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Assessing Musculoskeletal Health Disorders and Well- Being Among Academicians

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Abstract

BACKGROUND: Musculoskeletal disorders (MSDs) are highly prevalent among academicians, largely due to prolonged standing, sitting, repetitive tasks, and academic stress. Despite their widespread occurrence, systematic assessment of MSDs in this group is often limited by the lack of standardized, validated tools. Questionnaire-based assessments provide a practical means of identifying MSD risk factors and health outcomes; however, the reliability and validity of such instruments must be established before use in research and practice.

OBJECTIVE: To develop and validate a questionnaire for assessing musculoskeletal disorders among academicians, ensuring its reliability and applicability in academic occupational health research.

METHODOLOGY: A structured questionnaire was designed and developed to assess musculoskeletal disorders among academicians, focusing on demographic data, working hours, and ergonomics. The tool was validated through expert review and statistical analysis to ensure reliability and suitability. It was subjected to content validation by experts, and reliability was assessed through internal consistency (Cronbach's alpha).

RESULT: The validated questionnaire demonstrated high internal consistency and satisfactory test–retest reliability, confirming its suitability for assessing MSDs in academicians. Factor analysis supported the construct validity of the tool, ensuring it captured relevant domains of musculoskeletal health such as pain prevalence, risk factors, and functional limitations.

CONCLUSION: The most common musculoskeletal problems reported by academicians were in the upper back and neck regions, which have low-level physical activity. The validated MSD questionnaire provides a reliable and context-specific tool for assessing musculoskeletal disorders among academicians. Its use will facilitate more accurate identification of risk factors, early detection of health issues, and the development of preventive strategies to safeguard the occupational well-being of academic professionals.

INTRODUCTION

Musculoskeletal disorders (MSDs) are among the most common occupational health concerns globally, affecting millions of workers across various professions [1]. These disorders involve pain, discomfort, and functional limitations in muscles, tendons, ligaments, joints, and nerves, often resulting from repetitive movements, prolonged static postures, and poor ergonomic conditions [1,2]. In the educational sector, academicians are particularly vulnerable due to the physical and mental demands of teaching, research, grading, and administrative responsibilities [2]. MSDs in this population can severely impact

health, reduce productivity, and affect overall quality of life [1]. Systematic reviews indicate that teachers experience a notably high prevalence of MSDs worldwide, highlighting a widespread occupational vulnerability among educators [2].

The professional responsibilities of academicians often require extended hours of teaching, research, grading, and administrative tasks. Educators frequently spend long periods standing while delivering lectures or sitting for prolonged durations while preparing lessons, writing research manuscripts, or evaluating student work [3,4]. Repetitive hand and arm movements, such as writing on blackboards or typing on keyboards, coupled with awkward postures, contribute significantly to musculoskeletal strain [3,12]. The integration of digital technologies has further increased sedentary work patterns and repetitive tasks, compounding ergonomic risks [3,13].

High prevalence of musculoskeletal complaints among school teachers has been documented in various regions, particularly affecting the neck, shoulders, and lower back [1,12,13]. Similarly, professors in higher education institutions experience patterns of pain associated with prolonged teaching, computer work, and administrative tasks [4,11]. Occupational stress and mental fatigue are recognized contributors, which can amplify physical symptoms and reduce an individual's capacity to cope with discomfort [4,9]. This interplay between psychosocial and physical stressors underscores the complex etiology of MSDs among academicians [4,9].

MSDs are not restricted to educational professions and affect multiple occupational groups. High rates have been reported among nurses, who frequently endure physically demanding tasks, prolonged standing, and patient handling [5]. Sedentary professionals who sit for extended periods are also susceptible to neck, shoulder, and back pain due to sustained postural strain [6]. Manual laborers, such as load workers, demonstrate a significant burden of MSDs due to continuous heavy lifting and repetitive physical exertion [7]. Dental professionals experience musculoskeletal complaints linked to repetitive clinical procedures and poor ergonomics [8]. These findings highlight that MSDs are a global occupational health issue, influenced by both work-related physical demands and ergonomic conditions [2,5–8].

Multiple factors contribute to the development and severity of MSDs among academicians. Prolonged static postures, repetitive hand movements, and inadequate ergonomic setups are consistently reported as risk factors [3,6,7,8]. Additionally, demographic characteristics such as age, gender, and years of professional experience are associated with higher prevalence rates; older educators and those with longer teaching tenure often report more frequent or severe musculoskeletal pain [9,12]. Work environment factors, including classroom layout, furniture design, and access to ergonomic equipment, also play a significant role in either mitigating or exacerbating musculoskeletal strain [3,8,11].

The impact of MSDs extends beyond physical discomfort to affect productivity, teaching effectiveness, and overall professional performance [10]. Chronic pain can result in absenteeism or presenteeism, where educators continue to work despite discomfort, potentially compromising the quality of teaching and student interaction [10]. Rehabilitation and targeted interventions have been shown to reduce the functional impact of MSDs, improve work performance, and enhance overall occupational well-being [10]. Preventive measures such as physiotherapy, structured exercise programs, ergonomic training, and regular posture breaks have demonstrated effectiveness in reducing pain and maintaining productivity in academic settings [3,10,11].

