
PARTICIPATORY ERGONOMICS AND EMPLOYEES' COMMITMENT IN SECONDARY HEALTHCARE INSTITUTIONS OF AKWA IBOM STATE

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Abstract

This study was carried out to examine participatory ergonomics and employee's commitment of Secondary Healthcare Institutions within Akwa Ibom State. The specific objectives were to examine the influence of collaborative health and safety programs and participatory workstation risk mitigation on employee's commitment in secondary healthcare institutions in Akwa Ibom State. Survey research design was adopted for the study. The population of the study consisted of 960 staff with a sample size of 400 determined through the use of Krejcie and Morgan formula of 1970 for sample determination. Data were collected using questionnaire and were analyzed using simple and multiple linear regression analyses. Findings revealed that collaborative health and safety programs and participatory workstation risk mitigation have significant influence on employee commitment in secondary healthcare institutions in Akwa Ibom State (R^2 -.558, F -478.760, $Beta$ -.747, and 571, f -506.125, $Beta$ -756, P -.000 ($P < 0.05$)). It was concluded that collaborative health and safety program and participatory workstation risk mitigation were statistically and positively significant with employee's commitment in secondary healthcare institutions in Akwa Ibom State. It was therefore recommended that management should prioritize transparency by ensuring that employees are informed and included in decision-making processes. This can enhance trust and engagement. Hospitals should expand employee involvement in health and safety initiatives, ensuring that workers have a voice in shaping policies that directly affect their well-being.

Keyword: Participatory Ergonomics, collaborative health and safety program, participatory workstation risk mitigation and Employee Commitment.

1.1 Introduction

The increasing competition in today's business environment and the demand for higher productivity have driven organisations to adopt cutting-edge workplace strategies that prioritize both performance and employee well-being. One approach gaining prominence is the management of workplace ergonomics. Workplace or Human Factor Ergonomics (HFE) focuses on designing and arranging workstations, equipment, and task processes to fit the physical and cognitive needs of employees. The primary goal is to increase efficiency while minimizing workplace hazards. According to the International Ergonomics Association (IEA, 2000), ergonomics is the scientific study of human interactions with other elements of a system, applying theories, methods, and principles to optimize human well-being and system performance. Ergonomic practices aim to modify workplaces to suit workers, thereby reducing discomfort and minimizing risks associated with poor posture, repetitive tasks, or inadequate equipment (Thomas and Okeke, 2019).

The key components of ergonomics include task design, communication and feedback mechanisms, posture optimisation, equipment adaptation, among others. Together, these components contribute to improved employee well-being, increased productivity, reduced absenteeism, and higher job satisfaction (Umana *et al.*, 2019). However, the benefits of ergonomics is significantly enhanced when workers actively take part in the design and implementation process. This process is known as participatory ergonomics. Participatory ergonomics (PE) extends traditional ergonomics by involving employees in identifying, analysing, and resolving ergonomic challenges. Employees, being the primary users of workspaces, provide valuable insights into what can improve their comfort, efficiency, and overall health. The defining features of PE include employee involvement in decision-making, ergonomic problem identification, and ongoing communication and feedback. By actively engaging employees, PE fosters a sense of ownership and empowerment, which can lead to higher commitment and better performance outcomes.

The concept of participatory ergonomics emerged from the need to address workplace injuries and discomfort, particularly in settings where repetitive tasks and poor workstation design are prevalent. Traditional ergonomics often involved experts making recommendations based on limited observations or assessments. Participatory ergonomics advocates for collaboration between workers, management, and ergonomists to create solutions that are practical and tailored to the specific needs of the workforce. The components of PE examined in this study- participatory job design, communication, collaborative health and safety programs, and workstation risk mitigation - are critical to fostering a supportive work environment.

Collaborative health and safety programs are initiatives that emphasize joint efforts among workers, management, and relevant stakeholders to identify, mitigate, and manage workplace hazards. These programs are grounded in the principle that shared responsibility and cooperation are essential for creating a safe and healthy work environment. By leveraging the knowledge and experiences of all participants, collaborative programs can address workplace risks more effectively and foster a culture of safety. Collaborative approaches have been shown to enhance workplace safety outcomes, including reduced injury rates, improved compliance with regulations, and higher employee satisfaction. By fostering open communication and trust, these programs create an environment where safety is prioritized and embedded into daily operations (Beran and Violato, 2021).

Workstation risk mitigation in participatory ergonomics is a dynamic and collaborative process that integrates worker input to design effective solutions for ergonomic

risks. This approach not only enhances workplace safety but also improves overall worker well-being and organisational performance (Chen, 2022). It involves actively engaging workers, ergonomists, and management in identifying and addressing hazards associated with workstation design. This approach leverages the knowledge and experiences of workers to create practical and sustainable solutions, reducing the risk of musculoskeletal disorders (MSDs), repetitive strain injuries, and other workplace health issues. Participatory ergonomics leads to workers involvement and commitment. Employee commitment is a key outcome variable in this study and it is about employees' abilities to perform effectively and excel in their job roles through productivity, innovation, and adaptability. In the context of healthcare, commitment is closely linked to quality service delivery and professional growth. The role of employee commitment is also integral to this investigation, as commitment influences the extent to which participatory practices translate into tangible performance outcomes.

