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# Prevalence of Low Back Pain and Associated Factors among Bank Staff in Dar es Salaam, Tanzania (2024)

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## Abstract

**Background:** Low back pain (LBP) is a leading cause of disability worldwide. Bank staff are at increased risk due to exposure to ergonomic hazards. In Tanzania, data on the burden of LBP among this group are limited. This study aimed to determine the prevalence of LBP and its associated factors among bank staff.

**Materials and Methods:** A cross-sectional study was undertaken in 2024 among employees of a private bank in Dar es Salaam, Tanzania. Participants were selected through stratified random sampling. Data were collected via an interviewer-administered questionnaire. Associations between LBP and predictor variables were assessed using multivariable modified Poisson regression models.

**Results:** A total of 420 participants were included. The median age was 39 years, with 56.9% being female. The 12-month prevalence of LBP was 78.3%. Factors significantly linked to LBP included older age (aPR=1.18;95% CI:1.06–1.32) and being overweight/obese (aPR=1.07;95% CI:1.01–1.14). Other predictors included longer working hours, limited breaks, uncomfortable workstations, lack of physical activity, and prolonged sitting (aPR range:1.13–1.40). Protective factors included alternating between sitting and standing, access to ergonomic equipment, and walking to or from work (aPR range: 0.54–0.91). Negative perceptions of work environment were also significantly correlated with LBP (aPR range: 1.09–1.24).

**Conclusions:** LBP is highly prevalent among bank staff and is affected by several factors, including sociodemographic, psychosocial, ergonomic, and lifestyle factors. Workplace interventions targeting these factors, such as providing ergonomic workstations, promoting physical activity, and addressing workplace stress, could help lower LBP as well as enhance employee health and productivity.

**Keywords:** Ergonomics, Low Back Pain, Occupational Health, Musculoskeletal Disorders.

## Introduction

Low back pain (LBP) is a significant public health problem in both developed and developing countries, affecting a large proportion of the global population, including individuals across various professions [1]. It affects not only individuals in physically demanding jobs but also those in sedentary roles, such as office workers, teachers, and bank employees [1–4]. This revealed that LBP is not solely related to physical strain but also heavily affected by psychosocial and ergonomic factors [2].

According to the 2010 Global Burden of Disease Assessment, LBP is the sixth most significant

contributor to the global disease burden exceeding that of lung cancer, diabetes, obstructive pulmonary disorders, HIV/AIDS, malaria or tuberculosis combined, with global prevalence rate ranging within 40%-86% among different populations, depending on socio economic, cultural and occupational factors [5, 6]. The high prevalence highlights the economic and social impacts of LBP, extending beyond individual suffering to societal burdens, including healthcare costs, loss of productivity, and disability-related expenses [3].

The impact of LBP extends far beyond mere physical discomfort. It often results in significant consequences such as sick leave, disabilities, and restrictions on daily activities [7]. These outcomes not only lower the quality of life for those affected but also induce considerable economic strain on organizations and society as a whole [8]. Working conditions have been presumed to play a major role in the etiology of LBP [9]. It is associated with working postures which include bending heavily with one's trunk, bending and twisting concurrently with one's trunk [10], a bent and twisted posture for long periods, as well as making repetitive movements with the trunk [11, 12].

However, despite its global prominence, specific data on LBP prevalence within the banking sector, especially in countries such as Tanzania remain limited. This is primarily towing to weak occupational health surveillance systems in many low- and middle-income countries, which tend to focus on high-risk manual labor sectors rather than office-based work [2, 4, 10, 12]. Moreover, research and funding priorities often emphasize infectious diseases over musculoskeletal disorders, leading to limited empirical studies on LBP in the service sector [5, 6]. Lack of ergonomic workplace assessments and limited inclusion of LBP in national occupational health policies further contribute to the underreporting of such conditions [10, 12]. Compared with other occupational groups, the precise relationship between office work, sedentary behavior, and the elevated risk of LBP remains poorly understood.

Recognizing this gap, the present study aimed to ascertain the prevalence of LBP among bank staff and examine the influence of sociodemographic, ergonomic, psychological, and lifestyle factors. By exploring these associations, the study seeks to offer valuable insights into the specific occupational demands faced by banking professionals and to provide evidence-based recommendations for the prevention as well as management of LBP.

