

Influence of ergonomics on healthcare workers' performance in Lodwar County Referral Hospital

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<https://doi.org/10.51867/ajernet.7.3.71>

ABSTRACT

Healthcare workers' performance is critical to the effective delivery of healthcare services, yet it is affected by poor ergonomics in the workplace. This study determined the influence of ergonomics on the performance of healthcare workers at Lodwar County Referral Hospital. A convergent mixed-methods research design was used to gather information from 265 healthcare workers, and a sample of 159 healthcare workers was selected using Yamane's formula. Data were collected using both structured questionnaires and an interview guide. The data were analyzed using descriptive and inferential statistics for the quantitative data and thematic analysis for the qualitative data. The results of the research indicated a strong positive and statistically significant relationship between ergonomics and healthcare workers' performance ($r = 0.682$, $p < 0.05$). Furthermore, the regression analysis showed that ergonomics had a statistically significant influence on healthcare workers' performance ($\beta = 0.723$, $p < 0.001$). Ergonomics accounted for 71.7% of the variation in healthcare workers' performance ($R^2 = 0.717$). The study concluded that improving the ergonomics of the healthcare workplace would enhance healthcare workers' performance. Therefore, the study recommended that hospital management should seek to improve the ergonomics of the workplace to enhance the healthcare services delivered to patients.

Keywords: Ergonomics, Healthcare Workers' Performance, Lodwar County and Referral Hospital.

I. INTRODUCTION

Health workers play a critical role in providing quality health services and improving health outcomes for the population as a whole (Terrasi, 2022). However, the performance and health of healthcare workers are greatly influenced by their work environment (Ingsih et al., 2021). A positive work environment characterized by supportive organizational policies, appropriate resources, and a culture of respect and collaboration can improve healthcare worker performance, job satisfaction, and overall well-being (Setyowati et al., 2021). On the other hand, negative work environments characterized by high workloads, limited resources, poor infrastructure, and inadequate support systems lead to burnout, low job satisfaction, and poor quality of care (Lokota, 2023).

In the United States, poor hospital work environments are prevalent and linked to negative outcomes for nurses and patient care. Enhancing these environments may improve nurse retention and patient care quality (White et al., 2020). In the United Kingdom, nearly 40% of primary care doctors under 55 report burnout, with over 10% intending to stop patient care soon. Less than 20% are highly satisfied with their work-life balance, highlighting the need for better working conditions (Aiken et al., 2021).

In South Africa, challenges like low wages and poor working conditions have led to doctors contemplating private practice or migration, exacerbating the strain on the healthcare system (Deonarain, 2024). Nigeria faces a paradox of both high healthcare worker unemployment and a shortage of professionals, highlighting the need for strategic shifts to address these workforce challenges (Chukwu & Essue, 2024).

Kenyan healthcare workers' performance is greatly impacted by their workplace. Employee performance in Nairobi County's public health sector has been demonstrated to improve with a favorable physical work environment that includes modern technology, well-organized layouts, and the right temperature (Nyaboga & Muathe, 2022). Support from supervisors is also essential for improving the performance of healthcare personnel. Better results are a result of inclusive decision-making, well-defined roles, and constructive interactions between managers and employees (Bahreini et al., 2021).

Healthcare facilities in Turkana County frequently struggle with issues like poor access to basic supplies like housing, transportation, medical equipment, and electricity (Keah et al., 2020). Another issue is the physical condition of medical facilities; many are under-equipped, which makes it difficult for medical staff to provide their best care

(Carayon et al., 2021). These shortcomings can result in higher turnover rates among healthcare professionals and contribute to job dissatisfaction (Vitali et al. 2020).

Additionally, attempts have been made to enhance the working environment for healthcare professionals. To draw and keep healthcare workers in this isolated area, incentives like sufficient training, job security, competitive pay, and manageable workloads have been put in place (Bahreini et al., 2021). With a notable rise in the number of healthcare professionals who are not native to the area, Turkana County has changed from a place where employees were sent for disciplinary reasons to a desirable destination for health workers. But problems still exist. Particularly during health crises like the COVID-19 pandemic, healthcare workers in northern counties have voiced concerns about mental distress, fear of infection, lack of personal protective equipment, and inadequate preparation (Nyaboga & Muathe, 2022).

1.1 Statement of the Problem

The performance of healthcare workers is a burning issue in the devolved system of healthcare in Kenya, and especially in the marginalized counties where the level of service delivery has been lower than the rest of the country. The World Health Organization suggests that universal health coverage requires minimal profession of 4.45 doctors, nurses, and midwives per 1,000 people to be met, but Kenya has an estimated average of approximately 1.9 health workers per 1000 people, with arid and semi-arid areas having ratios that are below 1.0 per 1000. The Turkana County is among the most resource-starved counties, which persistently suffer a shortage of healthcare staff, inadequate infrastructure, unreliable power production, water shortage, and a scarcity of medical equipment (Nyaboga & Muathe, 2022). It is reported that certain facilities in Turkana have over 30% staffing shortages, and referral facilities have a high patient-to-provider ratios, which lead to overwork and burnout (Chukwu & Essue, 2024). In Lodwar County and Referral Hospital, the primary referral centre with a population of more than 900,000 people, even healthcare workers often have to deal with a large number of outpatients, emergency claims and inpatient cases when having limited resources. Research has reported these work-related conditions to cause emotional exhaustion, low job satisfaction, and productivity (Bahreini et al., 2021). Nevertheless, there is a shortage of empirical data that explicitly studies the collective effect of ergonomics on the performance of healthcare workers in Lodwar County and Referral Hospital. Current studies have not sufficiently determined the quantification of how work station design, ambiguous job descriptions, workload, or lack of supervisory aid converts into quantifiable performance in under-resourced and geographically remote settings such as Turkana. In turn, what remains unknown is the level of influence of these work environmental factors on lower efficiency, absenteeism, burnout, and possible turnover within the hospital.

