

# Navigating the Digital Shift: Ergonomic Adaptations and Occupational Well-Being of Zimbabwean University Educators Post-Pandemic

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## ABSTRACT

The COVID-19 pandemic created an unprecedented disruption in the higher education sector, compelling university educators in Zimbabwe to rapidly shift from conventional face-to-face teaching to remote digital instruction. This abrupt transition reshaped work arrangements and introduced new patterns of occupational health that required systematic evaluation. Although remote and blended learning enhanced flexibility and improved access to educational resources, the shift also presented notable ergonomic challenges. Many educators were forced to improvise home-based workstations that fell short of recommended ergonomic standards, resulting in discomfort, musculoskeletal strain, and broader risks to occupational well-being. This study sought to investigate the ergonomic and occupational health challenges experienced by Zimbabwean university educators post COVID-19 lockdowns, while also identifying institutional strategies implemented to support remote work and minimise ergonomic risks. A descriptive research design was utilised. Primary data were collected through interviews and questionnaires, whereas secondary data were drawn from scholarly publications, institutional websites, and other online sources. Chain referral sampling was employed to reach educators working from home across various universities. Findings reveal a significant uptake of digital teaching platforms, demonstrating adaptability and resilience among educators. However, the results also highlight a lack of adequate ergonomic adjustments within home-based work environments, contributing to increased musculoskeletal discomfort and a heightened risk of long-term health complications. Furthermore, limited institutional support in providing ergonomic equipment and formal guidelines exacerbated these challenges. The study underscores the need for universities to develop comprehensive ergonomic policies, supply adjustable workstations, and offer continuous training to promote safe and healthy remote working conditions. Strengthening ergonomic support systems is vital for sustaining educator well-being and enhancing productivity within the evolving landscape of blended and digital teaching.

**Keywords:** Digital shift, ergonomics, remote work, occupational safety and health.

## INTRODUCTION

The COVID-19 pandemic catalysed a paradigm shift in global higher education, compelling institutions to transition rapidly from traditional, in-person instruction to remote and digitally mediated learning (Ahmed, Qamar & Soomro, 2022). In Zimbabwe, this abrupt transformation significantly impacted university educators, who were required to adopt new technologies, pedagogical approaches, and digital platforms with limited time, training, or infrastructural support. While the digital shift ensured academic continuity during a time of crisis, it also introduced a complex array of occupational challenges that continue to affect educators in the post-pandemic era due to unadjusted ergonomics in home offices (Paigude, Pangarkar, Mahajan, Jadhav, Shirkande, Shelke (2023).

Ergonomics in home offices refers to the design and arrangement of the home-based workspace including furniture, equipment, ambient conditions, and task practice, so that they align with the physical and psychological needs of the individual in order to reduce risk of injury (especially musculoskeletal disorders),

enhance comfort, and enable productive, sustainable work (Bouziri, Smith, Descatha, Dab, & Jean, 2022; Oakman & Kinsman, 2022; International Ergonomics Association, 2023). An ergonomically adjusted (appropriate) workplace is guided by the ISO (2018), ISO 45001:2018 which are recognized international standards that promote occupational health and safety. According to ISO (2018), ISO 45001:2018 Occupational Health and Safety Management Systems, workplaces should be designed and organized to prevent work-related musculoskeletal disorders, reduce physical and cognitive strain, and enhance overall employee well-being. The standard emphasizes risk assessment, ergonomically sound workstation and scheduled breaks. Implementing ISO 45001:2018 principles ensures that both office and remote work environments support productivity, safety, and long-term health outcomes (ISO, 2018).

Occupational safety and health are a discipline that deals with the prevention of injuries, diseases and facilities at work as well as the promotion and protection of the safety and health of the workers including contractor personnel, visitors or any other person in the workplace (NOSHP, 2021). In Zimbabwe, the National Social Security Authority (NSSA), established by an Act of Parliament in 1990 holds the mandate of providing social security to the Zimbabwean population and addressing the issues of health and safety in the workplace.

This study examined how digital shift in teaching practices has imparted the work of the Zimbabwean university educators, with the most pressing concerns related to ergonomics and occupational well-being in home offices. The specific objectives were to investigate the ergonomic adaptations in remote work and its impact on occupational health on Zimbabwean university educators amid and post COVID-19, identify strategies and interventions implemented by universities to support remote work and minimise ergonomic risks and to assess the coverage of the National Occupational Safety and Health Policy in terms of compensation in remote work.