**Materials and Methods**

We performed an analytical cross-sectional study among bank staff at a large private bank in Dar es Salaam between June and July 2024. The participants were selected using a stratified random sampling technique from different departments, including IT & System Support, Procurement & Supplies, Administration, Operations & Technical Work, and Real Estate & Facility Management. Eligible participants were those with at least six months of permanent employment. Individuals with a history of back injury, spine surgery, or known pregnancy were excluded from the study.

Data were collected via an interviewer-administered questionnaire adapted from the Nordic Musculoskeletal Questionnaire and Workplace Stress Scale. It included socio-demographics, ergonomic setup, psychosocial factors, and lifestyle characteristics. The questionnaire was translated into Swahili and then back-translated to assess its validity as well as consistency. Trained interviewers administered the questionnaire in Swahili, with each interview taking approximately 30 minutes to complete. Weight was measured to the nearest 0.1 kilogram by a calibrated SECA weighing scale (Hamburg, Germany), with participants wearing light clothing and no shoes. Height was measured to the nearest 0.1 centimeter using a portable SECA stadiometer (Hamburg, Germany), with participants standing barefoot. Low back pain was defined as a "YES" response to the question: "Have you had trouble with your lower back at any time during the past 12 months?". Longer working hours were defined as more than 40 hours per week; limited rest was defined as reporting 'rarely' or 'sometimes' taking breaks during the workday; and prolonged sitting referred to sitting for more than 6 hours per day.

In order to ensure the accuracy and trustworthiness of the data collected, validity and reliability of the research instrument were considered. The questionnaire was adapted from a validated tool previously used among bank workers in Ethiopia [2]. This adaptation provided a strong foundation for content and construct validity, as the instrument had been applied across a population with similar occupational characteristics.

Content validity was established through expert review to ensure that the instrument adequately captured the study objectives while also encompassing relevant dimensions such as sociodemographic characteristics, ergonomic conditions, lifestyle factors, psychosocial elements, and low back pain symptoms. Modifications were made based on their feedback to boost clarity and relevance.

For ensuring construct validity, the study utilized the Nordic Musculoskeletal Questionnaire (NMQ) and the Workplace Stress Scale, which are internationally recognized and widely used. The NMQ has been extensively validated in occupational and clinical research for ascertaining musculoskeletal symptoms and their functional impact, with reported kappa values ranging between 0.60 and 0.82, indicating good test-retest reliability. The Workplace Stress Scale, adapted from the American Institute of Stress, offers structured

categorization of stress levels and has indicated effectiveness in occupational health surveillance.

Language and cultural validity were strengthened by providing the questionnaire in both English and Swahili. Translation into Swahili followed a forward-translation process by a bilingual expert. Pretesting was performed with 38 participants (approximately 10% of the study sample) from a different branch of the same bank to identify ambiguities, check clarity, and evaluate participant understanding. The pretest findings informed minor revisions to guarantee semantic accuracy and eliminate confusing or redundant items.

Considering reliability, several measures were taken to ensure consistency in data collection. Two research assistants were recruited and trained along one week on the study objectives, ethical considerations, questionnaire content, administration techniques as well as standardized procedures for anthropometric measurements.

In order to ensure consistency in data collection, the principal investigator supervised all field activities, performed daily debriefings, and reviewed completed questionnaires for completeness and accuracy. Anthropometric instruments were calibrated each morning prior to data collection. Although internal consistency statistics such as Cronbach's alpha were not computed for this study, the utilization of previously validated instruments and rigorous pretesting contributed to acceptable reliability standards.

Data were entered into STATA version 17 (StataCorp, College Station, TX, USA) following collection. Double data entry was applied for cross-verification. Inconsistencies were resolved by referring to original questionnaires. The dataset underwent rigorous cleaning, including checks for logical inconsistencies, outliers, and data range errors. Missing data were evaluated for patterns and frequency. Given the low proportion of missing responses, complete case analysis was adopted for the regression models, whereby only the subjects with complete data on key variables were included. This approach helped preserve the internal validity of the findings while minimizing potential bias owing to data omission.