Regional studies from India confirm the high prevalence of MSDs among educators. Reports indicate significant occurrences of neck, shoulder, and back pain among schoolteachers in Eastern, Northeastern,

and New Delhi regions [12,13]. Similarly, medical faculty in Punjab experience high rates of musculoskeletal complaints that adversely affect teaching performance and occupational health [14]. These findings are consistent with international observations, suggesting that MSDs in educators are influenced by common occupational exposures such as prolonged standing, repetitive tasks, and inadequate ergonomic support [2,12–14].

The digitalization of educational tasks has further amplified the prevalence of MSDs among academicians. Prolonged use of computers, laptops, and electronic devices for teaching, grading, and research increases static postural loads on the neck, shoulders, and upper back [2,3]. Frequent engagement in online lectures and digital documentation imposes additional repetitive strain, emphasizing the need for workplace redesign and proper ergonomic education [2,3]. Ergonomic interventions, including adjustable chairs and desks, wrist supports, and the promotion of regular movement breaks, are vital in reducing the risk of MSDs in this population [3,11].

Psychosocial factors, including high workload, tight deadlines, student expectations, and administrative pressures, further exacerbate musculoskeletal problems [4,9]. These combined physical and psychological stressors contribute to a cycle of pain, reduced efficiency, and occupational strain, making MSDs a multifactorial challenge in academic environments [4,9]. Early identification, routine assessment, and intervention strategies are therefore essential to reduce both the prevalence and severity of MSDs among teachers and university professors [11,12].

Given the high prevalence, diverse risk factors, and significant impact on occupational productivity, systematic evaluation of MSDs among educators is necessary. Validated assessment tools, including questionnaires and ergonomic evaluations, are critical for identifying at-risk individuals and guiding the implementation of preventive and therapeutic measures [11,12]. Such approaches support the well-being of educators, promote sustained productivity, and maintain the quality of education. The present study aims to assess musculoskeletal health among academicians and validate a reliable questionnaire for occupational health evaluation [11,12].

NEED OF THE STUDY

- Musculoskeletal pain is a common occupational health problem among academicians, primarily due to prolonged standing during teaching, extended sitting for grading, research, and administrative tasks, repetitive work, and poor ergonomics.
- The increasing working hours of academicians contribute significantly to neck, back, and shoulder discomfort.
- Despite this growing burden, very few studies have specifically addressed musculoskeletal problems in academicians, indicating a clear research gap.
- This study, for the first time, develops a structured, expert-validated questionnaire exclusively for academicians to reliably assess their musculoskeletal issues and provide evidence for preventive, corrective, and ergonomic strategies.

AIM OF THE STUDY

To design, develop, and validate a comprehensive questionnaire to assess the well-being of academicians in relation to musculoskeletal disorders, with the goal of identifying risk factors, prevalence, and the impact on their occupational health and performance.

OBJECTIVES

PRIMARY OBJECTIVES:

1. To design a questionnaire that helps find out if academicians (teachers, professors, etc.) have body pain or discomfort related to their work.
2. To determine the reliability of the questionnaire.
3. To ensure the questions are clear, relevant, and comprehensive - by getting feedback from experts.
4. To validate the questionnaire using statistical methods to confirm its effectiveness in assessing musculoskeletal disorders.

SECONDARY OBJECTIVES:

1. To compare the results of this questionnaire with other well-known tools to see if it measures what it's supposed to.
2. To find out how common musculoskeletal pain is among academicians, how bad it is, and how it affects their work and daily life.

REVIEW OF LITERATURE

Vaghela and Parekh (2018) conducted a cross-sectional study among school teachers in India using a structured questionnaire to assess the prevalence of musculoskeletal disorders (MSDs). Although the duration was not specified, results showed a high prevalence of pain in the neck, shoulders, and lower back. The study concluded that teaching involves considerable ergonomic risks, indicating the need for preventive interventions.[1]

Tahernejad et al. (2024) carried out a systematic review and meta-analysis on teachers worldwide, analyzing data from multiple studies across several decades. The intervention involved a review of prevalence and risk factor assessments. Results indicated consistently high MSD prevalence, though with variations due to different occupational and lifestyle factors. The authors concluded that MSDs are a significant global burden and highlighted the need for standardized assessment tools.[2]

Kraemer et al. (2021) performed a cross-sectional study on teachers from a Brazilian federal institution, using questionnaires and ergonomic risk assessments. The study duration was not mentioned. Findings showed that MSDs were strongly associated with poor ergonomics, workstation design, and long static postures. The conclusion emphasized the importance of ergonomic modifications in academic institutions.[3]

Almeida et al. (2021) undertook a cross-sectional study among professors in higher education institutions in Pernambuco, Brazil, using a questionnaire to assess MSD prevalence and occupational stress. The study found a high prevalence of MSDs, with occupational stress shown to exacerbate symptoms. The authors concluded that MSDs among academicians are influenced by both physical workload and psychosocial stressors.[4]

Sun et al. (2023) conducted a meta-analysis of studies on nurses to estimate MSD prevalence across different countries. The review included over a decade of data. Results showed that MSDs were most common in the lower back, neck, and shoulders, often due to heavy workload and long shifts. The study concluded that occupational workload is a major risk factor across professions, including healthcare.[5]

