

The Impact Of Hospital Bed And Beddings On Patients: The Ghanaian Healthcare Consumer Perspectives

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Abstract: *Patients are continually denied health care due to the shortages of hospital beds. Others are unnecessarily referred resulting in delays of care and the development of complications. In addition, some hospital beds are in a poor state and negatively impacting healthcare. This study; therefore, seeks to determine the overall comfortability of hospital beds to patients and the effects of bed shortages on patients. Furthermore, to define occupied beds without linens within a day and to find out the contribution of hospital beds and beddings to cross infection. The study involves the use of descriptive cross-sectional study design. The study population consisted of three hundred inpatients from three selected hospitals in the Ashanti region of Ghana. Thirteen clusters were randomly selected from eighteen clusters (wards). Simple random sampling technique was further used to select at most fifteen subjects from each of the thirteen clusters to make a sample size of 177. Data were collected in the year 2017. Major findings include; 29.4% of occupied beds were without linens and only 9.6% of subjects were very comfortable lying in the hospital beds. Just 10.7% of patients have experienced floor nursing and 30.5% of patients were unnecessarily referred. Subjects prematurely discharged accounted for 31.6% and 42.4% of respondents were cross-infected. In conclusion, hospital beds and beddings contribute to high levels of hospital-acquired infections and subject patients to various degrees of discomfort. Also, unavailability of hospital beds compounds the problem of floor nursing, unnecessary referrals and premature discharge from hospitals.*

Keywords: *Bedding; Perception; No bed syndrome; Comfort; Ghana*

I. INTRODUCTION

Deficiency of hospital beds either acute or chronic has detrimental impacts on the health of patients. All over the world, this phenomenon has become a major catastrophe needing urgent attention, especially when it concerns the lack of acute and intensive care unit beds (Cunningham & Sammut, 2012; Meydan, Haklai, Gordon, Mendlovic, & Afek, 2015). However, the problem is even more devastating in developing countries where poverty (Cooke, Hague, & McKay, 2016) and inequality and disparities in the distribution of health resources (Kushitor & Boatemaa, 2018) play a tremendous role. This situation is further exacerbated by the burden of communicable and non-communicable diseases (Omoleke, Mohammed, & Saidu, 2016; Vetter et al., 2016) and the surge in population (Gerland et al., 2014). A typical example is the

scarcity of health resources experienced in Ethiopia which often results in bedside rationing on a daily basis (Defaye et al., 2015). Likewise, Ghana is no exception but have similar or even more difficult situations. Available statistics put Ghana's hospital beds at 19,907 with a turnover per bed of 99.7% and the average length of stay at 3.3 in 2014 (Ghana Health Service, 2015). According to Central Intelligence Agency (2017), Ghana's hospital bed per 1000 population is 0.9 and this number is woefully inadequate.

Undeniably, shortages in hospital beds have numerous negative influences on patients. Some researchers favoured the argument of bed shortages resulting in worse prognosis while others think otherwise. Stowell et al. (2013) identified worse prognosis of patients as one of the consequences of hospital bed shortages. Conversely, it was argued that decreased beds have no effect on mortality but rather an alteration in the care

plans of patients (Mery & Kahn, 2013; Stelfox et al., 2012). Moreover, Akbari Haghighinejad et al. (2016) suggests hospital bed shortages increase patients waiting time at outpatient departments. The conclusion reached in another study submits that shortages of hospital beds were directly responsible for clinicians prematurely discharging hospitalised patients (Blom et al., 2015).

Despite the glitches caused by hospital bed shortages, existing beds also have tremendous impacts on health. Though it has been established that hospital beds and beddings play a therapeutic role and provide comfort for patients, they can likewise cause havoc. Comfort is paramount in healthcare and cannot be undermined. Openshaw (2011) contextually defined comfort as a sensation and a state of being that people strive to achieve in their endeavours. As a result, many studies have been conducted to identify factors that impact on patients comfort (Borzou, Anosheh, Mohammadi, & Kazemnejad, 2014; Coelho, Parola, Escobar-Bravo, & Apóstolo, 2016; Lombardo et al., 2013). In spite of everything, hospital beds play similarly an important role in healthcare, assisting patients to obtain optimal comfort. On the contrary, this is a challenge in Ghana and other developing countries, as some of the hospital beds are in a wretched state. The beds have no control buttons, making patients overly reliant on care providers for changing bed positions and thus increasing their emotional discomfort. Also, these beds were manufactured without considering the anthropometry data of local inhabitants and they further complicate matters (Adeodu, Daniyan, & Adaramola, 2014; Ariful Islam, Asadujjaman, Nuruzzaman, & Mosharraf Hossain, 2013; Fajobi, Awoyemi, & Onawumi, 2016).

