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Clinical supervision practices and determinants in health training institutions in Ghana: A multicentre mixed-methods study

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Article

Keywords: clinical supervision, clinical education, preceptorship, health training institutions, nursing education, Ghana

Posted Date: November 12th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11249720/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

Clinical supervision connects classroom learning with safe practice, but Ghanaian evidence identifies large student numbers, staff workload, limited supervisor preparation, and weak institutional coordination as persistent constraints. This study assessed supervision practices, student-reported effectiveness, supervisor competence, institutional structures, and determinants across Ghanaian health training settings.

Methods

A multicentre cross-sectional mixed-methods survey was conducted from January to July 2026. A voluntary non-probability sample of students, tutors/clinical instructors, and preceptors completed an online KoboCollect questionnaire distributed through institutional communication platforms. A 12-item CLES + T-informed measure assessed student-reported effectiveness, and a 10-item measure assessed supervisors' self-rated competence. Psychometric assessment preceded index construction. Descriptive statistics and linear regression with HC3 robust standard errors were used. Free-text responses were analysed using dictionary-assisted qualitative content analysis and integrated with the quantitative findings.

Results

Of 682 submissions, 629 were eligible: 544 students, 69 tutors/clinical instructors, and 16 preceptors. Among 619 respondents with frequency data, 37.0% reported no supervision. High student numbers (72.2%), inadequate logistics/resources (63.3%), and inadequate staffing (49.0%) were the leading structured challenges. The effectiveness index showed acceptable internal consistency (α = .797; M = 3.73, SD = 0.56; n = 537), and the competence index showed excellent consistency (α = .928; M = 4.30, SD = 0.65; n = 83). In the adjusted student model (n = 484), daily (B = .208, 95% CI [.051, .366]), weekly (B = .208, 95% CI [.084, .331]), and monthly supervision (B = .324, 95% CI [.097, .551]) were associated with higher effectiveness than no supervision. Full communication of learning objectives was also positively associated (B = .263, 95% CI [.140, .385]). Compared with always completing supervision documentation, sometimes (B = − .398, 95% CI [-.526, − .270]) and rarely/never completing it (B = − .233, 95% CI [-.418, − .047]) were associated with lower effectiveness. Free-text findings explained these patterns through workload, placement congestion, resource limitations, weak feedback, and poor institutional coordination.

Conclusion

Supervision was inconsistently delivered in the participating settings. Regular contact, clear learning objectives, and consistent documentation were modifiable correlates of student-reported effectiveness. Improvement requires protected supervision time, manageable placement numbers, prepared and recognised preceptors, adequate resources, and accountable collaboration between training institutions and clinical facilities.

Introduction

Clinical education enables health professions students to apply theoretical knowledge in patient care, develop clinical judgement, and learn professional practice. Placement alone does not guarantee learning. Students need supervisors who can structure opportunities, observe performance, support participation, and provide feedback. The quality of the supervisory relationship and the wider clinical learning environment therefore influence confidence, competence, professional socialisation, and patient safety [1], [2], [3] .

The Clinical Learning Environment, Supervision and Nurse Teacher (CLES + T) model conceptualises clinical learning through the pedagogical atmosphere, supervisory relationship, ward leadership, premises of care, and the nurse teacher's role (Saarikoski et al., 2008). The instrument is among the most widely translated and evaluated measures of nursing students' placement experiences, but validation studies show contextual differences in factor structure [4], [5], [6]. Adapted measures should therefore be examined psychometrically in the population and setting in which they are used.

Clinical supervision in Ghana takes place within expanding education systems and health services that face staff shortages and competing clinical demands. Ghanaian research describes limited tutor visits, insufficient numbers of prepared preceptors, inconsistent feedback, weak role clarity, and inadequate institutional support [7], [8], [9], [10]. A study of 254 nursing and midwifery students found that perceived student numbers, supervisory relationships, and ward leadership predicted the quality of the clinical learning environment [11]. More recent Northern Ghana evidence found generally favourable placement perceptions but comparatively lower ratings for regular constructive feedback [12]. These findings suggest that aggregate satisfaction can coexist with important weaknesses in specific supervisory processes.