Arora and Khatri (2022) performed a cross-sectional survey on sitting professionals such as office workers, using self-reported questionnaires. The study duration was not specified. Results showed a high

prevalence of lumbar and cervical MSDs due to prolonged sitting and improper posture. The authors concluded that sedentary occupations carry strong MSD risks, which can also be compared to academic work environments.[6]

Vijayakarthikeyan et al. (2021) carried out a cross-sectional study among load men in Tamil Nadu, India, using questionnaires to determine MSD prevalence. Although duration was not specified, results showed very high rates of musculoskeletal pain due to repetitive heavy lifting. The conclusion highlighted that physically demanding jobs expose workers to severe MSDs, contrasting with sedentary jobs yet confirming that MSDs occur across diverse occupational settings.[7]

Kholinne et al. (2025) conducted a cross-sectional study on Indonesian dental professionals, using questionnaires and risk factor assessments. The study found high MSD prevalence, particularly in the neck and shoulders, attributed to prolonged static postures and awkward working positions. The conclusion emphasized the urgent need for ergonomic interventions in dental practice.[8]

de Ceballos and Santos (2015) carried out a cross-sectional study among teachers in Brazil, focusing on sociodemographic aspects, health status, and well-being at work. Using structured questionnaires, the study found that age, gender, and general health significantly influenced MSD occurrence. The authors concluded that MSDs among teachers are multifactorial, influenced by both occupational and lifestyle factors.[9]

Assunçao et al. (2025) investigated the relationship between chronic musculoskeletal pain, rehabilitation, and productivity among Brazilian university professors. The cross-sectional study revealed that chronic pain substantially impaired productivity, yet professors who underwent rehabilitation experienced lower productivity loss compared to those who did not. Importantly, rehabilitation did not moderate the effect of pain severity on productivity, indicating its benefits may be limited in cases of high pain intensity. The study also emphasized the positive role of self-efficacy, which was significantly associated with reduced productivity loss. These findings underscore the importance of combining rehabilitation with psychological and preventive strategies.[10]

Mahadik et al. (2016) explored the prevalence of musculoskeletal disorders (MSDs) among academicians in higher education institutions in India. Using a cross-sectional survey design, they reported a high incidence of MSDs, with the neck and lower back being the most commonly affected regions. The study identified key risk factors such as increasing age, higher body mass index, occupational stress, and history of joint injuries, which significantly influenced MSD prevalence. Their findings highlight the vulnerability of teaching professionals to MSDs due to prolonged static postures, computer use, and academic workload, calling for ergonomic interventions and lifestyle modifications in this population.[11]

Banerjee et al. (2020) conducted a survey among schoolteachers in Eastern and Northeastern India to assess the occurrence of work-related musculoskeletal disorders. The study revealed an alarmingly high prevalence rate of around 70%, with women more frequently affected than men. The most commonly reported problem areas included the neck, shoulders, back, wrists/hands, and knees, reflecting the physical demands of prolonged standing, classroom teaching, and repetitive grading work. The authors also pointed to psychosocial stressors as contributing factors. Their findings emphasize the urgent need for ergonomic improvements in schools and preventive health strategies to reduce the musculoskeletal burden among teachers.[12]

Taneja et al. (2023) examined the prevalence and distribution of occupation-related musculoskeletal pain among school teachers in New Delhi, India. Using a structured questionnaire, the study found a

high occurrence of pain, particularly in the neck, shoulders, upper back, and lower back. Prolonged standing during lectures, inadequate ergonomic support, and repetitive activities were identified as primary contributors to discomfort. The authors emphasized that musculoskeletal pain significantly affected teachers' daily functioning and work efficiency. Their findings highlight
the urgent need for ergonomic awareness, workplace modifications, and targeted preventive programs to reduce the physical strain on school teachers in urban educational settings.[13]

Singh et al. (2024) conducted a cross-sectional observational study to assess the impact of work-related musculoskeletal diseases among medical teachers in Patiala, Punjab. The study surveyed 280 faculty members and reported a high prevalence of musculoskeletal complaints, with the back, neck and shoulder being the most commonly affected regions. Many participants experiences moderate to sever pain, which interfered with teaching activities and reduced overall quality of life. The findings underscore the occupational risks faced by medical educators due to long teaching hours, static postures, and academic pressures. The authors recommended ergonomic corrections, stress management, and preventive health strategies.[14]

HYPOTHESIS

NULL HYPOTHESIS (H_0):

The questionnaire does not demonstrate acceptable validity and reliability; observed indices (e.g., Cronbach's alpha) are not statistically or practically significant.

ALTERNATIVE HYPOTHESIS (H_1) :

The questionnaire demonstrates acceptable validity and reliability; observed indices meet or exceed recommended thresholds and are statistically significant.