Despite the growing global discourse on the implications of remote work, there remains a notable gap in context-specific research focusing on the lived experiences of university educators in sub-Saharan Africa, particularly in Zimbabwe. This study seeks to address this gap by examining how Zimbabwean university educators navigated the digital shift, the ergonomic adaptations they employed, and the resultant impacts on their occupational well-being in the aftermath of the pandemic. By prioritising educators' experiences, we hope the findings will provide useful information for individuals, organisations and policy makers to reflect on and map the way forward in terms of providing an environment that is adaptable to digital shift, adhering to standard ergonomic principles and at the same time promoting occupational safety and health. The findings may also be used to create awareness amongst various stakeholders so that prophylactic measures to prevent injuries and ensure maximal function in the workplace can be implemented.

## REVIEW OF RELATED LITERATURE

### **Ergonomic adaptation and occupational health challenges experienced by university educators amid COVID-19.**

The reviewed literature revealed paucity of relevant studies in local settings (Mlambo, Chirubvi and Muteti (2014). However, global relevant studies revealed that these radical changes in the working conditions of university educators (and not only), particularly the transfer of all scientific and didactic duties to home, resulted in many negative phenomena. Academic teachers worldwide complained about various ailments of the musculoskeletal system, such as cervical, thoracic and lumbar spine (Niciejewska, 2022). Scholars on the effects of musculoskeletal conditions deposit that it may increase the risk of chronic disease (Williams, Kamper, Wiggers, O'Brien, Lee, Wolfenden, Yoong, Robson, McAuley, Hartvigsen and Williams, 2018). These empirical findings underscore the urgent need for NSSA, employers, and employees to reassess ergonomic adaptations and promote the occupational well-being of Zimbabwean educators working from home. The prevention and timely management of musculoskeletal conditions, including osteoarthritis (OA), as well as back and neck pain, may contribute to reducing the risk of other chronic diseases (Williams et al., 2018). Traditionally, global chronic disease prevention strategies have focused on lifestyle-related risk factors such as poor diet, physical inactivity, alcohol consumption, and smoking, often overlooking musculoskeletal health (Dietz, 2016). In the latest report by the World Health Organisation (WHO) musculoskeletal complications are a major contributor to disability worldwide, with low back pain being the leading cause in many countries (WHO, 2024). It has been proven that such impact extends beyond physical limitations, affecting mental health, social

participation, and economic productivity (William et al, 2018). Further evidence shows that chronic diseases and musculoskeletal conditions frequently co-occur (Zee-Neuen, Putrik, Ramiro, Keszei, de Bie, Chorus, 2016). Empirical evidence suggests that individuals with musculoskeletal conditions have approximately twice the risk of developing chronic diseases affecting other body systems, including cardiovascular, neurological, gastrointestinal, and endocrine disorders (Hartvigsen, Natvig, & Ferreira, 2013). Alarming, inadequate ergonomic adaptations in remote work environments can significantly compromise employee well-being, yet this issue remains underexplored in local contexts. Given these documented risks, a critical review of institutional strategies and technological support for remote workers is warranted.

### **To identify strategies and interventions implemented by universities to support remote work and minimise ergonomic risks.**

Universities across the world are increasingly acknowledging the ergonomic challenges faced by academic staff, particularly those linked to prolonged computer use, intensive marking workloads, repetitive lecturing, and the rapid expansion of blended and remote teaching models. These evolving work patterns have heightened exposure to musculoskeletal disorders (MSDs), prompting institutions to adopt evidence-based ergonomic interventions that promote occupational health and sustainable academic performance.

From a global perspective, leading universities in Europe, North America and Australia have implemented integrated ergonomic strategies with measurable success. For example, the University of Melbourne's institution-wide introduction of sit-stand workstations and redesigned office environments has contributed to notable reductions in musculoskeletal discomfort among academic staff, reinforcing global evidence that adjustable furniture lowers sedentary behaviour and spinal strain (Chung, Wong & Choi, 2020; Gao, Li & Zhang, 2022). The University of California came up with system compulsory ergonomics training, combined with personalised workstation assessments, reflects best practice internationally. This approach aligns with findings by Robertson, Ciriello and Garabet (2017), who demonstrated that the combination of skills training and equipment provision significantly decreases ergonomic risk among knowledge workers.