The organisation of academic-practice relationships is also consequential. A systematic review found that complementary faculty and clinical mentor roles, together with managerial commitment, may facilitate learning, although comparative evidence remains limited [13]. Reviews of preceptor-development interventions report short-term improvements in knowledge, confidence, and behaviour but little evidence about sustained student or patient outcomes [14]. Preceptors' commitment may also depend on perceived organisational support, recognition, and rewards [15]. Clinical supervision should therefore be examined as an interaction between contact, goal clarity, feedback, supervisor capability, workload, and institutional support.

Feedback is a particularly important mechanism. It helps learners compare observed performance with expected standards, develop evaluative judgement, and make safer decisions [16], [17]. Clinical feedback is nevertheless vulnerable to time pressure, large student cohorts, inadequate preparation, limited infrastructure, and weak college-hospital coordination [18]. These pressures are likely to be most visible when supervision is irregular or documentation does not capture whether learning objectives, observation, and feedback were completed.

Although existing Ghanaian evidence provides important insights into clinical supervision and preceptorship, much of the available literature has focused on individual regions, specific professional groups, qualitative accounts, or evidence syntheses. There remains limited multicentre evidence integrating students' and supervisors' perspectives while simultaneously examining supervision practices, institutional support, and factors associated with perceived supervisory effectiveness. This study therefore sought to address this gap by examining clinical supervision across participating health training and clinical placement organisations in Ghana.

Methods

Study design and setting

A multicentre cross-sectional mixed methods survey with an explanatory free-text component was conducted between 18 January and 21 July 2026 in Ghana. Quantitative and free-text data were collected concurrently in one questionnaire and integrated during interpretation. Reporting was guided by relevant STROBE principles for cross-sectional studies and the Good Reporting of A Mixed Methods Study (GRAMMS) framework [19], [20].

Respondents were asked to provide the name of their health training institution or clinical placement organisation. After harmonising spelling variants and abbreviations, 524 respondents identified 62 distinct organisations, comprising 11 health training institutions and 51 clinical or administrative placement organisations. Ninety-four respondents did not provide an organisation, while 11 entries were too generic or ambiguous to classify. These figures represent organisations reported by respondents rather than a formally verified institutional sampling frame.

Population eligibility sampling and sample size

Eligible participants were students who had undertaken clinical placement, clinical preceptors with current or recent student-supervision experience, and tutors or clinical instructors involved in clinical education. The survey used voluntary non-probability convenience sampling. Institutional contacts circulated an open questionnaire link through communication platforms used by faculty, students, preceptors, and clinicians. No roster was used to randomly select participants, and the number of people who received or saw the invitation was unknown.

Because participants were recruited through voluntary non-probability sampling, the Cochran-derived sample size was treated as a recruitment benchmark rather than a basis for population-representative inference. Consequently, estimates should be interpreted as associations within the participating sample rather than population prevalence estimates.

For planning, Cochran's large-population formula was used with a conservative expected proportion of .50, 95% confidence, and 5% absolute precision, giving a minimum benchmark of 384 responses [21]. This calculation guided recruitment volume but does not confer probability-based precision on a convenience sample. Recruitment remained open to improve subgroup coverage and allow for incomplete records. The final analytical sample was 629. The adjusted model included 484 of 544 students (89.0%) and 13 slope parameters, providing 37.2 complete observations per parameter. Because there was no invitation denominator, a response rate could not be calculated.

Instrument and variables

Data were collected with a structured, self-administered KoboCollect questionnaire developed from clinical supervision, preceptorship, and health professions education literature (see Supplementary File 1_Clinical Supervision). It covered participant characteristics, supervision practices, perceived effectiveness and learning environment, policy and institutional structures, supervisor competence and support needs, barriers and facilitators, and four open-ended questions. Section C contained 12 positively worded five-point Likert items adapted from CLES + T-related constructs of supervisory relationship, feedback, pedagogical atmosphere, and learning support [3], [4], [5], [22]. Section E contained 10 five-point items addressing supervisors' self-rated clinical knowledge, teaching, assessment, feedback, communication, conflict management, and preparedness. During questionnaire development, informal methodological advice was obtained from colleagues with experience in clinical education and supervision to improve the relevance and clarity of the items. These colleagues were not study participants, and their feedback was not included in the research dataset or analyses. The questionnaire was pretested with students and clinical supervisors at a non-study site, and minor wording and sequencing changes were made. It was administered in English.

