering them to access timely and appropriate treatment.

The IMAM program addresses wasting through a community-based approach, including nutrition education, therapeutic feeding at Outpatient Therapeutic Care Centers (OTCCs) for Severely Acutely Malnourished (SAM) cases without medical complications, those children with medical complications are managed at Inpatient Therapeutic Care Centers (ITCCs). Moderate wasting is addressed through counselling mothers/caretakers on Infant and Young Child Feeding (IYCF) practices, and hygiene promotion.

The program has been implemented in Kapilvastu since 2012/13 to address the acute malnutrition and improve the nutrition outcome of the district. However, the evidence on program coverage, and factors supporting and hindering the coverage are still lacking. Therefore, this coverage assessment plays a crucial role in generating the evidences on the factors boosting up or pulling down the coverage. At the same time, it also provides the coverage estimate, point coverage and period coverage of the program.

METHODS

This assessment strictly followed the standard coverage assessment methodology called Semi Quantitative Evaluation of Access and Coverage developed by Valid International, FHI 360 / FANTA, UNICEF, Concern Worldwide, World Vision International, Action Against Hunger, Tufts University, and Brixton Health. The necessary tools were also adopted from the tools available in coverage monitoring network which were adapted in the context of IMAM program implementation in Nepal. The data collection in the district was done from 10 November 2024 to 22 November 2024. The methodology is three-stage procedure:

1. Stage I: Identification of high and low coverage areas
2. Stage II: Validation of hypothesis
3. Stage III: Wide Area Survey/ Coverage Estimate

Stage I: Identification of High and Low Coverage areas

Stage I identifies the areas of high and low coverage through quantitative data analysis of routine program data. This analysis was done basically to inform the assessment team regarding the admission pattern, MUAC on admission and exit, discharge outcomes, length of stay, relation between case identification and seasonality. Qualitative data was collected via KII, FGDs, and direct observations. The qualitative data is collected to identify the boosters supporting the effectiveness of the program and barriers hindering the program coverage and access.

Tools: Respondent-oriented key informant interview guides, FGD guides and direct observation checklists were developed. These tools have been previously tested during the same assessment conducted in other districts and hence the tools were adapted modifying the questions according to the current context of the program implementation.

Participants: The participants or respondents for this assessment were mothers or caretakers of various categories of cases as defined by IMAM guideline and the stakeholders involved in the program. Basically, in this assessment the following were the respondents

- Mother or caretaker of SAM children who are enrolled in the program
- Mother or caretaker of SAM children not covered in IMAM program
- Mother or caretaker of SAM children who defaulted from IMAM program
- Nutrition focal person at OTCC
- Female Community Health Volunteer
- OTCC In-charge
- Representative of a community-based organisation
- Community leader (ward representative)
- Teacher
- Mother of cured child
- Mothers of under five children
- Nutrition focal person at health office

Unlike in other conventional studies, the sample size or the respondents for the collection data is not predetermined for the assessment. The sample size is determined as the stages progress. Stage I strictly adheres to the principle of saturation and triangulation of data by source method and location. Hence, the qualitative data in Stage I is collected until it achieves the

saturation point. For further validation of data, FGDs were conducted with FCHVs, and mothers of under 5 children using FGD guides and direct observation at OTCCs. The qualitative data were collected from 18 different locations of Kapilvastu district.

Data Management and Analysis

Qualitative data collected was synthesized in the form of Barriers, Boosters and Recommendations (BBR) exercise. In SQUEAC methodology, qualitative data are systematically synthesized through a BBR exercise, which organizes findings from interviews, focus group discussions, observations, and routine data into factors that hinder access (barriers), factors that facilitate service uptake (boosters), and actionable programmatic responses (recommendations). This structured synthesis enables triangulation across sources, identification of dominant access constraints, and prioritization of context-specific strategies to improve program coverage. All the information on barriers, boosters, and recommendations was combined in 8 thematic areas out of which 6 belonged to six WHO building blocks i.e. service delivery, health workforce, health information systems, medical products, vaccines and technologies, financing and leadership/governance (5), and the rest 2 areas were community engagement, and gender and social inclusion (GESI). Qualitative findings were integrated using the Barriers, Boosters, and Recommendations (BBR) framework, a standard SQUEAC analytical approach used to systematically organize factors influencing program access and coverage. Each identified barrier and booster was documented in a BBR matrix, where symbols were used to denote the data source (e.g., caretakers of under five children, FCHVs, health workers), data collection method (e.g., FGD, KII, observation), and geographic location (e.g., rural or urban municipalities). These symbols were presented within the BBR tables, enabling visual triangulation across multiple sources, methods, and locations. This symbol-based triangulation strengthened the credibility and validity of findings by ensuring that key barriers and boosters were supported by converging evidence rather than single-source observations. To assess the relative influence of each factor on program coverage, two scoring methods were applied: simple scoring, where all factors were weighted equally to capture breadth, and weighted scoring, where scores (1–4) were assigned based on predefined criteria of identified number of boosters and barriers in Stage I. This dual scoring approach allowed both comprehensive mapping and prioritization of the most influential barriers and boosters (6).