METHODOLOGY OF STUDY

Materials & Methods

Study Design: Construction & Validation of the questionnaire
Study Type: Construction and validation.
It involves **designing and validation** of a **new questionnaire**.
Target Population: Academicians (Lecturer-Professors)
Source of data: University professors (Prudence Group of Institution)
Sample size: For the validation of the questionnaire
Need of : **2 Orthopedic Physiotherapists**
2 Class students
2 Orthopedicians doctors
2 Civilian

SELECTION CRITERIA

INCLUSION CRITERIA

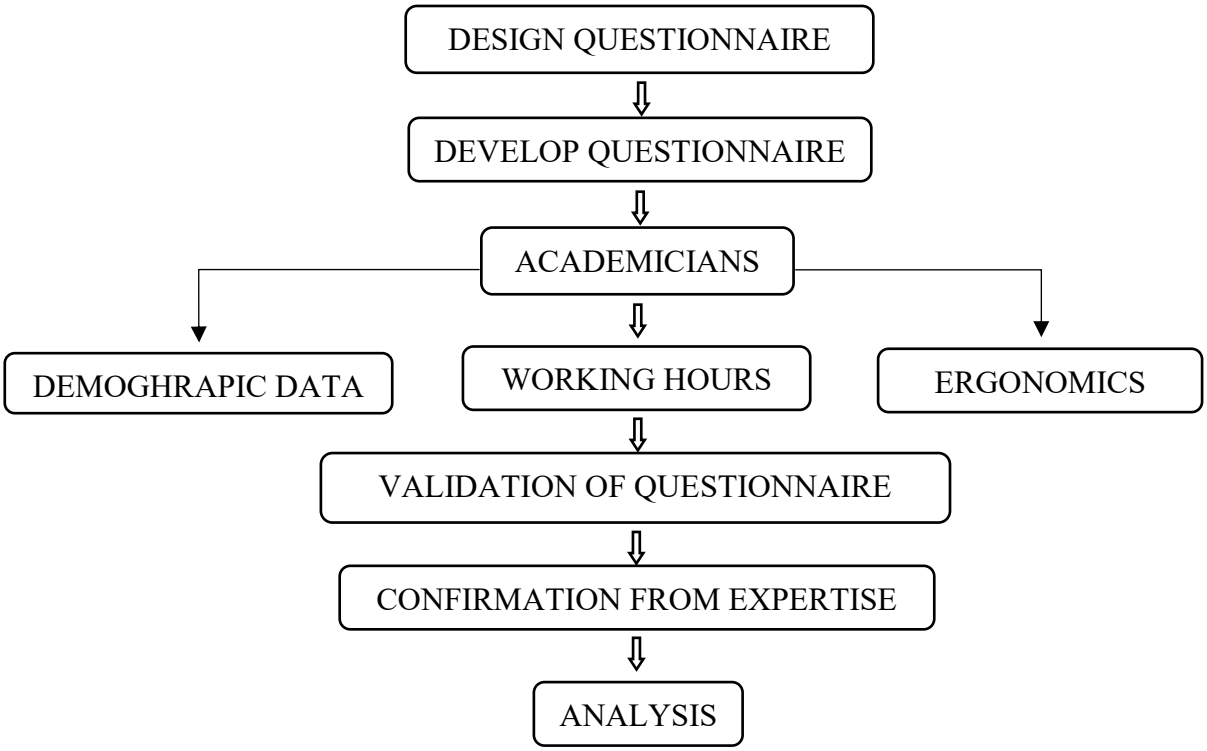
1. Professors aged 20–50, including both males and females.[1]
2. ≥ 6 months teaching, ≥ 20 teaching hours/week.[12]
3. Participants with or without musculoskeletal complaints.[17]

4. Participants should have at least one year of teaching experience to ensure adequate exposure to occupational risk factors. [7]
5. Participants must be able to read and comprehend the language of the questionnaire with ease.[23]

EXCLUSION CRITERIA

1. Participants will not be a part of other ongoing department research project.[1]
2. Uncontrolled Diabetes Mellitus : Fasting Blood Glucose (FBG) ≥ 126 mg/dL or HbA1c ≥ 6.5%
3. Uncontrolled Hypertension : Blood Pressure ≥ 140/90 mmHG.[12]
4. Cardiac/Psychiatric conditions : Coronary artery disease, Major depressive disorder, Anxiety disorders.[14]
5. Pregnancy[20]
6. Neurological condition : stroke, neuropathies, Parkinson's disease[22]

STUDY PROCEDURE



FLOW CHART: STUDY PROCEDURE

Identification of Need

The development of the questionnaire was initiated after recognizing that academicians frequently report musculoskeletal discomfort associated with prolonged teaching hours, repetitive postures, and inadequate ergonomic support. In the absence of a standardized assessment tool designed specifically for this population, the need to construct and validate a new questionnaire was established.

Review of Literature

A comprehensive review of relevant literature was carried out to understand the prevalence of musculoskeletal disorders among teachers and similar occupational groups. This review helped identify

the key domains that required inclusion, namely demographic characteristics, workload and working hours, ergonomic factors, and musculoskeletal complaints.

Questionnaire Design

Based on the evidence obtained from the literature review and observations of academicians in their work environment, an initial draft questionnaire was developed. The draft comprised four sections:

Demographic details (age, gender, teaching experience, etc.)

Work profile (teaching hours, breaks, workload, physical activity)

Ergonomic factors (posture, work environment, use of aids)

Musculoskeletal complaints (site, duration, and intensity of pain).