Administrative interventions have also gained traction globally. At the University of Toronto, restructuring teaching timetables to limit prolonged consecutive lectures mirrors international research showing that scheduled micro-breaks enhance physical recovery and reduce occupational fatigue among educators (Thakur, Alvarado & Ross, 2021). Likewise, the adoption of adjustable-height lecterns at the University of Sydney has enabled more dynamic teaching postures, consistent with Garcia, Wendel and Pearson's (2020) conclusion that flexible teaching infrastructure reduces awkward body positioning and upper-limb strain. Complementing these engineering and administrative controls, institutions such as the University of Reading have introduced digital break-reminder systems, supporting evidence that computer-based prompts improve break compliance and reduce visual and musculoskeletal fatigue (Alavi, Makarem & Mehrdad, 2021). The Stanford University shifted toward digital grading platforms, further illustrates how task automation can reduce repetitive strain injuries and cognitive overload, thereby enhancing academic efficiency and staff well-being (Johnson & Brown, 2019).

From an African perspective, universities are increasingly adopting similar ergonomic principles, albeit within resource-constrained contexts that require innovative and scalable solutions. The University of Cape Town, for instance, responded to the post-pandemic shift to remote work by distributing ergonomic chairs, laptop stands and offering virtual workstation assessments for academic staff. This initiative aligns closely with findings by Oakman and Kinsman (2021), who reported that educators provided with ergonomic resources in home-based work environments experience significantly lower levels of neck and back pain. Comparable initiatives have emerged in other African institutions, including universities in South Africa, Kenya and Ghana, where blended teaching models have encouraged investments in basic ergonomic infrastructure, staff awareness campaigns, and online ergonomics training modules. Although financial and infrastructural limitations remain a challenge for many African universities, these examples demonstrate a growing institutional commitment to safeguarding academic staff health. Importantly, African institutions are increasingly recognising that ergonomic interventions need not rely solely on high-cost equipment; rather, effective risk reduction can also be achieved through administrative controls such as workload redistribution, flexible scheduling, and structured rest breaks, alongside behavioural interventions that promote posture awareness and healthy work practices.

Collectively, both global and African experiences illustrate that the most effective approach to managing ergonomic risks in higher education lies in the strategic integration of engineering controls, administrative measures, and behavioural training. When supported by sustained institutional leadership and grounded in empirical evidence, these interventions significantly enhance staff well-being, productivity, and long-term occupational health outcomes. As universities continue to navigate the realities of digital transformation and flexible work arrangements, ergonomics, remain a central pillar of occupational health policy in academic environments worldwide.

### **To assess the coverage of the National Occupational Safety and Health Policy in terms of compensation in remote work.**

The key players in Zimbabwe's occupational health include the National Social Security Authority (NSSA), which oversees health and safety through its Occupational Safety and Health (OSH) Division, the Zimbabwe Occupational Health and Safety Council (ZOHSC), comprising government, employers, and labour unions, and the Ministry of Public Service, Labour and Social Welfare. Other significant players are private providers like Baines Occupational Health Services, professional bodies such as the Zimbabwe Institute of Occupational Safety and Health (ZIOSH), and international organizations like the International Labour Organization (ILO).

The key legal frameworks for Occupational Safety and Health Laws in Zimbabwe include the Factories and Works Act (1948), the Labour Act, Chapter 28:01), NSSA Accident Prevention and Workers Compensation Scheme (Notice No. 68 of 1990) and the Labour Relations (HIV and AIDS) Regulations (S.I. 202 of 1998). These laws govern workplace safety, machinery regulation, accident reporting and compensation. The existing National Social Security Authority (NSSA) compensation frameworks encompasses medical, disability, death, funeral, and pension benefits. These benefits are predominantly structured around traditional workplace injuries and do not explicitly address home-based or remote work arrangements. Empirical evidence from studies and interviews conducted with the NSSA Occupational Safety and Health (OSH) office indicates that, in the absence of targeted legislation for remote work, regulatory oversight relies solely on the employer's general duty of care (Muvingi & Mugadza, 2023). These findings reveal a critical lacuna in occupational health and safety policy, particularly as the nature of work increasingly shifts toward home-based settings.

## **MATERIALS AND METHODS**

Given the fact that ongoing pandemic is an unusual occurrence, and little is known about pandemic driven ergonomic concerns in Zimbabwean Universities, the study used a descriptive research method. It attempts to highlight the digital shift from traditional offices to home offices, the related work-ergonomic problems and the effect they had and continue to pose on Zimbabwean university educators (and not only) occupational well-being. That required attention from various circles and related authorities. Atmowardoyo (2018) stressed that descriptive research is one of the effective methods for describing the existing or ongoing phenomenon in the accurate possible manner. Similarly, Sekaran and Bougie (2019) reported that descriptive study method is a sensible choice when research objectives are aimed at knowing characteristics of any population. A structured survey instrument was designed to collect primary data and generate empirical evidence to address the objectives of this study. Data were obtained from surveys administered to university educators in Zimbabwe. The study's objectives were situated within this transition, focusing on digital learning environments, ergonomic adaptations, and occupational well-being in home-based workspaces. For many participants, this represented their first experience with online teaching and the use of advanced web-based instructional tools mandated by their institutions. Nonetheless, a considerable proportion of university educators lacked the necessary ergonomic and technological resources at home to effectively conduct their academic responsibilities in an online format.