Sociodemographic, psychosocial, ergonomic, and lifestyle characteristics were compared between participants with and without LBP based on the Chi-squared test and Fisher's exact test, as appropriate. To ascertain the association between LBP and predictor variables, multivariable modified Poisson regression models were applied, adjusting for age, sex, and years of employment at the bank. Results were reported as adjusted prevalence ratios (aPR) with 95% confidence intervals (CIs). Separate models were fitted for each LBP-predictor variable pair. A p-value of $<0.05$ was considered statistically significant.

## Results

Among the 420 participants whom we interviewed, majority (56.9%) were female with most (70.9%) participants ageing within 34-49 years (Table 1). A significant proportion held roles in operations and technical work (37.4%) or administration (28.6%). More than half of the participants (56.0%) had been employed at the bank for less than 10 years, and a considerable number (50.7%) worked more than 40 hours per week. The prevalence of overweight and obesity was notably high (77.4%). The prevalence of low back pain over the past 12 months among bank workers was 78.3%. Low back pain was more commonly reported among older participants (92.0%), those who were overweight or obese (81.8%), individuals who utilized public or private transportation to commute rather than walking (79.9%), those with over 10 years of work experience, and those who worked more than 40 hours per week (80.2%).

**Table 1.** Characteristics of the study participants (n = 420)

| Characteristics | | Total n (%) | Low back pain | | P-value ($\chi^2$ test) |
|---|---|---|---|---|---|
| | | | Yes n (%) 329 (78.3) | No n (%) 91 (21.7) | |
| **Sex** | Female | 239 (56.9) | 193 (80.7) | 46 (19.3) | 0.167 |
| | Male | 181 (43.1) | 136 (75.1) | 45 (24.9) | |
| **Age** (years) | 18-33 | 97 (23.1) | 59 (60.8) | 38 (39.2) | <0.001 |
| | 34-49 | 298 (70.9) | 247 (82.9) | 51 (17.1) | |
| | 50-65 | 25 (6.0) | 23 (92.0) | 2 (8.0) | |
| **Job title** | IT & systems support | 78 (18.6) | 63 (80.8) | 15 (19.2) | 0.002 |
| | Procurement & supplies | 35 (8.3) | 22 (62.9) | 13 (37.1) | |
| | Administration | 120 (28.6) | 84 (70.0) | 36 (30.0) | |
| | Operations and technical work | 157 (37.4) | 137 (87.3) | 20 (12.7) | |
| | Real estate & facility management | 30 (7.1) | 23 (76.7) | 7 (23.3) | |
| **BMI status** | Normal (*BMI: 18.5 – 24.9 kg/m$^2$*) | 95 (22.6) | 63 (66.3) | 32 (33.7) | 0.001 |
| | Overweight/obese (*BMI ≥ 25 kg/m$^2$*) | 325 (77.4) | 266 (81.8) | 59 (18.2) | |
| **Regular mode of transportation** | Public/private transport | 412 (98.1) | 329 (79.9) | 83 (20.1) | <0.001 |
| | Walking | 8 (1.9) | 0 (0.0) | 8 (100.0) | |
| **Years working at the bank** | 0-9 years | 235 (56.0) | 172 (73.2) | 63 (26.8) | 0.004 |
| | 10 years or more | 185 (44.0) | 157 (84.9) | 28 (15.1) | |

| | | | | | |
|---|---|---|---|---|---|
| **Working hours *per* week** | 0-40 hours | 32 (7.6) | 18 (56.3) | 14 (43.7) | |
| | More than 40 hours | 388 (92.4) | 311 (80.2) | 77 (19.8) | 0.002 |

$\chi^2$ test: Chi-squared test; BMI: Body Mass Index; IT: Information Technology

Socio-demographic characteristics associated with low back pain: Modified Poisson regression analysis identified several factors associated with low back pain (LBP) among bank staff in Dar Es Salaam. Age was a significant predictor of LBP in a dose-dependent manner, with higher odds observed among workers aged 50–65 years (adjusted prevalence ratio [aPR] = 1.18; 95% CI: 1.06–1.32) and those aged 34–49 years (aPR = 1.13; 95% CI: 1.06–1.21) (Table 2). Elevated odds of LBP were also observed among overweight or obese workers (aPR = 1.07; 95% CI: 1.01–1.14) as well as among those working more than 40 hours per week (aPR = 1.13; 95% CI: 1.01–1.26).