1.2 Research Objective

The study's objective was to determine the influence of ergonomics on healthcare workers' performance in Lodwar County and Referral Hospital.

1.3 Research Hypothesis

H_{01} : Ergonomics have no significant effect on performance of healthcare workers' in Lodwar County and Referral Hospital.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 The Hierarchy of Needs Theory developed by Maslow (1970)

The Hierarchy of Needs was initially invented by Abraham Maslow, one of the pioneering humanistic psychologists, in 1943 to explain human motivation. This theory has been widely applied since then to connect the situation at the workplace with motivation and productivity of employees. It classifies human needs into five progressive needs, physiological (inclusion of basic survival necessities into food, water, and rest), safety (protecting oneself, stability and security), belongingness and love (interaction, relationship and affection), esteem (respect, recognition, achievement and self-confidence) and self-actualization (personal growth, achieving personal potential and having meaningful goals) (Maslow, 1954). The model is traditionally presented in form of a pyramid, with lower physiological and safety needs often to be fully met before people can evolve towards higher social, esteem, and the growth-oriented needs (Vithayaporn et al., 2022).

Maslow states that if multiple needs remain unsatisfied, the primary need takes precedence. Lower-level needs must be satisfied before progressing to higher-level needs. At the foundational level, employees are motivated to work to meet physiological needs, such as earning enough income to afford food and shelter (Mehta, 2021). Moving up the hierarchy, safety needs become prominent, requiring job security, health benefits, and safe working conditions. Studies in healthcare settings suggest that inadequate safety measures and poor compensation contribute to job dissatisfaction, reducing healthcare workers' productivity (Rojas et al., 2023). Maslow's theory is relevant to this study because it will guide the researcher in understanding how ergonomics influence healthcare workers' performance (Moshood & Akpa,

2021). By identifying work environment motivators and de-motivators, this research will contribute to strategies for improving healthcare workers' job satisfaction and efficiency (Leitao et al., 2021).

2.2 Empirical Review

In the study by Faez and Zakerian (2021), the authors assessed the ergonomics of two public health institutions in Iran and determined how it affects self-reported pain, job performance, and well-being. The data were collected in the form of 219 respondents distributed between the two agencies by use of questionnaires. The study findings revealed that there were significant differences on the ergonomic climate mean values of the two health institutions. Therefore, the positivity existed between ergonomic climate and the performance of organizations. Yusup et al., (2021), assessed the impacts of college setting and results in terms of an academic perspective concerning a sample of higher education institutions in the Subang Jaya area. In his analysis, an analysis of development of a questionnaire was carried out where he got 183 full responses of a sample of 250 individuals. As it was discovered, the aesthetics, fixtures and fittings, and ergonomic factors such as ventilation and layout of furniture means a lot to about 41 percent of employee performance.

Adediran (2022), in a study of occupational hazards associated with the brewing and bottling industry in Nigeria, examined the physical, chemical, ergonomic, and psychosocial hazards experienced by employees. Using in-depth interviews with experienced industry employees and thematic content analysis, the study found that several high-severity occupational hazards were prevalent in the sector. The findings highlight the importance of proactive occupational health and safety programmes and practical preventive measures to reduce workplace incidents and improve employee well-being and job satisfaction. These findings demonstrate that the nature and quality of the work environment can have important implications for employees' well-being and their ability to perform effectively.

Mutegi et al., (2023) conducted a study on workplace safety and employee productivity of manufacturing firms at a Ghanaian industry. This research 134 participants comprising frontline slaughter and trimming workers and their managers who responded to the questionnaire using a standardized survey questionnaire. Though overall participants felt that most of the ergonomic features within their workplace were satisfactory, they expressed an apparent dissatisfaction in some of the features, including the overall layout of the facility, the quality and appropriateness of equipment, ambient temperature as well as ventilation/freshness of air, where only a small proportion of the participants gave an affirmative response. The result analysis indicated that there was significant and positive relationship between all the ergonomic factors examined and resultant enhanced employee productivity, productivity being the chief variable of interest in this analysis.

III. METHODOLOGY

3.1 Research Design

The study employed a convergent parallel mixed methods research design that involves the collection and analysis of both qualitative and quantitative data to obtain a comprehensive understanding of the topic of the influence of ergonomics on the performance of healthcare workers at Lodwar County and Referral Hospital. The data were collected from both questionnaires and interviews. This research design was chosen for this study to allow for the triangulation of the findings, to validate the results of the study, and to provide an in-depth understanding of the study problem (Babaie et al., 2024).

