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Nurse Staffing Ratios and Patient Outcomes: Implications for Practice Standards and Health Policy in Uganda's Public Referral Hospitals

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Abstract

Staffing of nurses is a cornerstone parameter of safe hospital care, but resource-constrained referral facilities often base staffing choices on establishment posts as opposed to the actual patient need. This paper discusses the effects of nurse to patient ratios on clinical outcomes, nursing practice and health workforce policy on the public regional and national referral hospital in Uganda. A synthesis of Ugandan workforce reports, local research of the working conditions of nurses, and international research on staffing, missed nursing care and patient outcome was integrated in an integrative narrative review. The 2023/24 figures published by the government show that in regional referral hospitals, 23 percent of the openings approved were filled and in national referral hospitals, 46 percent was filled; these are total establishment fill rates, not direct nurse-to-patient ratios. Ugandan research reports high levels of work strain, and general longitudinal and low- and middle-income-country findings support the links between low staffing with registered nurses and mortality, care omissions and adverse events. Existing Ugandan literature does not allow the estimation of a national effect of a particular staffing ratio on mortality. The results, instead, endorse a more context-sensitive strategy of integrated approaches involving, but not limited to, safeguarded minimum staffing, patient-acuity optimization, professional skill mix, consistent medicines and equipment, and ongoing quality checking. The article suggests a gradual recruitment, rostering according to workload, staffing dashboards at the ward level, and enhanced nursing leadership and future assessments of patient outcomes. A staffing reform must be seen as a patient-safety investment, instead of merely a headcount goal.

Key words: *nurse staffing; patient outcomes; referral hospitals; patient safety; Uganda*

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1. Introduction

Nurses bring unceasing evaluation, drug delivery, infection control, fundamental care, patient education, early identifications of setback. The worth of this work grows in the referral hospital when the complexity of cases, the number of emergency hospitalizations, surgical work and the necessity to monitor specialists increase. Staffing is not merely a matter of employment, then. It is a clinical input that influences the

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provision of evidence-based care to patients in the appropriate time. The association between heavier workloads of registered-nurses and mortality and other unfavorable outcomes have been found across health systems, but the strength of the associations and their extrapolability differs by setting and study design (Aiken et al., 2014; Dall'Ora et al., 2022; Griffiths et al., 2024).

The regional referral hospitals of Uganda have large catchment populations and handle referrals of patients discharged of the lower-level facilities and direct emergency and outpatient demand. National referral hospitals offer more advanced specialist and tertiary care. The two groups have conflicting demands regarding the employees, laboratory facilities, facilities, drugs and oversight. According to the Uganda Bureau of Statistics (2026), in financial year 2023/24, 23% of approved positions in the public regional referral-hospitals and 46% of national referral-hospitals positions were filled. In the same way, the Ministry of Public Service (2025) also reported large establishment gaps in December 2024. These percentages are of all approved posts on professional and support cadres. They exhibit system-wide pressure with respect to recruitment, but can not be transformed into nurse-to-patient ratios, or utilized to determine how many nurses were working on a given shift.

There is a critical difference between the approved staffing structure of a hospital, the employed staff of nurses complement as well as the bedside staff available at a particular shift. One facility can be understaffed in one well-staffed ward, another can be staffed to a reasonable level but leave a high-dependency unit understaffed in a surge. Leaves, absence, training, administrative assignments, part-time deployment and unequal distribution across wards contribute to the further increase of the gap between the nominal staffing level and the care capacity. An operational staffing policy should thus quantify the fit between the number of qualified nursing hours available and the varying number and demand of patients (Musy et al., 2021; Needleman et al., 2011).

Staffing pressure is also experienced by nurses themselves. Udho and Kabunga (2022) found high burnout in 49.1% of hospital-based nurses surveyed in northern Uganda and Kabunga et al. (2024) found high burnout in 39.8% of a larger group of health professionals working in central Uganda hospitals (public and private). More recently, a cross-sectional survey of 231 nurses at Mulago National Referral Hospital reported a prevalence of occupational-stress of 64.5% (Tumusiime et al., 2026). These studies varied in terms of populations and instruments, and they should not be combined to give a national estimate of prevalence. Combined, they suggest that workforce well-being is a relevant topic of safe care conversations.