**Table 2.** Socio-demographic characteristics associated with low back pain

| **Characteristics** | | **n (%)** | **Univariate** | | **Multivariable** | |
|---|---|---|---|---|---|---|
| | | | **cPR (95%CI)** | **P-value** | **aPR (95%CI)** | **P-value** |
| **Sex** ¶ | Male vs female | 181 (43.1) | 0.97 (0.93-1.01) | 0.173 | 0.96 (0.92-1.01) | 0.095 |
| **Age** (years) ¤ | 18-33 | 97 (23.1) | Ref | | Ref | |
| | 34-49 | 298 (71) | 1.14 (1.07-1.21) | <0.001 | 1.13 (1.06-1.21) | <0.001 |
| | 50-65 | 25 (6.0) | 1.19 (1.10-1.30) | <0.001 | 1.18 (1.06-1.32) | 0.002 |
| **Years working at the bank** | ≥10 years vs <10 years | 185 (44.0) | 1.06 (1.02-1.11) | 0.003 | 1.02 (0.98-1.07) | 0.333 |
| **BMI** | Overweight/obese vs normal weight | 325 (77.4) | 1.09 (1.03-1.16) | 0.005 | 1.07 (1.01-1.14) | 0.028 |
| **Working hours per week** ∞ | ≥40 hours vs <40 hours | 388 (92.4) | 1.15 (1.03-1.29) | 0.013 | 1.13 (1.01-1.26) | 0.034 |
| **Job Title** | IT & systems support | 78 (18.6) | Ref | | Ref | |
| | Procurement & supplies | 35 (8.3) | 0.90 (0.81-1.01) | 0.062 | 0.91 (0.82-1.02) | 0.104 |
| | Administration | 120 (28.6) | 0.94 (0.88-1.01) | 0.078 | 0.95 (0.89-1.02) | 0.148 |
| | Operations and technical work | 157 (37.4) | 1.03 (0.98-1.10) | 0.216 | 1.02 (0.97-1.08) | 0.365 |
| | Real estate & facility management | 30 (7.1) | 0.98 (0.89-1.08) | 0.648 | 1.00 (0.89-1.09) | 0.806 |

cPR: crude prevalence ratio; aPR: adjusted prevalence ratio; Each predictor variable was analyzed in a separate modified Poisson regression model adjusted for age, sex and years of employment at the bank unless otherwise indicated; ¤: Adjusted for sex and years of employment at the bank; ¶: Adjusted for age and years of employment at the bank; ∞: Adjusted for age and sex

Psychosocial characteristics associated with low back pain: The presence of LBP was linked to participants' negative perceptions of their current jobs (Table 3). These perceptions included excessive physical demands (aPR = 1.09; 95% CI: 1.00–1.18), unpleasant working conditions (aPR = 1.13; 95% CI: 1.10–1.26), negative effects on personal well-being (aPR = 1.20; 95% CI: 1.10–1.30), unreasonable deadlines or excessive workload (aPR = 1.24; 95% CI: 1.13–1.35), difficulty expressing opinions to superiors (aPR = 1.11; 95% CI: 1.07–1.16), as well as interference of job pressure with family and personal life (aPR = 1.18; 95% CI: 1.12–1.25).