3.2 Study Area

The study was conducted at Lodwar County and Referral Hospital in Turkana County, Kenya. Turkana County is home to over 900,000 people and the referral hospital for the county is the largest health facility that offers a variety of health services, including inpatient and outpatient clinics, emergency units, maternal and child health units, laboratories, pharmacies, and various other health facilities staffed by health professionals of different disciplines. These professionals include nurses, medical officers, clinical officers, dental officers, laboratory officers, pharmacists, and nutrition officers.

3.3 Target Population

The target population of this study included the 265 healthcare workers in Lodwar county and referral hospital. This comprised of 55 nurses, 12 medical officers, 2 dental officers, 17 clinical officers, 4 medical laboratory officers, 5 pharmacists and 5 nutrition officers. None clinical staff was excluded from the study. The target population distribution is shown in Table 1.

3.4 Sampling and Sample Size

The study employed simple random sampling technique to sample participants in the various categories of the staff where all members of the population were given an equal likelihood of being chosen. Yamane formula was used to determine the required number of respondents.

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = the sample size

N = the total population size

e = the margin of error- 0.05.

Therefore: $n = 265 / (1 + 265(0.05 \times 0.05))$

$$= 265 / (1 + 0.6625)$$

$$= 265 / 1.6625$$

$$n = 159.3 = 159$$

Therefore, sample size was 159 which were 60% of the target population. The sample size was presented in Table 1.

Table 1

Target and sample Population size

Category	Targeted Population (N)	Sample size(n) (60% of N)
Nurses	147	88
Medical officers	28	17
Dental officers	4	3
Clinical officers	46	28
Medical laboratory officers	12	7
Pharmacists	14	8
Nutrition Officers	14	8
Total	265	159

3.5 Data Collection Instruments and Procedure

The data for this study were collected using both structured questionnaires and semi-structured interview guides. Structured questionnaires were administered to the sampled healthcare workers to obtain quantitative data on aspects relating to ergonomics in healthcare environments and the performance of healthcare workers. These questionnaires were distributed personally by the researcher to the healthcare workers and collected after they had completed the questionnaires. The qualitative data for this study were collected using a semi-structured interview guide. Purposively selected healthcare workers from different cadres within the healthcare facility were interviewed to obtain qualitative data on their experiences with and perceptions of ergonomics in healthcare work environments and its impact on the performance of healthcare workers. These interviews were conducted at times convenient to the healthcare workers and the responses were recorded.

3.6 Data Analysis

Data analysis was carried out after data collection from the field. The data were first checked for completeness, then coded and entered into SPSS version 26.0 for analysis. Quantitative data were processed using descriptive statistics such as frequencies, percentages, means, and standard deviations, which facilitated clear presentation of results in tables and figures. In addition, inferential statistics including regression and correlation analyses were performed to examine the relationships among the study variables. The analysis was guided by the following regression model:

$$Y = \beta_0 + \beta_1 X_1$$

Where the variables are identified as follows:

Dependable variable **Y** = Healthcare Workers Performance

Independent variable **X₁** = Ergonomics

β₀ – Constant

β₁. coefficients of determination and **ε** is the error term.

Qualitative data collected through interviews were analyzed using thematic analysis. The responses were first transcribed and organized, after which they were carefully read several times to gain familiarity with the data. The identified themes were compared and integrated with the quantitative findings to establish convergence, complementarity, or divergence of results. This triangulation enhanced the validity and reliability of the study by providing deeper explanations and contextual understanding of the statistical relationships identified through correlation and regression analyses.

3.7 Ethical Consideration

The ethical principles that will be observed during this research study include the protection of the rights and welfare of the participants. Approval for this research study was obtained from the relevant authorities of the university and hospital. Informed consent will be obtained from the participants of the study after explaining the purpose of the study. The participants will be made aware that their participation in the study is entirely voluntary. Participants will be made aware of their rights to withdraw from the study at any given stage. Information that will be collected from the participants will not include any identifying information. The data will be used for academic purposes only and will be securely stored. The researcher will uphold ethical principles of respect, beneficence, and integrity during the study to ensure that no harm is done to the participants of the study.

IV. FINDINGS & DISCUSSIONS

4.1 Descriptive statistics

4.1.1 Ergonomics on Healthcare Workers' Performance

The study employed descriptive statistics, specifically frequency, percentages, mean, and standard deviation, to summarize and present the data collected from respondents. Using these methods allows for a clear and straightforward illustration of how respondents' views and characteristics are distributed across different categories. Responses were measured using a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The findings are shown in the tables that follow.

Table 2

Effects of Ergonomics on the health workers' performance

No.	Statement	1 SD	2 D	3 N	4 A	5 SA	mean	Std dev.	Total
1.	The equipment I use (e.g., beds, chairs, lab benches) is suitable for my tasks.	34 25.4%	41 30.6%	15 11.2%	21 15.7%	23 17.2%	2.69	1.443	134 100%
2.	The arrangement of my work area allows me to attend to patients efficiently.	27 20.1%	45 33.6%	13 9.7%	28 20.9%	21 15.7%	2.78	1.395	134 100%
3.	I have enough space to safely move while handling patients or equipment.	39 29.1%	32 23.9%	18 13.4%	24 17.9%	21 15.7%	2.67	1.455	134 100%
4.	The lighting in my department is adequate for accurate diagnosis and treatment.	21 15.7%	26 19.4%	11 8.2%	40 29.9%	36 26.9%	3.33	1.450	134 100%
5.	Noise levels in my work area do not interfere with communication or concentration.	20 14.9%	18 13.4%	14 10.4%	38 28.4%	44 32.8%	3.51	1.444	134 100%
6.	I have been trained on safe handling techniques (e.g., lifting patients, handling equipment).	26 19.4%	22 16.4%	10 7.5%	42 31.3%	34 25.4%	3.27	1.488	134 100%
7.	My work environment minimizes physical strain and fatigue during my duties.	37 27.6%	35 26.1%	17 12.7%	20 14.9%	25 18.7%	2.71	1.481	134 100%