Although participatory ergonomics has been widely adopted in industries such as manufacturing, banking, and education, its application in healthcare environments remains underexplored, because of the passive risk factors in healthcare system. With healthcare systems worldwide facing increasing pressure from aging populations, pandemics, and limited resources, fostering a competitive and healthy workforce is essential. This study seeks to address this gap by examining the effects of participatory ergonomics on the commitment of healthcare workers in Akwa Ibom State. Through this research, healthcare institutions can gain actionable strategies to enhance workforce well-being, improve performance, and ensure the sustainability of healthcare services.

Employee commitment in secondary healthcare institutions is a critical factor influencing the quality of patient care and organizational performance. Recent studies have highlighted that a supportive psychosocial safety climate (PSC) within healthcare settings significantly enhances employee engagement and reduces burnout. For instance, research indicates that a 10% improvement in PSC can lead to a 4% decrease in job demands and a 6% increase in engagement among employees (Wilson, 2021). Moreover, the Continuous Professional Development (CPD) of healthcare workers has been linked to increased job satisfaction and retention rates. Training and development programs ensure that staff remain informed about the latest advancements, thereby enhancing patient safety and care quality. Proficient personnel exhibit greater efficiency and adaptability, contributing to improved operational performance and better patient outcomes. Therefore, employee commitment refers to the level of dedication, loyalty, and attachment an employee has towards their organization and its goals. It is characterized by the willingness to exert effort for the benefit of the organization and a desire to remain with the organization over the long term. Committed employees align their personal values with the organization's mission, are more motivated to perform well, and exhibit a sense of responsibility towards their work.

1.2 Statement of the Problem

Participatory ergonomics ordinarily should enhance employees' commitment to work ethics, improved productivity, dedication to duties as well as sustained harmonious work environment with minimized work-related injuries and other hazards. On the contrary, what seem to be applicable in many organisations and healthcare institutions in Akwa Ibom State in particular is the struggle to effectively implement participatory ergonomics programs, leading to potential missed opportunities for improving worker's health, safety, and productivity and potentially increasing costs associated with workplace injuries and illnesses. These may hamper employee commitment attributable to non-involvement in job design,

proper communication, lack of collaborative health and safety programs and risk mitigation programs in the secondary healthcare institutions in Akwa Ibom State.

In Nigeria, the situation is further compounded by the dearth of relevant empirical data showcasing evidence of healthcare employees' collaboration with their management to design their jobs and/or operational tasks in a bid to mitigate ergonomics risks at work. Similarly, it is not clear whether healthcare workers in Nigeria are properly guided in risk management protocols involving risk identification, analysis, and mitigation of workplace ergonomic risks. Hence, in many scenarios, healthcare workers often seem helpless when exposed to various workplace hazards. These factors make it crucial to assess how participatory ergonomics and workspace risk management can reduce workplace hazards and improve overall well-being and performance.

Although studies on healthcare ergonomics abound in existing literature, the aspect of involving healthcare employees in planning, designing and controlling ergonomic decisions involving jobs design, communication, health and safety programs, workspace risk mitigation, to the best of my knowledge are rarely researched. Most studies on ergonomics are carried out in developed economies. In addition, the synergistic effect of participatory ergonomics on employee commitment in the Nigerian healthcare sector is uncertain because it is infrequently investigated. Knowledge of existing participatory ergonomic studies focusing on the Akwa Ibom State's healthcare sector is doubtful. This study fills the gaps by examining how participatory ergonomics practices and employee commitment jointly influence the healthcare workers in Akwa Ibom State, thus, laying a theoretical foundation for broader application.

1.3 Objectives of the Study

The main objective of this study was to examine the effect of participatory ergonomics on employee's commitment in secondary healthcare institutions of Akwa Ibom State. In specific terms, the following are the key objectives formulated to:

- i. evaluate the effect of collaborative health and safety programs on employee commitment in secondary healthcare institutions of Akwa Ibom State'
- ii. examine the influence of participatory workstation risk mitigation on employee commitment in secondary healthcare institutions of Akwa Ibom State

1.4. Research Questions

In the light of the specific objectives, the following research questions are raised.

- i. What is the effect of collaborative health and safety programs on employee commitment in secondary healthcare institutions of Akwa Ibom State?
- ii. How does participatory workstation risk mitigation influence employee commitment in secondary healthcare institutions of Akwa Ibom State?

1.5 Hypotheses of the Study

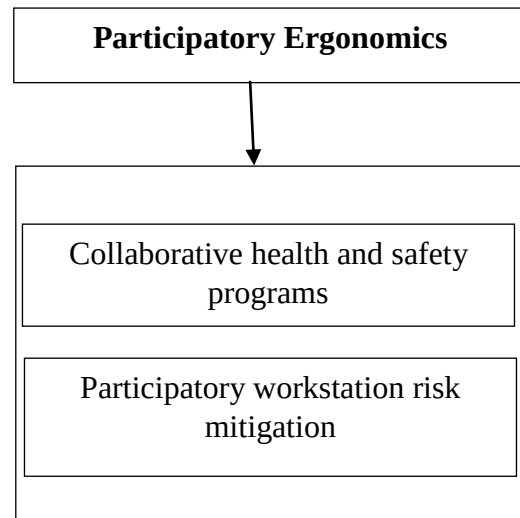
Based on the research questions, the following hypotheses are being proposed.

