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# Registered Nurses Assignment-Workload for Teaching Hospitals in Kenya: Utilizing the Research Brief with Annotated Bibliography Approach.

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## Abstract

Nursing is important in quality and safety of hospital care and in patients' perceptions of their care. There seems to be a close association between patient safety, undergraduate nursing students' learning with nurse staffing levels in Kenya. The Ministry of Health as well as the Ministry of education does not yet support changing nurse workforce standards for teaching medical institutions. This research brief targeted the nursing units of two teaching hospitals in Kenya. Purpose: There are a lot on staffing issues in research that could be applied in Kenya and nurses might be interested in a staff-understandable review of what has been researched. This brief sought to: establish the relationship between nurse workload and nurse-sensitive patient safety outcome indicators. This review focuses on the staffing issue on the effect of workload on patient outcomes or staff outcomes. The search spanned period of between 2003 and 2013. Conclusion: Nurse managers ought to implement staffing processes that align staff skills and competencies with prioritized patient needs supported on a shift-to-shift basis. A fair and balanced patient assignment increases nurse satisfaction in their daily work.

**Keywords:** Nursing ratios, RN workload, Patient safety, Research brief, RN assignment, Kenyan nurses

## 1. Introduction

Across the board observation of literature showed that there was a clear link between staffing levels and quality outcomes. The general policy by peri-operative grand round<sup>6</sup> for example recommended standard for nurse-to-patient ratio of 1:4 or 1:5 on medical-surgical units, 1:3 or 1:4 on intermediate units, and 1:2 in intensive care units. It is difficult to imagine when this will be possible for the two Kenyan public hospitals below.

Nursing Council of Kenya for recommends a minimum ratio of teacher to BScN students at Classroom 1:10 while that of a qualified nurse to BScN student in a maternity ward 1:2, surgical ward 1:4, ICU 1:1, other wards 1:6.

Shortages nurses in the public hospitals has been as a result of migration, and a high rate of attrition and a long freeze on civil service employment. Public-sector hiring freeze began in 1994 resulting in a shrinking health workforce that limits the government's ability to respond to increased demand for health services. The lean staff mean that patients often wait for long periods to get attention and quality of care suffers. Staff burnout is a problem. Despite a pool of unemployed (potentially available for hire) health staff available in Kenya, staffing levels at most facilities were only 50% (Adano, HRH 2008). The Kenya National Union of Nurses (KNUN)

has said more than 3,000 nurses have fled the country for greener pastures due to poor salaries and working conditions. Union official John Bii said the nurses migrated within the last two years. He said another 13,000 nurses will retire soon. Sunday, February 9, 2014 - 00:00 -by Mathews Ndanyi [www.the-star.co.ke/news/article-154462/3000-nurses-quit-greener](http://www.the-star.co.ke/news/article-154462/3000-nurses-quit-greener)

Emergency Hiring Program was designed as a fast-track hiring and deployment model in 2008 and later those hired under the Economic Stimulus Package (ESP), but many of these staff are yet to be absorbed into the government payroll by the date of writing this report.

## 2. The study sites

Kapkatet District Hospital is a level four hospital, in Kericho County. Operational wise it has 200 Beds and 17 cots. Services offered: Antiretroviral Therapy, Curative In-patient Services, Family Planning, HIV Counseling and Testing, Immunization, Eye clinic, ENT, Psychiatry and Orthopedics clinics. It is the teaching hospital for University of Kabianga School of Health Sciences about 2 Km away from the medical campus. It also hosts Kapkatet Campus of the Kenya Medical Training College in its vicinity which offers Diploma in Kenya Registered Community Health Nursing and Diploma in Clinical Medicine.