Participants were recruited through the researchers' professional networks. To address the sensitivity of the research topic and minimize potential bias, a chain referral sampling method was employed. This approach is particularly suitable for studies where the subject matter may involve perceived risks or sensitivities, as it facilitates participation while helping to reduce sampling bias (Sadler, Lee, Lim & Fullerton, 2010). The survey specifically examined the "official work activities at home" of Zimbabwean university educators. Data were collected using an online questionnaire created in Google Forms, with the survey link distributed to participants via email.

The target population comprised educators from four universities in Zimbabwe. Of the 80 educators invited, 66 responded, yielding a response rate of 83%. Participants were informed about the study objectives and assured of the voluntary nature of their participation. They were informed that they could withdraw at any stage without any consequences. During data collection, the purpose of the study was emphasized, and participants were assured of confidentiality and anonymity. Participation was secured only after informed consent had been obtained. The survey instrument included demographic questions (e.g., age, sex, and education level) and items related to the digital shift in teaching practices, ergonomic adaptations and related occupational health outcomes. In addition to the survey, a face-to-face interview was conducted with the NSSA, Occupational Safety and Health Section. The discussion focused on existing ergonomic policies and available interventions concerning compensation for injuries sustained in remote environments.

## RESEARCH FINDINGS AND DISCUSSION

The details of the demographic data and the frequencies of the participants in this study are shown in Table 1.

### Demographic profile of respondents

Table 1 The Demographic Data and its frequencies (N =66)

Demographic Category	Frequency	Number (66)	Percentage (%)
Age	35 – 40	21	32
	41 – 50	27	41
	51 – 50	18	27
Gender	Female	21	32
	Male	45	68
University	NUST	30	46
	LSU	24	36
	MSU	5	8
	ZOU	7	10
Academic Position	Lecturer	42	63,6
	Senior Lecturer	15	22,7
	Associate Professor	6	9,1
	Professor	3	4,6
Discipline / Faculty	Business and Economics	9	14
	Commerce	24	36
	Engineering	12	18
	Social Sciences	9	14
	Management and Economics	6	9
	Industrial Psychology	6	9

## The ergonomic adaptations in remote work and its impact on occupational health on Zimbabwean University educators amid and post COVID-19.

### Digital shift and ergonomic adaptations

The respondents recorded a (100%) transition from in person teaching to digital or hybrid teaching amid and Post COVID-19 pandemic. Figure 1: presents a comparison of digital literacy of University Educators pre-pandemic and current. The data suggest increased digital literacy post COVID 19 as compared to before the pandemic as a result of digital shift to home office. This also indicates an increase in time spent and heavy reliance of the Zimbabwe university educators on digital platforms. The majority of respondents (91%) used laptops, which, in the absence of external accessories (eg adjustable laptop stands, mouse), have been associated with poor posture and musculoskeletal strain (Tahernejad, Choobineh, Razeghi, Abdoli-Eramaki, Parsaei & Daneshmandi, 2021). Only 17% rated their work environment as “good,” while 83% described it as “fair” or “poor.” While this shift enhanced digital literacy, only 55% of educators reported having a dedicated home workspace, leaving 45% reliant on non-ergonomic environments such as couches, beds, or kitchen tables. This aligns with global evidence showing that inadequate home office setups contributed to musculoskeletal disorders among remote workers (Niciejewska, 2022, Oakman et al., 2020; Toscano & Zappalà, 2020).