Stage II: Setting a hypothesis

Based on the synthesis of qualitative and routine program data in Stage I, barriers and boosters were assessed in terms of their relative influence on program

effectiveness, service access, and treatment coverage. The level of impact was determined through a structured BBR analysis, which considered (i) frequency of citation across sources, (ii) consistency across methods and locations, and (iii) plausibility of the causal link between each factor and enrolment or continuation in IMAM services. The hypothesis was set which stated, “Coverage of the program is high in communities having low concentration of Disadvantaged Groups (DAG) and low in communities having high concentration of DAG in both rural and urban context”. Disadvantaged Groups (DAG) is defined in this study as socially and economically marginalized populations, including Dalits, Rajbanshi, Santhal, Muslim, and other excluded communities. Active-adaptive case finding is a SQUEAC-recommended approach in which case-finding strategies rely solely on routine screening points, adaptive methods (e.g., door-to-door visits, community informant guidance, purposive site selection) to maximize the likelihood of identifying uncovered cases, particularly in hard-to-reach or high-risk communities (6). During this stage, case identification was conducted using a small-area survey approach in both rural and urban contexts; in rural areas, an active-adaptive case-finding strategy was applied, while in urban areas, a door-to-door case-finding approach was used to identify eligible cases. The case finding was done in 12 different locations in both the context, urban and rural. Six locations were purposively selected based on the proportion of households belonging to disadvantaged groups (Muslims and Dalits), using local government demographic records and consultation with municipal officials. Locations where disadvantaged groups constituted a relatively higher proportion of the population were classified as high-concentration areas, while those with a comparatively lower proportion were classified as low-concentration areas.

Tools: Separate standard questionnaire for covered and uncovered cases were adopted from coverage monitoring network. The questionnaires were administered to the mothers or caretakers of covered cases, i.e. SAM cases enrolled and currently under treatment, and the cases enrolled in the program who have graduated from SAM to MAM or normal. The uncovered questionnaire was administered to the mothers or caretakers of children who are SAM but not enrolled in the program at the time of assessment. The entire case finding process included the children between 6 to 59 months of age.

Stage III: Wide Area Survey

This stage is also called a wide area survey or likelihood survey. Before moving to this stage, the prior was developed based on the scoring from the Barriers, Boosters, and Questions (BBQ) exercise. Prior mode provides a guesstimate about the program coverage which informs the assessment team that the coverage

would be somewhere around the prior mode. This is calculated by taking the average of simple and weighted.

The sample for wide area survey or likelihood survey was calculated using the alpha prior and beta prior and the uncertainty level. Since this assessment was conducted for the first time in the district, the uncertainty level of 25% is taken. Using the standard table for 25% given the SQUEAC guideline, Alpha prior of 11.1, Beta prior of 20.6, and precision of 12 was plugged-in in Bayesian scale for suggested sample (n) which was 30. Here the calculated sample size was the number of SAM cases (n) required for wide area survey. This required to be translated into the minimum number of villages that needed to be sampled to achieve the required sample size. The required number of villages was calculated using the following formula:

$$n_{\text{villages}} = \frac{n}{\text{average village population}_{\text{all ages}} * \text{percentage of population}_{6-59\text{months}} / 100 * \text{SAM prevalence} / 100} * 100.$$

The case finding is done via active adaptative approach in rural and door-to-door approach in urban context. Case findings were done through anthropometric measurement using mid-upper arm circumference (MUAC) tape and checking the bilateral pitting edema.

