

Perceptions of Nurses on Patient Outcomes Related to Nursing Shortage and Retention Strategies at a Public Hospital in the Coastal Region of Tanzania

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Abstract

Background: There is little disagreement that the shortage of nurses affects patients' outcomes globally. However, within the low and middle income country setting, there is minimal known about the perceptions of nurses on nursing shortages impact the health outcomes of their patients and what recruitment and retention strategies might be appropriate to address some of these challenges. This study explored the perceptions of nurses on the health outcomes of patient related to shortage of registered nurses and the strategies to retain nurses at a public hospital in Tanzania. **Method:** This qualitative descriptive study used semi-structured in-depth interviews with a select group of nurses in a large public hospital. **Findings:** Through an iterative coding process, a series of categories were derived which yielded three major themes—factors contributing to nursing shortage; compromised quality of care; and recruitment and retention strategies. **Conclusion:** A shortage of nurses affects the health outcomes of patients as it potentially hinders timely accomplishment of the optimal nursing. Efforts need to be proactive in recognizing the reasons for nursing shortages which are rooted in individual, institutional (agency), and organizational (systemic) issues. Within the LMIC context, such as where this study was conducted, it became apparent that the nurses wanted acknowledgement and opportunities to work collaboratively towards the resolution of workload issues for the benefit of the patients.

Keywords

Patient Outcomes, Nursing Shortage, LMIC, Recruitment and Retention,

Tanzania

1. Introduction

“Although 24% of the global burden of diseases falls under the African regions it has only 3% of the global health professionals” [1]. According to the Joint Learning Initiative (JLI) report, within the sub-Saharan context in 2004 the imperative was to triple the current number of health workers in order to meet needs [2]. This was revisited in a 2013 WHO document, which indicated that the current shortage of health workers globally stands at 7.2 million with the projection extending to 12.9 million by 2035 [3]. These authors note that 80% of countries presently not meeting the minimum 22.8 health providers per 10,000 population are in Africa, with a real deficit of 1.8 million workers as of 2013 (25% of the global deficit) on a single continent [3]. This deficiency is situated within the reality of a global nursing shortage which challenges the emergence of universal health care posing a potential threat to both patient well-being and the standards of nursing care [4].

Although there is no universally accepted definition about nursing shortage, Oulton [5] defined the nursing shortage as an unequal proportion of the number of patients attended by one nurse per shift. Mitchell [6] suggested the nursing shortage yields an inadequate number of nurses to provide quality nursing care. Shortage of nurses hinders timely accomplishment of activities significant to patient safety and effective nursing care, thereby negatively affecting the quality of nursing care [7]. Quality care serves as a measure of patient satisfactory outcomes and an indicator of safe standards of patient care [7].

A number of research projects have associated nursing staffing levels with patient outcomes [8] [9] [10]. A large cross-sectional study in 181 hospitals on mainland China revealed that a shortage of nurses had a direct effect on patient outcomes, with a sufficient nursing staff contributing to prevention of adverse patient outcomes. Hinno *et al.* [4] reported three subgroups of patient outcomes “adverse events, patient well-being and patient satisfaction” (p. 2). Adverse patient outcomes are complications, such as hospital acquired infections (*i.e.*, urinary tract infections), falls, medication errors) affecting patient health status and increase length of stay [4]. Adverse patient outcomes are also referred to as nursing sensitive indicators as they measure the level of standard of the nursing care in an institution [4].

Despite evidence that hospitals with high patient to nurse ratios experiencing more adverse events, little is known about the perceptions of nurses about the impact of nursing shortages on patient outcomes, generally, and within the low middle income country (LMIC) settings, specifically. A few studies [11] [12] have affirmed similar experiences amongst LMIC respecting patient outcomes and nursing retention challenges. However, there are additional challenges in

nursing in LMIC such as limited remuneration and career mobility, and social acceptability/stigma of the profession (*i.e.*, working conditions; power) [12] [13] [14].

Complicating the workload issues in LMIC has been the significant aggressive recruitment by developed nations [15] challenging governments to develop mechanisms to incentivize and/or retain health workers in lesser developed countries [16].