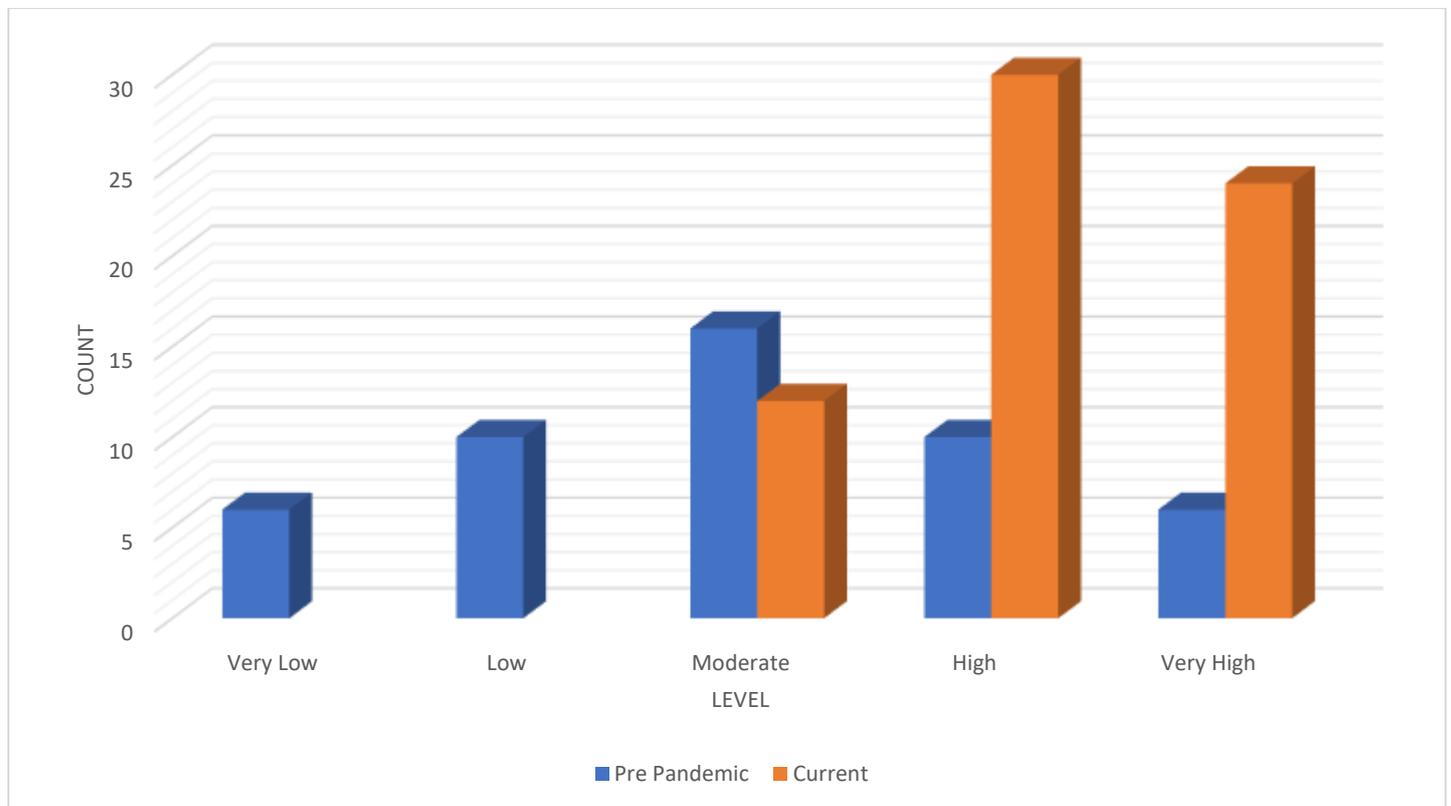


Figure 1. Comparison of Digital literacy before the pandemic versus current levels (N = 66)

### Impact of digital shift on Physical health

The prevalence of the musculoskeletal issues encountered by study participants in home offices is given in Figure 2. The data indicate various physical health issues that affected the participants as follows, eye strain (55%), back pain (45%), neck strain (27%), headaches (27%), and general fatigue. These findings mirror international research documenting the rise of musculoskeletal and visual complaints among educators and office workers during remote work transitions (Moretti, Menna, Aulicino, Paoletta, Liguori & Iolascon, 2022, WHO, 2024).