The Human Resources for Health Strategic Plan 20202030 in Uganda develops a more long-term plan on the availability, distribution, productivity and performance of the workforce (Ministry of Health [MoH], 2021). The policy problem is to work that direction into workable hospital standards that do not cause avoidable harm without necessarily assuming that a single fixed ratio applies to all wards. The article therefore poses three questions: what are the relationships between nurse staffing and patient outcomes that have been demonstrated in the literature; how do Uganda interpret those results in its referral-hospital setting; and what clinical and policy mechanisms can be used to enhance the adequacy and accountability of staffing? The aim is a critical evidence-based synthesis and not an unsubstantiated estimate of national nursing shortages.

2. Literature Review

2.1 Conceptualising staffing adequacy and care quality

Nurse-to-patient ratio is an ordinary description of the number of patients that a nurse is allocated to during a given shift. The number of patients per nurse is often less, suggesting more nursing capacity per patient, but the indicator cannot be complete unless its numerator, denominator, time window and staffing category

are stated. The scopes of practice of registered nurses, enrolled nurses, midwives, nursing assistants and students vary. Workload-acuity and patient turnover scores and nurse hours per patient day, the percentage of qualified nurses provide complementary information. The rate of admission can be high without an improvement in the occupied bed count, as the assessment of the admission, clinical stabilisation and discharge planning all demand focussed nursing attention (Griffiths et al., 2019; Twigg et al., 2021).

The structure-process-outcome framework by Donabedian (1988) offers a logical explanation of the impact that staffing can have on outcomes. Structure denotes the amount of nurses, their qualifications, the distribution and support of nurses. Timely monitoring, administration of medicine, handover, infection prevention and escalation are included in processes. These outcomes include mortality, hospital-acquired complications, falls, patient experience and recovery. This model protects against the assumption that a better headcount will automatically lead to better results: they need effective processes and a facilitating hospital environment as intermediate processes. Similarly, Kruk et al. (2018) assert that population health gains are not possible without the quality of care, and not just access.

This pathway is sharpened with the theory of missed nursing care. According to Kalisch et al. (2009), missed care is defined as nursing care that is missed or delayed. In a situation of inadequate labour, materials/communication, nurses might focus on urgent life-saving duties, neglecting counselling of patients, repositioning, mobility support or discharge planning. In a nine-country observational study, Ball et al. (2018) discovered a relationship between missed care and postoperative mortality, indicating a possible mechanism through which staffing pressure may cause safety issues. Missed-care reporting is incapable of causation but may be a prophylactic measure prior to the development of serious adverse events.

2.2 International evidence relating staffing to patient outcomes

One of the European studies that had a powerful impact conducted research on over 422,000 patients who had surgery in 300 hospitals in nine countries. Every extra patient per nurse was linked to a higher probability of in-hospital mortality within 30 days, which was approximately 7% higher, post-adjustment; the higher proportion of bachelor-educated nurses was linked to reduced mortality (Aiken et al., 2014). This percentage is a research-specific odds ratio of European surgical hospitals, and does not imply that the same effect would be achieved by adding one patient per nurse in Uganda. However, it singles out the staffing and professional preparation as separate aspects of hospital safety.

This association is reinforced by more temporally informative studies. The study conducted by Needleman et al. (2011) revealed the higher mortality risk of patients who were exposed to lower shifts than anticipated staffing levels of registered nurses. Griffiths et al. (2019) and Musy et al. (2021) utilized longitudinal hospital data that connected the staffing exposure to patient journeys more closely. An overview of 27 longitudinal studies has found that a higher number of registered-nurse staffing were usually linked to reduced mortality, although the impact of other outcomes and the role of other staff groups was less evident (Dall'Ora et al., 2022). This type of research enhances temporal ordering, but still is susceptible to residual confounding and variation in case mix.