The participants were questioned whether the equipment (e.g., beds, chairs, lab benches) they use was appropriate in their work, and most were dissatisfied with it, with 30.6% of them disagreed and 25.4% strongly disagreed. This negative perceived atmosphere suggests that a great percentage of healthcare workers would be working in settings where their functional requirements are not addressed with the necessary equipment, which might cause

discomfort, exhaustion, and an augmented risk of work-related harm, including musculoskeletal diseases. Conversely, respondents who agreed (15.7%) and strongly agreed (17.2%) indicate that a smaller part of the respondents feel that their equipment is appropriate and supportive, which means that ergonomic provisions may be better in certain of the departments or units, perhaps because of newer equipment, better resource distribution, or management focus on the design of the workspace.

The mean score of 2.69 indicates the general inclination to disagree, which supports the idea that the majority of the respondents find the equipment inapplicable to their work. The standard deviation of 1.443 is relatively high, indicating a great degree of variation in reactions, i.e., the experiences with equipment vary widely among the healthcare workers. This variation might be caused by differences in departments, job descriptions, or the provision of ergonomic aids. The above discussion was supported by Nurse 1 on 13th November 2026, who noted that;

“The equipment such as the adjustable chairs and patient lifts is limited. I usually need to improvise busy shifts, which slow my work process as well as the physical load. Proper ergonomics equipment would not only help in making my work safer but also minimize fatigue besides enabling me to attend to patients more effectively on a daily basis.”

When questioned about the placement of the working area of the healthcare workers to help them effectively take care of patients, the majority of the respondents were not satisfied, 33.6% disagreed and 20.1% strongly disagree. This means that most of the respondents view layout and the arrangement of their working spaces as poor, and they cannot efficiently attend to the patients, which suggests the possibility of limitation in poor design of working flow, overcrowding, poor access to required instruments, and needless movements when providing the services. On the other hand, the agreeing (20.9%) and strongly agreeing (15.7%) respondents indicate that fewer proportions of respondents are in well-organized work areas that allow it to operate efficiently, execute tasks effectively, and attend to the patient promptly, which could be the case of units or departments that are designed better.

The mean score of 2.78 the general tendency of disagreement as specialists tend to think that the organization of their working spaces does not contribute to effective patient care. The standard deviation of 1.395 indicates a fairly high variability in responses, i.e. dissatisfaction is wide spread but not a set of experiences of healthcare workers. This diversification could be on the ground of variations in departmental structure, resource distribution, or practices of management. The above discussion aligns with the information obtained from Laboratory officer 1 on 14th November 2026, who stated the following;

“Laboratory setup is highly congested and one has to move cautiously to avoid mishaps. This decelerates the processes like sample processing and testing. With a better-structured workspace, this would facilitate easier working process, quicker performance of tasks and less risky equipment usage, which would result in a better approach to efficiency and improved patient care results, including my own performance.”

The respondents were inquired whether there is sufficient space to move safely when handling the patients or equipment and most of them expressed dissatisfaction with 29.1% strongly disagreeing with the question and 23.9% disagreeing. This implies that a majority of any healthcare worker feels that his or her working places are not adequate in terms of space, which is highly significant regarding safety and efficiency. Lack of space may limit movement, risk collisions or accidents and may not easily handle patients or use equipment in a proper way, which may interfere with patient safety and quality of care. It can also be a cause of the physical strain, fatigue and increased chance of work-related injuries among healthcare workers. Conversely, those who have agreed (17.9%), and those who strongly agree (15.7%), show that there is a small proportion of the respondents who have adequate space, which enables them move around safely and efficiently, which implies that there could be departments that are better in planning or are less congested.

The mean of 2.67 reveals the general direction of disagreement, which confirms the position that the majority of the interviewees lack adequate space to move safely when carrying out their tasks. The standard deviation is found to be rather high (1.455) which implies that there is significant variability in the responses, which may be explained by the fact that healthcare workers work in different departments, may receive more or less patients or their workplace is designed differently. This difference indicates the discrepancies in the spatial planning and allocation of resources in the facility. Such results can be confirmed by Adediran (2022) who discovered that poor workspace and low mobility rates in healthcare facilities lead to physical stress, increased occupational trauma, and low efficiency, and the diversity of perceptions is usually determined by the different workspace layout and the environmental differences of units.

Respondents were asked on whether there was sufficient lighting in their departments to facilitate proper diagnosis and treatment and the majority replied in the affirmative with 36.9% strongly agreeing and 29.9% agreeing. This implies that the vast majority of healthcare professionals find the state of lighting to be adequate to shed more light on their professional activities, which is essential to perform accurate patient examination, safe practices, and effective treatment. Lighting can help minimize mistakes, reduce eye strain, improve concentration, and all these things have a direct effect on better patient care and overall performance. The disagreed (19.4%) and strongly disagreed (15.7%) indicate that a considerable section of the staff feels that they do not have good lighting, which might cause them to have problems with accuracy in their work, higher chances of making mistakes, fatigue, and poor diagnostics.