Data collection procedure

Institutional contacts shared the KoboCollect link through established electronic platforms used by faculty members, students, clinical preceptors, and clinicians. The first page presented study information and an electronic consent item. Participants independently completed the questionnaire using an internet-enabled device. The link remained available throughout the data collection period. Participation was voluntary, and no financial or academic inducement was offered.

Data management and eligibility

The raw export was preserved unchanged and identified by checksum. The audit examined duplicate UUIDs, consent, respondent role, missingness, range validity, multiple-response coding, and skip logic. Thirty-one submissions that declined consent and 22 consenting submissions without a respondent role were excluded. No duplicate UUIDs were detected. The deployed routing yielded Section C data for 537 students, two tutors, and no preceptors. The two non-student records were excluded from the effectiveness index, which was treated as a student-reported outcome. Students had no responses to the supervisor competence section, as expected. Figure 1 summarises participant flow.

Organisation names were normalised without changing the source file. Common spelling and abbreviation variants were mapped to canonical names. Entries without a uniquely identifiable organisation remained missing or ambiguous. Organisation was not used for multilevel modelling because many records lacked a usable name, within-organisation counts were small, and respondents could have named either their training institution or placement facility.

Psychometric and statistical analysis

Likert items were scored from 1 (strongly disagree) to 5 (strongly agree). The effectiveness index was calculated as the respondent mean when at least 10 of 12 items were available. The competence index was calculated when at least 8 of 10 items were available. Internal consistency was assessed with Cronbach's alpha, corrected item-total correlations, and alpha if item deleted. Kaiser-Meyer-Olkin (KMO) statistics, Bartlett tests, and simulation-based parallel analysis assessed factorability and dimensionality. Descriptive statistics used available-case denominators. Percentages for multiple-response items used the eligible group for that item as the denominator.

Bivariate summaries compared mean student effectiveness across participant and supervision characteristics. A linear regression model estimated adjusted mean differences in student effectiveness by age, sex, supervision frequency, communication of objectives, documentation, policy awareness, structured schedule, and orientation. Because only 10 students with a valid effectiveness index reported that documentation was never completed, the rarely and never categories were combined before final modelling. Documentation that was always completed was the reference category. HC3 heteroskedasticity-robust standard errors, 95% confidence intervals, and two-sided p values were reported. Complete-case analysis was used; the model sample and R^2 are given. Coefficients are unstandardized differences on the 1–5 effectiveness index and should not be interpreted causally. Analyses were conducted with reproducible Python scripts and matrix calculations.

Free text analysis and mixed methods integration

Responses to the four open-ended questions were combined at participant level. A dictionary-assisted qualitative content approach was used to identify recurrent constraints and proposed improvements. Keyword searches retrieved potentially relevant passages, and the categories were refined through contextual review of retrieved responses. Multiple categories could apply to one participant. Because the

dictionary was designed for retrieval rather than prevalence estimation, keyword frequencies were not treated as population estimates. Illustrative excerpts were selected only after the corresponding respondent role was verified. Integration occurred through a joint interpretive comparison: free-text categories were used to explain quantitative patterns and to identify practical responses to the structured barriers. Coding was not independently duplicated, which is considered in the limitations.

Ethical considerations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and received approval from the Ethics Committee for Research Involving Humans of the Tepa Nursing and Midwifery Training College, Ghana (Ref: ECRIH/AP/013/26). Electronic informed consent was obtained before substantive study items. Respondents could decline questions or discontinue participation. Records from people who declined consent were excluded. De-identified data were stored with access restricted to the research team.

Results

Sample and supervision profile

The export contained 682 submissions. After exclusions, 629 participants were analysed: 544 students (86.5%), 69 tutors/clinical instructors (11.0%), and 16 clinical preceptors (2.5%). Women comprised 75.7% of the sample. Among the 592 respondents with facility-type data, 61.0% selected district hospital. Table 1 presents participant and supervision characteristics.