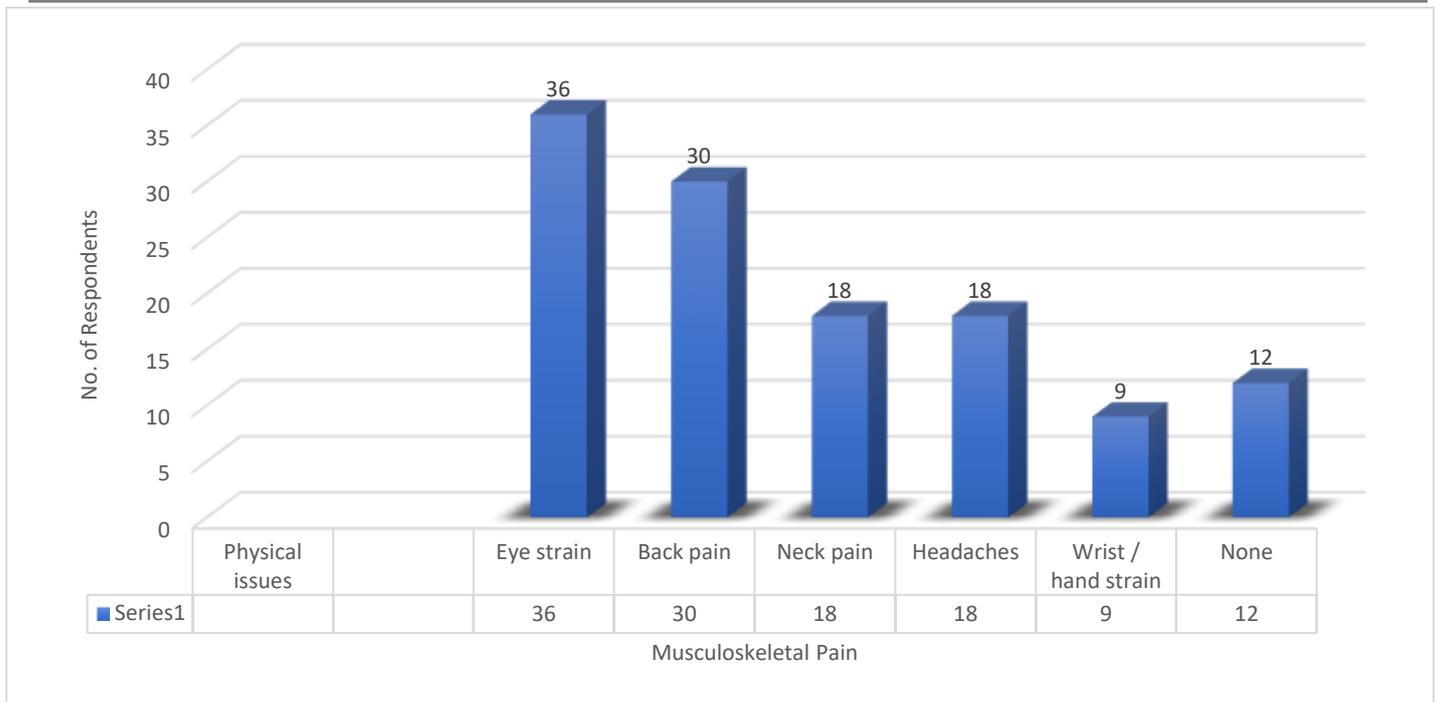


Figure 2. The prevalence of different types of Musculoskeletal pain reported by participants in home offices (N = 66)

### Digital Shift on Mental Health

Figure 3. presents prominent Psychosocial challenges that were, and continue to be faced by study participants. While 45% reported no change in stress levels, 41% experienced increased stress, largely attributed to digital fatigue, workload, and blurred work-life boundaries. Similar studies report that remote work often intensifies stress and feelings of isolation, particularly when ergonomic and institutional support are limited (Kniffin, Narayanan, Ansel, Antonakis, Ashford, Bakker, Vugt, 2021). Burnout and job satisfaction responses were mixed, with many educators expressing ambivalence. Both Figure 2 and 3 collectively demonstrate that without structured ergonomic support, occupational health suffers both physically and mentally.