Expert Validation

The drafted questionnaire was submitted for expert validation to ensure content simplicity, clarity, and relevance. The expert panel included:

Two ortho physiotherapists

Two Classmates

Two orthopedic specialists

Two civilians

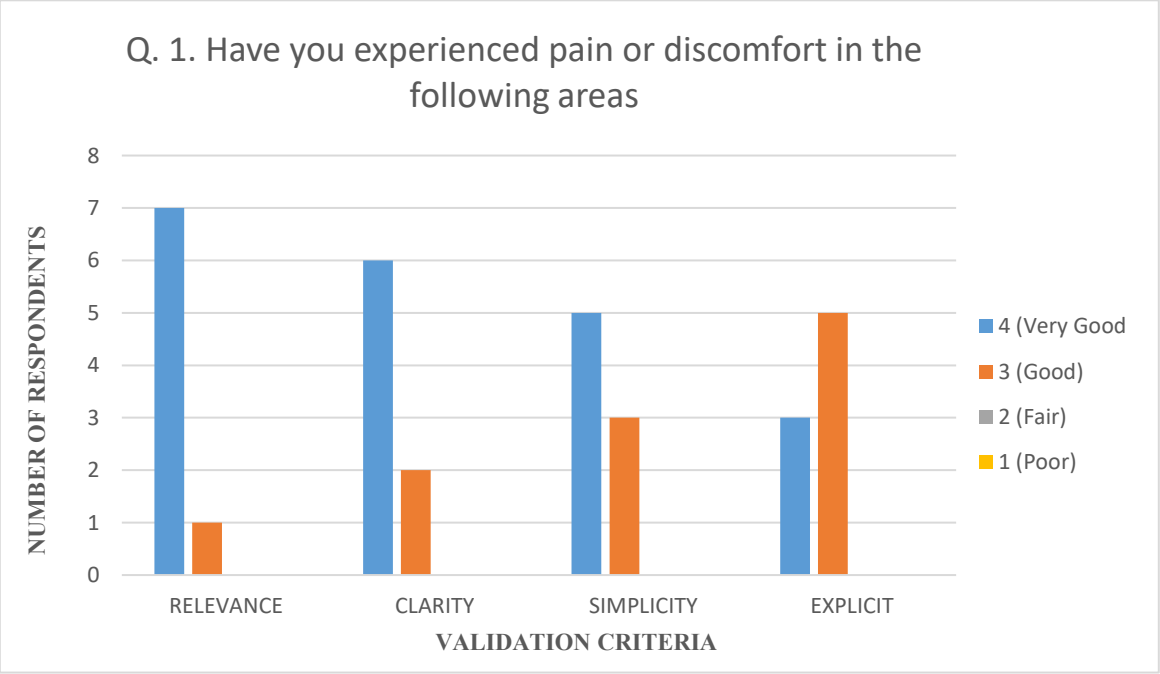
The experts rated each item for relevance and clarity. Suggestions provided were incorporated, and modifications were made accordingly to improve the precision and comprehensibility of the questionnaire.

Finalization and Analysis

Final version of the questionnaire was prepared. This version was then subjected to statistical procedures to assess its reliability (using Cronbach's alpha) and validity, thereby confirming its suitability as an assessment tool for musculoskeletal disorders among academicians.

RESULTS

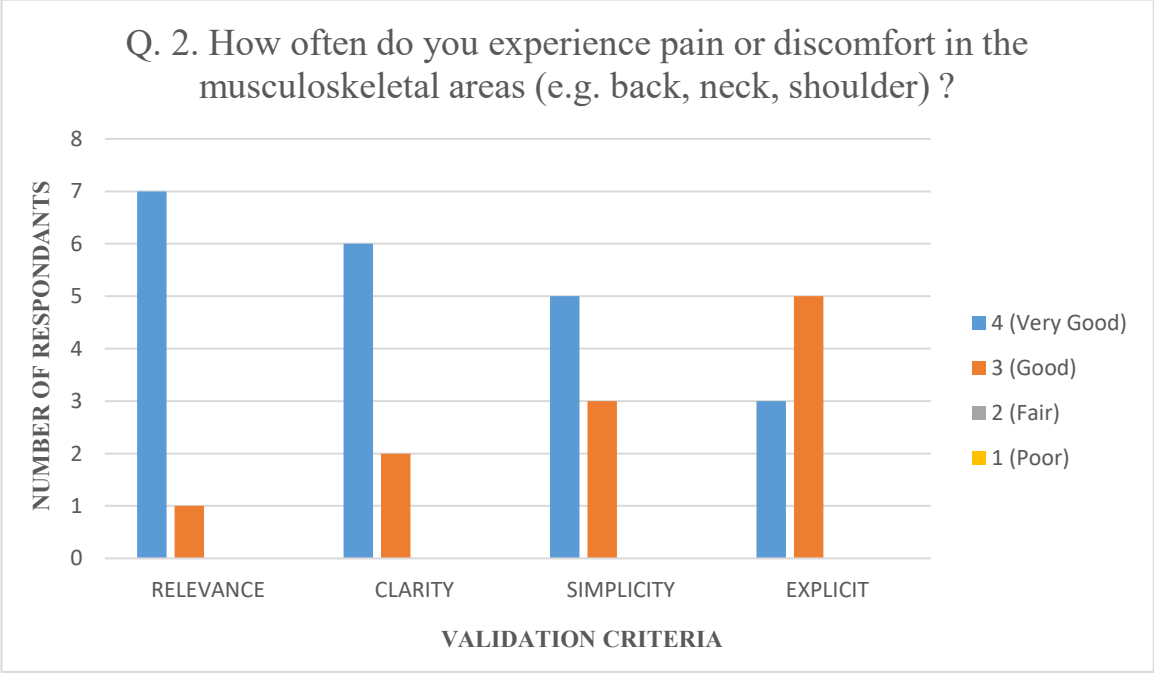
Validation Rating For Questionnaires



The graph presents the validation ratings for the questionnaire item: “Have you experienced pain or discomfort in the following areas?”

