

Acceptability, Appropriateness, and Feasibility of an Integrated Supportive Supervision Checklist for Primary Healthcare Facilities in Tanzania: A Convergent Mixed-Methods Study

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Abstract

Background

Supportive supervision (SS) has been shown as an effective approach for capacity building for healthcare providers, motivation, improving accountability, and the quality of health services. Use of digital tools has been shown to improve SS frequency, accountability, comprehensiveness, and consistency across primary healthcare (PHC) facilities. This study assessed the acceptability, appropriateness, and feasibility of the Integrated Supportive Supervision (ISS) Checklist for primary healthcare facilities.

Methods

A parallel convergent mixed-method study was conducted across seven districts in four regions (Kigoma, Songwe, Mtwara, and Dar es Salaam) in Mainland Tanzania. Ninety-one health personnel completed the quantitative survey, and among them, 24 were invited to a Key Informant interview (KII). The quantitative questionnaire included the Acceptability of Intervention Measure (AIM), Feasibility (FIM), and Intervention Appropriateness (IAM). A semi-structured interview guide was used during KII. Quantitative data were analyzed using absolute numbers and percentages, while qualitative analysis employed thematic analysis.

Results

Among 91 survey respondents, 56.0% were female, 47.2% were aged 30–39 years, and 41.8% were nurses or midwives. Overall, respondents reported high levels of acceptability (93.2%), appropriateness (93.3%), and feasibility (95.1%) of the ISS Checklist for PHC. Qualitative findings complemented and contextualized the quantitative findings, highlighting the checklist's comprehensiveness, alignment with national standards, compatibility with routine supervision workflows, and integration within the AfyaSS digital platform. Reported challenges included checklist length at lower-level facilities, internet connectivity constraints, and the need for additional user orientation.

Conclusions

The ISS Checklist for PHC was perceived as highly acceptable, appropriate, and feasible among healthcare providers and health managers in Tanzania. Integration within the AfyaSS platform enhances supervision standardization, accountability, and real-time use of data. Addressing contextual challenges and strengthening user capacity may facilitate successful national scale-up and long-term sustainability.

INTRODUCTION

Supportive supervision provides a structured mechanism for continuous performance monitoring, capacity building, and problem-solving within primary healthcare (PHC) [1–4]. It is increasingly recognized as a fundamental element of improving service quality and fostering accountability and teamwork among health workers. In decentralized health systems, such as Tanzania's, effective supervision is essential to ensure consistency and quality across a wide range of service delivery points [5–7].

Over the past decade, Tanzania has made substantial investments in PHC infrastructure and workforce development, including the expansion of health facilities, recruitment of healthcare personnel, and improved access to essential medicines and diagnostic services [8–10]. Most villages now have at least one dispensary, health centers serve each ward, and the majority of councils have a Council Hospital. Despite these advances, challenges related to service quality, supervision consistency, and patient satisfaction persist [10, 11]. Gaps in adherence to clinical standards, record-keeping, and infection prevention and control practices highlight the need for more coherent and data-driven supervision systems [4, 12–14].

In response, Tanzania has implemented several quality improvement (QI) initiatives, including the Star Rating Assessment (SRA), 5S–KAIZEN–Total Quality Management (TQM)[15], Strengthening Laboratory Management Towards Accreditation (SLMTA)[16], SafeCare [17], Improvement Collaboratives and Learning Sites [18], Respectful Care and Effective Communication (RCEC) [19–21]. While these efforts have improved the quality of health services, accountability, and transparency, supervision practices often remain fragmented, with multiple vertical checklists and parallel reporting systems. Such fragmentation undermines efficiency, creates duplication, and limits the use of supervision data for performance improvement [22, 23].

To address these challenges, the Ministry of Health (MoH), in collaboration with the Prime Minister's Office–Regional Administration and Local Government (PMO-RALG) and development partners, reviewed and updated the National Supportive Supervision Guideline (NSSG) and Integrated Supportive Supervision Checklist for Primary Health care (ISS Checklist for PHC) [19]. The ISS Checklist for PHC was designed to harmonize supervision processes across the health system, align them with national standards, and promote evidence-informed decision-making at the point of care. The model aligns with global trends toward integrated and systems-oriented supervision mechanisms that contribute to Universal Health Coverage (UHC) and sustainable health system strengthening [2, 24].

The checklist is housed within the existing Afya Supportive Supervision System (AfyaSS), a digital platform developed by the MoH and stakeholders to streamline planning, data collection, analysis, and feedback for supportive supervision. The platform has both mobile and web-based interfaces, enabling real-time reporting and visualization of facility performance across regions and councils. By digitizing the supervision process, the system enhanced

accountability and transparency, facilitated development, and enabled timely follow-up of action plans based on gaps identified during supportive supervision [25, 26].

Successful adoption and implementation of these checklists depend not only on their technical soundness but also on their acceptability, appropriateness, and feasibility from the perspective of end-users, including regional and district health management teams, facility in-charges, and healthcare workers [25, 27]. Despite the national rollout of ISS reforms, there is limited evidence regarding the acceptability, appropriateness, and feasibility of the newly developed ISS Checklist for PHC, particularly when implemented through a digital supervision platform. Understanding end-user perceptions is essential for informing refinement, scale-up, and sustainability.