In addition, the hospital bed comprises of many parts and they serve as a potential source of infection. In spite of healthcare personnel working assiduously to prevent cross infections, it still remains a major risk. Repeatedly, studies have proven over and over again to demonstrate the contamination of hospital bed decks and mattresses after use (Fernando, Ferreira, Colombo, Rubio, & Almeida, 2013; Hooker, Allen, Gray, & Kaufman, 2012). Consequently, they have been studies that have identified microorganisms on the surfaces of fomites in the hospital (George et al., 2012; Tagoe, Baidoo, Dadzie, Tengey, & Agede, 2011). Other enquiries have indicated how the growth of bacteria on inanimate objects has become a possible vehicle for the transmission of infections (Nwankwo, 2012). It was thus not remarkable when the findings from a research suggest the high incidence of nosocomial infections in a teaching hospital in Cameroon (Nouetchognou, Ateudjieu, Jemea, Mesumbe, & Mbanya, 2016). Nonetheless, the conclusions reached in other investigations proved otherwise (Fijan & Turk, 2012; Scherbaum et al., 2014).

Last but not the least, Quality sleep is known to have an effect on wound healing, aid in recovery from disease and promote good health. Pilkington (2013) identified factors such as noise, light, pain, stress, nurses shoe and anxiety as causes of sleep disturbance to patients when on admission. However, other findings propose that new bedding systems improve sleep quality and reduce back discomfort (Jacobson, Wallace, Smith, & Kolb, 2008; Jacobson, Boolani, & Smith, 2009). In a different study, it was suggested that medium-firmed and

custom inflated mattresses promote comfortable and quality sleep and aid in spinal alignment (Radwan et al., 2015). Tonetti, Martoni and Natale (2011) supported this claim but were inconclusive on the effect of latex and independent spring mattresses on subjective sleep quality.

Finally, in a developing country like Ghana and others, where poverty is extreme, issues of hospital bed shortages and bed and beddings are not given the necessary attention they deserve. However, the hospital bed and beddings have deleterious effects on healthcare. There have been reported incidents of patients denied healthcare due to the unavailability of hospital beds. Others cite delays in care, floor nursing and unnecessary referrals from one hospital to another which often results in the development of complications and death. Also, lack of bed linens and bed discomfort are other matters of importance to healthcare consumers. The news has become rampant and the menace is continuously growing. Hence, this article seeks to determine the overall comfortability of hospital beds to patients and the effects of bed shortages on patients. In addition, to define occupied beds without linens within a day and to find out the contribution of hospital beds and beddings to cross infection.

II. DESIGN AND METHODS

A. DESIGN

The study was carried out using a descriptive cross-sectional study design. This involves collecting information from a randomly chosen sample of the study population at a point in time. This method was selected to determine the number of participants affected by the identified health problems. Additionally, to make generalizations which would be representative of the study population and minimising biases.

B. STUDY SETTING

This survey took place in three different geographically located hospitals in the Ashanti region of Ghana. Namely, the Kwame Nkrumah University of Science and Technology Hospital (University Hospital), Agogo Presbyterian Hospital (Presbyterian Health Services) and Devine Hospital at Feyiase. These hospitals were selected based on their strategic locations, the number of customers served and the heterogeneous nature of their attendants. For instance, the Kwame Nkrumah University of Science and Technology is an academic hospital which serves students, staff, staff dependents and private patients as well. This provides participants with different backgrounds, views and ideologies which would be reflective of the general characteristics of the Ghanaian population. Also, available infrastructures in these hospitals range from the old-fashioned to the modernised type. Those wards with the state of the art facilities are famously referred to as very important personality wards (VIP wards). These 'VIP wards' have the best of everything and patients in these wards would have different perceptions from their counterparts in the old-fashioned wards. In addition to the above-stated reasons, the hospital environment was chosen to

remind patients of their experiences from other hospitals. The remembrance of such happenings would help them in responding to the questionnaires more appropriately.

C. STUDY POPULATION

The research population consisted of inpatients from the Kwame Nkrumah University of Science and Technology Hospital, Agogo Presbyterian Hospital and Devine hospital. Altogether, the three hospitals have a total of 300 in-patients. These patients were scattered on eighteen different wards in the three hospitals with each ward having an average of twenty (20) beds. In-patients with medical, surgical and obstetric conditions were all part of the study population. Both males and females above the age of ten (10) and who have spent at least 12 hours on the wards were included. Patients incapable of independently responding to items on the questionnaire because of their existing health conditions and below the age of ten (10) were exempted from the study.

D. SAMPLING TECHNIQUE AND SAMPLE SIZE

Multi-stage sampling technique was used to select the participants of this study. Each of the eighteen (18) wards were assigned a number from one (1) to eighteen (18) to form a total of 18 clusters. Afterwards, thirteen (13) clusters or wards were randomly picked from the eighteen (18) using the lottery system. Finally, subjects were picked from each of the thirteen (13) selected wards using a simple random sampling technique to make up the required sample size. The sample size was 177 subjects consisting of 92 males and 85 females all above the age of 10 years with various health problems.