It has one of the best e-health information technology LAN networks in the country. Although revenue issues, rather than clinical needs, seemed to have driven the investment in IT, sort of agreeing with Bates (2002) who observed that billing systems were generally much better than the clinical systems. The current nursing levels are 65 nurses for the whole hospital. Bed occupancy 88%per -90% month, daily admissions 40, average out patient Departments attendance is 300 patients per day. On average 238-250 mothers deliver in the hospital

per month, 35-40 of whom deliver via Caesarean section. (Source: Office of the Nursing Officer in charge, Kapkatet District Hospital, 2013).

Kericho District Hospital is a level 5 hospital in Kericho County. Operational wise its capacity includes 250 Beds and 26 cots. Services offered include: Antiretroviral Therapy it host a Comprehensive Care Center (CCC), Walter Reeds Project which deals with HIV/AIDS research, Curative In-patient Services, Family Planning, HIV Counseling and Testing, Immunization among others. It is the other teaching hospital for University of Kabianga School of Health Sciences about 40 Km away from the medical campus.

Nursing levels 120 nurses to cover for both inpatient and outpatient nursing services. Bed occupancy averages 80% for medical and surgical wards while pediatrics it is about 120% per month. Number of deliveries per month ranges between 330-380 mothers, out of whom almost 150 deliver via caesarean section per month (Source: Office of the Nursing Officer in charge, Kericho District Hospital, 2013).

University of Kabianga, Kapkatet Campus runs under the School of Science & Technology, situated within a purpose built 120 beds hospital (though not yet operational). It has witnessed high enrollments since it opened its doors in August 2011 with the first batch of 40 students in BSc Nursing and 52 in Diploma Clinical Medicine. In May 2012 another 40 BSc Nursing, and 20 BSc Environmental Health (EVH) were admitted as a result of an unusual government directive on double intake. In August 2012, 28 BSc Nursing, and 25 EVH were admitted. Due to this double intake in 2012/2013 academic year, the 2012 classes were merged at year two for respective programs. In August 2013 admission BScN 37, students, DCM 52, EVH 40. A population growth of about 400 students in two and a half years. On the other hand, teachers (lecturers, Technicians and the clinical instructors/ preceptors) have had to struggle to cope with overenrolled classes. However, these are positive outcomes for Kenya whose youthful population is about 43% of the total population (KDHS, 2011). It also means that the numbers will rise as the demand for the courses offered in the medical campus exceeds the number vacancies. There continues to be an unmet need for those seeking to upgrade from diploma to degree in nursing and clinical medicine.

## 2.1 Would Legislation really help?

The state of California, USA went ahead to legalize a mandatory nurse to patient ratios. Others have not been eager to emulate it and have been watching to see what happens. Numerous shortcomings have been noted for California such as lack of flexibility to patient acuity, skill mix and even increased nurse workload<sup>9 13</sup>. Legislation is a most unlikely way to go for our country any time soon.

Nurse managers ought to implement staffing processes that align staff skills and competencies with prioritized patient needs supported on a shift-to-shift basis. A fair and balanced patient assignment increases nurse satisfaction in their daily work.

## 3. A summary of published work on the situation

A study<sup>3</sup> was able to link nurse staffing, burnout, and health care-associated infections. In their introduction they thought that reducing burnout in registered nurses was a promising strategy to help control infections in acute care facilities since nurse staffing in the form of nurse-patient ratios and hours of nursing care per patient-day had been implicated in the spread of infection. Anyone remembers some burn out sometime? Imagine now how that could lead to more infections in your ward.

The results<sup>3</sup> indeed found that there was a relationship between nurse staffing and patient infections acquired during hospital stays as follows: looking at it in a little detail, overall; 16 patients per 1,000 acquired some type of infection while hospitalized. The most common infections were urinary tract infections (8.6 per 1,000) and surgical site infections (4.2 per 1,000), followed by gastrointestinal infections (2.5 per 1,000) and pneumonia (2.1 per 1,000). It clearly indicated that differences in nurse workloads across hospitals were associated with the rate of patient infections. That increasing a nurse's workload by 1 patient was associated with increases in both urinary tract and surgical site infections. That is something new, which is as close as it can get.