According to implementation science frameworks, interventions that are perceived as acceptable, appropriate, and feasible are more likely to be adopted, implemented with fidelity, and sustained over time. Therefore, assessing these implementation outcomes is essential for informing refinement of the ISS Checklist for PHC and guiding future scale-up efforts [27].

This study assessed the acceptability, appropriateness, and feasibility of the ISS Checklist for PHC among healthcare workers and district health managers in Tanzania. This study was conducted as part of the national process to revise a supportive supervision (SS) guideline and develop the ISS Checklist for PHC. The findings are expected to inform iterative checklist improvement, enhance digital supervision system integration, and provide implementation insights for other low- and middle-income countries pursuing similar SS improvement reforms. The insights generated provided evidence to guide the effective review of the NSSG and digital integration of SS in Tanzania and similar contexts.

METHODS

Study Design

A parallel convergent mixed method design was used to assess the acceptability, appropriateness, and feasibility of the ISS Checklist for PHC. Quantitatively, a cross-sectional design using a survey questionnaire was deployed to assess the three outcomes described. To gain insight into the contextual factors, a phenomenological design using Key Informant interviews (KIIs) was used among selected healthcare providers and district health managers.

The intervention

The Afya Supportive Supervision System (AfyaSS) is a web- and mobile-based digital platform developed by the Ministry of Health and partners to support planning, implementation, monitoring, and reporting of supportive supervision activities across all levels of the health system. The platform provides a centralized repository for supportive supervision data and enables real-time monitoring of facility performance, identification of gaps, action planning, and follow-up.

Within AfyaSS, supervisors plan supervision activities through the web-based portal and collect data electronically using mobile devices during field visits. The system automatically generates performance summaries, identifies gaps, and facilitates the development of corrective action plans. Completed reports are synchronized to a central server and can be reviewed through web-based dashboards to support accountability and evidence-informed decision-making.

During the pilot implementation, the ISS Checklist for PHC was embedded within AfyaSS and used by district health managers and healthcare providers to conduct supportive supervision across the 21 participating facilities. A schematic overview of the AfyaSS platform architecture and workflow is presented in Fig. 1.

Setting and Population

Four regions; Kigoma, Songwe, Mtwara, and Dar es Salaam, were purposively selected for this study. These regions were chosen to leverage ongoing interventions that are complementary to SS work. In each region, a rural and urban district was included in the study, except for Dar es Salaam, which does not have a rural district; one district was selected. In each district, three health facilities were included: a district hospital, health center, and dispensary, making a total of 21 facilities. Participants included PHC health providers and members of CHMTs.

Sampling justification

No formal sample size calculation was undertaken for either strand, as the study employed purposive rather than probability sampling. Eligible key informants were identified and verbally invited by the district medical officers, who explained the study's purpose and voluntary nature of participation prior to the interview. For the quantitative component, health providers from the 21 selected PHC facilities who participated in the pilot SS were invited to complete the survey; 91 respondents completed the questionnaire. For the qualitative component, 24 key informants were selected to ensure sufficient diversity across cadre, facility level, and region. Selection continued until adequate depth of information was achieved across all three implementation outcomes: acceptability, appropriateness, and feasibility, which is consistent with the principles of purposive sampling in qualitative inquiry [28]. Thematic saturation was assessed iteratively during analysis; no new themes emerged after the 20th interview, suggesting that 24 interviews were sufficient to capture the range of participants' perspectives. All 24 invited key informants agreed to participate and completed their interviews; no participants withdrew or declined to take part.

Data Collection

Survey questionnaires were uploaded on the online ODK-based platform (KoboToolbox) and administered by trained research assistants using Android-based devices. The questionnaire incorporated validated measures to assess implementation outcomes, including the Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM) developed by Weiner et al. [27]. In addition, the questionnaire included items assessing Perceived Attributes of Innovation, adapted from the instrument developed by Atkinson [29], which is based on Rogers' Diffusion of Innovations theory. The survey questionnaire and data abstraction tool, developed for this study, are provided as Additional File 2.

KIs were conducted face-to-face at participants' workplaces, primarily within health facilities and district offices. Interviews were conducted in private settings with only the interviewer and participant present; no supervisors, colleagues, or other third parties were in attendance during any interview. Interviews were conducted in Kiswahili, with clarifications in English where needed, and lasted approximately 30–45 minutes. The semi-structured interview guide, developed for this study and provided as Additional File 1, covered participants' experiences of using the ISS Checklist for PHC, perceived alignment with existing supervision workflows, practical challenges encountered, and suggestions for improvement. The guide was pilot-tested with two health managers not included in the main study and refined accordingly. All interviews were audio-recorded with participants' prior written consent and transcribed verbatim. Kiswahili transcripts were translated into English by a bilingual research team member and reviewed for accuracy. Transcripts were not returned to participants for member-checking; however, data validity was supported through methodological triangulation between the quantitative and qualitative strands, as described in Table 1.