E. DATA COLLECTION TOOL

The self-structured close-ended questionnaire was solely constructed for the purpose of this research. The questionnaire was created after a rigorous literature review of selected articles and identification of problems associated with the hospital bed and beddings. The questionnaire consisted of 24 items. The items on the questionnaire borders on a range of questions centring on demographic characteristics of patients and patients' perception of cross-infection. Other items included in the questionnaire were overall comfortability of hospital beds to patients, unavailability of beds, lack of beddings and hand controls.

F. DATA COLLECTION PROCESS

Questionnaires were administered to randomly chosen participants from the thirteen (13) clusters (wards) described above. For example, some of the wards engaged were male wards, female wards, intensive care units (ICU), emergency rooms/casualty departments and maternity. Ten well-trained nurses who were fluent in both English and one or two local dialects were recruited to assist in the collection of data. These nurses offered vivid explanations to subjects but with timely interventions not to influence the outcome of their decisions. Where necessary, questions were translated into the local dialect of respondents for easy understanding and avoidance

of inaccurate responses. More importantly, participants were encouraged to carefully examine and observe their beds before responding to items on the questionnaire. Also, subjects were asked to reflect upon their past experiences to guide them in responding to certain items on the questionnaire. The latter approach was adopted to get a generalized view of patients concerning hospitals they have visited before. Respondents below the age of eighteen (18) years were assisted by their parents or guardians in answering the questions.

G. PILOT STUDY

Two clusters were randomly selected from the eighteen clusters developed. The chosen clusters were further subjected to simple random sampling technique to obtain a total of 15 participants. The characteristics of participants fit those described above. Inquiry forms were then administered to the participants after permission was sought from them. Subjects were guided in responding to the questionnaire and explanations were provided when needed. After the administration of the questionnaire, the data was analysed. The results obtained proved that the data collection tool was highly reliable and valid. Hence, the tool was maintained.

H. METHOD OF DATA ANALYSIS

The data from the field were processed using the Statistical Packages for Social Sciences (SPSS) version 20.0. The quantitative method of data analysis was utilised. Descriptive statistics such as frequencies and percentages were used in the analysis when necessary. Also, tables were used to provide a clearer picture and illustrations.

I. LIMITATION OF THE STUDY

The smaller sample size may interfere with the generalisation of the results to a larger group since it may not be a true reflection of characteristics of the larger group.

J. ETHICAL CONSIDERATION

The ethical issues addressed in this research include the following; informed consent, the anonymity of respondents, confidentiality of respondents' information, and avoidance of harm.

Also to avoid plagiarism, the works of other researchers used in this study were duly acknowledged in both in-text referencing and in the references column. Furthermore, ethical clearance was sought from the respective hospitals and the individual participants before data was collected.

III. RESULTS

	Demographic Variable	Frequency	Per cent (%)
Gender	Male	92	52
	Female	85	48

Age	10 – 19	12	6.8
	20 – 29	57	32.2
	30 – 39	53	29.9
	40 – 49	26	14.7
	50 ⁺	29	16.4
Marital Status	Single	74	41.8
	Married	92	52.0
	Divorced	11	6.2
Educational Background	SSS level	43	24.3
	College	39	22.0
	University	27	15.3
	Post basic	32	18.1
	Uneducated	36	20.3
Occupation	Civil servant	20	11.3
	Trader	43	24.3
	Self-employed	53	29.9
	Unemployed	43	24.3
	Others	18	10.2
Religion	Christianity	140	79.1
	Islam	34	19.2
	Traditionalist	3	1.7

Source: Field Data, December 2017

Table 1: Socio-Demographic Characteristics of Respondents

As shown in Table 1, the percentages of males and females used in the study were 92 (52%) and 85 (48%) respectively. The majority of participants falls within the age group of 20 – 29 years with a count of 57 and a percentage of 32.2. This was closely followed by the age group 30-39 years with a percentage of 29.9 (53). At least each age group used in the study had a representation. Fifty-two per cent 92 (52%) of the subjects were married, 74 (41.8%) were single and 11 (6.2%) had divorced. 79.1 per cent (140) of respondents belonged to the Christian faith, 34 (19.2%) were Muslims and 3 (1.7%) were traditionalists. Only, 36 (20.3%) of respondents were uneducated, 43 (24.3%) had received SSS education and 39 (22.0%) were at the college level. Furthermore, 27 (15.3%) had attained university education and finally, 32 (18.1%) had received post basic education. 11.3% (20) of respondents were civil servants, traders accounted for 43 (24.3%) and 29.9% (53) were self-employed. Also, 24.3% (43) were unemployed and finally, 10.2% (18) of respondents were engaged in other forms of occupation not specified on the questionnaire.