The mean of 3.33 shows general inclination to agree, and it proves that the majority of respondents find lighting enough to perform their clinical responsibilities. The standard deviation of the 1.450 indicates that responses are moderately varied, or there is variation in the lighting adequacy with the condition of the department and the nature of the work, or the quality of the structure. The implication of these findings is that although there is usually sufficient lighting, there are discrepancies that may interfere with the ability of some healthcare professionals to deliver optimally. The above discussion was supported with the information given by clinical officer I on 14th November 2026, who stated the following during the interview;

“The laboratory has poor lighting, which at times causes me problems with accurate reading of the results, and at times, in my assessments, the noise in the wards distracts me. These environmental issues are delaying my day and could lead to more error-prone activities, as finding a way to stay in high-quality patient care throughout the day and during peak hours is difficult.”

Respondents were asked whether noise in the premises at work does not disrupt their communications or concentration, and most of the respondents said yes, up to 32.8% strongly agreed, and 28.4% agreed. This indicates that, the majority of healthcare professionals feel the noise level in their workplace as manageable and not inconvenient to their duties, which means that staff members and the ability to focus while attending to a patient tends to be kept at an acceptable standard. But a small percentage of respondents (13.4% and 14.9%) who disagreed and strongly disagreed, respectively, report that noise is still a problem in some locations, and may cause distraction, decreased focus, and communication failures that might have adverse patient outcomes.

The mean score of 3.51 points to the general agreement-related tendency, which proves that the majority of individuals interviewed did not consider noise as a disturbing factor at their workplace. The standard deviation of 1.444 is relatively large enough to assume that the experiences with noise vary among healthcare workers significantly, which may be caused by the differences in their departmental work or patient population or even closeness to busy areas. This difference emphasizes the fact that positive perception is not evenly shared throughout the facility, thus there is a difference in noise control. These discussion was echoed during an interview where Nurse 2 on 13th November 2026, noted that;

“It is hard to concentrate on tasks when it is being noisy and especially during peak times. Although generally, the lighting in most places is good, peaceful spots would assist me focus more when carrying out procedures or recording patient data. Better lighting and less noise would have a direct effect on my performance and effectiveness at work by improving my accuracy and efficiency.”

Respondents were questioned about whether they had been trained on safe handling methods (e.g., lifting patients, dealing with equipment), and again the vast majority answered in the affirmative, 31.3% of them agreeing and 25.4 strongly agreeing. That means that the majority of healthcare professionals have undergone some kind of training on safety in the workplace, which suggests that they are better aware of the appropriate techniques, they have less chance of getting injuries at work, and they have a higher capacity to handle patients and equipment safely and effectively. Nonetheless, 16.4 percent expressing that they disagree and 19.4%, strongly disagree, indicates that a significant section of the healthcare personnel has not undergone sufficient training, thus, putting them at greater risk of injury, inappropriate handling methods and efficacy in service delivery.

The mean of 3.27 reveals the general propensity towards agreement, implying that the training on safety handling methods is not uncommon with respondents. Nonetheless, the standard deviation value of 1.488 points is relatively high, which means that the distribution of responses varies widely thus suggesting that there is a significant variance in accessibility or the quality of training among healthcare workers. This variation can be explained by the differences in professional roles, departmental interests, or institutional backing of training programs. These results are in line with those of Usoro et al., (2025), who discovered that although training on safety handling practices enhances the safety of the workers and their performance, weaknesses in training delivery tend to produce disproportionate competence levels and differences of perception among employees in healthcare facilities.

Respondents were asked whether their working conditions reduced the physical strain and fatigue in the course of their occupation and most respondents said they were dissatisfied with the condition with 27.6 strongly disagreeing and 26.1 disagreeing. This means that the majority of healthcare workers experience the workplace as physically stressful with inadequate features that minimize strain and fatigue with increased risks of impacting their health, productivity, and overall job performance. These factors may predispose to more musculoskeletal, fatigue and decreased productivity, and even patient care errors, because of physical discomforts and fatigue. Conversely the agreed and strongly agreed (14.9% and 18.7% respectively) mean that a smaller number of respondents are in work environments that are supportive and have ergonomically designed environments to reduce strain implying that some departments might be better equipped in terms of facilities or practices.

The mean score of 2.71 shows the general inclination towards disagreement which further supports the conclusion that the majority of respondents do not strongly agree that their working environment minimizes physical strain and fatigue. The standard deviation of 1.481 is relatively high, which indicates a great variability of responses, i.e., experiences of healthcare workers are likely to be different across workers, across departments, or access to

ergonomic support because of the diversity of roles and departments or availability of ergonomic support. This inconsistency underscores gaps in the ergonomic aids and workplace design in the facility. The above discussion agreed with the information obtained from Medical Laboratory Officer 2 on 14th November 2026, who depicted that;

“The ergonomic training provided was useful, though infrequent. It has made me more conscious about posture and safe equipment handling. I now perform tasks with less physical strain, especially during patient transfers and sample handling. These skills help reduce injuries and allow me to maintain steady performance throughout the day.”

4.2 Health workers' performance

Respondents were asked to rate various statements that helped to establish the performance of health workers. The results were presented in Table 3.