Table 1
Participant characteristics and supervision profile

Characteristic	Category	n/N	%
Respondent role	Student	544/629	86.5
Respondent role	Tutor/instructor	69/629	11.0
Respondent role	Preceptor	16/629	2.5
Sex	Female	476/629	75.7
Sex	Male	153/629	24.3
Facility type	District hospital	361/592	61.0
Facility type	Regional hospital	74/592	12.5
Facility type	Teaching hospital	73/592	12.3
Facility type	Private facility	47/592	7.9
Facility type	Health centre / Clinic	37/592	6.2
Supervision frequency	Never	229/619	37.0
Supervision frequency	Daily	121/619	19.5
Supervision frequency	Occasionally	115/619	18.6
Supervision frequency	Weekly	115/619	18.6
Supervision frequency	Monthly	39/619	6.3
Overall supervision rating	Good	239/623	38.4
Overall supervision rating	Poor	208/623	33.4
Overall supervision rating	Excellent	104/623	16.7
Overall supervision rating	Fair	72/623	11.6

Note. Percentages are based on available responses for each characteristic. Totals may differ because of item nonresponse.

Among 619 respondents with supervision-frequency data, 229 (37.0%) reported that supervision never occurred. Daily supervision was reported by 121 (19.5%), weekly by 115 (18.6%), occasional supervision by 115 (18.6%), and monthly supervision by 39 (6.3%). Of 623 respondents who rated the overall level of supervision, 208 (33.4%) rated it poor and 104 (16.7%) rated it excellent.

Practices, institutional structures, and constraints

Feedback or review sessions and group supervision were the most frequently reported supervision methods, selected by 49.0% and 45.8% of respondents, respectively (Table 2). Learning objectives were

fully communicated to 418 of 622 respondents (67.2%). Approximately two-thirds of respondents with applicable data were aware of a supervision policy or guideline (64.6%). However, implementation was inconsistent: among 332 policy-aware respondents with implementation data, 48.8% reported that guidelines were always implemented, while 45.8% reported that they were implemented only sometimes. A structured supervision schedule was reported by 74.4% of respondents, and 78.4% reported receiving orientation.

Table 2
Reported supervision practices and institutional structures

Domain	Indicator	n/N	%
Supervision method	Feedback or review sessions	308/629	49.0
Supervision method	Group supervision	288/629	45.8
Learning preparation	Learning objectives fully communicated	418/622	67.2
Policy structure	Aware of a supervision policy or guideline	336/520	64.6
Guideline implementation	Guidelines always implemented	162/332	48.8
Guideline implementation	Guidelines sometimes implemented	152/332	45.8
Organisational structure	Structured supervision schedule available	459/617	74.4
Organisational structure	Orientation provided	483/616	78.4

Note. Multiple supervision methods could be selected. Denominators vary because of questionnaire routing and item-level missing data. Guideline-implementation percentages were calculated among policy-aware respondents who provided implementation data. Only the two predominant implementation responses are displayed.

Despite the reported availability of schedules and orientation, respondents identified substantial structural constraints (Table 3). High student numbers were the most frequently reported challenge (72.2%), followed by inadequate logistics or resources (63.3%) and inadequate staffing (49.0%). Poor coordination between health training institutions and clinical sites was reported by 43.4%, while 38.0% identified limited time for supervision.

Clear communication (70.1%) and a supportive clinical environment (66.6%) were the leading facilitators. Among the 85 tutors, clinical instructors, and preceptors, the most frequently reported additional support needs were stronger collaboration between health training institutions and clinical facilities (74.1%) and financial or non-financial incentives (71.8%). Refresher training and teaching or assessment materials were each selected by 64.7%.

Table 3
Reported challenges, facilitators, and additional support needs

Domain	Item	n/N	%
Challenge	High student numbers	454/629	72.2
Challenge	Inadequate logistics or resources	398/629	63.3
Challenge	Inadequate staffing	308/629	49.0
Challenge	Poor coordination between HTIs and clinical sites	273/629	43.4
Challenge	Limited time for supervision	239/629	38.0
Challenge	Lack of training for supervisors	216/629	34.3
Facilitator	Clear communication	441/629	70.1
Facilitator	Supportive clinical environment	419/629	66.6
Facilitator	Positive student attitude	375/629	59.6
Facilitator	Institutional support	316/629	50.2
Facilitator	Adequate preceptor training	251/629	39.9
Additional support required	Stronger collaboration between HTIs and clinical facilities	63/85	74.1
Additional support required	Financial or non-financial incentives	61/85	71.8
Additional support required	Refresher training	55/85	64.7
Additional support required	Teaching and assessment materials	55/85	64.7
Additional support required	Reduced workload	35/85	41.2

Note. HTI = health training institution. Multiple responses were permitted; therefore, percentages do not total 100%. Challenges and facilitators used the full analytical sample as the denominator. Additional support needs were assessed among the 85 tutors/clinical instructors and preceptors.