Data Management and Analysis

Quantitative data were exported from KoboToolbox to SPSS version 26. Descriptive statistics summarized respondents' characteristics and responses to the Acceptability (AIM), Appropriateness (IAM), and Feasibility (FIM) measures. Composite mean scores were calculated for each measure.

Qualitative data from KIs were transcribed, translated, and coded in the web-based Dedoose platform. Thematic analysis followed Braun and Clarke's six-phase approach [30]. Initial coding was conducted independently by two researchers (AK and PK), who each read all transcripts and assigned descriptive codes to data segments relevant to the study objectives. Codes were compared, discussed, and reconciled through team consensus, with any discrepancies resolved by a senior researcher (PM). Codes were then grouped into sub-themes and overarching themes. The three implementation outcomes: acceptability, appropriateness, and feasibility served as deductive organising categories within which inductively derived themes were nested. The resulting coding structure comprised 38 primary codes consolidated into 12 sub-themes and 6 overarching themes across the three outcome domains. Direct participant quotes were selected to illustrate and substantiate the identified themes.

Quantitative and qualitative findings were integrated during interpretation using a convergent mixed-methods approach, whereby qualitative themes were used to explain and contextualize quantitative results. Each implementation outcome was assessed using data triangulation across methods and sources as described in Table 1.

Table 1
Study Measures

Implementation outcomes	Qualitative	Quantitative	Key Measures
1. Acceptability	KIs	Survey	AIM scores, perceptions of the checklist relevance
2. Appropriateness	KIs	Survey	Perceived Attributes of Innovation, Fidelity, and uptake
3. Feasibility	KIs	Survey	FIM scores, implementation facilitators/barriers

Findings from both strands were integrated using a convergent approach, where quantitative patterns were compared with qualitative explanations to provide a comprehensive view of implementation outcomes.

Reflexivity and Reporting Standards

KIs were facilitated by two trained research assistants (AK and PK), who are male and female, respectively, holding master's-level qualifications in public health and with prior experience conducting qualitative health systems research in Tanzania. Participants were aware that the broader study was coordinated by the MoH, PMO-RALG, and UNICEF, and that interviewers were independent research staff. No supervisory or hierarchical relationship existed between the interviewers and the participants; however, participants were informed that the study findings would be used to refine the national NSSG, which may have introduced some degree of social desirability in their responses.

Several members of the broader research team (CG, EE, JH, EK, ON, LM, and SM) were involved in the development, digitisation, or national rollout of the ISS Checklist for PHC. To mitigate the potential for researcher bias, these individuals did not facilitate interviews or conduct primary qualitative coding. Regular analytical debriefs were held across the full team to surface and interrogate interpretive assumptions throughout the analysis process. This dual role of some authors as both tool developers and evaluators is acknowledged as a potential source of bias and is noted among the study's limitations.

This study was reported in accordance with the Good Reporting of A Mixed Methods Study (GRAMMS) guidelines [31] and the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist [32]. Completed checklists are provided as Supplementary File S1.

Ethical Clearance

Ethical clearance was sought from Hubert Kairuki Memorial University (HKMU) Institutional Research Ethical Committee (IREC). The IREC has been approved by the National Institute of Medical Research (NIMR) to provide research ethical reviews. Approval certificate KU/IREC/27.10/465 was issued. Before commencing the study, an authorization letter from PMO-RALG was obtained.

RESULTS

Participants’ Characteristics

A total of 91 health personnel participated in the survey, of whom 24 were subsequently selected for KIIs. Among the 24 key informants, 14 (58.3%) were CHMT members serving as supervisors, and 10 (41.7%) were facility-based healthcare providers who had been supervised. Key informants represented all four study regions and all three facility levels (district hospital, health centre, dispensary), and included both male and female participants. More than half of the respondents were female (56.0%), and nearly half (47.2%) were aged 30–39 years. Diploma holders constituted the largest proportion of participants (46.2%), followed by certificate holders (25.3%). Nurses and midwives represented the largest professional group (41.8%), followed by clinicians (27.5%). Approximately two-fifths of respondents (38.5%) had five years or less of professional experience, while 34.0% had more than ten years of experience. Most participants were based at health facilities (71.4%), with health centres accounting for the largest proportion (34.0%). Regionally, respondents were distributed across Kigoma (35.2%), Songwe (26.4%), Dar es Salaam (19.8%), and Mtwara (18.6%) (Table 2).

Table 2
Characteristics of study participants (N = 91)

Description	Number	Percentage
Gender		
Female	51	56%
Male	40	44%
Age		
20–29	16	17.6%
30–39	43	47.2%
40–49	18	19.8%
50–59	16	17.6%
Education		
Diploma	42	46.2%
Certificate	23	25.3%
Bachelor's degree	19	20.9%
Master's Degree	7	7.6%
Cadre		
Nurse/Midwife	38	41.8%
Clinician	25	27.5%
Health Admin	16	17.6%
Pharmacy Personnel	7	7.7%
Lab Personnel	5	5.4%
Experience in years		
1–5	35	38.5%
6–10	25	27.5%
>10	31	34.0%
Duty Station		
CHMT	26	28.6%
District hospital	17	18.7%
Health Center	31	34.0%
Dispensary	17	18.7%
Region		
Kigoma	32	35.2%
Songwe	24	26.4%
Dar es Salaam	18	19.8%
Mtwara	17	18.6%

Overall Acceptability, Appropriateness, and Feasibility of the ISS Checklist for PHC

Overall, the ISS Checklist for PHC was well received by respondents. The mean scores for AIM, IAM, and FIM were all high; the mean percentage of respondents who agreed/strongly agreed with the four statements in each measure was calculated. The majority of respondents (93.2%) rated the checklist as acceptable, 93.3% as appropriate, and 95.1% as feasible.