a) Neck
b) Shoulder
c) Upper back
d) Lower back
e) Arms or Hands
f) Hips or thighs
g) Knees or legs
h) No pain

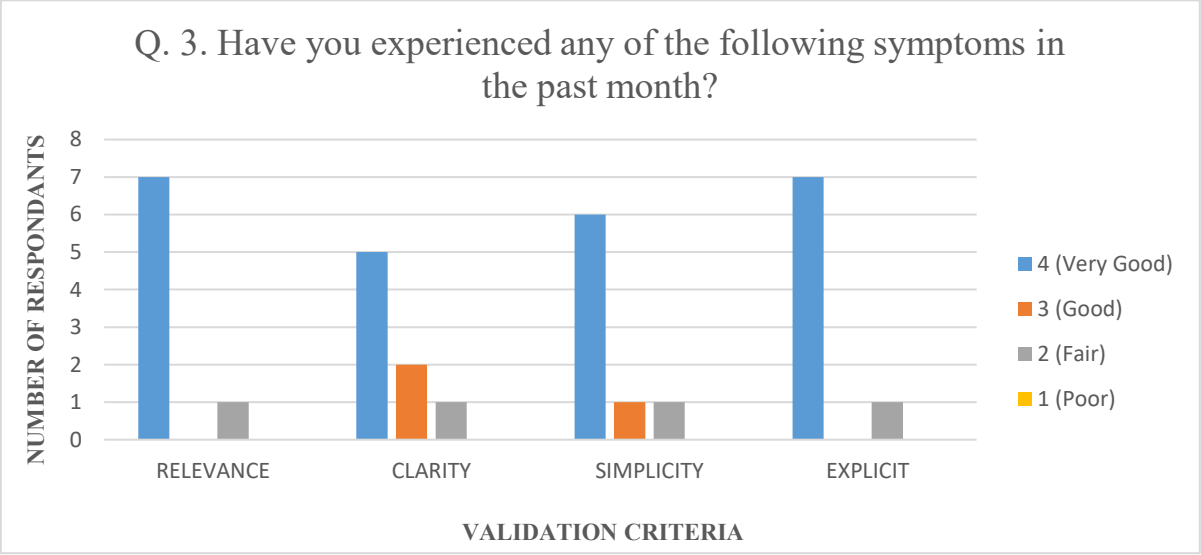
Based on four validation criteria. A total of 8 responses are reflected in the data points:
Relevance: 7 respondents (87.5%) rated it as Very Good (4), while 1 respondent (12.5%) rated it as Good (3).
Clarity: All 8 respondents (100%) rated it as Very Good (4).
Simplicity: 6 respondents (75%) rated it as Very Good (4), and 2 respondents (25%) rated it as Good (3).
Explicitness: 5 respondents (62.5%) rated it as Very Good (4), while 3 respondents (37.5%) rated it as Good (3).



The graph shows the validation results for the question: "How often do you experience pain or discomfort in the musculoskeletal areas (e.g., back, neck, shoulder)?"

a) Daily
b) Several times a week
c) Once a week
d) Less than once a week

Based on four validation criteria. A total of 8 responses are reflected in the data points:
Relevance: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Clarity: 6 respondents rated it as Very Good (4), and 2 respondents rated it as Good (3).
Simplicity: 4 respondents rated it as Very Good (4), and 2 respondents rated it as Good (3).
Explicitness: 4 respondents rated it as Good (3), and 2 respondents rated it as Very Good (4).



The graph shows the validation results for the question: "Have you experienced any of the following symptoms in the past month?"

a) Back pain
b) Neck pain
c) Shoulder pain
d) Wrist pain
e) Knee pain
f) Elbow pain
g) Joint stiffness
h) Muscle aches or spasms