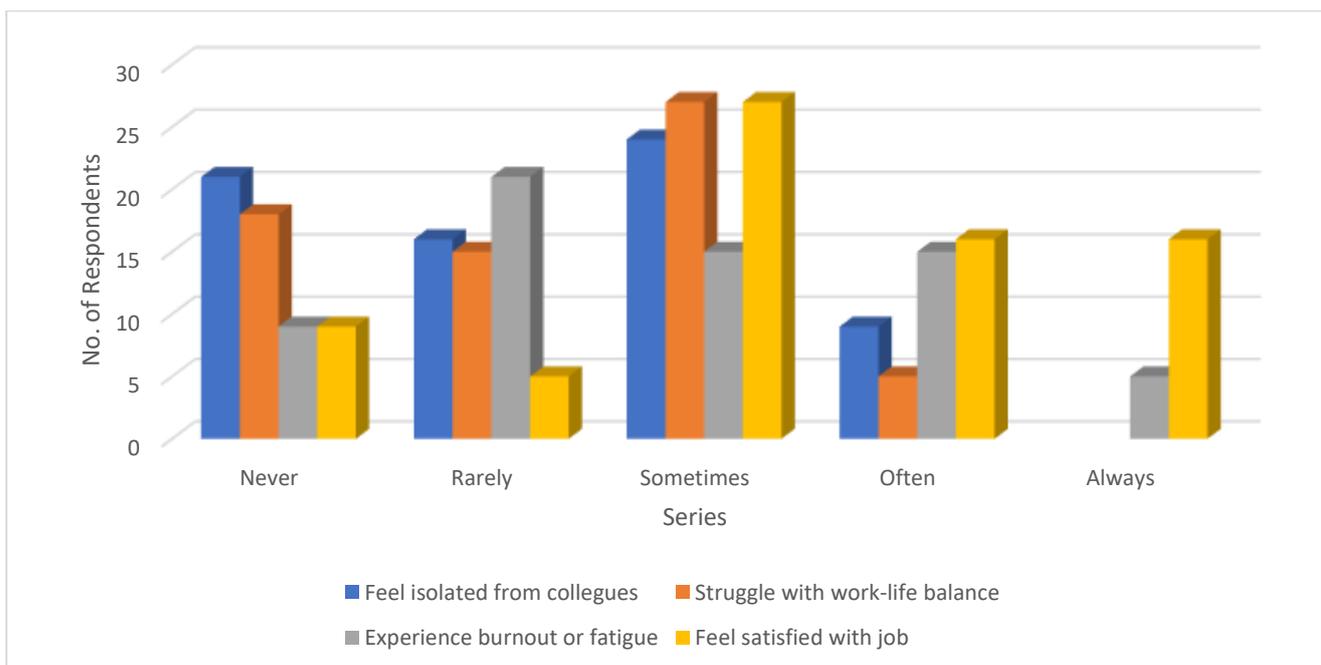


Figure 3. The prominence of Psychosocial impacts in the participants (n = 66)

### To identify strategies and interventions implemented by universities to support remote work and minimise ergonomic risks.

The prevalence of institutional support during the digital shift was moderate, with about 50% of educators receiving assistance in the form of online teaching platform training, internet data, or laptops. However, 41% reported minimal support, while only 9% experienced substantial institutional backing. Figure 4. presents the degree of institutional support on the provision of guidance or resources on ergonomics. Crucially, only 14% of respondents received ergonomic guidance or resources, a gap that reflects broader neglect of occupational health issues and ergonomics in higher education amid and post pandemic (Awada, Lucas, Becerik-Gerber & Roll, 2021). This gap likely worsened physical health issues.