Qualitative findings supported these results, with participants consistently describing the checklist as relevant, comprehensive, and aligned with national health standards. Respondents emphasized that the checklist reduced variability in supervision practices and provided a structured approach for assessing service delivery. Together, these findings suggest that the checklist was perceived as both technically sound and operationally useful within the Tanzanian PHC context.

Acceptability of the ISS Checklists for PHC

The ISS Checklist for PHC demonstrated a high level of acceptability among respondents. Across all four AIM items, the majority of participants either agreed or completely agreed with the statements. The highest level of agreement was observed for the statement that the checklist “meets my approval,” with 96.8% of respondents expressing agreement or strong agreement and a mean score of 4.38 (SD = 0.76). Similarly, 93.4% reported that the checklist was clear and easy to understand (mean = 4.33, SD = 0.68), while an equal proportion indicated that it integrated smoothly with existing supervision processes (mean = 4.26, SD = 0.73). Furthermore, 89.1% agreed that the checklist comprehensively addressed key supervision domains (mean = 4.32, SD = 0.80). The AIM scale demonstrated excellent internal consistency reliability (Cronbach’s α = 0.90) (Table 3).

Qualitative findings provided insight into the reasons behind these ratings. Respondents described the checklist as comprehensive, relevant, and aligned with national standards. Participants appreciated that the checklist guided supervisors through critical service areas while reducing variation in supervision practices across facilities.

Relevance and alignment with national health standards

The respondents indicated that the checklist is highly acceptable because assessment questions are clear, relevant, structured, and aligned with national health standards. It was also seen as a valid tool, as every item adheres to the required standards, ensuring consistency and practicality. The refined checklist ensures that only facility-specific questions are included, making supervision more efficient and reducing unnecessary workload. Respondents also noted that the questions are valid, as they adhere to established standards and provide a structured approach to assessment.

Improved efficiency and streamlined supervision

Respondents noted that the checklist’s clear and direct questions simplify assessments, while the verification process enhances accountability. Overall, its structured approach improves supervision, reduces inefficiencies, and supports standardized service delivery assessment. The integration of action plans within the system further enhances accountability and follow-up.

“Compared to the previous supervision forms, this one is more complete and gives us guidance on what to observe.” (KII, CHMT Member)

“We now have uniformity. All supervisors are using the same guide, unlike before when everyone had their own style.” (KII, Facility Healthcare Provider)

Checklist Comprehensiveness

Also, respondents indicated that the checklist is highly acceptable because it is well-structured, comprehensive, and streamlines supervision processes. With broad coverage across key departments like administration, maternal and child health, and outpatient services, the ISS checklist ensures that essential areas are consistently addressed, reinforcing their acceptability.

“From my perspective, the checklist addresses most of the six building blocks of healthcare well, especially areas like health commodities and medical equipment. It also does a good job of assessing the availability of medical staff and touches on health information systems effectively.” KII, CHMT member.

Despite the high acceptability of the ISS checklist, some concerns were noted during the pilot phase. Respondents highlighted network challenges as a key barrier, particularly in areas with unstable internet connectivity. Supervisors faced delays in saving and submitting their work, sometimes needing to move to areas with better network signals, as the planning phase requires a computer or laptop and an internet connection. Power outages or poor internet could hinder the planning and approval phase.

“Another issue is that the checklist requires an internet connection for full functionality during the planning phase, and that may pose challenges in some areas where the network is unstable.” (KII, CHMT Member).

Table 3
Acceptability of the ISS Checklist for PHC

Statement	Response	N (%)	Cronbach Alpha	Mean Score	SD
Meets my approval	Completely Disagree	2 (2.2%)	0.9003	4.384615	0.7567361
	Disagree	1 (1.1%)			
	Neutral	0 (0.0%)			
	Agree	45 (49.5%)			
	Completely Agree	43 (47.3%)			
Integrate smoothly with existing processes	Completely Disagree	1 (1.1%)		4.263736	0.7277845
	Disagree	2 (2.2%)			
	Neutral	3 (3.3%)			
	Agree	51 (56.0%)			
	Completely Agree	34 (37.4%)			
Comprehensively addresses supervision domains	Completely Disagree	1 (1.1%)		4.318681	0.8010981
	Disagree	2 (2.2%)			
	Neutral	7 (7.7%)			
	Agree	38 (41.8%)			
	Completely Agree	43 (47.3%)			
Clear and easy to understand	Completely Disagree	1 (1.1%)		4.32967	0.6840231
	Disagree	0 (0.0%)			
	Neutral	5 (5.5%)			
	Agree	47 (51.6%)			
	Completely Agree	38 (41.8%)			
Note: 1 = Completely Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Completely Agree					

Overall, quantitative and qualitative findings converged to demonstrate a high level of acceptability of the ISS Checklist for PHC. The high AIM scores were supported by participants' descriptions of the checklist as comprehensive, easy to understand, and aligned with national standards and routine supervision practices. Respondents also appreciated its ability to standardize supervision processes across facilities and provide clear guidance for assessing service delivery. Although challenges related to internet connectivity were reported, these did not substantially diminish users' positive perceptions of the checklist. Together, these findings suggest that the ISS Checklist for PHC is well accepted by both supervisors and healthcare providers and has strong potential for routine use within the Tanzanian PHC system.