You might agree that there are tensions involved in nurse staffing ratios and patient safety especially since RN staffing census has been low many times. Whenever RN ratios were adhered to, patients received safe, quality care, if you doubt this ask the patients. Studies<sup>6</sup> have demonstrated that increases in the number of RNs caring for patients resulted in fewer complications, lower morbidity, fewer medication errors, and lower costs.

Duffield<sup>5</sup> did a great piece on nursing staffing, nursing workload, the work environment and patient outcomes as a 5 year longitudinal study. In their introduction they observed that nursing staffing (fewer RNs), increased workload and unstable nursing unit environment were linked to negative patient outcomes including falls and medication errors in medical surgical units. You might want to look up Duffield's work.

Evidence on the positive effects of higher proportions of RNs on patient outcomes in ICU and surgery was strong and consistent<sup>1</sup>. Higher RN staffing was associated with less: hospital mortality, failure to rescue, cardiac arrest, hospital acquired pneumonia and fewer adverse events. Conversely, lower levels of RN staffing were associated with higher rates of urinary tract infections, pneumonia, shock, cardiac arrest, upper GI bleeding,

failure to rescue and increased length of stay (ALOS).

Time dedicated to actual nursing care is astonishingly becoming less. One study measured sources of nursing inefficiency in the medical-surgical setting<sup>7</sup>, and revealed that the majority of nursing practice time was accounted for by documentation (35%), medication administration (17%), and care coordination (21%), with only 19% of nursing hours, on average, being consumed by actual patient care<sup>2</sup>. This being the case then the statement below might make us see the seriousness of the situation.

One result of increased workload<sup>7</sup> was that basic nursing interventions e.g. comforting, skin care, oral hygiene, documentation, teaching of families were left undone or delayed in the case of answering call bells, vital signs, pain medications, dressings, turning, measuring/documenting intake and output mobilization and dressings. Imagine core nursing undone. There is therefore need to eliminate those tasks that do not add value to unit operations or care outcomes. They should not interfere with the delivery of high-quality nursing care. You might want to list some of them.

If we relate these comments to our situation, it is a sad fact that a nurse, even a complete, outstanding one can only do one thing at a time. That even the best of effort is only a singular contribution along the journey for the greater good that we refer to as quality health care. For example, if six patients in a 42-bed Nyayo ward all press their bells at once and there was only one nurse on night duty as is sometimes the case for our teaching hospitals, five may not be answered.

When nursing demand /supply levels exceeded 80%, the number of negative outcomes increases not only for the patients but for nurses and hospitals<sup>10</sup>. Nurse overtime working hours were positively associated with increased negative outcomes not only for the patients but for nurses and hospitals. When the patient- nurse ratio exceeded 7:1 worse things can happen.

A more recent study done in South Africa<sup>4</sup> concluded that it was by improving the practice environment, including patient to nurse ratios that held promise for retaining a qualified and committed nurse workforce that may benefit patients in terms of better quality care.

A study comparing China and Europe<sup>12</sup> found that substantial percentages of nurses described their work environment and the quality of care on their unit as poor or fair (61% and 29%, respectively) and graded their hospital low on patient safety (36%). These outcomes tended to be somewhat poorer in China than in Europe, though fewer nurses in China gave their hospitals poor safety grades. How would our teaching hospitals fare in this one?

Nursing is important in quality and safety of hospital care and in patients' perceptions of their care. Improving quality of hospital work environments and expanding the number of baccalaureate-prepared nurses held promise for improving hospital outcomes in China<sup>12</sup>. Degree nurses are not that many in Kenyan hospitals but we want to believe that they would make that difference.

#### **4. It is a battle worth fighting**

Nurses worldwide are fighting to create better health care settings and coping with a loss of stability and an increased workload. Nurses are well placed to advocate for quality professional practice environments in today's health care system.