Tools: The standard questionnaire, adopted and adapted from coverage monitoring network, was used to collect qualitative information on reasons for enrolling and not enrolling in the program. Two different types of questionnaires were used, one for mothers/caretakers of covered or enrolled SAM cases and another for SAM cases out of program meaning that the cases were identified as SAM during assessment but were out of treatment (not covered by the program). Tally sheet of coverage monitoring network was also used to track the date of survey and number of cases identified.

Ethical Approval

Ethical approval from the Nepal Health Research Council (NHRC) was taken prior to the commencement of field activities with additional approvals from the Family Welfare Division (FWD) under the Ministry of Health and Population (MoHP).

RESULTS

The results of this assessment are obtained in three phase procedure where the result of one procedure leads to another stage.

Stage 1: The quantitative data was analyzed for admission over time, MUAC at admission, discharge over time and length of stay and based on the quantitative analysis, areas of low and high coverage were identified to identify the reasons for high and low coverage of the program.

Quantitative Findings

Admission overtime:

The data for admission over time (in Figure 1) showed the inconsistencies in the number of children admitted in the OTCCs. The admissions were consistent in the months mid-July to mid-October to some extent, which declined significantly in mid-October to mid-November and mid-January to mid-February. Mid-July to mid-September months fall in the monsoon season, a period associated with high prevalence of diseases such as diarrhoea and malaria, which often lead to malnutrition. The decline in admissions during mid-October to mid-November may be attributed to the festival season (Dashain and Tihar), when food availability generally improves for many households. Conversely, mid-March to mid-May months, which fall during the dry season, often see a rise in health issues related to seasonal changes, such as respiratory infections and water scarcity-related illnesses, impacting the overall nutritional status of children. Hence the identification and admission in OTCC increased (Figure 1).

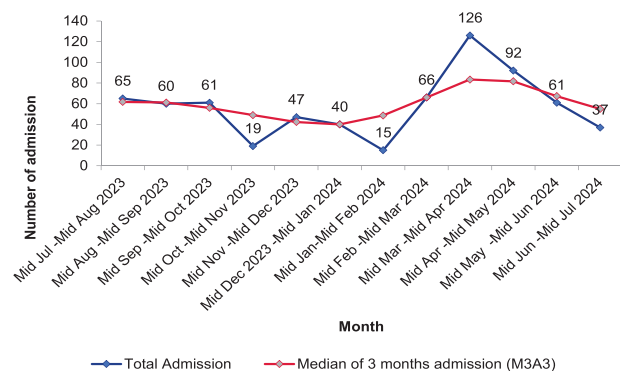


Figure 1. Admissions over time

MUAC at admission

The data on MUAC at admission shown in Figure 2 indicates that MUAC peaks at 115 mm and 110 mm, which tells that most of children are admitted to OTCCs either when their MUAC is 115 mm or when it is 110 mm. Since the cases were also enrolled in the program using z-score, MUAC values of more than or equal to 115 mm were also observed. However, there might have been wrong admissions by MUAC, which cannot be clarified from the graph. The same figure also shows that children with MUAC measurements of less than 115 mm as well as less than 125 mm were mentioned, without pointing the exact MUAC measurement in the registers. Additionally, cases with MUAC measurements as low as 80 mm, 95 mm, and 100 mm were also recorded. This highlights late detection and delayed admission of cases into the program. Such delays place children at a significantly higher risk of health complications and vulnerability (Figure 2).

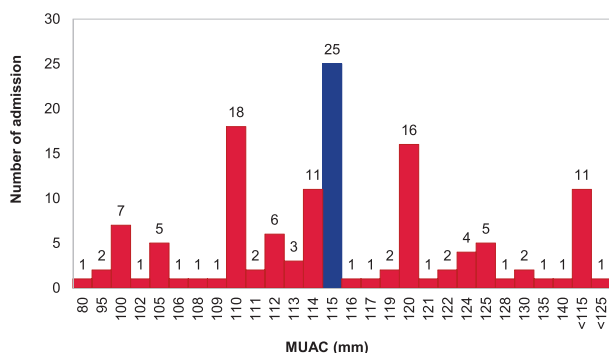


Figure 2. MUAC at admission

Discharge Over time

The data for discharge over time in Figure 3 reveals that recovery rate for only six months meet the Sphere standard which is >75%. Similarly, the defaulter rate exceeds the Sphere standard of <15% (Figure 3).