- H₀₁** Collaborative health and safety programs are not significantly related to secondary healthcare employee commitment.
- H₀₂** Participatory workstation risk mitigation is not significantly related to secondary healthcare employee commitment.

2. REVIEW OF RELATED LITERATURE

2.1 Conceptual Framework

Independent Variable



Dependent Variable

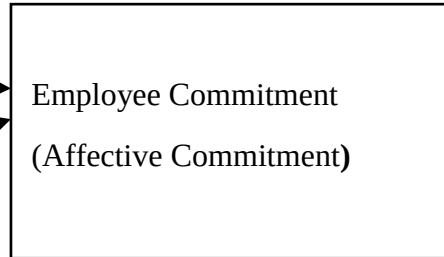


Figure 1 Model of participatory ergonomics and employee commitment by the researcher (2025).

Source: Researcher's Conceptualisation (2025)

2.1.1 Participatory Ergonomics

Participatory ergonomics (PE) has emerged as a key approach in ergonomics and occupational health, drawing increasing attention from researchers and practitioners alike. Defined as the involvement of workers in the identification, analysis, and implementation of ergonomic interventions (Kottala and Sahu, 2024), PE emphasizes the critical role that employees play in designing workplace solutions. Several studies have demonstrated the effectiveness of participatory approaches in reducing workplace risks, improving employee health, and fostering organisational change (Sujan *et al.*, 2021). This literature review synthesizes key research on the elements, benefits, and implementation strategies of participatory ergonomics. One of the primary characteristics of participatory ergonomics is the active involvement of workers in the ergonomic decision-making process.

Researchers such as Kottala and Sahu, (2024) highlight that this involvement ranges from problem identification to solution development, with workers offering valuable insights into task-related risks that external analysts may overlook. The key element here is that workers are not passive recipients of ergonomic changes but are agents in the improvement process. In addition to worker participation, the multidisciplinary nature of participatory ergonomics is frequently cited in the literature. The success of PE programs depends on the collaboration between workers, management, ergonomists, and health and safety personnel (Shoubi *et al.*, 2013). This team-based approach ensures that ergonomic interventions are both practical and aligned with organisational goals, as noted by Sakindla *et al.*, (2024), who argue that this diversity of perspectives enriches problem-solving efforts.

Collaborative Health and Safety Programs

The concept of collaborative health and safety programs incorporates participatory ergonomics to ensure that employees actively contribute to the design and implementation of safety measures. This approach addresses not only the physical aspects of safety but also the psychological and operational factors that influence employee well-being. By engaging workers directly, collaborative design of health and safety system fosters compliance, satisfaction, and productivity, key outcomes substantiated by research (William *et al.*, 2020).

At the heart of collaborative health and safety design lies participatory ergonomics; this integrates systems thinking, empowerment theories, and occupational health psychology. Traditional WHS systems often rely on top-down structures where decisions are made without worker input, leading to gaps between policy and practical application. In contrast, participatory approaches leverage the intimate operational knowledge of employees, allowing for more effective safety interventions. Systems theory underpins this framework, viewing organisations as interconnected entities where changes to one aspect inevitably affect others (Waterson, 2020).

Benefits of Collaborative Health and Safety System Design

Participatory health and safety system design offers numerous benefits that make it an increasingly favoured approach in workplace safety management. By adopting an integrated approach that promotes collaboration between employees, management, and safety experts, organisations can foster a workplace culture that not only reduces risks but also enhances employee commitment, well-being and overall efficiency (Lee and Okoro, 2020). According to Kwan *et al.*, (2021), one notable advantage is its capacity to enhance risk identification and prevention. Workers, due to their direct involvement in daily operations, possess a unique and practical understanding of the specific risks associated with their roles (Johnson and Stewart, 2020). This first-hand knowledge enables them to identify hazards that might escape the attention of management or external assessors (Lora, 2023).

The psychological benefits of participatory systems also play a crucial role in improving worker well-being. For instance, Dunn and Roberts, (2020) found that involvement in the design of health and safety systems has been associated with increased job satisfaction and reduced stress levels. From an occupational psychology perspective, this participation empowers workers by enhancing their perceptions of control over their work environment (Adams and Ng, 2019). This sense of control mitigates the stress often linked to potential workplace hazards and contributes to a healthier and more supportive work atmosphere.

Participatory Workstation Risk Mitigation

Getting healthcare employees to participate in hazard mitigation has become a vital approach to addressing ergonomics-occupational health and safety concerns. Workplace hazard mitigation entails systematic efforts to identify, evaluate, and control potential hazards to ensure a safe, efficient, and legally compliant work environment. It is a critical component of occupational health and safety (OHS) management systems, combining proactive and reactive strategies to address risks that may affect the physical, psychological, and operational well-being of employees (Hale and Borys, 2013). An important element of workplace risk mitigation is hazard identification, which is essential in workplace safety management. It involves recognizing potential sources of harm within the work environment

and systematically assessing their implications for employee health, productivity, and organisational compliance. Hazard identification combines conventional tools with cutting-edge technologies to address the dynamic and complex nature of workplace risks. Traditionally, hazard identification has relied on methodologies such as Work Hazard Analysis (WHA) and workplace inspections. For instance, a production task may be dissected for risks like repetitive strain injuries or exposure to harmful substances. Workplace inspections focus on visible risks, such as improper storage of hazardous materials or malfunctioning equipment, while safety audits assess overall safety systems, including policies and training.