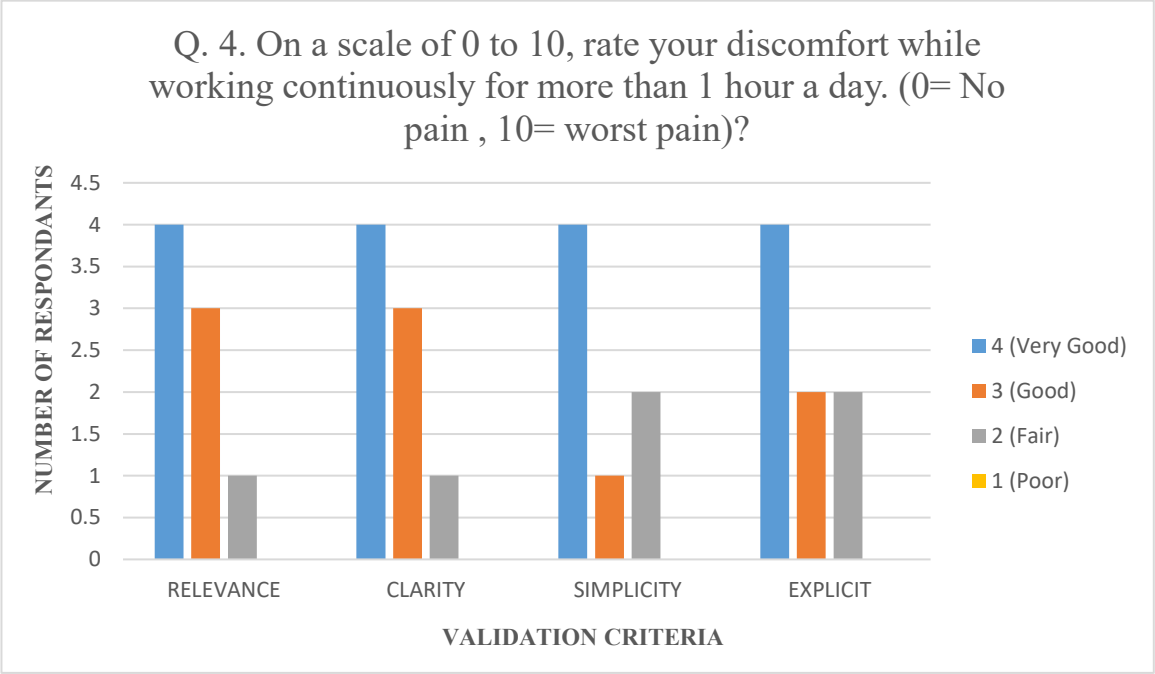
Based on four validation criteria. A total of 8 responses are reflected in the data points:

Relevance: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Fair (2).

Clarity: 5 respondents rated it as Very Good (4), 2 respondents rated it as Good (3), and 1 respondent rated it as Fair (2).

Simplicity: 5 respondents rated it as Very Good (4), 1 respondent rated it as Good (3), and 1 respondent rated it as Fair (2).

Explicitness: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Poor (1).



The graph shows the validation results for the question: "On a scale of 0 to 10, rate your discomfort while working continuously for more than 1 hour a day (0 = No pain, 10 = Worst pain)"

a) 0
b) 1
c) 2
d) 3 - Mild
e) 4
f) 5
g) 6- Moderate
h) 7
i) 8
j) 9
k) 10 - Severe

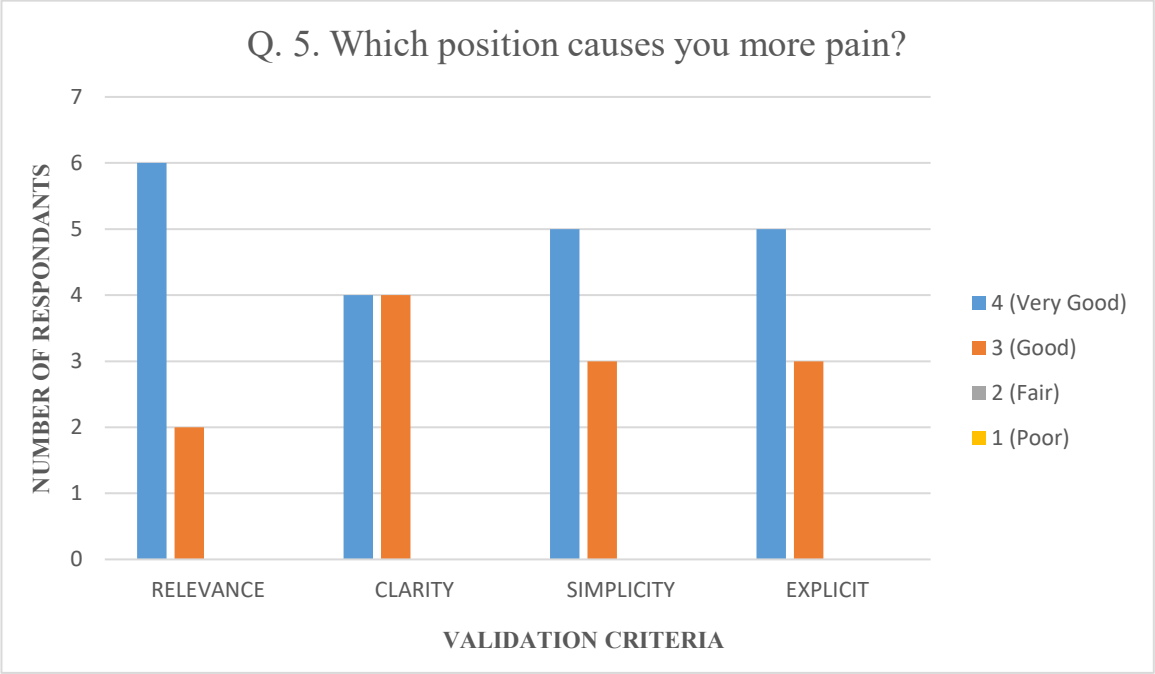
Based on four validation criteria. A total of 8 responses are reflected in the data points:

Relevance: 4 respondents rated it as Very Good (4), 3 respondents rated it as Good (3), and 1 respondent rated it as Fair (2).