		Frequency	Per cent
Occupied beds with linens in a day	Yes	125	70.6
	No	52	29.4
The frequency of changing bed linens in a day	When necessary	32	18.1
	Three times	8	4.5
	Two times	23	13.0
	Once	79	44.6

	Not at all	35	19.8
Patients' awareness of hospital bed cross infection	Yes	143	80.8
	No	34	19.2
Patients who picked infections from the hospital bed	Yes	75	42.4
	No	102	57.6

Source: Field Data, December 2017

Table 2: Patients Perception about Bed Linens and Nosocomial Infections

When asked whether there was always bed sheets on the various beds within a day, 125 (70.6%) of respondents responded 'yes' with only 52 (29.4%) answering 'no'. From Table 2, 32 (18.1%) of respondents had their bed linens changed anytime the need arises and only 8 (4.5%) of respondents had their bed linens changed three times in a day. Some 23 (13.0%) of respondents had their linens changed twice a day and majority 79 (44.6%) of respondents had their linens changed once a day. Finally, some 35 (19.0%) of respondents never had their bed linens changed within a day. Most respondents 143 (80.8%) possess the knowledge that they can acquire infections from the hospital bed leaving only 34 (19.2%) without this essential information. 75 participants out of the 177 making up 42.4% of the subjects perceived they had acquired cross infections from the beds during their hospitalization. Approximately 102 (57.6%) were not cross-infected.

		Frequency	Per cent
Patients nursed on the floor due to unavailability of hospital beds	Yes	19	10.7
	No	158	89.3
Patients unnecessarily referred due to unavailability of beds	Yes	54	30.5
	No	123	69.5
Premature discharge of patients	Yes	56	31.6
	No	121	68.4

Source: Field Data, December 2017

Table 3: Effects of hospital bed shortages on Patients

Concerning the effects of hospital bed shortages on patients, 19 (10.7%) of subjects claimed to be floor nursed while a greater proportion of respondents, that is 158 (89.3%) had never received such treatment. Also, 54 (30.5%) of respondents asserted they were unjustly referred or asked to go to another health facility due to lack of beds. But majority 123 (69.5%) of respondents had never experienced such

phenomenon. Finally, when asked whether subjects were ever discharged prematurely from any health facility before, some 56 (31.6%) responded 'yes' and most 121 (68.4%) responded 'no'.

From Table 4 below, the results indicated that 154 (87%) of beds patronised by patients in the study lacks hand control buttons. Leaving only 23 (13%) of beds with it. When respondents were provided with four options to describe the hospital bed mattress, only 31 (17.5%) described it as soft. Additionally, 51 (28.8%) described it as medium-firm, 38 (21.5%) described it as firm and 57 (32.2%) described it as hard. Also, respondents were provided with binary options to indicate whether they experienced bodily pains or not when lying in these beds. Responses gathered shown that 134 (75.7%) of subjects experienced some form of bodily pains, while the remaining 43 (24.3%) did not. A preponderance of 140 (79.1%) of participants suggested the beds reduced their quality of sleep, while 37 (20.9%) of subjects think otherwise. Furthermore, a five-point Likert scale was employed to assess the comfortability of the beds to the subjects. As shown in Table 4, 17 (9.6%) of participants indicated that the beds were 'very comfortable' and 16 (9.0%) responded that it was 'somewhat comfortable'. To add up, 48 (27.1%) assessed that it was 'uncomfortable' and 51 (28.8%) indicated that it was 'somewhat uncomfortable'. Lastly, some 45 (25.4%) indicated that it was 'very uncomfortable'.

	Variable	Frequency	Percentage
Beds with hand control buttons	Yes	23	13
	No	154	87
Description of hospital bed mattress	Soft	31	17.5
	Medium-firm	51	28.8
	Firm	38	21.5
	Hard	57	32.2
Respondents that experienced bodily pains	Yes	134	75.7
	No	43	24.3
Effect of hospital bed on sleep quality	Yes	140	79.1
	No	37	20.9
Overall ratings of bed comfort	Very comfortable	17	9.6
	Somewhat comfortable	16	9.0
	Uncomfortable	48	27.1
	Somewhat uncomfortable	51	28.8
	Very uncomfortable	45	25.4

Source: Field Data, December 2017

Table 4: Hospital Bed Accessories and Their Impact on Patients Comfort

IV. DISCUSSION

The study was conducted using 177 participants of which 52 per cent were males, and 48 per cent were females. This, though not deliberately was done to put across the concerns of both sexes and making sure that the results were not skewed in a favour of only one particular sex. Following the same principle, each age group starting from ten (10) years and above had a representation. The mean age was 34.5 (SD 1.18). Also, there was a representation of the various religious groups in the study, with Christians making up the majority. The religious representation was in conformity with the 2010 Ghana population census which indicated that Christianity is the major religion in the country (Ghana Statistical Service, 2012). The majority of participants were self-employed, and a few were unemployed. Patients' occupation has the probability of influencing most of the variables as some of the well-furnished hospital wards popularly known as very important personality wards (VIP wards) are only patronised by the economically sound and people of high repute. Hence occupants of those wards receive quality care and they might have different perceptions from the ordinary poor Ghanaian. Though this study was not interested in the effect of demographic variables on the quality of care received at the various healthcare facilities, there is a link or an association and this could be researched into.