Scale performance and index scores

The effectiveness scale (see Table 4) had acceptable internal consistency (α = .797; complete-case n = 517). Corrected item-total correlations ranged from .296 to .560. The KMO statistic was .815, and Bartlett's test was significant, $\chi^2(66) = 1701.9$, $p < .001$. Parallel analysis retained two components. The prespecified overall mean index was retained because all items were positively keyed, item-total performance was acceptable overall, and deleting an item did not materially improve alpha. Its

multidimensionality is acknowledged. The valid student index mean was 3.73 (SD = 0.56, 95% CI [3.69, 3.78], n = 537). Timely feedback had the lowest item mean (M = 2.95, SD = 1.33).

The competence scale (see Table 3) had excellent internal consistency (α = .928; complete-case n = 80), KMO = .845, and a significant Bartlett test, $\chi^2(45) = 683.7$, $p < .001$. Parallel analysis retained one component. The supervisor competence index mean was 4.30 (SD = 0.65, 95% CI [4.16, 4.44], n = 83).

Table 4
Psychometric performance and index scores

Scale	Group	Valid n	M	SD	95% CI	α	Components
Effectiveness	Students	537	3.73	0.56	[3.69, 3.78]	.797	2
Competence	Supervisors	83	4.30	0.65	[4.16, 4.44]	.928	1

Note. Valid n reflects the prespecified minimum-item rule. Alpha and component retention were based on complete item data (n = 517 for effectiveness and n = 80 for competence).

Factors associated with student-reported effectiveness

In bivariate summaries, mean effectiveness was 3.54 among students reporting no supervision and ranged from 3.76 to 3.92 among those reporting some supervision. The adjusted model included 484 students (89.0% of all students), contained 13 slope parameters, and explained 21.5% of outcome variance. Daily, weekly, and monthly supervision were associated with higher effectiveness than no supervision. Full communication of learning objectives was also positively associated. Compared with documentation that was always completed, sometimes and rarely/never completing documentation were associated with lower effectiveness. Occasional supervision, partial communication of objectives, policy awareness, structured schedules, orientation, age, and sex were not independently associated at $p < .05$ (Table 5).

Table 5
Adjusted linear regression of student reported supervision effectiveness

Predictor	B	Robust SE	95% CI	p
Daily supervision	0.208	0.080	[.051, .366]	= .009
Weekly supervision	0.208	0.063	[.084, .331]	< .001
Monthly supervision	0.324	0.116	[.097, .551]	= .005
Occasional supervision	0.152	0.084	[-.012, .316]	= .070
Objectives fully communicated	0.263	0.062	[.140, .385]	< .001
Objectives partially communicated	0.104	0.080	[-.052, .261]	= .190
Documentation sometimes	-0.398	0.065	[-.526, − .270]	< .001
Documentation rarely/never	-0.233	0.095	[-.418, − .047]	= .014
Aware of policy/guideline	0.108	0.058	[-.006, .222]	= .062
Structured schedule	0.014	0.052	[-.088, .116]	= .792
Orientation provided	0.089	0.067	[-.042, .220]	= .184
Age per 10 years	0.109	0.098	[-.084, .301]	= .268
Male (vs. female)	0.062	0.057	[-.050, .174]	= .276

Note. B is the adjusted unstandardized mean difference on the 1–5 effectiveness index. HC3 robust standard errors were used. Reference categories were no supervision, objectives not communicated, documentation always completed, not policy aware, no structured schedule, no orientation, and female. n = 484; R^2 = .215.

Integrated free text findings

Free-text responses were available from 559 participants. The responses explained how service demands limited the structured processes measured quantitatively. Participants described too few supervisors, clinical workload competing with teaching, placement congestion, inadequate equipment and transport, delayed or absent feedback, and weak coordination between HTIs and clinical facilities. They proposed staggered placements, realistic student allocations, supervisor preparation and recognition, transport and teaching resources, protected contact, and stronger joint planning. Table 6 presents the principal categories and verified illustrative excerpts.