Employee Commitment

Employee commitment is the level of loyalty, dedication, and emotional attachment that an employee has to their organisation. It is a psychological state that influences an employee's decision to stay with the organisation. Employee commitment serves as a mediator in the relationship between ergonomic interventions and organizational outcomes. When hospital employees feel committed, they are more likely to go beyond their basic job requirements and engage in behaviours that contribute to organizational success. This might include offering better patient care, collaborating with colleagues to improve work processes, or volunteering for additional responsibilities. Research has consistently shown that committed employees are more likely to invest discretionary effort, which directly translates into enhanced performance and competitive advantage for the organization (Meyer and Allen, 1991). In the case of hospitals, this commitment is essential because it leads to improvements in various operational aspects, such as patient care, staff retention, and organizational learning. Furthermore, committed employees are less likely to experience burnout or turnover, reducing recruitment and training costs and ensuring a more experienced and stable workforce (Ekanem *et al*, 2023).

Hospitals with a committed workforce are better positioned to compete in the healthcare sector. Employee commitment leads to higher quality of care, lower error rates, improved team dynamics, and better patient outcomes all of which contribute to the hospital's reputation and competitive positioning. Participatory ergonomics, by improving the work environment and fostering employee commitment, ultimately enhances the hospital's performance in these critical areas. Moreover, a committed workforce is more likely to exhibit organizational citizenship behaviours, such as helping colleagues, volunteering for extra tasks, and supporting organizational goals outside of their immediate responsibilities (Ekanem *et al*, 2023). These behaviours improve the overall work culture and contribute to a positive reputation for the hospital, which is critical for maintaining a competitive advantage in a highly demanding and competitive industry (Uttong *et al.*, 2024).

Affective commitment refers to the emotional bond between employees and their organization. When hospital workers participate in ergonomic interventions, such as providing feedback on workplace design or engaging in the modification of their work environment, they feel that their contributions matter (Uforo *et al*, 2022). This sense of involvement is key to fostering affective commitment because employees perceive that their well-being is prioritized by the organization (Meyer and Allen, 1997). By participating in ergonomic decision-making processes, hospital staff such as nurses, doctors, and technicians gain a greater sense of ownership and connection to their work environment. They are more likely to feel emotionally attached to the organization when they see that management is genuinely concerned with improving their conditions and ensuring their comfort. This

emotional bond makes employees more likely to exert discretionary effort toward organizational success, such as enhancing patient care, minimizing errors, and collaborating effectively with colleagues. Studies have shown that employees with high affective commitment are more likely to display positive work behaviours, which contribute to improved organizational performance (Meyer and Allen, 1991; Allen and Meyer, 1996).

Theoretical Framework

Job Characteristics Model (JCM) by Hackman and Oldham (1974)

The JCM identifies five core job dimension skill variety, task identity, task significance, autonomy, and feedback that impact three critical psychological states: experienced meaningfulness, responsibility, and knowledge of results. These psychological states, in turn, influence key outcomes such as job satisfaction, motivation, and productivity. This model has been found useful in the explanation of job outcomes. It indicates that work should be designed to possess certain core characteristics which would trigger certain psychological reactions to the job that subsequently impact on job outcomes (Teja and Krishnamurti, 2021).

In participatory ergonomics, employees are actively involved in designing their work environments, including the identification and management of ergonomic risks. This involvement directly increases job autonomy, one of the key dimensions of the JCM. Higher autonomy leads to greater ownership over work processes, which is likely to boost intrinsic motivation and productivity (Boschman et al., 2017). Effective risk management, especially in a high-risk sector like healthcare, enhances the task significance dimension. When healthcare employees understand how ergonomic improvements reduce risks and improve safety, they perceive their jobs as more meaningful, which aligns with the "experienced meaningfulness" psychological state in the JCM. This can positively affect their engagement and competitiveness. Participatory ergonomics encourages employees to contribute to different aspects of their work environment, such as identifying risk factors or designing task workflows (Gumasing, et al., 2023). This can increase the skill variety of their roles, which is another core dimension of the JCM. The more variety and challenge in a job, the greater the potential for increased job satisfaction and productivity.

The JCM emphasis in this study is also the importance of communication and feedback in job design. Participatory ergonomics often includes ongoing communication and real-time feedback mechanisms, where employees assess and refine ergonomic interventions. This continual loop of feedback helps employees stay informed about how their contributions are improving workspace safety and productivity, reinforcing the psychological state of "knowledge of results" (Kottala and Sahu 2024).