Nursing staff level along with the type of the health facility and hospital work environment are key factors in determining the quality of care including patient outcomes [7]. General staffing shortages forces nurses to engage in non-nursing activities (such as delivering food, transporting patients) rather than on the nursing tasks (such as medication administration, and wound care) that are crucial to patient recovery [4] [17] [18]. Nurse understaffing was related to high patient mortality in a number of studies [19] [20] [21].

Using data from the American National Database for Nursing Quality Indicator (NDINQI) to determine the link between total nursing staffing level, a recent study associated RN staffing levels and two specific patient outcomes (*i.e.*, hospital acquired pressure ulcers, and falls) [22]. Other studies have been highly suggestive of work overload contributing to increased post-operative complications and lengths of hospital stay [19], and reduced compliance with hand washing (and therefore infection prevention) [23].

High patient to nurse ratios align with higher emotional exhaustion and greater job dissatisfaction among nurses; conversely appropriate ratios contribute to lower burnout and increased satisfaction [23]. Hospital nurses' turnover affects the performance of the remaining nurses, causes chaos in an organization, threatens patient safety resulting in hospital readmission after discharge, increases nosocomial infections, and potentiates unsafe medication administration [9] [24].

This study explores the perceptions of a select group of nurses on the health outcomes of patient related to shortage of nurses and their perspectives on the strategies to retain nurses at a public hospital in Tanzania.

2. Methods

2.1. Setting

A qualitative descriptive design was used in order to gain an in-depth understanding of the phenomena under study in the natural setting [25]. The study was carried out at a public hospitals in Coastal Region of Tanzania. The choice of this hospital was made after reviewing the nurses staffing level, which was found to be a known issue to nurses and the institution at large.

2.2. Sampling and Recruitment

The participants of this study were registered nurses working at this hospital who understood and spoke English with at least two years of nursing experience.

The nurses were informed about the study by the hospital matron during the weekly hospital morning report. The information sheet consisting of researchers' contact details was posted on the notice board to allow any nurse meeting the inclusion criteria and interested to contact the designated research team members. One nurse from each of the units (*i.e.*, Maternity, Pediatric, Surgical, Male and Female Medical wards) was recruited within a purposive sampling strategy, yielding a sample of five participants recruited to the study. Our sampling approach aligned with the intent of qualitative research to sample to attain depth of meaning rather than generalizability of the findings [26].

2.3. Data Collection and Analysis

In-depth interviews were conducted using a semi-structured interview guide to gain understanding of the nurses' perceptions on the impacts on patient health outcomes related to shortage of nurses and their perspectives on the strategies to retain nurses at the hospital. A pilot interview was conducted with one nurse prior to data collection process to determine the length of interview, increase confidence with interview process and types of questions and probes. This interview data was not included in the analysis phase of this study.

Data collection and analysis was completed between January and April 2015. The interview duration was between 30 and 45 minutes. A brief demographic of each participant was collected before the interviews. The interviews were conducted in the conference room of the hospital. The interviews were audio recorded with the permission of participants. In addition to the interviewer, a second research team member took observational notes during the interviews. All interviews were transcribed and re-reviewed for accuracy.

2.4. Ethics

The project received approval from the Aga Khan University Ethical Review Committee and the management of the public hospital. The participants who volunteered were asked to sign a consent form and reminded of their option to withdraw without consequences at any time. Each participant was assigned a participant number to maintain their confidentiality (*i.e.*, P1 to P5).

3. Findings

The transcripts were reviewed and meaningful words and/or phrases were assigned codes manually. The emerging codes were then grouped into several categories or clusters. From these groupings, a number of themes were developed.

3.1. Demographics

Table 1 highlights the demographic information of the five participants. All participants were females, degree prepared, and most were between 41 and 47 years of age. Work experiences were highly variable ranging from 2 to more than 14 years.

Table 1. Characteristics of participant nurses.