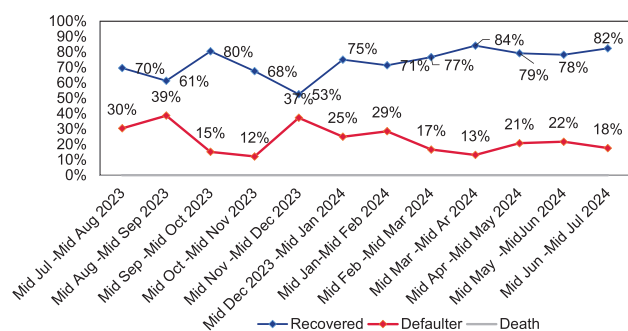


Figure 3. Discharges over time

Length of Stay (week) before discharge as recovered

The median length of stay in the program for children 'discharged as cured' was 9 weeks as shown in Figure 4. This means that 50% of children were discharged within 9 weeks or less. The minimum length of stay for recovery was 3 weeks, suggesting that some children responded quickly to treatment.

However, the maximum length of stay extends to 32 weeks. Such prolonged stays may indicate challenges, such as cases with severe co-morbidities, late detection of malnutrition, or issues with treatment adherence and follow-up (Figure 4).

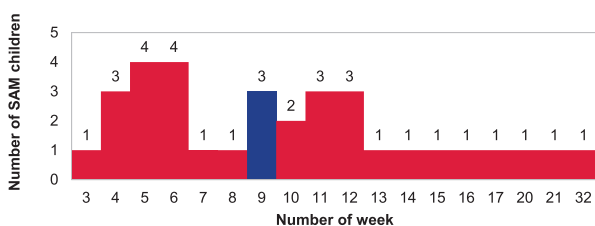


Figure 4. Length of stay (week) before discharge as recovered

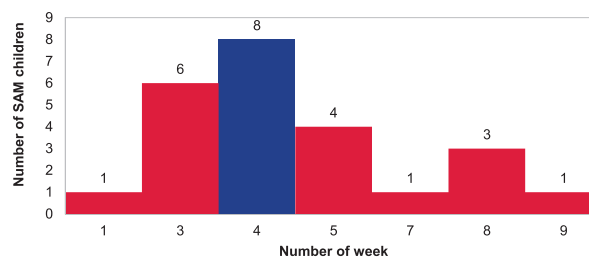


Figure 5. Length of stay or number of visits before discharge as defaulter

The median number of visits before defaulting from the program was 4 visits, meaning 50% of the children default after 4 or fewer visits. However, there were cases where children defaulted after just one visit, indicating that some come for admission but fail to return for any follow-up visits (figure 5).

Qualitative finding

Based on the quantitative data analysis, 18 different locations were selected for identification of factors associated with low and high coverage. Fourteen boosters and twenty-four barriers were identified. Barriers were identified across both the service delivery and service uptake domains; however, these categories were not mutually exclusive, and several barriers overlapped across both domains. Cultural restrictions, particularly in Muslim communities, require women to obtain permission from male family members before accessing healthcare services. Language barriers at service delivery sites further hinder access. In addition, unwelcoming behavior from some health workers discourages service seekers, and frequent stockouts of RUTF limit treatment availability. The long distances between OTCCs and beneficiaries' homes, combined with a general lack of awareness among mothers about the program, also contribute to low service utilization.

The boosters mainly included the active involvement of trained Female Community Health Volunteers (FCHVs) and Health Workers (HWs), strong community trust in these frontline workers, and the consistent availability of RUTF in health facilities. Local initiatives such as nutrition allowances for malnourished children and awareness campaigns, along with large number of OTCCs, are also contributing to the district's efforts to identify the cases and bring them into program catchment and provide timely treatment.

The BBQ exercise evaluated 14 boosters and 24 barriers using both a simple scoring and a weighted scoring method, as presented in the following table. In the simple scoring method, each booster and barrier were assigned an equal score, if all factors influenced the program's effectiveness equally. In contrast, the weighted scoring method assigned scores based on the perceived level of impact that each factor had on the program's outcomes (Table 1).