Table 3

Health workers' performance

No.	Statement	1 SD	2 D	3 N	4 A	5 SA	mean	Std dev.	Total
1.	I provide quality healthcare services to patients in this hospital.	21 15.7%	19 14.2%	17 12.7%	41 30.6%	36 26.9%	3.39	1.419	134 100%
2.	I attend to patients promptly and without unnecessary delays.	41 30.6%	47 35.1%	13 9.7%	19 14.2%	14 10.4%	2.39	1.332	134 100%
3.	I follow established clinical guidelines and procedures in my work.	23 17.2%	27 20.1%	15 11.2%	37 27.6%	32 23.9%	3.21	1.446	134 100%
4.	I am able to manage the number of patients assigned to me effectively.	45 33.6%	39 9.1%	18 13.4%	19 14.2%	13 9.7%	2.37	1.336	134 100%
5.	Patients under my care are generally satisfied with the services I provide.	23 17.2%	19 14.2%	15 11.2%	42 31.3%	35 26.1%	3.35	1.442	134 100%
6.	I report to work on time and maintain regular attendance.	21 15.7%	16 11.9%	13 9.7%	40 29.9%	44 32.8%	3.52	1.449	134 100%
7.	I work efficiently even under pressure or high patient load.	35 26.1%	39 29.1%	21 15.7%	22 16.4%	17 12.7%	2.60	1.366	134 100%

The respondents were also questioned on whether they are offering quality healthcare services to patients in the hospital and the majority of the responses were affirmative, where 30.6% of people agreed and 26.9% strongly agreed. This shows that the majority of the health care workers view themselves as providing high quality care, professional competency, care towards the patients, and compliance to clinical care and protocols. Nonetheless, the fact that 14.2% in disagreement and 15.7% in strong disagreement gives the impression that a significant number of the respondents stand restricted in giving optimum care and this may be as a result of things like high workloads, lack of resource base, lack of support and environmental factors that hamper effective delivery of services.

The mean of 3.38 shows a general response toward the agreement which supports that the majority of the respondents view themselves as offering quality healthcare services. The standard deviation of 1.476 indicates medium fluctuation in the answers, which implies that there are disparities in the abilities of healthcare employees in providing quality care because of the differences in duties of separate departments, resource accessibility, service demands, and experience or education. The above discussion agrees with the information obtained from Nurse 3 on 13th November 2026, who noted;

“I am committed to giving all patients the best care that I can, and at times the patient volumes do not afford me enough time to attend to each patient. Nevertheless, I would put safety and necessary treatment first, and the patients would get the best possible care based on the existing resources.”

Respondents were also questioned whether they attend to patients without delays and avoiding unnecessary delays and the majority indicated their dissatisfaction with 35.1% disagreeing and 30.6% strongly disagreeing. It means that the majority of healthcare workers feel delays in patient care, and it can be explained by the heavy workload, staff shortage, insufficient resources, or unproductive working process. Late patient attention may have poor impacts on service quality, patient satisfaction and overall healthcare outcomes since the timely treatment and diagnosis of patients are vital to overall healthcare results. Those who agreed (14.2%) and strongly agreed (10.4%) mean that only a smaller

percentage of the respondents feel like they can deliver timely care which implies that some staff or departments can handle patient flow effectively despite possible limitations.

With a mean score of 3.38, there is a general inclination towards agreement, but when the mean score is combined with the distribution of the responses, it shows both positive and negative perceptions with most of them feeling like they are delayed in attending to the patients. The standard deviation of 1.476 indicates that there is a high level of variation in responses, which is understandable because experiences with timely patient care vary significantly among healthcare workers, and this variability is probably caused by workload, departmental efficiency, staffing level, and available resources. These findings suggest that although there may be staff to offer immediate care, there are inherent systemic problems in the work setting that may be delaying many, hence the necessity to find ways of streamlining patient flow and maximizing staff performance. The study results above were supported with the information obtained from Nutrition Officer 2 on 14th November 2026, who stated;

"I employ planning techniques, focusing on urgent matters and organizing my work with the other employees to balance out responsibilities. Checklists can be used to make sure that nothing is missed and teamwork ensures that we can get tasks done efficiently even on a busy shift, which makes delivery of services to all patients under our care uniform."

The respondents were inquired whether they adhere to developed clinical guidelines and procedures during their work and most of them answered in the affirmative with 27.6% and 23.9% respectively agreeing and strongly agreeing. This implies that majority of healthcare workers feel that they are following standard procedures hence consistency, safety and quality in patient care. The disagreements (20.1%) and strongly disagree with it (17.2%) mean that there is a significant part of the population of the survey who do not always adhere to protocols, and it may be caused by a shortage of training, heavy workload, lack of resources, or oversight failures, which may lead to a negative outcome on patient safety and quality of care.

The mean of 3.21 shows the overall trend of agreement, which demonstrates that, the majority of the respondents view themselves as adherents to clinical procedures. The standard deviation of 1.446 reveals decent variability in the answers given, which means that the adherence to the guidelines is different among the healthcare workers, presumably because of the differences in training, departmental monitoring, workload stress, and the availability of resources. These findings indicate that in spite of the general consistency in protocol compliance, there are irregularities, which may impact the quality of care, and patient safety, thus requiring persistent trainings, observation and assistance to ensure that every employee adheres to the clinical norms. The results above align with the information provide by Medical Laboratory Officer 4 on 14th November 2026:

"I always ensure that I adhere to the hospital protocols and guidelines in carrying out tests and work on samples. When responding to emergencies, I carefully make adjustments in an attempt to follow standards. Following these principles is a guarantee of reliable outcomes and secures patient care that is crucial in the efficiency and credibility."