Demographic	Participant				
	1	2	3	4	5
Age	41 - 47	34 - 40	41 - 47	27 - 33	41 - 47
Gender	Female	Female	Female	Female	Female
Education	Degree	Degree	Degree	Degree	Degree
Work Experience	>14 yrs	10 - 13 yrs	2 - 5 yrs	2 - 5 yrs	>14 yrs
Unit/Ward	Medical	Maternity	Surgical	Pediatric	Medical
Working hours	6 - 8	8 - 10	6 - 8	8 - 10	6 - 8

3.2. Themes

Seven categories emerged including: nurse: patient ratios; reasons for nursing shortage; effects of nursing shortage; adverse patient outcomes; intrinsic and extrinsic motivation; recruitment and retention strategies; and motivation to work. Subsequently, these categories were grouped into three major themes: 1) contributing to nursing shortage; 2) compromising quality of care; and 3) recruiting and retaining nurses (See **Table 2**). These themes and sub-components are explored within the following sections.

3.2.1. Theme One: Contributing to the Nursing Shortage

Within this theme, the participants described the existing situation primarily in terms of nurse: patient ratios. Simultaneously, they described their perceptions of the reasons for the nursing shortage at their facility.

Nurse: Patient Ratios

Most participants, in describing the situation of their nursing units, indicated that the number of nurses compared to number of patients was low. One participant mentioned that there are *“Not enough nurses to attend particular patients in the hospital... two nurses to care for twenty patients”* (P1). Another indicated that the *“low number of nurses... will not fulfill the requirements of the patients”* (P2).

The nurse: patient ratios were also related to the context of this particular hospital. For example, apart from receiving the victims of road traffic accidents along a major transit path, they are also receiving patients from nearby regions, such as Dar es Salaam, Morogoro, and Tanga, which add to large volumes and unpredictable severity of the patients.

This hospital is a special hospital because we are taking care of many patients who have had accidents along Morogoro road-so we have many patients here and other patients are coming from Dar es Salaam, Morogoro, Tanga. (P5)

Reasons for Nursing Shortages

The low nurse: patient ratios were attributed by the participants to a range of challenges, such as sick leaves, deaths, retirements, lack of recruitment planning by management, low salary, and geographical location of the hospital (a significant distance from the Dar es Salaam).

Table 2. Thematic overview.

Theme	Sub-categories	Sub-components
Contributing to the nursing shortage	Nurse: Patient Ratios	None
	Reasons for Nursing Shortage	None
Compromised quality of care	Effects of Nursing Shortage	Delays in Care
		Intention to Leave
	Adverse Patient Outcomes	Inappropriate Task-shifting Occupational Injuries Patient Satisfaction with Nursing Care
Recruiting and retaining nurses	Extrinsic and Intrinsic Motivation	None
	Recruitment and Retention Strategies	Employing more Nurses Improving Professional Development Activities Increasing Incentives

According to one participant (P3), “*another (cause) is staff movement, others are going for further studies, others are moving to other stations because of... may be going with the family.*”

One nurse mentioned that lack of commitment can also be a factor contributing to the nursing shortage.

Sometimes they come at the shift but they are not committed and sometimes there are many reasons which lead the staff or that person not to come to (the) working place. (P4)

This same participant stated that a major issue is “*they are not committed, most of the staff they are not committed*” (P4).

3.2.2. Theme Two: Compromised Quality of Care

As mentioned above, there were number of reasons for nursing shortages cited by the participants. With this range of causes, there are a number of effects, primarily described by the participants as negative impact on nurses and patients leading to compromised quality of nursing care. Within this theme, there were two sub-themes “effects of nursing shortage” and “adverse patient outcomes” embedded.

Effects of Nursing Shortage

Nursing shortages challenge patients, nurses, and institutions alike. The majority of the participants stated concerns of the effects of work overload, delays in patient care, high turnover ratios (*i.e.*, intention to leave), inappropriate task shifting, unsatisfactory patient outcomes, occupational injuries, and malpractice (*i.e.*, failure to attend).

Delays in care. Delay in patient care was a clearly stated effect of the nursing shortage cited by almost every research participant. All nurses acknowledged that it was not possible to administer medication at the right time due to the overwhelming nurse: patient ratio.