Table 1. Barriers and Boosters weighing score

| S.N. | Positive factor (Booster) | Weighing | | Negative factor (Barrier) | Weighing | |
|------|---|----------|----------|---|----------|----------|
| | | Simple | Weighted | | Simple | Weighted |
| 1 | Active FCHVs (screening, counselling) | 4 | 2.5 | Poor economic condition of households | 4 | 3 |
| 2 | Trained FCHVs and HWs in CNSI | 4 | 3.5 | No / less awareness of community on malnutrition | 4 | 3.5 |
| 3 | CBOs/NGOs/partner working in nutrition available | 4 | 3 | Superstition (faith on traditional healer) | 4 | 2 |
| 4 | Increasing trust of mothers / community in FCHVs and HWs | 4 | 2 | Cultural barriers | 4 | 2.5 |
| 5 | Responsible Health Workers | 4 | 2 | No/limited decision power of mothers (dominant in-laws/male) | 4 | 3.5 |
| 6 | Adequate stock level of RUTF maintained in HFs | 4 | 3.5 | Negligence in treatment from mothers/family | 4 | 2.5 |
| 7 | Supportive family | 4 | 2.5 | Long distance from OTCCs/HFs | 4 | 2.5 |
| 8 | Adequate number of OTCCs established in the district (44) | 4 | 2 | No designated room for OTCC | 4 | 3 |
| 9 | Supportive linkage between OTCCs (supported to circulate RUTF) | 4 | 2.5 | RUTF shortage / stockout | 4 | 2 |
| 10 | Presence of influential people (Maulana, political leaders) | 4 | 1.5 | Unavailability of updated/IMAM guidelines | 4 | 3 |
| 11 | Nutrition allowance for SAM children (Banganga, Shivraj R/Ms) | 4 | 1.5 | Commodities shortage / stockout | 4 | 3 |
| 12 | Malnutrition free ward declaration campaign (Ward 5 & 8 of Banganga municipality) | 4 | 2 | High turn-over of trained HWs | 4 | 1.5 |
| 13 | MAM cases covered by other project (Super Cereal) | 4 | 2.5 | Unwillingness of HWs to admit SAM children (from outside of their catchment area) | 4 | 1 |
| 14 | Provision of incentive for FCHVs | 4 | 2 | Behavioural concerns of Health Workers | 4 | 2.5 |
| 15 | | | | Irregularity in service delivery | 4 | 1 |
| 16 | | | | Language barrier | 4 | 2 |
| 17 | | | | Refusal of RUTF by SAM child | 4 | 2 |
| 18 | | | | Improper storage of RUTF (tin trunk used for other commodities/sharing, damaged RUTF) | 4 | 1.5 |
| 19 | | | | RUTF sharing with other children and adults | 4 | 2.5 |
| 20 | | | | No budget for MGM and mobilisation of FCHVs | 4 | 3 |
| 21 | | | | Inactive FCHVs (SAM child near FCHV's house) | 4 | 2 |
| 22 | | | | Poor health seeking behaviours | 4 | 2.5 |
| 23 | | | | Absence of FCHV (FCHV abroad, no new recruitment due to political pressure) | 4 | 2 |
| 24 | | | | Limited transportation to go to HFs/OTCCs | 4 | 2 |

Stage 2:

A hypothesis was set based on the barriers and boosters identified during stage 1 and scoring done during BBQ exercise. This hypothesis was confirmed through a small area survey. Hypothesis was set around awareness which stated, “Coverage of the program is high in communities having low concentration of DAG and low in communities having high concentration of DAG in both rural and urban context”.

An active adaptive case-finding approach was implemented to test the hypothesis. A total of three SAM cases were identified in both the areas/locations with high and low concentration of DAG. In rural context, a total of 3 cases among which 2 covered cases (bilateral pitting oedema and/or MUAC <115mm and currently in OTCC for treatment) were identified in the communities with low concentration of DAG. Similarly, 4 cases were identified among which 1 covered case was identified in areas/locations with high concentration of DAG. Similarly, in the urban context, a total of 4 SAM cases were identified in areas/locations with low concentration of DAG, and 5 cases were identified in areas/locations with high concentration of DAG. Among 4 cases in the communities with low concentration of DAG, 3 were enrolled in the program and were receiving treatment at the OTCCs. Similarly, a total of 5 uncovered SAM cases (bilateral pitting oedema and/or MUAC <115mm and not currently in OTCC for treatment) were identified in areas/locations with high concentration of DAG. The decision rule was satisfied in both rural and urban context and thus the hypothesis was confirmed and validated.