**Table 3.** Psychosocial characteristics associated with low back pain

| **Characteristics** | **n (%)** | **Univariate** | | **Multivariable** | |
|---|---|---|---|---|---|
| | | **cPR (95%CI)** | **P-value** | **aPR (95%CI)** | **P-value** |
| **Perceptions regarding their current job** | | | | | |
| Job requires excessive physical effort | 329 (78.3) | 1.07 (0.99-1.17) | 0.099 | 1.09 (1.00-1.18) | 0.039 |
| Unpleasant conditions at work | 267 (63.6) | 1.12 (1.07-1.18) | <0.001 | 1.13 (1.10-1.26) | <0.001 |
| Job negatively affecting their well-being | 349 (83.1) | 1.21 (1.11-1.31) | <0.001 | 1.20 (1.10-1.30) | <0.001 |
| Unreasonable deadlines/too much work to do | 356 (84.8) | 1.25 (1.15-1.37) | <0.001 | 1.24 (1.13-1.35) | <0.001 |
| Difficult to express their opinions to superiors | 184 (43.8) | 1.11 (1.07-1.16) | <0.001 | 1.11 (1.07-1.16) | <0.001 |
| Job pressure interferes with family & personal life | 349 (83.1) | 1.19 (1.13-1.26) | <0.001 | 1.18 (1.12-1.25) | <0.001 |
| Have adequate control over their work duties | 410 (97.6) | 0.99 (0.86-1.14) | 0.894 | 1.00 (0.86-1.18) | 0.965 |
| Received appropriate recognition/rewards for good performance | 400 (95.2) | 0.94 (0.87-1.00) | 0.074 | 0.96 (0.89-1.04) | 0.304 |
| Able to utilize their skills and talents to the fullest extent at work | 406 (96.7) | 0.10 (0.88-1.13) | 0.98 | 0.96 (0.86-1.07) | 0.442 |

cPR: crude prevalence ratio; aPR: adjusted prevalence ratio; Each predictor variable was analyzed in a separate modified Poisson regression model adjusted for age, sex and years of employment at the bank

Ergonomic and lifestyle characteristics associated with low back pain: Bank staff with LBP were more likely to report having fewer regular breaks (aPR = 1.35; 95% CI: 1.25–1.46), experiencing discomfort with their desk setup (aPR = 1.15; 95% CI: 1.10–1.20), never engaging in vigorous physical activity (aPR = 1.16; 95% CI: 1.11–1.21), and sitting for extended periods at work (aPR = 1.40; 95% CI: 1.22–1.60) (Table 4). In contrast, the presence of a standing desk or the option to stand while working (aPR = 0.91; 95% CI: 0.83–0.98), access to ergonomic equipment (aPR = 0.90; 95% CI: 0.86–0.93), and walking to or from work (aPR = 0.54; 95% CI: 0.53–0.55) were correlated with a lower likelihood of experiencing LBP.

**Table 4.** Ergonomic and lifestyle characteristics associated with low back pain

| Characteristics | n (%) | Univariate | | Multivariable | |
|---|---|---|---|---|---|
| | | cPR (95% CI) | P-value | aPR (95% CI) | P-value |
| Presence of a standing desk or an option to stand while working | 54 (12.9) | 0.89 (0.82-0.97) | 0.007 | 0.91 (0.83-0.98) | 0.019 |
| Presence of ergonomic equipment at work | 413 (98.3) | 0.89 (0.87-0.91) | <0.001 | 0.90 (0.86-0.93) | <0.001 |
| Having regular breaks | | | | | |
| Always | 89 (21.2) | Ref | | Ref | |
| Sometimes | 202 (48.1) | 1.35 (1.25-1.46) | <0.001 | 1.34 (1.24-1.45) | <0.001 |
| Rarely | 129 (31.0) | 1.36 (1.26-1.47) | <0.001 | 1.35 (1.25-1.46) | <0.001 |
| Desk setup discomfort | 216 (51.4) | 1.15 (1.10-1.21) | <0.001 | 1.15 (1.10-1.20) | <0.001 |
| Work involving moderate-intensity activities | 36 (8.6) | 0.95 (0.86-1.04) | 0.233 | 0.94 (0.86-1.03) | 0.202 |
| Never do vigorous exercise | 395 (94.0) | 1.17 (0.25-1.22) | 1.112 | 1.16 (1.11-1.21) | <0.001 |
| Walking as a regular mode of transportation | 8 (2.0) | 0.57 (0.54-0.57) | <0.001 | 0.54 (0.53-0.55) | <0.001 |
| Sitting for a long period at work | 393 (93.6) | 1.36 (1.19-1.56) | <0.001 | 1.40 (1.22-1.60) | <0.001 |
| Hours spent sitting down while working | | | | | |
| Less than 3 hours | 58 (13.8) | Ref | | Ref | |
| Between 3 and 6 hours | 180 (42.9) | 1.11(1.02-1.21) | 0.019 | 1.11(1.02-1.22) | 0.020 |
| More than 6 hours | 182 (43.3) | 1.17 (1.08-1.28) | 0.000 | 1.20 (1.09-1.29) | <0.001 |

cPR: crude prevalence ratio; aPR: adjusted prevalence ratio; Each predictor variable was analyzed in a separate modified Poisson regression model adjusted for age, sex and years of employment at the bank