Appropriateness of the ISS Checklists for PHC

Respondents reported high levels of perceived appropriateness of the ISS Checklist for PHC. Overall, more than 89% of participants agreed or completely agreed with each of the four IAM statements. The highest agreement was recorded for the statement that the checklist was suitable for their work context, with 96.7% expressing agreement or strong agreement (mean = 4.34, SD = 0.62). Similarly, 94.3% perceived the checklist as fitting for SS activities (mean = 4.40, SD = 0.66). A large majority also considered the checklist applicable to their daily work (89.9%; mean = 4.33, SD = 0.67) and a good match for their supervision needs (92.1%; mean = 4.22, SD = 0.77). The IAM scale showed high internal consistency (Cronbach's α = 0.89) (Table 4).

These findings were corroborated by interview with participants who reported that the checklist reflected routine supervisory responsibilities and translated national standards into practical supervision activities.

Improved and streamlined supportive supervision processes

The checklist was also seen as practical and efficient, supporting supervisors to quickly identify areas for improvement and minimize the time required for supervision. Its structured, easy-to-follow format encouraged better cooperation, clearer guidance, and improved facility engagement during SS.

"This checklist is appropriate because it matches what we are supposed to do when supervising different service areas. It follows the national structure." (KII, CHMT Member)

Improved service delivery

Participants emphasized that the use of a checklist improved service delivery by identifying gaps, such as the use of incorrect data registers, and supporting corrective action. They also played a role in strengthening infection prevention and control (IPC) practices and accountability through structured follow-ups on previously identified gaps.

“Supervisors can point out service gaps—like infection prevention checks—and guide immediate fixes or prepare an action plan.” (KII, Facility Healthcare Provider)

Despite the checklist's appropriateness, some gaps were noted. As lower health facilities do not offer specialized services, X-rays, and other diagnostics, participants recommended adding/strengthening the ability to skip irrelevant sections based on the facility level. This will improve the flexibility of the checklist and fit based on the facility level.

“Some items... not relevant at dispensary level. It would be better if the checklist allowed sections to be automatically skipped.” (KII, Facility Healthcare Provider)

Table 4
Appropriateness of the ISS Checklist for PHC

Statement	Response	n, %	Cronbach Alpha	Mean Score	SD
Feels fitting for supervision activities	Completely Disagree	0 (0%)	0.8879	4.395604	0.664649
	Disagree	1 (1.1%)			
	Neutral	6 (6.7%)			
	Agree	40 (44.9%)			
	Completely Agree	44 (49.4%)			
Seems suitable for my context	Completely Disagree	0 (0%)		4.340659	0.6185966
	Disagree	1 (1.1%)			
	Neutral	4 (4.5%)			
	Agree	49 (55.1%)			
	Completely Agree	37 (41.6%)			
Applicable to my work	Completely Disagree	1 (1.1%)		4.32967	0.6675818
	Disagree	0 (0%)			
	Neutral	4 (4.5%)			
	Agree	43 (48.3%)			
	Completely Agree	37 (41.6%)			
A good match for my needs	Disagree (2)	5 (5.6%)		4.21978	0.7717541
	Neutral (3)	4 (4.5%)			
	Agree (4)	48 (53.9%)			
	Completely Agree (5)	34 (38.2%)			

Findings from both data sources indicated that the ISS Checklist for PHC was perceived as highly appropriate for SS activities. The high IAM scores were reinforced by interview participants who reported that the checklist closely reflected routine supervisory responsibilities, translated national standards into practical assessment criteria, and facilitated identification of service delivery gaps. While respondents from lower-level facilities noted that some sections were less relevant to their service scope, they generally considered the checklist to be compatible with their work context and supervision needs. Collectively, these findings indicate that the checklist is well aligned with existing SS processes and the operational realities of PHC facilities in Tanzania.

Feasibility of the ISS Checklist for PHC

Respondents perceived the ISS Checklist for PHC as highly feasible for routine implementation. More than 92% of participants agreed or completely agreed with all four FIM statements. The highest level of agreement was observed for the statement that the checklist “feels doable in routine practice,” with 96.7% of respondents expressing agreement or strong agreement (mean = 4.33, SD = 0.72). Similarly, 95.6% reported that the checklist was implementable within their setting (mean = 4.36, SD = 0.74) and could be used as designed (mean = 4.33, SD = 0.73). In addition, 92.3% indicated that the checklist was easy to use (mean = 4.31, SD = 0.73). The FIM scale demonstrated excellent internal consistency reliability (Cronbach's $\alpha = 0.92$) (Table 5).