Interestingly, this article is the first of its kind which endeavours to link hospital furniture to patients' discomfort in this country. Surprisingly, the results obtained were alarming. For instance, several of the respondents felt various degrees of discomfort when lying in these beds based on a five points Likert's scale provided ranging from very comfortable to very uncomfortable. This approach was used instead of providing respondents with a binary option of 'yes' or 'no' to get varied responses and this was evident in the responses obtained. In cumulative percentage wise, only 18.6% of respondents felt somehow comfortable when lying on these beds. The above result indicated the magnitude and severity of the situation that requires urgent attention and solution. Also, the findings suggest that most of these patients are subjected to a lot of physical discomforts. What this means is that patients with physical injuries such as musculoskeletal pains could be aggravating their condition, delaying their recovery time and increasing their stay on the wards. Also, patients that are supposed to lie in the beds and assume a certain posture or position would not be able to do so. Uncomfortable beds can also lead to stress and this would further deteriorate patients' health. Evidently, the majority of participants reported bodily pains when lying in these beds. This which is no fault of theirs have the potential of increasing their health care expenditures and further making them develop some complications such as neck problems, circulatory problems and back pains.

Per results obtained, though not explicit, some of the associated factors to bed discomfort identified in this study were an inappropriate choice of bed mattresses and lack of bed hand control buttons. Obviously, respondents' description of these mattresses ranges from soft to hard with only a few participants describing their mattresses as medium-firm. Also, the majority of beds that respondents have had an encounter with before, lack hand control buttons. This has the tendencies

of increasing patients' emotional discomfort and independence. Hand control bed buttons help patients to self-adjust their positions in bed and without these buttons, patients become entirely dependent on nurses and other healthcare personals for the performance of some independent tasks. The problem of bed discomfort can be solved by providing healthcare facilities with modern beds. These beds have various functions and have the capacities of changing patients' position without the help of a professional. Also, beds should be serviced regularly and dysfunctional beds replaced. Furthermore, anthropometric data of local inhabitants should be used in the manufacturing of these beds (Adeodu et al., 2014; Fajobi et al., 2016). Medium-firm and self-adjusted mattresses could also be used to promote optimum sleep quality, comfort and spinal alignment (Radwan et al., 2015).

From Table 2, some participants had their bed linens changed only once in a day, and a few of the respondent's bed linens were not changed at all within the 24-hour period. This is not the standard practice, as research suggests that hospital bed decks and mattresses become contaminated after use even by using bed linens (Hooker et al., 2012). Therefore, the practice of laying patients in bare beds could lead to high rates of hospital-acquired infections, complicating patients existing conditions, increasing the cost of care and wasting of health resources. Hence, it will be in the best interest of healthcare providers to make readily available clean and well-kempt beddings when necessary to save patients from unnecessary costs and secondary infections. It was therefore not surprising to find 42.4% of participants indicating to have contracted hospital-acquired infections from the hospital bed and beddings before. However, the above findings do not pertain to only the aforementioned hospitals but other hospitals also contributed to the results as patients used their experiences obtained from other hospitals to answer the question.

Though the study does not involve checking temperature or running laboratory investigations to confirm their claims, which in some cases would not be applicable, this should be taken seriously and addressed appropriately, for perceptions really matters. Despite, the high percentage of respondents claiming to be crossed infected, the study is in conformity with research conducted in Yaoundé University Teaching Hospital whose findings suggested the high incidence of nosocomial infections in the hospital (Nouetchognou et al., 2016). To solve this problem, Fijan and Turk (2012) recommended the following steps in dealing with hospital beddings; correct collecting and categorization of contaminated hospital textiles, correct transportation of hospital linens, a correct division of clean and unclean area in the laundry. Also correct sorting, laundering, drying and ironing of hospital textiles, correct transport and storage of clean hospital textiles. Furthermore, Hooker et al. (2012) suggest the use of launderable bed mattresses in confronting the situation. Pinon, Gachet, Alexandre, Decherf, and Vialette (2013) recommended the use of active antimicrobial textiles that can effectively deal with all these microorganisms and limit hospital beddings cross infections to some extent.