For example, “*There are some problems like medication sometimes they don’t get at the [right] time.*” (P2)

In response to effects of nursing shortage, nurse (P1) responded:

Some patients may get treatment [but not] in proper time, may have no proper treatment, no proper care. Maybe other patients have [been] in the bed for a long time and they may develop bed sores.

Intention to Leave. Participants indicate that many nurses have an intention to leave their nursing post due to work overload.

Also, if one is sick and there is no replacement ... [am experiencing] nursing shortage in this hospital because sometimes there is aturnover (because) one [nurse] can say that I am so tired I cannot work in a shortage like this. (P2)

Inappropriate Task Shifting. The shortage of nurses makes it difficult for the patients to receive direct care from the registered or trained nurses, as they are often burdened with the administrative duties which eventually lead to inappropriate task shifting. This hinders timely accomplishment of nursing tasks and reduction in the quality of nursing care as the patient will necessarily be attended by the health attendants who are not qualified nurses.

you find one trained nurse in a ward and a nurse assistant so almost one trained nurse can be doing both, patient care and administrative issues so it is difficult for the patient to get nursing care directly from a trained nurse. (P3)

Adverse Patient Outcomes. As a result of nurses' work overload (often due to shortage of nurses at the hospital), numerous life threatening complications have occurred to patients during hospitalization. Commonly cited adverse events included: bedsores, medication errors, patient falls, and hospital acquired infections. Bedsores were attributed to a lack of meeting the standards of treatment with patients being "*in the bed for a long time they may develop bed sores because nobody is going to do the turning measures to those patient.*" (P1) Medication errors were also cited as a threat to the patient safety by a number of the respondents (P2, 3, and 4). Further, P3 indicated "*I can say patient falls and drugs under-dosed, most of the time it's drug under dose.*"

Occupational Injuries. Nursing shortages were seen as contributing to increased occupational injuries such as needle stick injuries. Despite knowledge and awareness programs on prevention of this needle stick injuries, one study participant mentioned it remains one of the major effects of the nursing shortage at the hospital.

Sometimes there is needle stick injuries due to work load or if you are busy the way you handle this sharp instruments sometimes you may injured yourself due to tiredness and this can cause harm to the patients, can cause harm to the nurses... (P5)

Patient Satisfaction with Nursing Care. When the participants were asked about patients' satisfaction with the nursing care, all participants indicated a range from satisfied to unsatisfied. A number of reasons were cited by the respondents as to this variability with a number of reasons were directly linked to the nursing shortage.

Am sorry to say that some patients are not satisfied and this is because it is not

easy to attend one patient at the right time because there are many patients and we are few. (P5)

... sometimes if the patients were supposed to be given an injection at maybe 2 pm and the patient [get] is going to be given at 2.30 or 2.45, they do ask why are you not giving me the injections at the right time? (P3)

The number of patient admitted in the ward on a particular day was seen as a possible determinant of patient satisfaction. According to P2, if the ward has many patients on a particular day the patients' satisfaction may be lower.

...it depends, if there is a lot of admission on that day they [patients] will not be satisfied but if the number of patient are low they get a bit better. (P2)

In addition to number of patients in the ward, length of stay at the hospital was mentioned as a measure of patient satisfaction and also attributed at times to the quality of care deliverable within the nurse: patient ratios.

... if patient who is staying in a hospital for two to three days most are satisfied but the patient who is staying longer at the end they are not satisfied with the nursing care. (P3)

3.2.3. Theme Two: Recruiting and Retaining Nurses

When the participants were asked about possible ways to recruit and retain nurses, they focused on various extrinsic and intrinsic motivational factors and retention strategies for improving quality patient care. These were encapsulated under the third theme of "recruiting and retaining nurses".

Extrinsic and Intrinsic Motivation

Throughout the interviews, nurses spoke of the challenges of working under nursing shortages, as has been reflected in the previous two thematic patterns. Despite these challenges, the nurses felt that there were still doing their best in the provision of care to the patients. Commitment to their work and internal motivation to nursing was cited by some participants.

Even with the shortage, the nurses are working, it is only a few of them those who are not committed but those who are committed they never mind about the appreciation. (P1)

This same participant indicated:

What makes me to be motivated to work in this hospital is my inner feeling to work in this hospital so as to assist and to give care to those well people and sick people.