Interviewed participants attributed this feasibility to the checklist's structured design, automatic action-plan generation, and integration into the AfyaSS platform, which simplified documentation and follow-up processes. The following themes were discussed in detail below.

Framework for supportive supervision

The checklist provided a structure or framework for conducting SS for PHC, identifying gaps, and developing action plans. The checklist was considered well organized with clear questions, standards in each thematic area, and the ability to automatically save the SS details/findings. Also, built-in generation of the work plan based on the identified gaps was appreciated by users. Transitioning from paper to digital records improved organization and data integrity, while enabling real-time performance summaries.

“They are very useful because, at the end of supervision, we generate a summary of the score. This summary provides a clear breakdown of performance across different areas. If a facility has underperformed in a specific area, we can immediately identify it. This allows us to create an action plan to address weaknesses. Then, during the next review, we can assess whether the action plan has led to improvements in those areas.” (KII, CHMT Member)

“With the paper-based system, records could be easily lost. But with digital records, everything is neatly organized.” (KII, Facility Healthcare Provider)

Comprehensiveness of the checklist

The breadth of the supervision checklist was noted and appreciated by respondents. As the checklist covered management, human resources management, finances, and service delivery at the PHC. This enables both facility in-charges and CHMT to review facility performance holistically within one checklist instead of utilizing multiple tools. Also, the checklist guides the supervision flow to ensure all areas are supervised and not skipped/forgotten.

“During supervision, the checklist helps reinforce supervision of all areas, ensuring sections are not overlooked”. (KII, Facility Healthcare Provider)

Sync with the existing SS workflow

Respondents felt the SS using the checklist aligns with the workflow and how the facility operates. They also noted there were no major changes in how they are supervised when the checklist is used. This further enhanced the acceptability and feasibility of the checklist, as it neither changed the supervision process nor increased workload.

“We found it compatible with our routine work. It didn’t require us to change how we supervise, just to be more structured.” (KII, CHMT Member)

However, a few respondents noted that if the supervising team does not have a smartphone, they will not be able to use the checklist during SS.

“Some staff don’t have smartphones, which is a challenge.” (KII, CHMT Member)

Nevertheless, during pilot supervision, high ownership of smartphones among health providers and district managers was noted. All teams were able to conduct SS using the checklist.

Table 5
Feasibility of the ISS Checklist for PHC

Statement	Response	n, %	Cronbach Alpha	Mean Score	SD
Implementable in my setting	Completely Disagree	2 (2.2%)	0.9181	4.362637	0.738113
	Disagree	0 (0%)			
	Neutral	2 (2.2%)			
	Agree	46 (50.5%)			
	Completely Agree	41 (45.1%)			
Possible to use as designed	Completely Disagree	2 (2.2%)		4.32967	0.7311322
	Disagree	0 (0%)			
	Neutral	2 (2.2%)			
	Agree	49 (53.8%)			
	Completely Agree	38 (41.8%)			
Feels doable in routine practice	Completely Disagree	2 (2.2%)		4.32967	0.7157738
	Disagree	0 (0%)			
	Neutral	1 (1.1%)			
	Agree	51 (56.0%)			
	Completely Agree	37 (40.7%)			
Easy to use	Completely Disagree	0 (0%)		4.307692	0.7256003
	Disagree	1 (1.1%)			
	Neutral	5 (5.5%)			
	Agree	46 (50.5%)			
	Completely Agree	38 (41.8%)			

Quantitative and qualitative findings consistently demonstrated that the ISS Checklist for PHC is feasible for implementation within routine SS systems. High FIM scores were complemented by participants’ reports that the checklist was easy to use, compatible with existing workflows, and capable of generating actionable outputs such as performance summaries and follow-up action plans. The integration of the checklist within the AfyaSS platform further enhanced documentation, monitoring, and accountability. Although some participants highlighted challenges related to smartphone ownership and internet

connectivity, these barriers were generally viewed as manageable and did not prevent implementation during the pilot phase. Taken together, the findings suggest that the checklist is practical for use across diverse primary healthcare settings and can be effectively implemented within Tanzania's existing supportive supervision framework.

Table 6
Integration of Quantitative and Qualitative Findings

Outcome	Quantitative Findings	Qualitative Findings	Integrated Interpretation
Acceptability	93.2% acceptable	Comprehensive and standardized	High acceptability driven by relevance and comprehensiveness
Appropriateness	93.3% appropriate	Fits supervision workflow	Strong alignment with routine supervisory activities
Feasibility	95.1% feasible	Action plans and digital integration support use	Feasibility enhanced by compatibility with existing systems

Table 6 presents the integrated findings from the quantitative survey and qualitative interviews. Overall, the two data sources demonstrated a high degree of convergence across all implementation outcomes. Quantitative findings showed high levels of acceptability (93.2%), appropriateness (93.3%), and feasibility (95.1%) of the ISS Checklist for PHC. These findings were supported by qualitative evidence indicating that users perceived the checklist as comprehensive, aligned with SS workflows, and well-integrated within the AfyaSS digital platform. The integrated interpretation suggests that the checklist's perceived relevance, compatibility with routine supervisory practices, and digital functionality contributed to its favorable implementation outcomes.