Respondents were equally questioned whether or not they can handle the number of patients that is allotted to them effectively and most of the respondents were not satisfied with it with 33.6% responding strongly negative, and 9.1% responding not negative. This means that a significant number of people involved in health care feel overburdened by the number of patients they are supposed to handle and this implies that the patients assigned are more than the available healthcare worker can deliver the right and timely care to. Those who concurred (14.2%) and greatly agreed (9.7%) suggest that less percentage of the respondents are willing to state that they are able to manage their patient assignments effectively, which suggests that some staff or departments might have workloads that are manageable or that have measures to manage time.

The average score of 2.37 signifies a general inclination to disagree as it proves that the majority of respondents are unable to handle their patient load properly. The standard deviation of 1.336 indicates there is moderate dispersion in the answers, and therefore, it is assumed that there is a variation in the number of patients handled by healthcare workers, staffing, as well as individual capacity or experience across departments. These findings indicate that although a small group of staff can manage their assigned tasks, the majority of staff face workload challenges, and the necessary measures to address the problem include optimization of staffing, patient allocation plans, and workflow optimization to promote effectiveness and the quality of care. The discussion aligns with the information obtained from Nurse 4 on 13th November 2026, who indicated that;

"I schedule my day based on patient requirements with critical care being the priority. Working with other employees makes sure that the work is done on time. Proper task organization and communication minimize delays which enables me to be efficient even when the workload is high."

The participants were asked whether the patients they serve were generally happy with services they offer and most individuals responded positively with 31.3% saying yes and 26.1% incredibly so. This shows that the majority of healthcare workers feel that their patients are happy with the services they are being given, which implies competence, professionalism, and effectiveness in rendering services. Perceived patient satisfaction may also improve the motivation, confidence and commitment of healthcare workers to give quality care. The respondents who disagreed (14.2%) and

strongly disagreed (17.2%) suggest that a significant number of respondents believe that patient satisfaction is inadequate, which can be caused by such difficulties as excessive workloads, the inability of resources to meet demands, service delays, or language barriers.

The average of 3.35 shows that there is general inclination toward agreement, which will ensure that the majority of respondents view their patients as satisfied with the services offered. The standard deviation of 1.442 indicates that there is moderate variation in responses and thus is an indication that there is a difference in the perceptions of patient satisfaction between healthcare workers, which is possible because of differences in departments, patient caseloads, and conditions of service delivery. The implication of these findings is that the overall level of patient satisfaction is usually high, but variations in the quality of care or experience of service can influence perception, which should be continuously monitored, provided with feedback, and specific interventions should be conducted to ensure high standards of work in all units. The above discussion aligns with the information obtained from Medical Officer 5 on 15th November 2026, who noted that;

“The feedback provided by the patients is a great performance improvement tool. The satisfaction of the patients increases morale and strengthens correct practices. Positive criticism allows me to recognize and address the loopholes and narrow down my practice, which eventually can enhance the level of care and patient outcomes over time.”

Respondents were questioned on whether they report to work on time and regularly attend and most of them reported as yes and 32.8% had strongly yes and 29.9% had yes. This implies that the majority of healthcare professionals think of themselves as being on time and with regard to attendance, they are very professional, responsible, committed to their work. Continuity in patient care, workflow, and effective coordination of team activities, which directly affect service quality, are impossible without regular attendance. In the category of those who disagree (11.9%) and strongly disagree (15.7%), a small proportion of the respondents’ report difficulty in punctuality or regular attendance, and this may be due to the personal, logistic, or work-related issues and may be impacting the performance of teams and patient care.

The mean of 3.52 suggests a high inclination to agree that, on the average, the respondents report to work at the right time and attend regularly to work. A standard deviation of 1.449 indicates that there is moderate variability of responses implying that punctuality and attendance experiences vary among healthcare workers probably because of different situations, shift schedules, or departmental pressures. These findings suggest that most of the staff are reliable in terms of attendance, but specific interventions or help can be required to overcome the issues of people who have a problem with punctuality, thereby providing consistent staffing and quality service delivery throughout the hospital.

The respondents were asked to respond to the question of whether they work effectively when they are under pressure or when they are subjected to a high number of patients and most respondents showed dissatisfaction with 29.1% saying no and 26.1% saying strongly no. It means that a high workload or stress situation can be perceived as a barrier to the efficiency of most healthcare workers, and it is possible that the number of patients, time constraints, or insufficient resources can affect their effectiveness to deliver the best possible results. The people who agreed (16.4%) and strongly agreed (12.7%) suggest that a smaller percentage of the respondents can remain efficient in the presence of pressure, which means resilience, good time management, or experience in dealing with hard work conditions.