New developments are introducing complexity. A large patient-level study in England linked exposure to low registered-nurse staffing to increased risk of 30-day mortality and observed that temporary staffing did not completely mitigate the risk of shortfalls (Griffiths et al., 2024). Morioka et al. (2026) found associations between ward-level understaffing, mortality, readmission and length of stay in Japanese hospitals. McHugh et al. (2021) found a positive impact of minimum-ratio legislation on staffing and multiple patient outcomes in Queensland, Australia at the policy level. Conversely, a systematic review of mandated staffing methodologies identified evidently improved reported nurse outcomes but mixed evidence of patient outcomes (Twigg et al., 2021). A ratio policy, therefore, is worthy of consideration, rather than blind transplantation.

2.3 Low-resource settings and the importance of context

Low- and middle-income country (LMIC)-specific reviews are especially pertinent to Uganda. Assaye et al. (2021) retrieved 27 studies and found that heavy nursing workload is associated with mortality, infection, medication errors and nurse burnout, but the rating of the underlying evidence was low. Assaye et al. (2022) used a low-income acute-care setting as the setting of an observational study, in which higher scores of missed-care were associated with a higher proportion of negative patient outcomes. Another systematic review of missed nursing care in LMICs identified understaffing as a notable reason that was being reported, particularly communication and comfort activities (Imam et al., 2023). These results support a multidimensional perspective: staffing issues are important, but supplies, teamwork, and workflow determine the capability of staffing.

The similarity and variation are demonstrated by evidence of neighbouring African health systems. Abere et al. (2024) have announced significant missed nursing care in the Ethiopian public hospitals due to various factors such as limited training, long shifts and poor teamwork. Another meta-analysis of Ethiopian research correlated missed care with staff turnover intentions, job satisfaction and scheduling-related issues (Haile et al., 2025). These findings can be handy in determining risks that may occur in Uganda, but variations in hospital funding, nurse education, data gathering and referral trends cannot be easily extrapolated numerically.

The work environment in nursing can mediate or modify the effects of staffing. According to Lake et al. (2019), there were associations between more favourable work environments and various patient and workforce outcomes. Li et al. (2024) synthesised international literature that found a relationship between nurse burnout and reduced reported patient safety, quality of care and satisfaction. Blume et al. (2021) have distinguished several nursing-sensitive outcomes and observed the difference in the level of association with the staff levels. Combined, these studies suggest that recruitment without supervisor support, secure schedules, and well-defined professional roles and effective clinical resources might have less substantial benefits than expected.

2.4 Ugandan studies and evidence gaps

The strongest Ugandan research is direct instead of indirect with the focus on professional experiences and workforce strain instead of patient-level comparisons between shift staffing and clinical outcome. Kakyo and Xiao (2019) conducted interviews with nurse managers in two rural publicly funded hospitals, and they reported the shortages and burdensome workload and insufficient supplies. Udho and Kabunga (2022) reported the burnout among nurses in northern Uganda, whereas Kabunga et al. (2024) related burnout in Uganda central health facilities with longer working hours and poor managerial support. Tumusiime et al. (2026) studied nurses in Mulago National Referral Hospital and found that occupational stress was high, yet some of the individual predictors had counterintuitive relationships, highlighting the shortcomings of cross-sectional self-report analysis.

The available evidence thus justifies the worry surrounding adequacy in staffing, but does not provide a single ratio observed in the public referral hospitals of Uganda as a whole or a locally validated threshold in each of the departments. The connection of daily nursing schedules with ward occupancy, acuity, and missed care and risk-adjusted outcomes has not been extensively linked in the literature. The need to create such evidence is relevant to the just distribution of resources: in a general medical ward, neonatal ward, operating theatre and intensive care department, there are essentially different nursing needs. The lack of a justifiable universal ratio is no excuse to do nothing; it requires minimum protection as well as a demand of care that is measured locally.

3. Methodology

3.1 Research design and scope

This article used an integrative narrative review to analyse nurse staffing, patient outcomes, practice standards and policy implications of the Uganda public referral hospitals. It incorporates both quantitative and qualitative evidence, conceptual literature and official policy documents. The choice of a narrative over a meta-analytic approach is due to non-equivalent measures of staffing, study populations and outcomes definitions, and a lack of Uganda-specific linked patient-level estimates of a national pooled effect. This was done as a secondary research; no patient records, wards registers, field interviews or original surveys were gathered.