Table 6
Free text categories and illustrative excerpts

Category	Interpretation	Illustrative excerpt
Workload staffing and limited contact	Clinical duties and staff shortages displaced teaching, observation, and feedback.	"The supervising nurse was extremely busy due to staff shortages and high patient load... No demonstration, questioning, or feedback was provided afterward." (Student)
Placement congestion	Large cohorts reduced individual learning opportunities and supervisory attention.	"Many students don't get the chance to learn and communicate regularly with their supervisors." (Student)
Resources and access	Equipment, space, transport, and distance limited both practice opportunities and tutor visits.	"The distance between the clinical site sometimes prevents supervision... there is no vehicle to transport supervisors." (Tutor/clinical instructor)
Feedback and supported participation	Observation, guidance, and feedback were linked to confidence and safer performance.	"My supervisor observed me administering medication, guided me through the procedure, and provided feedback afterward. This improved my confidence, skills, and patient care." (Student)
Institutional coordination and support	Respondents requested clearer communication, joint planning, preparation, recognition, and manageable allocations.	"Lack of collaboration between institutions and clinical supervisors [means] there's no communication on challenges regarding students placed nor mitigating them." (Clinical preceptor)

Note. Excerpts are anonymous and lightly shortened with ellipses or bracketed clarification without changing meaning. Categories are explanatory and are not prevalence estimates.

Discussion

This study found a marked gap between supervisors' high self-rated competence and the reliability of supervision delivery. More than one third of respondents reported no supervision, and one third rated the overall level as poor. Among students, regular supervisory contact, full communication of learning objectives, and consistent documentation were independently associated with higher effectiveness. Structured challenge items and free-text responses located these associations within staff shortages, workload, placement congestion, resource limitations, and weak coordination. The combined findings indicate that perceived capability alone does not ensure that supervision occurs as planned.

The association between supervision frequency and effectiveness is educationally plausible. Regular contact gives supervisors opportunities to clarify objectives, observe performance, correct errors, and reinforce progress. Ghanaian multisite evidence has similarly described minimal student-preceptor contact when limited numbers of preceptors face increasing student cohorts and competing clinical duties [10]. The present adjusted results extend that evidence by quantifying the association after accounting for demographic and institutional-process variables. However, the monthly coefficient should

not be interpreted as evidence that monthly contact is superior to daily or weekly supervision. The categories may capture differences in placement organisation, learner needs, or respondent expectations, and the cross-sectional design does not establish a causal dose-response relationship.

The broader clinical-learning-environment literature supports the importance of the supervisory relationship. A systematic review of 21 CLES + T studies found generally positive placement ratings, with the supervisory relationship often rated most favourably, but it also documented variation across settings and room for improvement [4]. An updated review confirmed that CLES + T remains widely evaluated while emphasising the need for transparent psychometric assessment [6]. The 2026 patient-safety synthesis further linked structured, supportive, and psychologically safe supervision with students' competence, confidence, speaking up, and safety-oriented behaviour [1]. Contact matters because it enables observation, dialogue, feedback, and safe participation; frequency alone is not the educational mechanism.

Clear communication of learning objectives was another independent correlate. Shared objectives can align students, tutors, and clinicians around expected competencies and help busy supervisors identify observable tasks. Ghanaian studies have reported unclear expectations, discrepancies in evaluation, and variable preparation for the preceptor role [7], [8], [23]. In this study, the reported existence of a structured schedule was not independently associated with effectiveness once actual contact and other processes were included. This distinction suggests that administrative arrangements matter when they produce observable supervision rather than when they exist only on paper.

Consistent documentation also remained independently associated with effectiveness after the sparse categories were combined. Documentation may function as more than administrative compliance. A completed logbook or assessment record can prompt objective review, feedback, follow-up, and shared accountability between the school and placement site. Conversely, inconsistent documentation may indicate that these processes did not occur or were not prioritised. International review evidence shows substantial variation in clinical competence assessment and difficulties translating competency statements into usable documentation [24]. The association in this study is not proof that documentation itself improves learning, but it supports using simple records as part of a complete supervision cycle rather than as a stand-alone paperwork requirement.