The impact of 'no bed syndrome' or hospital bed shortages on patients in this study was relatively high. Considering the fact that 30.5% of respondents had been unnecessarily referred before, 31.6% were prematurely discharged before and finally,

10.7% had suffered the fate of floor nursing before. Patients' discharged prematurely could lead to rehospitalisations and worsening of diseases. Though this research did not place much emphasis on what happens to patients after they were discharged, it would be interesting to find out and actually get tangible data in support of whatever conclusions might be drawn. In that case, a qualitative study might just be the appropriate choice. Also, unnecessary referrals could result in a delay of care, death and mounting of tremendous pressure on the few teaching hospitals available. Finally, floor nursing can cause conglomerate of problems including discomfort, change of care and infections. Considering the magnitude of these problems based on the above figures, urgent solutions are needed. One of the possible solutions to this issue is to intensify health promotion and primary prevention services in the country. According to (Emery et al., 2015; Zhao, Thomas, Guthridge, & Wakerman, 2014) primary care reduces hospital admissions. Hence, when more efforts are put into primary care services, cases at the emergency departments would be reduced, and this would lead to a fewer number of hospital admissions. Furthermore, research findings suggested that when interventions such as advance care planning, palliative care and geriatric specialist services are offered in nursing homes, they reduce hospital admissions (Graverholt, Forsetlund, & Jamtvedt, 2014). This option is very crucial since the elderly population is ever-increasing in the country (Ghana Statistical Service, 2012) and it is mostly the aged that report to hospitals with chronic conditions that require longer hospital stays. Finally, a third solution is to expand existing hospital capacities or build more hospitals to meet population demands.

The results obtained in this work were subjected to respondents perceptions of the reality. It is possible that some of the findings were exaggerated or underreported and could not be representing the actual account of events occurring on the grounds. And this is a limitation of the study. Therefore, other rigorous methods can be used in replicating this study.

V. IMPLICATIONS

As demonstrated through this paper and supported by its findings, stakeholders must prioritize patients' safety and comfort. It is their responsibility to improve the quality of care and provide the appropriate healthcare resources as demanded by their clients to improve the health sector. Providing clean beddings, stocking hospitals with adequate modernized beds would go a long way to lift the image of healthcare in this country. In addition, nurse in-charges must prioritize patients' needs and see nursing as a problem-solving profession. They must go the extra mile to provide more or adequate bed linens that would cover all shifts. The bed must be well-kempt and decontaminated very often to prevent infections. If possible, policies must be enacted to prevent patients from lying on bare mattresses and hospitals should be made to take up those responsibilities. Also, hospitals should service their beds regularly, so as to maintain the available functional ones. This can go a long way to prevent the scarcity of beds. More so, nurse educators should also place more emphasis on infection prevention right from the schools to

inculcate this habit in all potential nurses. It should be noted that bed and beddings can go a long way to influence health positively when given all the necessary attention.

However, the above findings cannot be said to represent the views of patients in the whole country as the research was conducted in only one region by using only three different hospitals. I, therefore, suggest for the replication of this study in other hospitals and regions all over the country to see the national picture.

VI. CONCLUSION

It was established that hospital beds and beddings contribute to high levels of hospital-acquired infections and also subject patients to various degrees of discomfort. Also, unavailability of hospital beds (no bed syndrome) compounds the problem of floor nursing, unnecessary referrals and premature discharge from hospitals. Finally, several of the occupied beds were determined to be without linens in a day resulting in patients lying on bare mattresses.