Permanent job contracts with good terms and conditions were described as one of the key factor that keeps nurses to continue working at this public hospital. Job security was one of the major aspects of retention commonly cited by almost every participant in this study. As P3 stated, "What I can say first of all is job security and another one I can say the team working making patients' feel better motivates me".

The majority of the participants have worked at this public hospital for a long time and have established their permanent residences close to the hospital. This sense of belonging to the community and being a part of the community was al-

so cited as one of the factors that motivate the nurses to continue working at their hospital despite of all the challenges. Accordingly,

I have been [working] here for so long, I am used [to working at this hospital] I think it is enough to me ... and I have a house nearby, I have a family nearby, am not expecting to move. (P2)

Traffic jam is a headache to me so to work at this (hospital) ...because am living nearby helps me remain at this hospital. (P5)

Recruitment and Retention Strategies

A number of suggestions were offered by the respondents to retain nurses at their hospital. The main suggestions included: employing more nurses (improving human resource management plans), increasing professional development for long and short courses/seminars, increasing incentives (such as allowances and salaries) and simply showing appreciation. Lack of these factors was viewed as hindering nursing recruitment and retention at this hospital.

Employing more nurses. The participants suggested recruiting more nurses. One of the nurses charged “*the management of the hospital to look for nurses or to call qualified nurses to come and do an interview so that the nurses can be employed*” (P1).

Improving professional development opportunities. According to P2, recruitment incentives such chances for professional development will help to retain nurses at the hospital.

If they increase the number of nurses, employ others and some motivation incentives such as night allowances, extra duty allowances, and chance for going to school. (P2)

Increasing incentives. Many nurses understand that the hospital has limited funds, so if the management is not able to motivate the staff by giving money, they can at least provide appreciation letters to nurses to make them feel recognized or valued. She said:

Motivation is not [only] money, even to write a letter to someone [to say] you have done a lot of work, you have done such and such we are glad to, to some sort of appraisal, some sort of appreciation that someone has done something good not only money. (P1).

Similarly, other participants suggested recognition by administrators is very important in motivating staff. For example,

What I think motivation is very important, motivation it can be even when our bosses appreciate what we are doing that is motivation and other motivation is incentives such as extra duty allowances, night allowances, uniform allowance, risk allowance, we need that so that we can be motivated to work. (P4)

Another participant (P3) suggested offering an extra day off so that they can have a time to rest with their families.

4. Discussion

This study led to three thematic groupings—“Contributing to the Nursing

Shortage”, “Comprising the Quality of Care”, and “Recruiting and Retaining Nurses”. The relationship of these themes was one of close articulation and a system in motion. For example, the elements which contributed to the nursing shortage potentiated the compromising of quality care and, in turn, generated the imperative for nursing recruitment and retention. As a result a simple diagram (see **Figure 1**) was used to depict the cog-like articulation of these three themes. Not only does this diagram emphasize the inter-relationship of these three themes, but also shows a system in motion, both of which were indicated by the input of the participants. No theme was articulated independently, such that the nursing shortage generated concerns for care which made recruitment and retention a need.

Low nurse: patient ratios (*i.e.*, indicative of the nursing shortage) were seen as hindering the provision of quality patient care. The nursing shortage was seen as contributing to delays in patient care, increasing medication errors, work overload, and inappropriate task shifting. These findings are similar to the other studies suggesting the low nurse: patient ratios impact on nursing activities that are considered as significant to patient safety and effective nursing care [7] [24]. The major causes of nursing shortages in the sub-Saharan region are migration of nurses seeking better opportunities, higher standards of living, salary increments, and more favorable working conditions, early retirement and the burden of HIV/AIDS [1]. In this study, a number of these issues were mirrored, however, no reference to HIV/AIDS patient burden was mentioned. The reasons for nursing shortages described in this study were directly linked to *individual nurse’s issues* (*i.e.*, sickness, retirement, death), *institutional issues* (*i.e.*, geographic location), and *organizational/administrative issues* (*i.e.*, lack of recruitment planning, leaves, low salary).