3.2 Evidence identification and selection

Identification of source was limited to literature that is available on PubMed, PubMed Central, journal publisher websites and Ugandan government and World Health Organization repositories. Concepts searched were nurse staffing, nurse-to-patient ratio, missed nursing care, patient mortality, burnout, referral hospital, Uganda and low- and middle-income countries. The search focused on literature published between 2018 and November 2026, and it was complemented with background studies that were necessary to establish mechanisms and assessment systems. The synthesis used a priority on published peer-reviewed studies, systematic reviews, longitudinal studies and government documents with distinct periods and denominators.

The sources met the criteria on staffing exposure, nurse workforce conditions, nursing-sensitive outcomes or human-resource policy in acute hospital care. The emphasis was made on uganda-specific evidence in the description of national conditions. Results of Ethiopia, Europe, Australia, Japan and other locations were also used to test mechanisms and policy choices, but were not modeled as Ugandan results. Studies that quantified nurse staffing were clearly differentiated by reports that all health-worker posts. Unverifiable numerical statements and sources which do not have a clear connection to the research questions were not used as primary evidence.

3.3 Synthesis and methodological safeguards

The structure-process-outcome framework of Donabedian was used to organise the evidence, and thematic categories included the measurement of staffing, missed care, mortality, complications, workforce well-being and governance. Prospective or longitudinal analyses and systematic reviews were accorded greater interpretive weight, whereas cross-sectional findings were accorded the status of associations. The synthesis included confounding variables based on the severity of illness, clinical resources, patient turnover and ward type. It was a purposive, reproducible search at the level of reported concepts, but not a registered systematic review and does not purport exhaustive screening or formal pooled effect sizes. Conclusions distinguish observed results, plausible mechanisms and policy proposals.

4. Findings

4.1 Referral-hospital staffing pressures are substantial, but ratios remain poorly observed

Official workforce data reveal that an approved-position vacancy is a focus issue. In 2023/24, the Uganda Bureau of Statistics (2026) documented 23 percent staffing of authorized job roles in the public regional referral hospitals and 46 percent in the national referral hospitals. On December 2024, the Ministry of Public Service (2025) recorded the same figures with 4,345 of 19,198 approved regional referral posts and 2,657 of 5,820 national referral posts being filled. These counts are institutional establishment indicators. They consist of doctors, nurses and other cadres; they do not indicate how many bedside nurses are at work on a

shift, neither do they indicate the workload of patients that are given to a particular nurse. It would be a significant analytical fallacy to consider vacancy percentages as direct clinical ratios.

However, there is a relationship between vacancy in the workforce and roster vacuity. Hospitals that handle high-acuity referrals, unpredictable emergencies, and high turnover may experience care pressure when the recruitment is outpaced by demand. The Ugandan strategic plan recognises the need for improved distribution, productivity and alignment of workforce planning with population health needs (MoH, 2021). According to the qualitative descriptions provided by Kakyo and Xiao (2019), nurse managers can address the shortages by prioritising tasks and improvising, and can do little with recruitment and budgets. This poses a danger whereby personnel work will give short-term relief to the structural deficiencies.

The results suggest that ward-level measurement should be implemented preceding the imposition of prescriptive thresholds. The facilities are supposed to routinely record nurses on duty by qualification, occupied beds, patient acuity, admissions, transfers and nursing hours. Reporting should be done to differentiate between employed personnel and those who are present in reality and are qualified to provide direct care. The resultant indicator is able to be compared across similar wards and across shifts and consider variations in workload. A transparently measured national standard is more plausible than a national standard based on aggregate establishment targets (Griffiths et al., 2019; Musy et al., 2021).