A consensus statement on safe staffing levels by the Nursing Standard's Care Campaign<sup>9</sup> ran a captivating '*Eight patients per nurse is unsafe*'. The alliance argued that if a nurse on a general medical or surgical ward were to be asked to care for more than eight patients on day duty, this should be reported as a clinical incident.

The alliance presented the case to ministers for safe minimum levels of nurses on hospital wards, backed by evidence-based methods. Nursing leadership is facing a great challenge in advocacy on this issue. They have managed to recruit others into their course e.g. Institute of Medicine<sup>8</sup> and advocacy groups in the political class. This approach will become important as we explore outcomes sensitive to nursing practice as relates to workload

Advocacy seems something we can do here in Kenya. The timing is ripe since health services have now been devolved (albeit with a lot of aggrieved parties involved) to county level with the new constitution dispensation. We can access our County Governor, Senator and Chief Officers of health with ease.

#### **5. The gap and steps we can take**

It is fascinating that this information might appear repetitive, but it helps to tell a story, but that story is only as good as the interventions we can take to make improvements. The gap that needs to be addressed is that much of these data is derived from USA, Europe, China and Taiwan and only one from Africa. It is therefore important to look critically at which of those factors can apply to our situation. Staffing patterns in these countries and ours may be different but I believe the number of patients assigned and how they are assigned and to whom they are assigned transcend geographic boundaries. It does also affect the students learning in the practical areas (wards, laboratories, and clinics etc.) since staff who are over stretched are less likely to give much attention to teaching.

Ideals and values may not get much of a chance. The students will most likely have to cover for the shortage of manpower at the expense of learning.

How do we make our work environment safe for our patients and for ourselves? The next step we need to look critically at: 1) lay care providers for resource-limited settings, whether they do assist with care or usurp nurses work; 2) the congestion in the wards, patients sharing beds overcrowding and what it means for staff.

We need to understand how to use this data towards evidence based practice, by developing an intuitive grasp of situations and quick targeting of problem areas since nursing staffing shortages in Kenyan public hospitals is not likely to end any time soon<sup>11</sup>. In conclusion there is adequate research information to gradually implement a plan to change our work environment. Beginning with advocacy, making a case for ourselves, but we need to articulate this based on our data.

## 6. Detailed Search Strategy

An integrative review of literature to identify maximum number of eligible articles from databases with key terminologies, networking and searching journal registries.

### 6.1 Limiters

- Years 2003 to 2013 (one exemption of 2001 from Institute of Medicine-IOM booklet).
- English Language

### 6.1.2 Expanders: Applied related words

After using "Workload", "Quality of Health Care+", "Nurse-Patient Ratio", and "Patient Outcomes" as keywords, reports were initially excluded if workload was discussed in terms of integrating a new policy in the workplace or if patient care was not addressed. By focusing the review, potentially relevant sources identified were reduced from 3982 to less than 20 reports. So far I have analysed those presented in annotated bibliography below. Further readings are also provided in appendix below.

One author Aiken, L<sup>4, 12</sup> had done more than two collaborative articles on the topic. Therefore based upon my search there does not seem to be many authors concentrating on this topic. Position statements from various professional bodies cited the works of authors now and then.

What was fascinating was that they seemed to be saying one and the same thing i.e. information might appear repetitive from the reports. This was a notable weakness on my search namely; no new issues coming up. Authors from far-east Asia also seemed to be making some impact in this area of workforce (interesting I had some difficulty citing their names). I did get two articles from Africa which was rather disappointing. I would have been interested to relate my environmental factor to what I observe in terms of nursing shortages, congestion in the wards, patients sharing beds, the role of lay care providers in Kenya.

I was able to use CINAHL and PubMed databases primarily (as seen in the table below) and then expanded my search using "Find it" and recommendations from others in my workforce. I also looked at endnotes of articles for further links especially at the abstracts. I believe other data bases might have expanded this view and will be looking into them in future.