REFERENCES

- [1] Adeodu, A. O., Daniyan, I. A., & Adaramola, O. O. (2014). Anthropometry as ergonomic consideration for hospital bed design in Nigeria. *International Journal of Scientific & Engineering Research*, 5(5), 485–492. Retrieved from http://www.academia.edu/9569871/Anthropometry_as_ergonomic_consideration_for_hospital_bed_design_in_Nigeria
- [2] Akbari Haghighinejad, H., Kharazmi, E., Hatam, N., Yousefi, S., Ali Hesami, S., Danaei, M., ... Haghighinejad, A. H. (2016). Using queuing theory and simulation modelling to reduce waiting times in an Iranian emergency department. *International Journal of Community Based Nursing and Midwifery*, 4(1), 11–26.
- [3] Ariful Islam, M., Asadujjaman, M., Nuruzzaman, M., & Mosharrar Hossain, M. (2013). Ergonomics consideration for hospital bed design: A case study in Bangladesh. *Journal of Modern Science and Technology Issue*. Pp, 1(1), 30–44.
- [4] Blom, M. C., Erwander, K., Gustafsson, L., Landin-olsson, M., Jonsson, F., & Ivarsson, K. (2015). The probability of readmission within 30 days of hospital discharge is positively associated with inpatient bed occupancy at discharge – a retrospective cohort study. *BMC Emergency Medicine*, 15(37), 1–6. <https://doi.org/10.1186/s12873-015-0067-9>
- [5] Borzou, S. R., Anosheh, M., Mohammadi, E., & Kazemnejad, A. (2014). Patients' perception of comfort facilitators during hemodialysis procedure: a qualitative study. *Iranian Red Crescent Medical Journal*, 16(7), 1–6. <https://doi.org/10.5812/ircmj.19055>
- [6] Central Intelligence Agency. (2017). Ghana. In *The world factbook*. Retrieved from https://photius.com/world_fact_book_2017/ghana/ghana_people.html
- [7] Coelho, A., Parola, V., Escobar-Bravo, M., & Apóstolo, J. (2016). Comfort experience in palliative care: a phenomenological study. *BMC Palliative Care*, 15(1), 71. <https://doi.org/10.1186/s12904-016-0145-0>
- [8] Cooke, E., Hague, S., & McKay, A. (2016). The Ghana poverty and inequality report: Using the 6th Ghana living standards survey 2016. University of Sussex.
- [9] Cunningham, P., & Sammut, J. (2012). Inadequate acute hospital beds and the limits of primary care and prevention. *Emergency Medicine Australasia*, 24, 566–572. <https://doi.org/10.1111/j.1742-6723.2012.01601.x>
- [10] Defaye, F. B., Desalegn, D., Danis, M., Hurst, S., Berhane, Y., Norheim, O. F., & Miljeteig, I. (2015). A survey of Ethiopian physicians' experiences of bedside rationing: extensive resource scarcity, tough decisions and adverse consequences. *BMC Health Services Research*, 15(1), 467. <https://doi.org/10.1186/s12913-015-1131-6>
- [11] Emery, D. P., Milne, T., Gilchrist, C. A., Gibbons, M. J., Robinson, E., Coster, G. D., ... Grant, C. C. (2015). The impact of primary care on emergency department presentation and hospital admission with pneumonia: a case-control study of preschool-aged children. *Nature Partner Journals*, 25(14113), 1–10. <https://doi.org/10.1038/npjperm.2014.113>
- [12] Fajobi, M. O., Awoyemi, E. A., & Onawumi, A. S. (2016). Ergonomic evaluation of hospital bed design and anthropometric characterization of adult patients in Nigeria. *International Journal of Scientific & Engineering Research*, 7(8), 640–651.
- [13] Fernando, F. da S. e L. de, Ferreira, A. M., Colombo, T. E., Rubio, F. G., & Almeida, M. T. G. de. (2013). Fungal contamination of hospital mattresses before and following cleaning and disinfection. *Acta Paulista de Enfermagem*, 26(5), 485–491. <https://doi.org/http://dx.doi.org/10.1590/s0103-21002013000500013>
- [14] Fijan, S., & Turk, S. Š. (2012). Hospital textiles, are they a possible vehicle for healthcare-associated infections? *International Journal of Environmental Research and Public Health*, 9(9), 3330–3343. <https://doi.org/10.3390/ijerph9093330>
- [15] George, D. F., Gbedema, S. Y., Agyare, C., Adu, F., Boamah, V. E., Tawiah, A. A., & Saana, S. B. B. M. (2012). Antibiotic resistance patterns of *Escherichia coli* isolates from hospitals in Kumasi, Ghana. *International Scholarly Research Network Microbiology*, 2012(658470), 1–5. <https://doi.org/10.5402/2012/658470>
- [16] Gerland, P., Raftery, A. E., Ševčíková, H., Li, N., Gu, D., Alkema, L., ... Wilmoth, J. (2014). World population stabilization unlikely this century. *Science*, 346(6206), 234–237. <https://doi.org/10.1126/science.1257469>
- [17] Ghana Health Service. (2015). The health sector in Ghana: Facts and figures. Accra, Ghana: Ghana Health Service.
- [18] Ghana Statistical Service. (2012). 2010 population and housing census final results. Accra, Ghana: Ghana Statistical Service.
- [19] Graverholt, B., Forsetlund, L., & Jamtvedt, G. (2014). Reducing hospital admissions from nursing homes: a systematic review. *BMC Health Services Research*, 14(36), 1–8.