Stage 3:

Following confirmation of the hypothesis in Stage II using SQUEAC decision rules, the assessment proceeded to Stage III (wide-area likelihood survey), as per standard SQUEAC methodology. In Stage II, hypothesis validation was based on rule-based confirmation, whereby the observed number of covered and uncovered SAM cases in purposively selected high- and low-coverage areas was compared against predefined decision thresholds derived from expected coverage levels. When observed findings met or exceeded these decision rules in both rural and urban contexts, the hypothesis was considered validated, allowing progression to Stage III.

During the Stage III wide-area survey, a total of 32 SAM cases were identified. Of these, only 2 cases (6%) were currently enrolled in the treatment program, while 2

cases (6%) were in the recovery phase (MUAC >115 mm but still receiving RUTF and not yet meeting IMAM discharge criteria). The remaining 28 cases (88%) were uncovered and not receiving treatment at the time of the survey. Among the uncovered cases, 24 (86%) were female and 4 (14%) were male, indicating a potential gender-related disparity in access to care. In addition, 8 uncovered cases had been previously enrolled in the program but had relapsed at the time of assessment.

Caretakers of defaulted children reported multiple reasons for discontinuing treatment, including children's dislike of RUTF, perceived side effects such as vomiting or nausea, competing maternal responsibilities (including pregnancy), limited family support, and mistrust in public health facilities. Similarly, among caretakers who had never sought treatment at OTCCs, reported barriers included lack of awareness of IMAM services, preference for private providers, dissatisfaction with the services offered (including expectations of RUTF but receipt of Super Cereal), and inadequate family support.

Overall, the Stage III findings corroborated the qualitative and hypothesis-testing results from earlier stages, demonstrating low program coverage, high proportions of untreated cases, and gender-related access gaps, consistent with the SQUEAC analytical framework.

Coverage Estimation

The wide-area survey identified 32 SAM cases. Among these, 2 cases (C_{in}) were covered in the program, 2 cases (R_{in}) were recovering within the program, and 28 cases (C_{out}) were uncovered. Using a Bayesian analysis with a prior coverage estimate of 34.3%, the updated overall coverage estimate was determined to be 22.9% with a confidence interval of 14.3% to 34.8%. This interval suggests that the true coverage is likely within this range (Figure 6).

However, point and period coverage are calculated using the below formula.

Point Coverage = Covered case (C_{in}) / {Covered case (C_{in}) + Uncovered cases (C_{out})}

$$= 2/(2+28)*100\%=2/30*100\% = 6.67\%$$

Period Coverage = Covered case (C_{in}) + Recovering case (R_{in}) / Covered case (C_{in}) + Recovering case (R_{in}) + Uncovered cases (C_{out})