Empirical Review

Augustina et al., (2024) examined the Influence of Workstations and ergonomic work postures on employee job satisfaction in the academic library in Indonesia. This study focuses on workstations, work postures, and employee job satisfaction in the Brawijaya University Library. This study aims to determine the influence of workstations and ergonomics work posture on employee job satisfaction in the library. The research method used a quantitative approach. The sampling technique is total sampling with a total of 45 library staff from 5 departments in the library. This study uses multiple linear regression analysis techniques. The study results are the influence of workstations and ergonomic work posture on employee job

satisfaction, with the t-test values for both variables being $2.899 > 2.018$ and $3.050 > 2.018$, respectively. Based on the results of the R² test that has been carried out above, the results of the R test of this study are the Workstation variables (X1), Work Posture (X2), simultaneously having an effect of 0.674 or 67.4% on the Job Satisfaction variable (Y). This means that the independent variable provides 67.4% of the information needed to predict and explain the variation of the dependent variable. At the same time, 32.6% is influenced by other factors or variables that are not examined. This study is related to the present study as they both evaluated workstations and ergonomics but different in terms of research design. Previous used quantitative approach while the present used qualitative approach such as survey design

Kgakge et al., (2024) investigated ergonomics and occupational health: knowledge, attitudes and practices of Nurses in a Tertiary Hospital in Botswana Musculoskeletal disorders (MSD) are, to this day, considered one of the major occupational health risks, especially among healthcare workers. Poor working conditions, such as awkward postures, are associated with the development of MSD. The study aimed to evaluate the knowledge, attitudes, and practices (KAP) of nurses at a public tertiary hospital in Botswana relating to ergonomic principles. The researchers conducted a cross-sectional survey, using a self-administered questionnaire to collect the data. The researchers employed Stata v18 (StataCorp, USA) to perform descriptive and inferential statistics. The chi-square test was used to determine the association between knowledge levels and socio-demographic variables. p-values ≤ 0.05 were deemed statistically significant. In total, 306 nurses participated in the study, and a response rate of 88.4% was achieved. The mean age was 35.5 (SD ± 8.79) years. Most (69%) participants were female nurses. About 99.3% (95%CI: 97.7–99.9) of the participants were familiar with the concept of ergonomics. Only a small proportion of participants (26%) possessed high levels of knowledge, exhibited positive attitudes, and demonstrated good practices in relation to ergonomic principles, following the composite analysis. A statistically significant relationship was found to exist between sex and practice ($p = 0.030$) and between length of work and practice ($p = 0.013$). The KAP analysis indicated that most nurses had poor practices regarding essential ergonomic principles. These findings could inform policy development and enable employers to design prevention strategies, especially those aimed at preventing lower back pain (LBP). This study is related to the present study in terms of the variable used as they both sought to examine ergonomics but different in terms of method of data analysis used. Present study used regression analysis but previous study used KAP analysis.

Kottala, and Sahu, (2024) studied the impact of collaborative health and safety programmes on employee competitiveness in manufacturing industries in Brazil. Descriptive research design was applied in the study. The population of the study was 80 employees of the studied firms, while the sample size was 80 employees as determined using census sampling technique. Generated primary data were analyzed using simple regression. The result showed that the improved efficiency translated to enhanced employee competitiveness, as workers were able to complete their tasks with fewer errors and injuries, making them more valuable assets to the organisation. This implies that workers who participate in the ergonomic design lifting devices often report improved productivity because the tools reduce the risk of injury, allowing them to focus on patient care without fear of physical harm. This study is related to the present study as they both used regression analysis but different in term of study area. Previous study was carried out in Brazil but present study is conducted in South-South Nigeria.

Fernandez and Ngugi (2024) examined collaborative workstation risk mitigation and employee competitiveness. Descriptive research design was used in the study. A population of 250 employees was used, while the sample size was 70 employees. Generated data were analyzed using multiple linear regressions. The results found that healthcare facilities leveraging advanced technologies, such as real-time risk assessment tools, achieved better outcomes in risk mitigation and employee performance. However, the study also cautioned that the initial costs of implementing such technologies could pose challenges for smaller healthcare organisations, potentially limiting their ability to reap the full benefits of collaborative approaches. Contextual factors such as technology adoption and regulatory compliance also play a role in shaping the relationship between collaborative workstation risk mitigation and employee competitiveness. This study is connected to the present study in terms of the variable used as they both evaluated collaborative workstation but different in terms of research design. Present study used survey design but previous study adopted descriptive design.

3. METHODOLOGY

3.1 Research Design

The survey research design was adopted in this study. This involved collecting data from a sample population to understand their perceptions, and experiences regarding specific phenomenon of interest. Surveys were selected because of its ability to efficiently gather standardized data from a large group of healthcare workers on the relationship among participatory ergonomics and employee commitment. This method is particularly advantageous in the healthcare sector, where professionals often face time constraints. The adoption of survey design was further justified by its efficiency in collecting data promptly, cost-effectively, and across a broad geographical scope, making it well-suited for exploring trends and relationships among the study variables.

3.2 Population of the study

The study population included thirty-one (31) General/Cottage Hospitals in Akwa Ibom State. However, due to the need to enhance quality and uniformity in data collection, the researcher resorted to selecting only General/Cottage Hospitals in the three (3) Senatorial Districts of Akwa Ibom State. The unit of analysis included all medical practitioners in these Hospitals. The Akwa Ibom State Hospital Management Board provided a comprehensive list showing 960 general hospital workers in the selected hospitals as at the time of this study. The General/Cottage Hospitals in the three senatorial districts are presented in Appendix III.