- [20] Hooker, E. A., Allen, S., Gray, L., & Kaufman, C. (2012). A randomized trial to evaluate a launderable bed protection system for hospital beds. *Antimicrobial Resistance and Infection Control*, 1(27), 1–7. <https://doi.org/10.1186/2047-2994-1-27>
- [21] Jacobson, B. H., Boolani, A., & Smith, D. B. (2009). Changes in back pain, sleep quality, and perceived stress after introduction of new bedding systems. *Journal of Chiropractic Medicine*, 8(1), 1–8. <https://doi.org/10.1016/j.jcm.2008.09.002>
- [22] Jacobson, B. H., Wallace, T. J., Smith, D. B., & Kolb, T. (2008). Grouped comparisons of sleep quality for new and personal bedding systems. *Applied Ergonomics*, 39(2), 247–254. <https://doi.org/10.1016/j.apergo.2007.04.002>
- [23] Kushitor, M. K., & Boatemaa, S. (2018). The double burden of disease and the challenge of health access: Evidence from access, bottlenecks, cost and equity facility survey in Ghana. *Plos One*, 13(3), 1–11. <https://doi.org/10.1371/journal.pone.0194677>
- [24] Lombardo, V., Vinatier, I., Baillot, M.-L., Franja, V., Bourgeon-Ghittori, I., Dray, S., ... Roch, A. (2013). How caregivers view patient comfort and what they do to improve it: a French survey. *Annals of Intensive Care*, 3(19), 1–8. <https://doi.org/10.1186/2110-5820-3-19>
- [25] Mery, E., & Kahn, J. M. (2013). Does space make waste? The influence of ICU bed capacity on admission decisions. *Critical Care*, 17(315), 1–3. <https://doi.org/10.1186/cc12688>
- [26] Meydan, C., Haklai, Z., Gordon, B., Mendlovic, J., & Afek, A. (2015). Managing the increasing shortage of acute care hospital beds in Israel. *Journal of Evaluation in Clinical Practice*, 21(1), 79–84. <https://doi.org/10.1111/jep.12246>
- [27] Nouetchognou, J. S., Ateudjieu, J., Jemea, B., Mesumbe, E. N., & Mbanya, D. (2016). Surveillance of nosocomial infections in the Yaounde University Teaching Hospital, Cameroon. *BMC Research Notes*, 9(505), 1–8. <https://doi.org/10.1186/s13104-016-2310-1>
- [28] Nwankwo, E. (2012). Isolation of pathogenic bacteria from fomites in the operating rooms of a specialist hospital in Kano, North-western Nigeria. *The Pan African Medical Journal*, 12(90), 1–10.
- [29] Omoleke, S. A., Mohammed, I., & Saidu, Y. (2016). Ebola viral disease in West Africa: A threat to global health, economy and political stability. *Journal of Public Health in Africa*, 7(1), 27–40. <https://doi.org/10.4081/jphia.2016.534>
- [30] Openshaw, S. D. (2011). Predicting and quantifying seated comfort and discomfort using objective and subjective measures. University of Iowa.
- [31] Pilkington, S. (2013). Causes and consequences of sleep deprivation in hospitalised patients. *Nursing Standard*, 27(49), 35–42. Retrieved from <http://ezproxy.tru.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=c8h&AN=2012219561&site=eds-live>
- [32] Pinon, A., Gachet, J., Alexandre, V., Decherf, S., & Viallette, M. (2013). Microbiological contamination of bed linen and staff uniforms in a hospital. *Advances in Microbiology*, 3, 515–519. <https://doi.org/10.4236/aim.2013.37069>
- [33] Radwan, A., Fess, P., James, D., Murphy, J., Myers, J., Rooney, M., ... Torii, A. (2015). Effect of different mattress designs on promoting sleep quality, pain reduction, and spinal alignment in adults with or without back pain; Systematic review of controlled trials. *Sleep Health*, 1(4), 257–267. <https://doi.org/10.1016/j.sleh.2015.08.001>
- [34] Scherbaum, M., Kösters, K., Mürbeth, R. E., Ngoa, U. A., Kremsner, P. G., Lell, B., & Alabi, A. (2014). Incidence, pathogens and resistance patterns of nosocomial infections at a rural hospital in Gabon. *BMC Infectious Diseases*, 14(1), 124. <https://doi.org/10.1186/1471-2334-14-124>
- [35] Stelfox, H. T., Hemmelgarn, B. R., Bagshaw, S. M., Gao, S., Doig, C. J., Nijssen-Jordan, C., & Manns, B. (2012). Intensive care unit bed availability and outcomes for hospitalized patients with sudden clinical deterioration. *Archives of Internal Medicine*, 172(6), 467–474. <https://doi.org/10.1001/archinternmed.2011.2315>
- [36] Stowell, A., Claret, P., Sebbane, M., Bobbia, X., Boyard, C., Grandpierre, R. G., ... Coussaye, J. D. La. (2013). Hospital out-lying through lack of beds and its impact on care and patient outcome. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, 21(17), 1–7. <https://doi.org/10.1186/1757-7241-21-17>
- [37] Tagoe, D. N. A., Baidoo, S. E., Dadzie, I., Tengey, D., & Agede, C. (2011). Potential sources of transmission of hospital-acquired infections in the Volta regional hospital in Ghana. *Ghana Medical Journal*, 45(1), 22–6. <https://doi.org/10.4314/gmj.v45i1.68918>
- [38] Tonetti, L., Martoni, M., & Natale, V. (2011). Effects of different mattresses on sleep quality in healthy subjects: an actigraphic study. *Biological Rhythm Research*, 42(2), 89–97. <https://doi.org/10.1080/09291010903557187>
- [39] Vetter, P., Dayer, J.-A., Schibler, M., Allegranzi, B., Brown, D., Calmy, A., ... Pittet, D. (2016). The 2014–2015 Ebola outbreak in West Africa: Hands on. *Antimicrobial Resistance and Infection Control*, 5(17), 1–17. <https://doi.org/10.1186/s13756-016-0112-9>
- [40] Zhao, Y., Thomas, S. L., Guthridge, S. L., & Wakerman, J. (2014). Better health outcomes at lower costs: the benefits of primary care utilisation for chronic disease management in remote Indigenous communities in Australia's Northern Territory. *BioMed Central*, 14(463), 1–9.