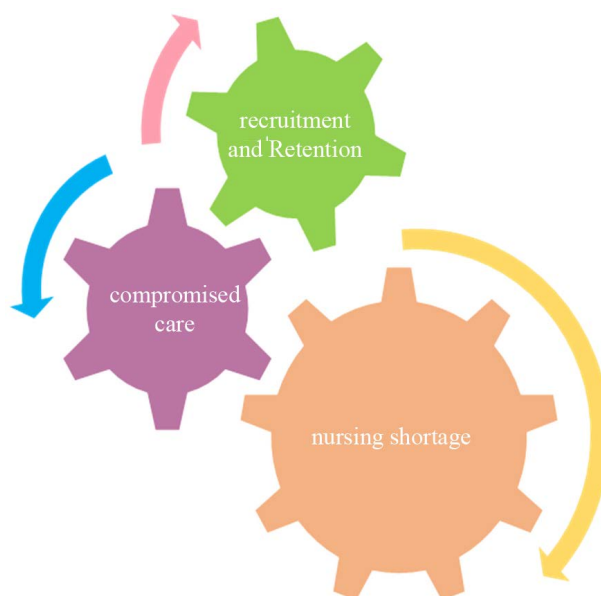


Figure 1. Thematic linkage diagram.

Again, the effects of the nursing shortage as described by this group of nurses were described as related primarily to patient or practice outcomes. Shortage of nurses affects both patients' outcomes and nurses' health in many ways such as work overload, delays in patient care, high turnover rates, inappropriate task shifting, unsatisfactory patient outcomes, and needle stick injuries. Many of these findings were reported by previous researchers [5] [27] [28]. The participants indicated that, as the shortages increased, they were being required to do more non-nursing activities, especially administrative activities. This finding is similar to a study by Jackson, *et al.* [18] which suggested that a shortage of nurses forces nurses to engage in more non-nursing activities which are out of their scope of practice rather than concentrating on nursing care and other tasks that are crucial to improving patient outcomes. Further, the nurses indicated that patients were not satisfied with the nursing care when it caused delays of service or when they were being attended to by health attendants rather than registered nurses, similar to the work of Scott [29].

Adverse patient outcomes identified by participants in this study included bedsores, medication errors, patient falls, and hospital acquired infections. Nurses perceived these outcomes as threats to patient outcomes, directly affecting patient health status, satisfaction, and lengths of stay. The evidence affirms what these nurse informants suggested. For example, addressing nursing shortages may reduce length of stay [19] [30], fall rates [31], nosocomial pressure ulcers [32], and overall adverse events (*i.e.*, medication errors and infections) [28].

Of interest was the range of recruitment and retention strategies provided by the participants. There was a clear message that both intrinsic and extrinsic motivators need to be attended to in order to overcome the nursing shortage. It was also made apparent that there is awareness on the part of the nurses of the challenges for the organization in meeting the human resource needs due to funding limitations. This study's participants, as in the study by Duffield Roche, Blay, & Stasa [33], indicated that nurses' satisfaction was associated with recognition and praise by their managers while lack of recognition lowers morale and productivity. Also, professional development was noted as highly desired by nurse participants as a means to retention.

Recommendations and Conclusion

Shortage of nurses affects the health outcomes of patients in many ways, as it hinders timely accomplishment of the tasks that are considered as significant to patient safety and effective nursing care. Steps are required by the management to recruit more nurses to cover this shortage and improve the patients' health outcomes. Good retention strategies are a key to nurses' shortage eradication, thereby contributing to improved patient health outcomes and nursing staff's satisfaction. These efforts need to be proactive in recognizing the reasons for nursing deficits are rooted in individual, institutional, and organizational issues. Within the LMIC context, such as where this study was conducted, it became

apparent that the nurses were wanting acknowledgement and opportunities to work collaboratively towards the resolution of workload issues for the benefit of the patients. There is a need for ongoing research in the area of the impacts of the nursing shortages in the LMIC context which may or may not mirror the findings in developed contexts. Inclusion of the voices of nurses is imperative in articulating and appreciating the issue of nursing shortages and patient outcomes in order to validate the possible solutions including meaningful recruitment and retention strategies.

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