Feedback warrants particular attention because timely feedback was the lowest-scoring effectiveness item. Feedback supports learners' evaluative judgement and helps them calibrate performance against expected standards [17]. Debriefing can also help students interpret difficult experiences and strengthen participation and learning [16]. In Northern Malawi, clinical teachers attributed feedback problems to time constraints, large student numbers, limited formal preparation, inadequate faculty support, and poor infrastructure [18]. The close match with the present free-text findings supports protected feedback checkpoints, shared rubrics, and joint college-facility responsibility for follow-up.

High student numbers were the most frequently selected structured challenge. This finding closely matches Ghanaian evidence that students perceived the number of learners on wards as

disproportionate to available supervisors and equipment, with cohort pressure predicting lower clinical-learning-environment quality[11]. Although Wuni et al.[12] reported generally positive placement perceptions in Northern Ghana, feedback was rated less favourably than the overall environment. These results are compatible: learners may value clinical placement while still experiencing congestion and inconsistent supervision. Institutions should therefore monitor specific processes rather than relying only on global satisfaction ratings.

Workload, staffing, logistics, and coordination problems also align with the Ghanaian scoping review, which concluded that clinical supervision is valued but constrained by individual and systemic barriers [8]. Evidence from Ghanaian radiography education likewise identified inadequate equipment, increased workload, overcrowding, lack of collaboration, absent remuneration, and unclear institutional objectives as leading constraints on preceptors [25]. Similar pressures have been reported in Malawi, where preceptors described insufficient faculty support, weak teamwork, and excessive student allocations [26], and in Nigeria, where students and preceptors identified low preceptor-to-student ratios, limited equipment, and absence of unified policy guidance [27]. The recurrence of these problems across professions and settings suggests that supervisor training without workload and placement reform will have limited effect.

Supervisors' competence ratings were high, but many requested stronger collaboration, incentives, refresher training, and teaching materials. Self-ratings may reflect confidence and professional identity and should not be treated as observed competence. A systematic review similarly found that mentors often rated their clinical and mentoring competence favourably while identifying weaknesses in organisational practices, resources, and stakeholder-facing pedagogy [28]. Intervention studies generally show short-term gains after preceptor education but rarely establish sustained effects on students or patients [14]. Organisational support and perceived recognition are also associated with commitment to preceptorship [15]. Training should therefore be combined with role clarity, follow-up coaching, protected time, and appropriate recognition.

The effectiveness scale showed acceptable reliability but a two-component signal. This is consistent with the multidimensional nature of clinical learning environments and the contextual variation reported across CLES + T adaptations [4], [5], [6], [22]. The overall index remains useful for this prespecified analysis because item-total correlations were acceptable overall and deleting items did not materially improve alpha. Nevertheless, it should be described as a CLES + T-informed effectiveness index, not the full validated CLES + T instrument. Future research should test its dimensional structure with confirmatory methods and assess measurement invariance across programmes and institutions.

Implications for policy and practice

A minimum supervision package should include assignment to a named supervisor or team, learning objectives shared before placement, a feasible schedule of actual contact, direct observation, documented formative feedback, and escalation when supervision is missed. HTIs and facilities should

jointly set placement numbers using ward workload, supervisor availability, equipment, and learning opportunities. Preceptors need preparation in teaching, assessment, feedback, and psychological safety, together with protected time, accessible materials, and recognition. Routine review should examine whether supervision and feedback occurred, not merely whether a policy, timetable, or logbook exists. Ghana's emerging clinical education framework provides a useful platform for this joint governance approach [29] .

Strengths and limitations

The study included a large analytical sample, student and supervisory perspectives, psychometric assessment before index construction, HC3 robust standard errors, integrated free-text evidence, and a reproducible audit trail. Several limitations constrain interpretation. The voluntary convenience sample was recruited through open institutional platforms; selection probabilities, invitation exposure, response rate, and national representativeness are unknown. Organisations were respondent-reported rather than sampled from a verified frame, and some names were missing or ambiguous. The cross-sectional design and self-report measures preclude causal inference and are vulnerable to recall and social-desirability bias. Complete-case regression excluded 60 students, although it retained 89.0% of the student sample. Site-level dependence could not be modelled reliably because organisation reporting was incomplete and could refer to either a school or placement facility. The two non-student Section C records were excluded because deployed skip logic made effectiveness effectively student-specific; supervisor competence could not be linked to individual student outcomes. The competence measure was self-rated. The free-text component was brief, dictionary-assisted, and not independently coded, so it provides explanatory context rather than a saturated qualitative account. The adapted effectiveness measure showed two components and requires further structural validation. Findings should therefore be generalised analytically to similar settings, not statistically to all Ghanaian HTIs or clinical facilities.