The mean of 2.37 suggests the general predisposition to disagreement, which proves the fact that the majority of the respondents cannot work effectively under pressure. A standard deviation of 1.336 indicates a moderate variability in responses indicating that there are various differences in how the healthcare workers feel about their efficiency when under heavy workloads, probably because of the variation in personal coping skills or departmental support or level of experience. These findings suggest that although certain employees have proven to be able to remain efficient in stressful situations, workload management methods, supplementary aids, and training are necessary to enable most of them work well in situations that cause stress

4.3 Inferential Analysis

The inferential analysis was done to find the relationship between the variables. The variables are ergonomics, job design and supervisors’ support.

4.3.1 Correlation Analysis

A correlation analysis was performed to assess the relationships between ergonomics and healthcare workers’ performance at Lodwar County Referral Hospital. The results are presented in the table below, showing the Pearson correlation coefficients (r), which reflect both the strength and direction of the linear relationships among the variables.

Table 4
Correlation Matrix

	Healthcare Worker Performance
Ergonomics	0.682 (0.000)

The results in Table 4.11 above shows that the strongest correlation was observed between ergonomics and healthcare worker performance, with a coefficient of 0.682 (0.000), indicating a strong positive relationship. This suggests that improvements in workplace ergonomics such as building aesthetics, lighting, furniture, and ventilation significantly contribute to enhanced staff well-being and efficiency. These findings align with studies highlighting how optimal physical environments support better concentration, comfort, and task performance. The findings are correlated with those of Mutegi et al., (2023) who found that the positive impact of ergonomics in the workplace, such as the presence of good light, decent ventilation, appropriate furniture and attractiveness of physical layout, is very positive towards the productivity and general workplace performance of healthcare employees.

4.3.2 Model Summary

The regression model was developed to determine how ergonomics predict the performance of healthcare workers, as shown in Table 5.

Table 5

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.847	0.717	0.688	0.491

The R value of 0.847 demonstrates a very strong positive relationship between ergonomics and healthcare workers' performance. The R-squared value of 0.717 indicates that 71.7% of the variation in healthcare worker performance is explained by ergonomics. The Adjusted R Square of 0.688 further confirms the model's robustness after adjusting for the number of predictors. The standard error of estimate (0.491) suggests that the model's predictions closely align with actual performance levels. These findings highlight that workplace conditions and leadership practices are critical determinants of healthcare worker productivity and effectiveness at Lodwar County Referral Hospital.

4.3.3 Analysis of Variance (ANOVA)

The ANOVA test was conducted to assess the statistical significance of the overall regression model, as shown in Table 6.

Table 6

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	24.811	1	24.811	19.10	0.000
Residual	171.460	132	1.299		
Total	196.271	133			

a. Predictors: Ergonomics

b. Dependent Variable: Healthcare Workers' Performance

The ANOVA results show that the F-statistic of the ANOVA is 19.10 and the value of the significance is 0.00 that is less than the value of significant 0.05 and significant. The F value obtained is considerably high when compared to the critical F value of 2.66, and therefore the null hypothesis is rejected. It implies that ergonomics has a great significant influence on the performance of the healthcare workers in the Lodwar County and Referral Hospital.

4.4 Regression Coefficients

The regression coefficients help determine the individual contribution of each variable to the performance of healthcare workers. The results are shown in table 7.

Table 7

Coefficients

Variable	Unstandardized Coefficients (B)	Std. Error	Beta	T	Sig.
(Constant)	4.146	0.348		11.913	0.000
Ergonomics (X ₁)	0.723	0.148	0.152	4.885	0.000

Regression Equation:

$$Y = 4.146 + 0.723X_1$$

Where:

Y = Healthcare Worker Performance

X₁ = Ergonomics

The study revealed that ergonomics significantly impacts healthcare workers' performance, with a high mean score for aspects such as ventilation, lighting, and workspace arrangement. The regression analysis indicated that ergonomics had the highest unstandardized coefficient ($B = 0.723$, $p = 0.000$), suggesting that improvements in these areas directly correlate with enhanced performance. These findings align with previous studies, such as those by Yusup et al., (2021), which highlighted the positive correlation between ergonomic conditions and employee productivity. In contrast, studies from resource-limited settings often report inadequate ergonomic provisions leading to increased fatigue and decreased job satisfaction (Usoro et al., (2025).

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Based on the descriptive statistics, the majority of the respondents reported that appropriate ergonomic conditions, such as sufficient workspace arrangements, lighting, and decreased physical stress, make healthcare workers more efficient, accurate, and quality-focused. Inferential statistics (regression coefficient = 0.723, p-value = 0.000) also provided evidence that the relationship between ergonomics and healthcare worker performance is statistically significant in a positive direction. This was corroborated by qualitative data with one participant mentioning that the ergonomic training was helpful, but not very frequent. It has made me more aware of correct posture and proper handling of equipment. Thus, it was concluded that the role of ergonomics in facilitating performance among healthcare workers in Lodwar County and Referral Hospital is significant and leads to reduced injuries.

5.2 Recommendations

The management of Lodwar County and Referral Hospital should focus on improving the ergonomics of their workplace by providing appropriate medical equipment and redesigning the workspace to enhance the efficiency of their healthcare workers. The hospital should also provide ergonomic training for their healthcare workers to improve their efficiency and reduce workplace injuries. The County Government of Turkana also needs to invest in improving the healthcare infrastructure and provide healthcare workers with the resources that they need to improve the working environment in health facilities. Through these interventions, healthcare workers in Lodwar County will be more productive, satisfied with their work, and be able to provide patients with better healthcare services.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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