## 7. Annotated Bibliography

1. American Association of Critical-Care Nurses 2005, Web Site <[www.aacn.org](http://www.aacn.org)

AACN is an authoritative professional body for nurses working in intensive care units in the US. They added that negative, demoralizing and unsafe conditions in workplaces could not be allowed to continue. The creation of healthy work environments is imperative to ensure patient safety, enhance staff recruitment and retention, and maintain an organization's financial viability.

2. Birmingham, S. (2010). Evidence based staffing, the next step. *Nurse Leader*. Mosby Inc.

This article by Birmingham, S. (2010) stated that there was strong evidence of the impact of nurse staffing on patient safety and quality. That there was the right nurse may be assigned to right patient for an equitable distribution of care hours and fairness in workload. That fair and balanced patient assignment increased nurse satisfaction in their daily work.

3. Cimioti, J. (2012). Nurse staffing, burnout, and health care-associated infection. *American Journal of Infection Control*. Elsevier: 40. 486-90

This study was able to link nurse staffing, burnout, and health care-associated infection. In their introduction they thought that reducing burnout in registered nurses was a promising strategy to help control infections in acute care facilities since nurse staffing in the form of nurse-patient ratios and hours of nursing care per patient-day had been implicated in the spread of infection.

For purposes of this review it was notable in the Cimioti study that differences in nurse workloads across hospitals were associated with the rate of patient infections. That increasing a nurse's workload by 1 patient was associated with increases in both urinary tract and surgical site infections.

4. Cotzee, S., Kloppe, H., Ellis, S., Aiken, L. (2013). A Tale of two systems-nurses practice environment,



wellbeing, perceived quality of care and patient safety in private and public hospitals in South Africa: a questionnaire survey. *International Journal Nursing Studies*. 50(2):162-73.

Closer home this study done in South Africa concluded that by it is by improving the practice environment, including patient to nurse ratios that holds promise for retaining a qualified and committed nurse workforce and may benefit patients in terms of better quality care.

5. Duffield, C. (2011). Nursing staffing, nursing workload, the work environment and patient outcomes. *Applied Nursing Research*. Elsevier. 2011: 24, 244-255.

This was a great piece on nursing staffing, nursing workload, the work environment and patient outcomes as a 5 year longitudinal study. In their introduction they had observed that nursing staffing (fewer RNs), increased workload and unstable nursing unit environment were linked to negative patient outcomes including falls and medication errors in medical surgical units.

6. Girard, N. (2013). Perioperative grand round, nurse staffing ratios. *AORN Journal*. 97 (5): 604.

Girard outlined the general policy by peri-operative grand round; nurse staffing ratios. The recommended standard for nurse-to-patient ratio of 1:4 or 1:5 on medical-surgical units, 1:3 or 1:4 on intermediate units, and 1:2 in intensive care units. Girard alluded that there were tensions involved in nurse staffing ratios and patient safety especially since RN staffing census was found to be low many times. When RN ratios were adhered to, patients received safe, quality care. Studies had demonstrated that increases in the number of RNs caring for patients resulted in fewer complications, lower morbidity, fewer medication errors, and lower costs.

7. Hendrich, A., Chow, M., Skierczynski, B., Lu, Z. (2008). 36-hospital time and motion study: How do medical surgical nurses spend their time? *Permanente Journal*. 12 (3):25-34.

Hendrich measured sources of nursing inefficiency in the medical-surgical setting and revealed that the majority of nursing practice time was accounted for by documentation (35%) medication administration (17%), and care coordination (21%), with only 19% of nursing hours, on average, being consumed by actual patient care.

8. Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. National Academy Press. (2001). Available at: [<http://www.nap.edu/books/0309072808/html/>]

A key statement by the Institute of Medicine, 'Health care is not just another service industry. Its fundamental nature is characterized by people taking care of other people in times of need and stress. Stable, trusting relationships between a patient and the people providing care can be critical to healing or managing an illness'.