DISCUSSION

This study examined the acceptability, appropriateness, and feasibility of the ISS checklists among PHC providers and district health managers in Tanzania. The mean scores for AIM, IAM, and FIM were all high, with 93.2% of respondents rating the checklist as acceptable, 93.3% as appropriate, and 95.1% as feasible. The findings reveal a high level of endorsement, indicating that the ISS Checklist for PHC was perceived as highly compatible with user needs, routine SS processes, and ongoing digital health transformation efforts within the Tanzanian health system. These findings provide early evidence supporting the implementation readiness of the checklist for broader adoption.

The high acceptability may partly reflect the participatory development process used during checklist design, which involved stakeholders from national, regional, district, and facility levels. Such engagement is known to increase ownership and acceptance of new interventions. Supervisors described the checklist as clear, logically structured, and comprehensive, encompassing all six WHO building blocks. These attributes enhanced the perceived utility of the tools in streamlining supervision processes and reinforcing quality standards. The strong acceptability ratings align with Proctor et al.'s taxonomy of implementation outcomes, which identifies acceptability as a critical determinant of adoption and sustained use [18, 33]. Comparable findings from Ghana also suggest that SS tools achieve higher uptake when they are well integrated into existing workflows and service delivery frameworks [34]. The results reinforce the importance of early user engagement and continuous adaptation to ensure local relevance. In Zambia, a digital tool developed through participatory approach resulted in 18% improvement in SS frequency and 21% improvement for appropriate care for pneumonia [35]. Also, clients' satisfaction has been shown to be instrumental in the acceptability of tools [36].

The findings suggest that users perceived the checklist not merely as an additional reporting tool but as a practical mechanism for translating national standards into routine supervisory actions. This alignment between intervention design and implementation context is a key determinant of successful adoption and sustainability, with over 94% of respondents agreeing that the ISS checklists fit their supervision responsibilities and service contexts. Participants highlighted that the tools translated national supervision standards into a structured, easy-to-use format for assessing facility performance and identifying gaps. This structured approach improved accountability by clarifying expectations for service delivery and standardizing performance evaluation across facilities [25, 26].

These findings highlight the importance of balancing standardization with contextual adaptability. While integrated supervision tools promote consistency, incorporating facility-specific customization may improve relevance, reduce respondent burden, and enhance long-term user engagement [37]. Respondents recommended improving skip-logic features or modular configurations to ensure relevance across diverse facility types. These recommendations echo World Health Organization guidance emphasizing adaptable supervision tools that accommodate varying service levels and system capacities. Implementation experiences from Ethiopia and Kenya have similarly demonstrated that locally adapted tools are more likely to sustain user engagement and minimize supervisory fatigue [24, 38, 39].

Findings on feasibility further affirm the practicality of ISS implementation. The slightly higher feasibility ratings compared with acceptability and appropriateness may reflect the perceived ease of integrating the checklist into existing supervision workflows without requiring major organizational changes. More than 95% of participants considered the checklist easy to use and compatible with routine supervision activities. The design's intuitive structure supported both new and experienced users. Participants also noted that digitalizing supervision improved record-keeping, minimized data loss, and facilitated follow-up through automated scoring and action plan tracking. The integrated format, allowing multiple service areas to be assessed during a single visit, was viewed as a major efficiency gain. The integration of the checklist within the AfyaSS platform further illustrates the potential of digital SS systems to enhance accountability, facilitate timely feedback, and promote data-driven decision-making. These functions are particularly important in decentralized health systems where routine monitoring and follow-up can be challenging.

Despite these positive perceptions, participants identified several barriers to full implementation, including limited access to smart devices and unreliable internet connectivity in remote areas. These challenges mirror broader infrastructure constraints reported in other Tanzanian digital health initiatives, such as

the electronic Logistics Management Information System (eLMIS). Ensuring device availability, improving offline access, and embedding the ISS tools into existing digital systems such as District Health Information Software–2 (DHIS2) will be essential for sustained use [40]. According to the CFIR, such environmental and resource considerations are key determinants of implementation fidelity [41]. Importantly, these barriers were not unique to the ISS Checklist itself but reflected broader infrastructural challenges affecting digital health implementation in many low- and middle-income settings.

Across all three implementation outcomes, respondents emphasized the importance of consistent training and orientation. While experienced supervisors adapted quickly, first-time users, particularly those in lower health facilities, requested additional guidance. Participants recommended short in-service training sessions, refresher courses, and peer learning opportunities to enhance proficiency and maintain motivation. These suggestions are consistent with evidence from digital supervision programs in India and Zambia, where continuous support mechanisms have been shown to improve adoption and long-term retention [35, 42, 43]. These findings emphasize that implementation success depends not only on the quality of the intervention but also on the availability of continuous support mechanisms that strengthen user competence and confidence.