4.2 Lower staffing is associated with poorer outcomes across the wider evidence base

The biggest substantive conclusion of the broader literature is the constant direction of correlation between lower qualified-nurse staffing and mortality. Both surgical and general inpatient populations have been studied internationally, reporting worse outcomes with increased workloads or exposure to less than target staffing (Aiken et al., 2014; Needleman et al., 2011; Dall'Ora et al., 2022). To illustrate, the European nine-country study found an adjusted odds of postoperative inpatient death per extra patient in a nurse assignment were about 7% higher (Aiken et al., 2014). The estimate cannot be used as a causal coefficient of Uganda as there exist material differences in case mix, referral pathways and resources.

Longitudinal evidence provides practicality as it shows how adequacy in staffing may vary across shifts. Morioka et al. (2026) reported more in-hospital deaths and re-hospitalization in groups with exposure to staffing levels lower than the ward-specific standards, and increased stay duration in a Japanese hospital cohort. Griffiths et al. (2024) identified a high mortality risk risk in an English cohort post-exposure to low registered-nurse staffing and no full substitution effect of temporary staff or senior personnel. These findings imply that a hospital can not base its understanding of safety on average monthly staffing. The implications of days and shifts of low coverage especially in patients who are critically ill may be disproportionate.

Some secondary outcomes have less convincing evidence and research designs should be viewed with care. Assaye et al. (2021) identified links to healthcare-associated infections, medication errors and falls in LMIC studies but had a rated overall evidence certainty of low quality. Blume et al. (2021) found variability in the nursing-sensitive outcomes. Not only the number of nurses influences adverse events, but supplies, availability of prescribers, infection prevention, documentation and surveillance. Under-reporting can give the illusion that units that have a weaker system of recording are safer. Uganda thus requires joint personnel and patient-outcome statistics prior to reasonable local effects sizes being estimated.

4.3 Missed care is a plausible, measurable pathway from workload to harm

There is evidence on missed nursing care that describes the effects of a numerical deficit on bedside practice. In a case whereby a nurse has too many patients or immediate urgency duties, the work that is important yet not immediately apparent may be postponed. This can involve reassessment of deterioration, intravenous line checks, aiding mobility, patient positioning, emotional support and clarification of discharge instructions. Kalisch et al. (2009) explain incomplete or delayed required care as a safety-relevant omission, whereas Ball et al. (2018) demonstrate the statistical correlation between it and postoperative mortality.

These correlations are even significant in cases where patient mortalities are too low to be monitored at a ward level to identify short-term variations.

According to LMIC studies, omissions do not only exist in high-technology environments. Assaye et al. (2022) noted that missed care was linked to adverse outcomes in acute hospitals and Imam et al. (2023) suggested that personnel shortages are a significant factor explaining omitted nursing activities in LMIC studies. Abere et al. (2024) also identified missed care due to lack of teamwork and training in Ethiopian hospitals. Such findings are not sufficient to determine the level of missed care in Ugandan referral facilities, but they support the inclusion of direct measures of unfinished nursing tasks in quality dashboards.

In the case of Uganda, a brief, secret missed-care checklist might be added to the regular ward audits, which would encompass the vital signs, medicine timeliness, infection prevention, communication with the patient, mobilisation and discharge counselling. The tool must indicate the observation window and the tasks postponed because of clinical reasons and the ones omitted because of time and material shortage. An organizational culture of non-punitive reporting is necessary: low reported rate can be an indicator of fear, not safe delivery. Integrating staff-reported missed care and chart reviews, incident reports and patient experience provide a more balanced measure than any of the above (Imam et al., 2023; Li et al., 2024).

4.4 Occupational strain threatens workforce stability and continuity of care

The well-being of nurses is always one of the outcomes of limited capacity to provide services in the Ugandan studies. Udho and Kabunga (2022) found high burnout among almost half of surveyed nurses in northern Uganda. Kabunga et al. (2024) indicated burnout rates of about two in five of the health professionals who participated in the study in mixed central Ugandan facilities with longer working hours and low management support being among the factors attributed to burnout. A study conducted in Mulago National Referral hospital found that 64.5 out of 231 nurses experienced occupational stress (Tumusiime et al., 2026). These percentages cannot be directly compared due to the sampling, definitions and outcome measurement. They however emphasize the need of staffing policy in safeguarding sustainable practice.