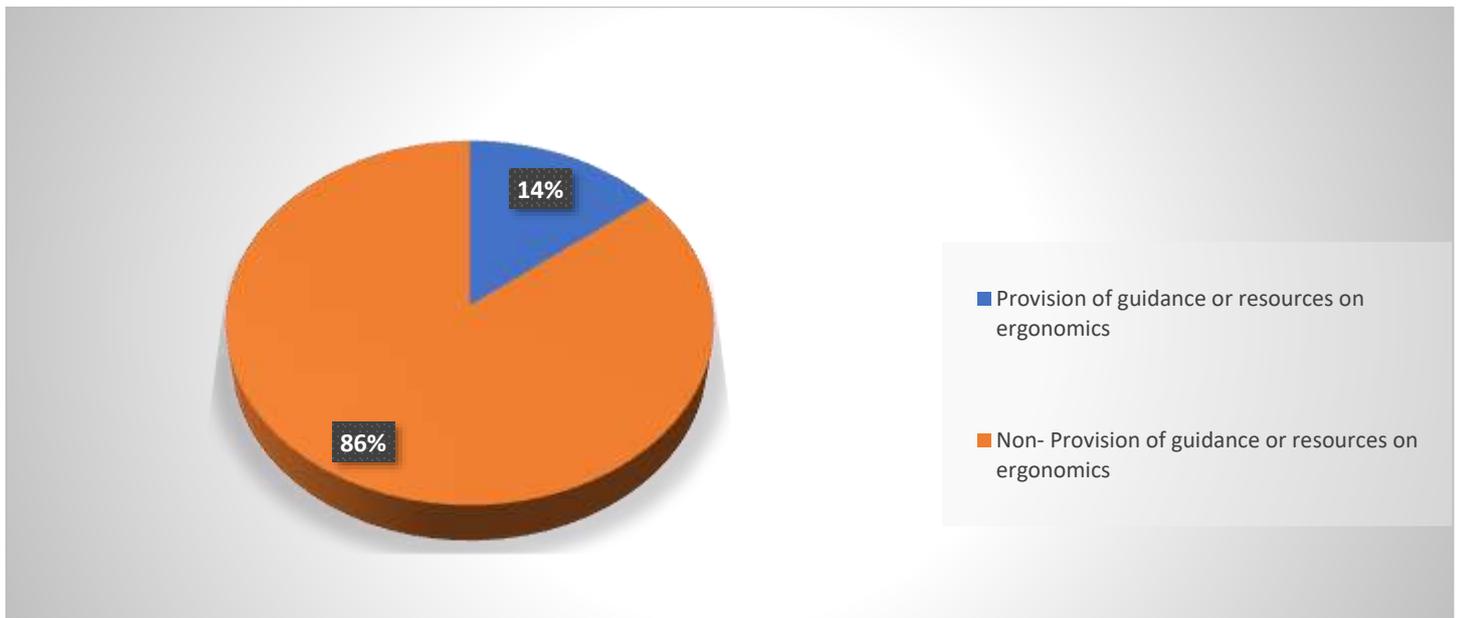


Figure 4. The degree of institutional interventions on guidance or resources on ergonomics (N = 66)

Further enquiry on coping mechanisms or support systems that aided participants under study, the coping mechanisms were predominantly individual-led solutions and not systematic institutional interventions, these included taking breaks, exercising, or collaborating with peers. This reliance on self-driven adaptations indicates that institutional interventions were largely technology-focused rather than health-centered. As highlighted by recent scholars on ergonomics in workspaces, comprehensive strategies encompassing ergonomic training, provision of ergonomic furniture, and structured employee wellness programs are vital to safeguarding remote workers' occupational health (Oakman & Kinsman, 2022).

### To assess the coverage of the National Occupational Safety and Health Policy in terms of compensation in remote work.

The study found limited awareness of compensation mechanisms for remote work-related injuries under Zimbabwe's National Occupational Safety and Health (OSH) framework. Existing legislation, including the Factories and Works Act (1948) and the NSSA Accident Prevention and Workers Compensation Scheme (1990). The current legislation primarily addresses traditional workplace environments and does not explicitly cover home-based work. This gap reflects findings from international analyses, which argue that OSH frameworks in many developing contexts remain underprepared to regulate or compensate remote work risks (ILO, 2020; Popma, 2021).

The lack of explicit policy guidance left educators vulnerable, with no clear channels for redress in cases of ergonomic injury or digital fatigue. This highlights the urgent need to revise Zimbabwe's OSH framework to accommodate remote work arrangements, in line with global calls for inclusive occupational safety regulation in the post-pandemic world (WHO, 2021).

## CONCLUSION AND FURTHER RESEARCH

This review found that the rapid shift to remote work for Zimbabwean university educators succeeded in building digital literacy at a significant cost to occupational health. Digital shift to home-based working conditions resulted in many harmful work conditions, such as laptops with too low monitors, chairs without arm rests, hard surfaces on desktops and long static poses due to lack of routine breaks. Providing hardware and internet data proved insufficient; without systematic ergonomic support, educators suffered increased musculoskeletal pain, visual strain, stress, and isolation. Institutions largely overlooked these risks, with only a marginal 14% offering ergonomic guidance. Consistent with prior research, institutional ergonomic guidance was uncommon, and educators reported ongoing psychosocial strains characterised by intermittent burnout and work-life boundary challenges (Awada et al., 2021). Findings support a multi-level response for educational institutions to ensure that workers have adequate equipment such as an adjustable office chair, adjustable monitor, an external mouse and key board. In addition, organisations should provide their employees with adequate ergonomic training to prevent the development of potential musculoskeletal disorders. Critically needed are policy frameworks that formalize hybrid work practices while safeguarding occupational health. Given that published research concerning hybrid learning and ergonomics is of preliminary or exploratory nature, present study is a step forward to pave the path for further explanatory research in the field of workplace ergonomics and occupational well-being in Zimbabwe. This study is among very few studies that highlight importance and sensitivity of the workplace ergonomic issues faced by educators in higher education sector post COVID-19. We insist that present study has unique significance for home workplaces and can play an instrumental role in transforming the occupational safety and health of Zimbabwean universities educators (and not only). Our findings warrant that universities and policymakers move beyond technical provisioning to actively safeguard the physical and mental well-being of the remote academic workforce.

Based on the study's findings and conclusions, recommendations are provided hereunder:

- Our findings warrant the need for institutional commitment to implement comprehensive ergonomic interventions encompassing engineering and administrative controls, ergonomic training, provision of ergonomic furniture, and structured employee wellness programs, that are vital to safeguarding remote workers' occupational health.
- Our findings highlight the urgent need to revise Zimbabwe's OSH framework to accommodate remote work arrangements, in line with global calls for inclusive occupational safety regulation in the post-pandemic world.
- There is also a need of adding ergonomics knowledge to courses in various degree programs to enable different professionals to familiarize themselves with it, hence promoting its adoption beyond traditional offices.

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