9. Kay, J. (2013). 'Eight patients per nurse is unsafe'. *Nursing Standard*. 27(37): 18 RCN Publishing Company.

I found Kay's a sound resource since it was a more recent, current double peer reviewed article containing a consensus statement on safe staffing levels by the Nursing Standard's Care Campaign. It ran a captivating 'Eight patients per nurse is unsafe'. The alliance presented the case to ministers for safe minimum levels of nurses on hospital wards, backed by evidence-based methods.

10. Li-Fang, L., Sheuan, L. (2012). Exploring the association between nurse workload and nurse-sensitive patient safety outcome indicators. *Journal of Nursing Research*. 20 (4): 300-309.

The results from Taiwan concluded that nurse workforce and nurse-sensitive patient outcome indicators are positively correlated. Nurse overtime working hours were positively associated with the following nurse-sensitive patient safety outcome indicators: patient falls, decubitus/pressure ulcers, near errors in medication, medication errors, unplanned extubation, hospital-acquired pneumonia, and hospital-acquired urinary tract infections; risks of patient falls, decubitus/pressure ulcers, unplanned extubation, hospital-acquired pneumonia, and hospital-acquired urinary tract infections significantly increased when the patient-nurse ratio exceeded 7:1.

11. World Bank Group: *Service Delivery Indicator Survey* (SDI) July, 2013. This survey released recently on frontline health care providers in Kenya underscored the reality about shortage of nurses in Kenya.

12. You, L., Aiken, L. (2013). Hospital nursing, care quality, and patient satisfaction: cross-sectional surveys of nurses and patients in hospitals in China and Europe. *International Journal of Nursing Studies*. 50(2): 154-161.

You and colleagues found that substantial percentages of nurses described their work environment and the quality of care on their unit as poor or fair (61% and 29%, respectively) and graded their hospital low on patient safety (36%). These outcomes tended to be somewhat poorer in China than in Europe, though fewer nurses in China gave their hospitals poor safety grades. Improving quality of hospital work environments and expanding the number of baccalaureate-prepared nurses hold promise for improving hospital outcomes in China.

13. Pamela, T. (2011). Mandatory nurse: patient ratios. *MedSurg Nursing*. 20(5):265-68.

This writer was giving the scenario on how the state of California went about instituting the mandatory nurse to patient ratio. There were several misgivings on the effectiveness of such a move.

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#### List of abbreviations:

RN-Registered Nurse

KRN-Kenya Registered Nurse

KECHN-Kenya Enrolled Community Health Nurse

KRCHN- Kenya Registered Community Health Nurse Ken

BScN-Bachelor of Science Nurse

MSN-Masters of Science Nurse

ENT- Ear Nose Throat

#### Competing interests

'The author declare that he has no competing interests'

Ethical approval not needed

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Table 1. Search modes

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CINAHL        | (MH "Workload")OR<br>(MH "Quality of Health Care+")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|               | AND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|               | (MH "Nurse-Patient Ratio")<br>OR<br>(MH "Patient Outcomes" )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HINARI PubMed | This strategy is limited to "developing countries." I got only 13 citations and utilized one from south Africa.<br>("Developing Countries"[Mesh] OR "Africa"[Mesh]<br>OR "Asia, Central"[Mesh] OR "Asia, Southeastern"[Mesh] OR<br>"Asia, Western"[Mesh] OR "Developing Countries"<br>OR "Africa" OR "Kenya" OR "East Africa" OR "South Africa"<br>OR "Tanzania"<br>OR "Asia" OR "Central America" OR "South America")<br>AND<br>(("quality of health care" or "patient safety" or "burnout"<br>OR "Quality of Health Care"[Mesh] OR "Patient Safety"[Mesh]<br>OR "Burnout, Professional"[Mesh])<br>AND<br>(nurses[majr] or nurse*[ti])<br>AND<br>(workload[majr] or workload[ti] or staffing[ti])) |



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