From a mixed-methods perspective, quantitative and qualitative findings were highly convergent across all implementation outcomes. High ratings of acceptability, appropriateness, and feasibility were consistently supported by qualitative evidence highlighting the checklist's comprehensiveness, compatibility with routine supervision processes, alignment with national standards, and integration within the AfyaSS platform. Qualitative findings further provided contextual explanations for implementation challenges, including internet connectivity limitations, checklist length, and the need for additional orientation. Together, these findings provide robust evidence supporting the implementation readiness of the ISS Checklist for PHC and its potential for wider scale-up.

Implications for Implementation and Policy

From an implementation science perspective, the findings suggest that the ISS tools demonstrate strong readiness for national scale-up. Their high acceptability, appropriateness, and feasibility indicate potential for seamless integration into Tanzania's PHC supervision framework. Embedding the ISS system within national digital platforms and aligning it with Tanzania's Digital Health Strategy [44] can enhance coordination, prevent duplication, and foster a unified approach to quality improvement. Incorporating real-time analytics and feedback mechanisms can also facilitate ongoing monitoring and data-driven refinement of the supervision process.

Future implementation efforts should prioritize infrastructure strengthening, user support, and adaptive digital functionality to ensure equitable and sustainable use across all levels of the health system.

Study Limitations

This study has several limitations. Its cross-sectional design and reliance on self-reported data may introduce social desirability bias, potentially overestimating tool performance. The purposive sampling of four regions limits generalizability across the national health system. Additionally, while qualitative data provided valuable insights into user perceptions, the study did not measure objective outcomes such as changes in service quality or patient health indicators. Future research should employ longitudinal designs and link perceived tool acceptability and feasibility with measurable improvements in healthcare delivery and system performance to assess long-term impact.

Because implementation outcomes were assessed shortly after pilot implementation, perceptions may change over time. Longitudinal studies are needed to examine sustainability and longer-term adoption of the checklist.

Additionally, participant checking of qualitative findings was not conducted; themes and interpretations were not returned to key informants for review prior to publication. This limits the confirmability of the qualitative findings, although methodological triangulation across the two study strands partially mitigates this concern.

Declarations

Ethics Approval and Consent to Participate

Ethical approval for this study was obtained from the Hubert Kairuki Memorial University Institutional Research Ethics Committee (Ref: KU/IREC/27.10/465). Permission to conduct the study was also granted by the Ministry of Health and respective regional and district authorities. Written informed consent was obtained from all participants prior to data collection. All methods were performed in accordance with the relevant guidelines and regulations outlined in the Declaration of Helsinki.

Consent for Publication

Not applicable. The manuscript does not contain any individual-level data or identifiable personal information.

Availability of Data and Materials

The dataset supporting the findings of this study is publicly available in Harvard Dataverse:

German CJ. (2026). Acceptability, Appropriateness, and Feasibility of an Integrated Supportive Supervision Checklist for Primary Healthcare Facilities in Tanzania. Harvard Dataverse. <https://doi.org/10.7910/DVN/LG2XUV>

Additional Files

Additional File 1: Key Informant Interview (KII) Guide. The semi-structured interview guide used to explore participants' experiences with the ISS Checklist for PHC, developed for this study.

Additional File 2: Survey and Data Abstraction Tool. The quantitative survey instrument administered via KoboToolbox, including the AIM, IAM, FIM and Perceived Attributes of Innovation items, developed for this study.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

All authors contributed significantly to the study's development and completion. CG, PM and AK conceived the study design, supervised data collection, and led the manuscript preparation. PM, AK and PK conducted data analysis and interpretation. EE, LM, JH, EK, ON and SM contributed to methodology design and critical revision of the manuscript. AK, SM, JM, UB, FK and WE coordinated project administration and supported the review process. All authors reviewed and approved the final manuscript and agreed to be responsible for the integrity and accuracy of the work.

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Figures

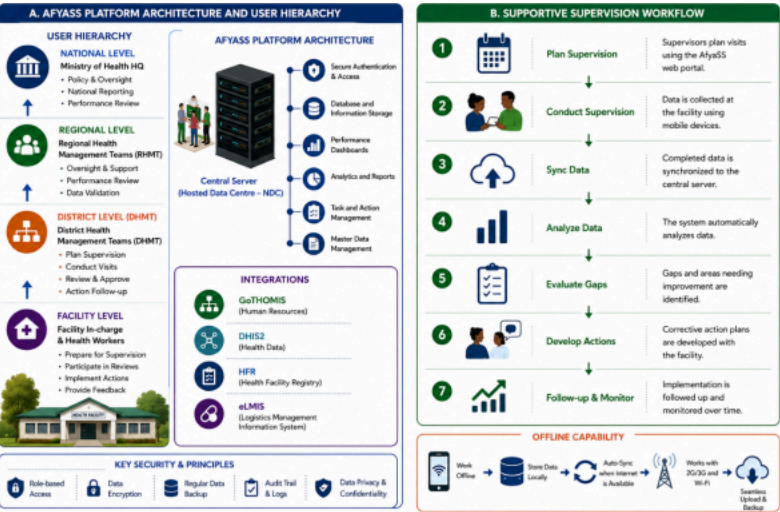


Figure 1

Schematic overview of the AfyaSS platform architecture, user hierarchy, and SS workflow.

Supplementary Files

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