Therefore, the researcher determined the sample size within the target population. For calculating sample sizes, this study employed Krejcie and Morgan Formula, which is stated as follows: $s = [x^2 np (1-p)] / [d^2 (n-1) + x^2 p (1-p)]$

Where:

n = required sample size

X² = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841), same as (1.96). (1.96)

N = the population size

P = the population proportion (assumed to be .50 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.50)

Since **N = 960**

$$\begin{aligned} n &= [3.841(960)(0.5)(1-0.5) / [0.05^2(960-1) / [3.841(0.5)(1-0.5) \\ 3.841(960)(0.5)(0.5) / [0.0025(959) + [3.841(0.5)(1-0.5) \\ &= 921.84 / 2.3975 + 0.96025 \\ &= 384.5 / 0.96025 \\ &= 400 \\ \text{Sample size (n)} &= 400. \end{aligned}$$

3.3 Sampling Techniques and Sample Size Determination

A sample size of 400 respondents determined using the Krejcie and Morgan's (1970) sample size calculation formula. The convenience sampling method was employed due to its practicality, allowing for the recruitment of participants who were both willing and available during the study period (Rahman, 2023). This approach was chosen to ensure efficient data collection within the constraints of time and resources.

3.4 Source of Data Collection

The study is quantitative in nature and sourced primary data through the close-ended structured questionnaire. Using the questionnaire for this study was considered appropriate because of its advantages such as standardization, coverage, economy, and the need to collect cross sectional data at one point in time.

3.5 Research Instrument

The questionnaire was structured using a 5-point Likert scale, where 'strongly agree' was assigned 5 points and 'strongly disagree' was assigned 1 point. A total of 25 questions were developed, aligned with the study's variables and overall objectives. Some items were adapted, with slight modifications for relevance, from previous studies by Ebitto *et al.*, (2019), Hignett *et al.*, (2007), and Umana *et al.*, (2019). Following the recommendation by Hair (2010), these prior studies were used to enhance the questionnaire's validity. Copies of the questionnaire were personally administered to willing and available healthcare workers at their workstations. To facilitate data collection from all locations of the healthcare institutions under study, two field assistants were engaged and trained on modalities of data collection.

3.6 Validation of the Research Instrument

The questionnaire items were validated by two specialists in the healthcare sector and two academics that are well versed in ergonomics discipline. Their inputs help in making slight modifications to the initial version of the questionnaire, aiding the quality of field survey data collected. In addition, the Cronbach Alpha approach was used to determine the reliability of the questionnaire items.

3.7 Reliability of the Instrument

Reliability refers to the consistency and stability of result when a measuring scale is repeated on the study on the same group of respondents. Reliability is then the ability of instrument and precision of a measuring instrument. Therefore, to measure the reliability of the instrument, the test-retest measure was used on 15 respondents in each of the Secondary Healthcare Institution adopted for the study. It was distributed to the respondents on interval of two weeks. Cronbach Alpha statistics used to compute and to measure the reliability of the instrument; the value of the alpha coefficients of 0.7 above was considered good and acceptable.

3.8 Method of Data Analysis

The data collected were analyzed using descriptive statistical tools such as frequencies and percentages. Also, inferential statistical tool such as simple linear and multiple regression models were used for testing the hypotheses. Quantitative data was employed to analyze the employees' commitment in secondary healthcare institutions in Akwa Ibom State. The Statistical Package for Social Science (SPSS) would be used as the statistical software package.

4. Data Presentation

The collected data are presented in tables, analyzed and discussed in this section.

Table 4.1 Questionnaire Administrations and Response Rate. The questionnaire administered and returned for use in the study is shown on Table 4.1

General Hospitals	No. of questionnaire distributed	No. of Questionnaire filled and returned
General Hospitals, Ikot Ekpene Senatorial District (330)	136	130
General Hospitals, Uyo Senatorial District (310)	133	129
General Hospitals, Eket Senatorial District(320)	131	123
Total	400	382

Source: Field Survey, 2025

Table 4.1 indicated that 400 copies of questionnaire were distributed to the secondary healthcare Institutions in the three senatorial districts in Akwa Ibom State but 382 copies of questionnaire were filled and returned in usable form. Therefore, 382 copies of the questionnaire form the basis for the analysis.

Table 4.2: What is the impact of collaborative health and safety programs on employee commitment in secondary healthcare institutions of Akwa Ibom State?

S/No.	Collaborative Health and Safety Program's Statements (1 – 5)	SA	A	U	D	SD	Total
1.	I am actively involved in developing protocols to improve patient handling safety.	149(39.0%)	155(40.6%)	-	46(12.0%)	32(8.4%)	382
2.	The hospital collaborates with staff to implement ergonomic solutions for medication stations.	154(40.3%)	150(39.3%)	-	42(11.0%)	36(9.4%)	382
3.	I participate in regular training on safe cleaning techniques and chemical handling.	148(38.7%)	156(40.8%)	-	30(7.7%)	48(12.6%)	382
4.	Staff and management work together to enhance safety measures in laboratory tasks.	157(41.1%)	147(38.5%)	-	38(10.0%)	40(10.5%)	382
5.	The organisation involves me in initiatives aimed at reducing noise-related stress in the workplace.	160(41.9%)	143(37.4%)	-	35(9.2%)	43(11.3%)	382