Burnout can be a cause of absenteeism, intent to leave and lack of attention, possibly forming a vicious cycle: vacancies elevate the workload, workload compromises well-being and retention, and turnover further reduces experienced staffing. In a systematic review, Shin et al. (2018) were able to relate nurse staffing conditions to nurse outcomes, whereas Li et al. (2024) could correlate nurse burnout with worse patient-safety and satisfaction outcomes in a large international synthesis. The presence of association does not imply that posting will be the answer to distress. The retention and work performance are also influenced by team culture, reasonable schedules, responsiveness of managers, reliability of payment and professional growth (Lake et al., 2019).

Special attention should be paid to the results of Mulago. In cross-sectional models, Tumusiime et al. (2026) found some unexpected negative correlations between the variables of staffing and stress levels. These findings are not to be construed that poor staffing safeguards nurses. Relationships can be distorted by self-selection, adaptation, patterns of response and residual confounding. A longitudinal study in Uganda in the future would be able to examine the hypothesis that roster gaps in an objective measure are predictive of overtime, sick leave, burnout and patient outcomes, but it would not have to be based on perceptions measured at a single point in time.

4.5 Fixed minimums should be paired with acuity, skill mix and operational safeguards

A national ratio can be appealing as it can be communicated and audited easily, but it has the disadvantage of not addressing the needs of patients whose care requirements are different. A 1:6 assignment might not be sufficient with unstable post-operative patients and another ward might have other requirements based on staff competence and support. The systematic review by Twigg et al. (2021) reported that staffing methods that were mandated led to improved nurse outcomes, whereas patient-outcome results were

inconclusive. The ratio reform in Queensland demonstrated positive outcomes in the conditions of its particular implementation (McHugh et al., 2021). The inference is to plan standards to integrate an enforceable safety floor with an increase in the staffing of a high dependency patients and specialist services.

Skill mix is also consequential. Griffiths et al. (2024) discovered that registered-nurse staffing was not safely offset by either higher numbers of temporary staff or older staff. Professionals of the right competence and authority are needed to apply clinical assessment, medication management and escalation. The policy in Uganda needs to distinguish between registered nurses and enrolled nurses and midwives and assistive roles, and acknowledge the need of supervision. Delegated non-clinical work to support workers can be beneficial, but this should not be factored in as an equivalent to registered nurses in the calculation of qualified coverage. Similarly, nursing students are supposed to be supervised students, rather than, an unrecognised permanent vacancy solution.

An effective staffing model must embrace structural standards as well as operational stimuli. Every hospital may have a locally-reasoned minimum of similar ward types and a system of bringing in additional workforce when the acuity, occupancy or admissions are higher than the threshold. Examples of trigger events could be a sudden surge in patient turnover, several high dependency admissions, mass-casualty arrivals or recurrent missed observations. Escalation is to be reported and associated with a managerial decision that is named. This is more consistent with the fluctuating referral work than a fixed number of establishments (Musy et al., 2021; Needleman et al., 2011).

4.6 Health policy must connect recruitment to financing and credible outcome evaluation

The health-policy implication does not stop at requesting managers to better the rosters. Funded posts, approvals of public services, equitable deployment and retention arrangements are needed in hiring decisions. The Human Resources of Health Strategic Plan of Uganda serves as a general planning framework, and the national staffing reports indicate the gaps in implementation (MoH, 2021; Ministry of Public Service, 2025). The wards that have the most combination of workload, long-term staffing shortage and nursing-sensitive adverse outcomes should then be identified through a phased recruitment programme. Emergency, intensive care, neonatal, maternity and high-acuity medical services may be prioritized based on audited need, instead of presuming a similar formula of national allocation.

The indicators to follow should initially be those that can feasibly be measured: the number of qualified nurses working per shift, occupied bed, turnover, staff hours per patient day, patient acuity, sickness absence and overtime. Examples of outcome indicators might be risk-adjusted inpatient mortality, unplanned intensive-care transfers, inpatient falls, medication delays, pressure injuries, healthcare-associated infections and patient experience. It is important that the same definitions and denominator checks are used. An increase in the number of reported incidents following a safety initiative can be a sign of improved reporting and not worsening care. The leaders of hospitals are thus encouraged to analyze trends with audit quality, case mix and service availability (Blume et al., 2021; Donabedian, 1988).