$$= (2+2)/(2+2+28)*100\%=4/32*100\% = 12.5\%$$

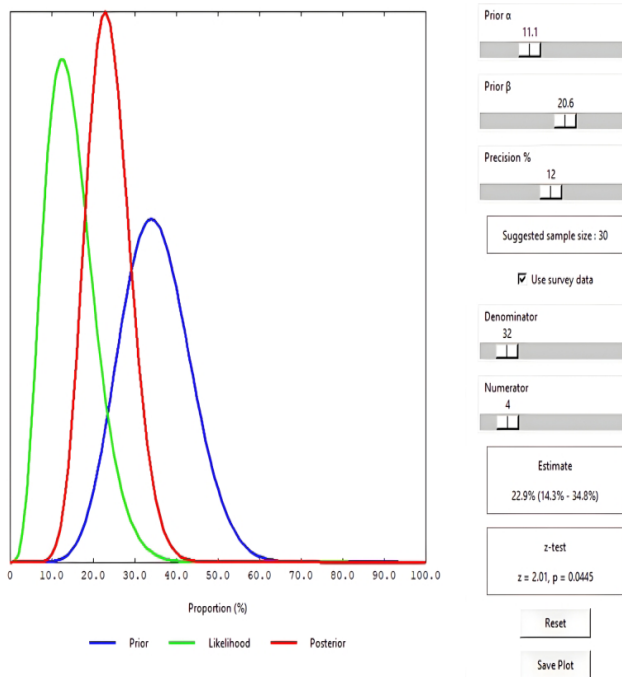


Figure 6. Coverage estimate using Bayesian scale

DISCUSSION

Kapilvastu is one of the early implementation districts for the IMAM program, which commenced in 2012. Despite its long-standing implementation, there has been no documented evidence regarding its coverage. Given the absence of systematic data, it was essential to conduct a coverage assessment to evaluate program reach and effectiveness. This assessment aimed to fill this gap by identifying areas of high and low coverage and provide an overall estimate of program uptake.

The assessment team analyzed data from OTCC registers (HMIS 2.6) and DHIS 2, revealing several gaps in record-keeping at health facilities. The poor documentation in the IMAM recording and reporting tools were also found in the various studies conducted in Kenya (7), Democratic republic of Congo (8), Somalia (9), Zambia (10). These findings highlight significant challenges in program monitoring and service delivery.

During the coverage assessment, 32 cases of SAM were identified. Of these, only 2 were enrolled in the program, 2 had recently recovered from SAM and were in the recovery phase, while the remaining 28 had not received any treatment. Based on these figures, the point coverage, which reflects the proportion of currently enrolled SAM cases, was 6.67%. The period coverage, which accounts for both enrolled and recently recovered cases, was 12.5%. Using a Bayesian statistical approach to adjust for data gaps and biases, the overall estimated coverage was calculated to be 22.9% (95% CI: 14.3% - 34.8%). This means that, when considering statistical adjustments, 22.9% of SAM cases in the district were likely covered by the program, though the actual coverage could range between 14.3% and 34.8%.

The low coverage can be attributed to multiple barriers affecting both service delivery and uptake. Cultural restrictions, particularly in Muslim communities, require women to obtain permission from male family members before accessing healthcare services. The cultural barriers hindering the health care access among Muslim community is also revealed in a narrative review conducted by John Hopkins University on Barriers to Healthcare barriers among Muslim women. (11) Language barriers at service delivery sites further hinder access. Stock out of RUTF has been one of the compounding factors for smooth service delivery which was also reported in the coverage assessment done in Kenya. (12) The SQUEAC conducted in Democratic Republic of Congo, also found that stock out of RUTF along with other essential drugs in the health facilities decreased the trust among beneficiaries regarding program. (8) One of the strong factors that affected the coverage is the awareness among mothers and community which was also observed in SQUEAC conducted in Kenya (12) and Zimbabwe. (10)

Capacity building of the frontline health workers is one of the strong determinants that helps to increase the coverage and access of the IMAM program.(7) Active engagement of FCHVs plays a pivotal role in service uptake and acceptance of the program by the communities, which was also revealed in similar assessment performed in Zimbabwe.(10) The presence of an adequate number of OTCCs across the district contributes in increasing in access to the services which was also observed in the studies conducted in Nepal (13) and Kenya.(12) Likewise, the support from influential community leaders, and municipal funding for nutrition allowances for malnourished children, have further reinforced program sustainability. Such findings were also noted in from the studies conducted in Democratic Republic of Congo (8) and Kenya (7)

The assessment also highlighted key concerns regarding program adherence such as the practice of providing Super Cereal to recovering cases, and distribution of RUTF in simplified approach. This raises concerns about adherence to program protocols. Issues affecting adherence to program protocols were also found in studies conducted in other countries.

CONCLUSION

The SQUEAC assessment in Kapilvastu revealed both systemic and service uptake limitations. Systemic challenges were identified across all six building blocks of the WHO health system framework, as well as in community engagement and gender equality and social inclusion (GESI). To improve service uptake and increase access and coverage of the program, these systemic barriers must be addressed. In parallel,

greater emphasis should be placed on awareness-raising and behavior change interventions, to enhance community participation, demand for services as well as service delivery. Additionally, strengthening the capacity of frontline health workers is a must to ensure the adherence to program protocol and quality service delivery.

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Conflict of interest

The authors declare no conflict of interest.

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