Total

Source: Researcher's Computation, 2025

100%

Table 4.2 reveals that 149 respondents representing 39.0% strongly agree that they are actively involved in developing protocols to improve patient handling safety while 155 respondents representing 40.6% agree but 0% undecided, 46 respondents representing 12.0% disagree and 32 respondents representing 8.4% strongly disagree. Also, 154 respondents accounting for 40.3% strongly agree while 150 respondents representing 39.3% agree but 0% undecided, 42 respondents representing 11.0% disagree and 36 respondents accounting 9.4% strongly disagree Moreso, 148 respondents representing 38.7% strongly agree that they participate in regular training on safe cleaning techniques and chemical handling while 156 respondents representing 40.8% agree but 0% undecided, 30 respondents representing 7.7% disagree and 48 respondents accounting for 12.6% strongly disagree. In the vein, 157 respondents representing 41.1% strongly agree that staff and management work together to enhance safety measures in laboratory tasks while 147 respondents representing 38.10.0% and 40 respondents representing 10.5% strongly disagree. Conversely, 160 respondents representing 41.9% strongly agree that the organization involved them in initiatives aimed at reducing noise-related stress in the workplace while 143 respondents representing 37.4% agree but 0% was undecided, 35 respondents representing 9.2% disagree and 43 respondents accounting for 11.3% strongly disagree.

Research Question 2

Table 4.3: How does participatory workstation risk mitigation influence employee commitment in secondary healthcare institutions of Akwa Ibom State?

S/No.	Participatory Workstation Risk Mitigation (1 – 5)	SA	A	U	D	SD	
1.	I am consulted about ergonomic improvements to reduce the strain from prolonged standing during surgeries.	148(38.7%)	156(40.8%)	-	47(12.3%)	31(8.1%)	382
2.	My suggestions on reducing repetitive strain injuries in administrative areas are implemented.	157(41.1%)	147(38.5%)	-	44(11.5%)	34(10.0%)	382
3.	My suggestions on reducing repetitive strain injuries in administrative areas are implemented..	145(38.0%)	159(41.6%)	-	29(7.6%)	49(12.8%)	382
4.	The hospital involves me in decisions about designing medication stations to reduce physical and cognitive stress.	158(41.3%)	146(38.2%)	-	39(10.2%)	41(10.7%)	382
5.	I am part of the process for evaluating noise control measures to enhance my work environment.	161(42.1%)	142(37.1%)	-	36(9.4%)	42(11.0%)	100%
Total							

Source: Researcher's Computation, 2025

Table 4.3 reveals that 148 respondents representing 38.7% strongly agree that they are consulted about ergonomic improvements to reduce the strain from prolonged standing during surgeries while 156 representing 40.8% agree while 0% undecided, 47 respondents representing 12.3% disagree and 8.1% strongly disagree. Also, 157 respondents accounting for 41.1% strongly agree that their suggestions on reducing repetitive strain injuries in administrative areas are implemented while 147 respondents representing 38.5% agree but 0% was undecided, 44 respondents representing 11.5% disagree and 34 respondents accounting for 10.0% strongly disagree. Consequently, 158 respondents representing 41.3% strongly agree the hospital involves me in decisions about designing medication stations to reduce physical and cognitive stress while 146 respondents representing 38.2 % agree, but 0% undecided, 39 respondents accounting for 10.2% disagree and 41 respondents representing 10.7% strongly disagree. Also, 161 respondents accounting for 42.1% respondents strongly agree that they are part of the process for evaluating noise control measures to enhance my work environment while 142 respondents accounting for 37.1% agree but 0% was undecided, 36 respondents representing 9.4% disagree and 42 respondents representing 11.0% strongly disagree

Hypothesis 1

Ho₁ Collaborative health and safety programs are not significantly related to secondary healthcare employee's commitment.

Table 4.4: Collaborative health and safety programs are significantly related to secondary healthcare employee's commitment

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
1	.747 ^a	.558	.556	.91276	1.655	

Model Fit						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	398.868	1	398.868	478.760	.000 ^b
	Residual	316.588	380	.833		
	Total	715.455	381			

Coefficients ^a						
Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.
1	(Constant)	.615	.084		7.360	.000
	Collaboration Heath and Safety Programs	.791	.036	.747	21.881	.000

Source: Researcher's Computation, 2025

The R-Square (R^2) is a statistical measure that represents the proportion of the variance in the dependent variable (employee commitment) that can be explained by the independent variable (collaborative health and safety program). The $R^2 = 0.558$ means that 55.8% of the variability in employee commitment can be explained by the collaborative

health and safety program. This is a moderately strong to strong explanatory power, indicating that collaborative health and safety programs are a significant factor in influencing employee commitment within secondary healthcare Institutions in Akwa Ibom State. The beta coefficient indicates the magnitude and direction of the relationship between the independent variable (collaborative health and safety program) and the dependent variable (employee commitment). Beta = 0.791 implies that for every unit increase in the collaborative health and safety program, employee commitment is expected to increase by 0.791 units, assuming all other factors remain constant. This suggests a strong positive relationship between the collaborative health and safety program and employee commitment. As the program improves, employee commitment also improves, highlighting the importance of these programs in enhancing productivity and safety outcomes.