The assessment would utilize an interrupted time-series or a stepped implementation design where possible, which would be used to monitor the results prior to and following staffing alterations in multiple hospitals and other similar wards. It should be analyzed in a manner that it takes into account admissions, severity of illnesses, seasonality and side by side investments. A structured programme would help establish whether or not the effect of protected staffing on missed care, burnout and adverse events in Uganda is quantifiable; the available evidence supports that effect currently cannot be quantified. Accountability would be enhanced by reporting on a suitably aggregated basis without necessarily holding individual clinicians accountable in terms of systemic shortages. The data justify a middle ground reform of workforce investment, clinical governance, managerial capacity and independent evaluation.

5. Conclusion and Recommendations

Adequacy of nurse staffing is a critical aspect of clinical safety and service quality in the Ugandan public referral hospitals. Government reports show that there are large gaps in vacancies in approved posts, and local research indicates that nurse workloads are causing distress and managerial limitations. There is a broad consensus in the international literature, both longitudinal and LMIC-based, associating lower qualified-nurse staffing with mortality, care omissions and various adverse events. Nevertheless, the Uganda-specific data is too little to ascribe a viable national nurse-to-patient ratio and assert that a specific number of nurses would provide a given level of mortality decrease. The establishment rates should not be mixed with the bedside nursing coverage and the estimates of the non-Ugandan effects are not transportable into the local hospitals.

To begin with, set ward-specific safe staffing levels. Practical staffing directives on minimum qualified-nurse coverage, suitable skills mix and patient-acuity modification of major referral-hospital service lines should be created by the Ministry of Health and professional nursing regulators. Standards must indicate whether their ratios are of registered nurses alone, all nurses or a larger care team, and must be applicable to actual shifts and not just payroll establishments. Selection of regional and national referral hospitals should be piloted before it is widely adopted (Griffiths et al., 2024; Twigg et al., 2021).

Second, transparently fund and sequence the workforce expansion. Recruitment must focus on documented high-risk service gaps, and predictable wage levels and retention policies to hard-to-staff services. Occupied beds, referral volumes, clinical severity and the available infrastructure should inform deployment. Improved staffing will help, but will never replace adequate funded nursing posts permanently. Nursing leaders ought to be involved in workforce budgeting and ward-level resource decisions (Kakyo & Xiao, 2019; MoH, 2021).

Third, enhances daily nursing practice protections. Standardised handovers, escalation procedures, frequent observation of delayed care and guarded rest arrangements should be established in referral hospitals. The supervisors must have the power to instigate temporary in-house redeployment or increase of cover during workload spikes. Professional growth, stable provision, mentorship and respectful leadership should be continued in a bid to change staffing inputs into effective care. Redeployment of any staff must not harm competencies and safe supervision, but any redistribution of responsibilities to outside areas of professionalism (Lake et al., 2019; Li et al., 2024).

Fourth, create a combined staffing and patient-safety information system. Hospitals are to document ward level nursing presence, acuity, missed care, incidence and chosen risk-adjusted outcomes with uniform definitions. Improvement and persistent risk should be reviewed monthly, and nurses must be free to voice their concerns without intimidation. Facility learning, equal distribution and systemic responsibility should be highlighted in public reporting. Indicators must be justified and explained in addition to patient case mix, evolving documentation practices and medicine availability (Blume et al., 2021; Imam et al., 2023).

Last of all invest in Ugandan outcome research. The association of shift rosters with patient records at an individual level requires multicentre prospective studies that can estimate local associations and test interventions on staffing. These studies must involve urban and rural referral hospitals, separate clinical units, measure professional skill mix, and confounding by severity and hospital resources. It is necessary to examine patient, nurse and financial outcomes in a combined manner in order to determine safety gains and affordability by policymakers. The most justifiable option is the gradual, evidence-producing staffing reform that not only safeguards the patients but also enhances workforce, on which the referral system in Uganda relies.

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