## Discussion

The 12-month prevalence of LBP among bank staff was notably high at 78.3%. Older age, being overweight or obese, and working long hours were identified as significant predictors of LBP. Moreover, limited breaks, uncomfortable workstations, prolonged sitting, and lack of physical activity were positively linked to LBP, while access to ergonomic equipment, the ability to alternate between sitting and standing, and walking to or from work appeared to be protective. Negative perceptions of the work environment, including excessive physical demands, poor working conditions, and job-related stressors, were also significantly correlated with the presence of LBP.

This study indicated a high prevalence of LBP among bank staff in Dar es Salaam, highlighting a significant occupational health concern within this predominantly sedentary workforce. The reported prevalence accords with findings from comparable populations in other low- and middle-income countries (LMICs), such as Nigeria (84.6%) [13] and India (70%) [14], and falls within the global prevalence range for desk workers, spanning from 40% to 86% [1, 15, 16]. These figures foster the growing recognition of sedentary work environments as a major contributor to musculoskeletal disorders, particularly LBP.

Interestingly, the prevalence observed in the present study has been considerably higher than the rates reported in Rwanda (45.8%) [10] and Ethiopia (55.4%) [17]. This suggests the influence of contextual factors such as variations in job demands, ergonomic conditions, as well as occupational health and safety practices. Cultural attitudes toward pain, awareness of musculoskeletal disorders, as well as differences in healthcare-seeking behaviour may also shape how LBP is reported and perceived. Additionally, methodological heterogeneity across studies, including variations in case definitions, recall periods, and assessment tools, may further account for the observed discrepancies.

Nonetheless, the consistently high burden of LBP across multiple settings, including the present study, highlights the pressing need for comprehensive workplace interventions. These should target modifiable risk factors such as prolonged sitting, insufficient ergonomic support, and insufficient physical activity, while also promoting health education, early reporting, and improved occupational health policies. Without such measures, LBP will likely continue to impair the productivity, wellbeing, and quality of life of desk-based workers in Tanzania and beyond.

Older age was independently linked to LBP, likely because of age-related degenerative changes and prolonged exposure to occupational stressors. This is in line with findings from studies in Nigeria [13] and Ethiopia [17], which similarly reported a higher prevalence of LBP among older workers. As musculoskeletal structures naturally degenerate with age, older individuals may become more susceptible to

strain and chronic pain, especially in sedentary occupations [2]. Moreover, the cumulative effect of long-term sedentary work and job-related stress may further contribute to the development of LBP over time. Nevertheless, this finding contrasts with a study conducted in Lebanon [18], where no significant association was found between age and the presence of LBP. This suggests that contextual or occupational differences may affect the relationship between age and LBP risk.

Being overweight or obese was also identified as a significant factor correlated with LBP, aligning with findings from studies in India [14] and Ethiopia [19]. This association is well supported by existing evidence, suggesting that excess body weight places additional mechanical stress on the spine, contributing to spinal degeneration and inflammation [20]. In this study, a substantial proportion of participants (77.4%) had elevated BMI, highlighting the need for targeted health promotion initiatives. Workplace wellness programs that encourage physical activity and support weight management could be advantageous in addressing this modifiable risk factor [21]. This finding also mirrors the results from a Lebanese study, which similarly reported an elevated risk of LBP among individuals with higher body weight [18].

The increased odds of LBP in workers who reported fewer regular breaks, discomfort with their desk setup, prolonged sitting, and a lack of vigorous physical activity is in accordance with existing literature linking poor ergonomic conditions and sedentary behavior to musculoskeletal disorders [15, 22]. Prolonged sitting, in particular, is a risk factor for LBP, possibly due to augmented spinal loading, lowered lumbar support, and muscle deconditioning [22]. Discomfort with desk setups was another critical contributor, supporting findings from Ethiopia [2]. It also underscores the importance of providing ergonomically designed and adjustable workstations that support natural posture and minimize biomechanical strain.