The F-value tests the overall significance of the regression model. It essentially checks whether the independent variable (collaborative health and safety program) significantly affects the dependent variable (employee commitment). The $F = 478.760$ is an exceptionally high value, which indicates that the regression model is highly significant. The value suggests that the collaborative health and safety program is an important determinant of employee commitment, with the model being far more effective than a model without any independent variables. The p-value tests the null hypothesis that there is no relationship between the independent variable (collaborative health and safety program) and the dependent variable (employee commitment). The P-value = 0.000 is much lower than the conventional significance level of 0.05, indicating that the relationship between collaborative health and safety programs and employee commitment is statistically significant.

This suggests that the observed effect is not due to random chance and that collaborative health and safety programs are a meaningful factor in improving employee commitment. Collaborative health and safety programs have a strong and significant influence on employee commitment in secondary health hospitals in Akwa Ibom State. The R^2 value of 0.558 suggests that over half of the variation in employee commitment can be attributed to these programs, indicating their substantial impact. The beta coefficient of 0.791 shows that as these programs improve, employee commitment significantly improves as well. The high F-value and low p-value underscore the robustness of the model and the statistical significance of the relationship. Therefore, hospitals in Akwa Ibom State should prioritize and enhance collaborative health and safety programs to foster a safer and more productive work environment for their employees.

Hypothesis 2

Ho₂: Participatory workstation risk mitigation is significantly related to secondary healthcare employee commitment.

Table 4.5: Participatory workstation risk mitigation is significantly related to secondary healthcare employee's commitment

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
1	.756 ^a	.571	.570	.89855	1.686	
Model Fit						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	408.644	1	408.644	506.125	.000 ^b
	Residual	306.811	380	.807		
	Total	715.455	381			
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.589	.083		7.141	.000
	Participatory Workstation Risk Management	.794	.035	.756	22.497	.000

Source: Researcher's Computation (2025)

The R-Square measures the proportion of variance in the dependent variable (employee commitment) that can be explained by the independent variable (participatory workstation risk mitigation). The $R^2 = 0.571$ means that 57.1% of the variation in employee commitment is explained by the participatory workstation risk mitigation programs. This is a moderately strong to strong relationship, indicating that these risk mitigation strategies are a significant factor in influencing employee commitment. While it doesn't account for all factors, it highlights the importance of risk mitigation in the workplace environment.

The beta coefficient indicates the strength and direction of the relationship between the independent variable (participatory workstation risk mitigation) and the dependent variable (employee commitment). The Beta = 0.794 suggests a strong positive relationship between participatory workstation risk mitigation and employee commitment. Specifically, for every unit increase in the participatory workstation risk mitigation strategy, employee commitment is expected to increase by 0.794 units, assuming all other factors remain constant. This indicates that improving workstation safety and reducing risks positively impacts the commitment of employees in secondary health hospitals in Akwa Ibom State.

The F-value tests the overall significance of the regression model, assessing whether the independent variable (participatory workstation risk mitigation) significantly influences the dependent variable (employee commitment). The $F = 506.125$ is an exceptionally high value, indicating that the regression model is highly significant. This suggests that participatory workstation risk mitigation has a substantial and statistically significant effect on employee commitment in secondary health hospitals. A high F-value typically means that the independent variable explains much of the variability in the dependent variable, reinforcing the importance of workstation risk mitigation. The p-value tests the null

hypothesis that there is no relationship between the independent variable (participatory workstation risk mitigation) and the dependent variable (employee commitment). The P-value = 0.000 is well below the conventional significance level of 0.05, indicating that the relationship between participatory workstation risk mitigation and employee commitment is statistically significant. This means that the observed effect is not due to random chance and that participatory workstation risk mitigation is an important factor influencing employee commitment in these hospitals.

Participatory workstation risk mitigation has a strong and statistically significant influence on employee commitment in secondary health hospitals in Akwa Ibom State. The R^2 value of 0.571 suggests that more than half of the variation in employee commitment can be explained by the participatory risk mitigation strategies, emphasizing their importance in the workplace. The beta coefficient of 0.794 indicates a robust positive relationship, meaning that as these strategies are enhanced, employee commitment is expected to improve significantly. Given the high F-value (506.125) and the low p-value (0.000), it is clear that participatory workstation risk mitigation is an essential factor in fostering a safer, more productive work environment. Secondary Healthcare Institutions in Akwa Ibom State should prioritize these programs to maximize employee commitment and safety.

5. Conclusion

The study concluded that participatory approaches in health and safety programs and workstation risk mitigation have a positive influence on employee commitment in secondary healthcare Institutions in Akwa Ibom State. By involving employees in decision-making processes, hospitals can foster a more engaged, satisfied, and productive workforce. This is especially important in the healthcare sector, where employee well-being is critical to maintaining high levels of service quality. Therefore, it was concluded that participatory job design, participatory communication, collaborative health and safety program and participatory workstation risk mitigation have significant influence on employee commitment of secondary Healthcare Institutions in Akwa Ibom State.

5. Recommendations

- i. Hospitals should expand employee involvement in health and safety initiatives, ensuring that workers have a voice in shaping policies that directly affect their well-being.
- ii. Hospitals should implement more participatory strategies in workstation design and risk assessment, allowing employees to identify and mitigate potential hazards.
- iii. Ongoing training on participatory practices and health and safety measures should be provided to both employees and managers to ensure that these initiatives are effectively integrated into daily operations.

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