Conclusion

Clinical supervision was inconsistently delivered in the participating Ghanaian training settings. Regular supervisory contact, full communication of learning objectives, and consistent documentation were independently associated with higher student-reported effectiveness. High student numbers, inadequate staffing, limited resources, workload pressure, and weak institutional coordination constrained delivery. Improvement requires reliable supervision processes supported by feasible placement numbers, prepared and recognised supervisors, adequate logistics, and accountable collaboration between HTIs and clinical facilities.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and received approval from the Ethics Committee for Research Involving Humans of the Tepa

Nursing and Midwifery Training College, Ghana (Ref: ECRIH/AP/013/26). Electronic informed consent was obtained from all included participants.

Consent for publication

Not applicable. No identifiable participant information is reported.

Availability of data and materials

The de-identified dataset, questionnaire, and analytical materials are available from the corresponding author on reasonable request, subject to ethical and confidentiality requirements.

Competing interests

The authors declare that they have no competing interests.

Funding

The authors received no specific funding for this study.

Clinical trial number

Not applicable

Authors’ contributions

MBU, AO, and TAAA contributed to the conception and design of the study, interpretation of the findings, critical revision of the manuscript, and approval of the final version. FKL and CAP contributed to data collection and critical revision of the manuscript. All authors accept responsibility for the integrity of the work.

Acknowledgements

The authors thank the faculty members, students, preceptors, clinicians, health training institutions, and clinical facilities that supported or participated in the study.

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Figures

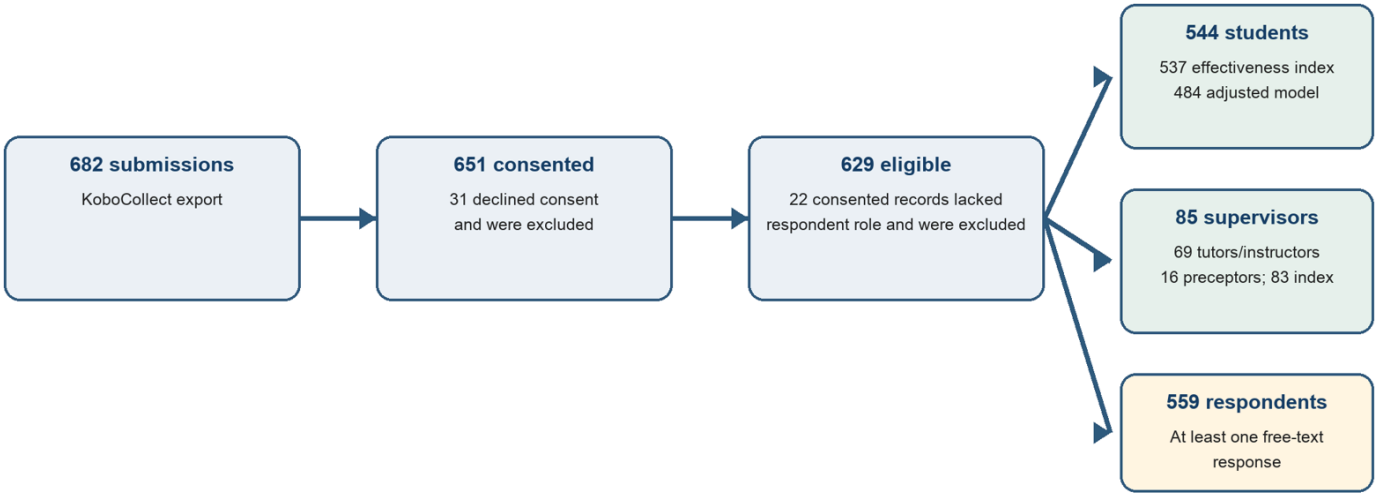


Figure 1

Participant flow and analysis samples

Supplementary Files

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- SupplementaryFile1ClinicalSupervision.pdf