The positive influence of standing desks noted in this study aligns with the growing body of evidence supporting sit-stand workstations to counteract the effects of prolonged sitting [23]. Whereas ergonomic equipment was linked to lower LBP odds in this study, conflicting findings in other research highlight the need to ascertain not only access but also the quality and correct usage of such tools [3]. Notably, workers who walked to work reported no cases of LBP, highlighting the benefits of active commuting in ameliorating physical fitness and shortening sedentary time. These findings collectively support workplace interventions that encourage regular movement, vigorous physical activity, flexible workstation designs, and active transportation as effective strategies to lower the burden of LBP in sedentary occupations.

The association between LBP and negative psychosocial perceptions of the workplace among bank staff in this study align with prior research in Nigeria [13] and Rwanda [10], where high job strain and adverse working environments were linked to more frequent musculoskeletal complaints. This consistent correlation between psychosocial stressors and LBP supports the biopsychosocial model of pain, highlighting the interplay between psychological stress and physical health outcomes [8, 24, 25]. High workloads and constant time pressure may contribute to muscle tension, poor posture, and reduced movement, all being risk factors for LBP [17]. Further, workers who felt unable to express concerns to their superiors or who experienced work interfering with personal life reported higher rates of LBP, highlighting the importance of supportive leadership and work-life balance. These results suggest that interventions aimed at lowering LBP should not only address ergonomic and physical factors but also target workplace psychosocial stressors through improved communication, realistic workload expectations, and employee well-being initiatives.

One of the strengths of this study was its relatively large, stratified random sample (n = 420) drawn from multiple departments within a major private bank, boosting the representativeness of the findings as well as allowing for the detection of meaningful associations between various risk factors and LBP. The application of a standardized and pretested questionnaire ensured consistency and reliability in data collection. Further, the study addressed a critical gap by providing recent, context-specific data on LBP in an understudied occupational group in Tanzania.

Nevertheless, conducting the study in a single private bank may have limited the generalizability of the findings to other banking institutions or occupational settings with different work environments. Secondly, reliance on self-reported data would introduce the risk of recall bias and socially desirable responses, which could result in underreporting or overreporting of symptoms and behaviors. These factors may have influenced the accuracy of prevalence estimates and the strength of observed associations. However, we consider the potential influence of such bias to be minimal, as trained interviewers and a carefully designed questionnaire were used. Future research should ascertain the effectiveness of these interventions in similar occupational settings through longitudinal or interventional study designs.

## Conclusion

This study found a high 12-month prevalence of LBP among bank staff in Dar es Salaam, highlighting a significant occupational health concern across this population. LBP was linked to a range of socio-demographic, ergonomic, lifestyle, and psychosocial

factors, with older age, excess body weight, long working hours, poor workstation design, and lack of physical activity emerging as key predictors. Protective factors included access to ergonomic equipment, the ability to alternate between sitting and standing, and active commuting. The findings highlight the need for targeted, multifaceted interventions to lower the burden of LBP among bank employees. These may include implementing scheduled short breaks to interrupt prolonged sitting, introducing workplace wellness programs that promote physical activity, performing routine ergonomic assessments to adjust workstations based on individual needs, as well as establishing organizational policies that encourage active commuting and allow flexibility in work posture.

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**Conflict of interest**

None declared.

**Funding**

None

**Ethical Considerations**

Permission to access the study site was granted by the Bank's Training and Research Department through a formal letter. Informed consent was obtained from all participants before data collection.

**Code of Ethics**

Ethical approval for the study was obtained from the Institutional Review Board of Muhimbili University of Health and Allied Sciences (Ref. No. DA.282/298/01.C/2324).

**Authors' Contributions**

Reinfrida C. Chepe: Responsible for data collection, management, and analysis. Prepared the first draft of the manuscript; Hussein H. Mwanga: supervisor and prepared the first draft of the manuscript; Zuhura I. Kimera: supervisor; Ezra J. Mrema: Prepared the first draft of the manuscript. All authors contributed to the conceptualization of the study and reviewed, revised, and approved the final version before submission.

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