Clarity: 4 respondents rated it as Very Good (4), 3 respondents rated it as Good (3), and 1 respondent rated it as Fair (2).

Simplicity: 4 respondents rated it as Very Good (4), 1 respondent rated it as Good (3), and 2 respondents rated it as Fair (2).

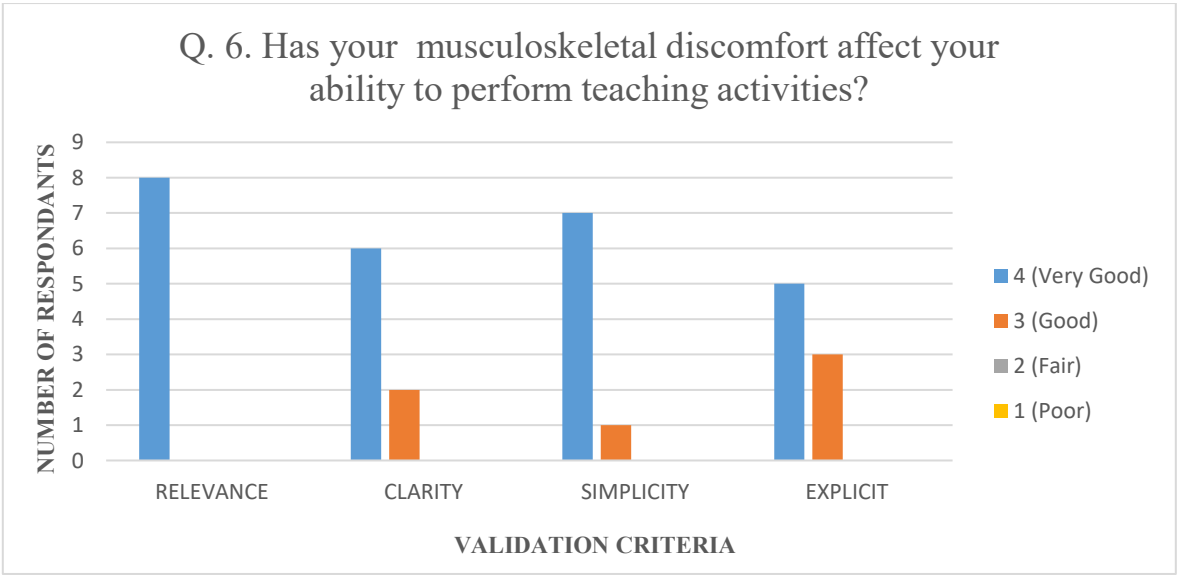
Explicitness: 4 respondents rated it as Very Good (4), 2 respondents rated it as Good (3), and 2 respondents rated it as Fair (2).



The graph shows the validation results for the question: "Which position causes you more pain?"

1. Sitting
2. Standing
3. Forward Bend sitting
4. Long Sitting

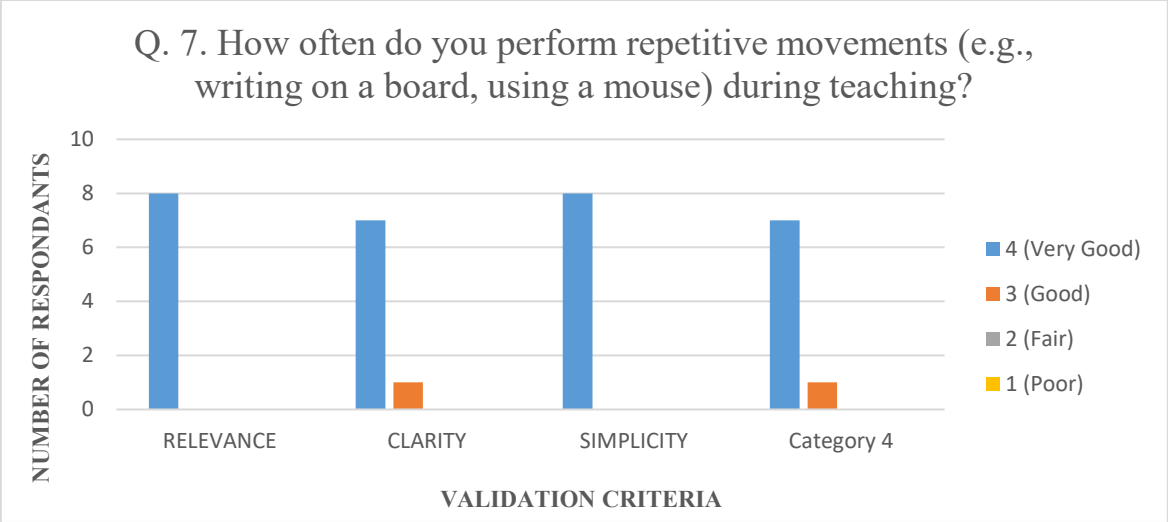
Based on four validation criteria. A total of 8 responses are reflected in the data points:
Relevance: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).
Clarity: 4 respondents rated it as Very Good (4), and 4 respondents rated it as Good (3).
Simplicity: 5 respondents rated it as Very Good (4), while 3 respondents rated it as Good (3).
Explicitness: 5 respondents rated it as Very Good (4), while 3 respondents rated it as Good (3).



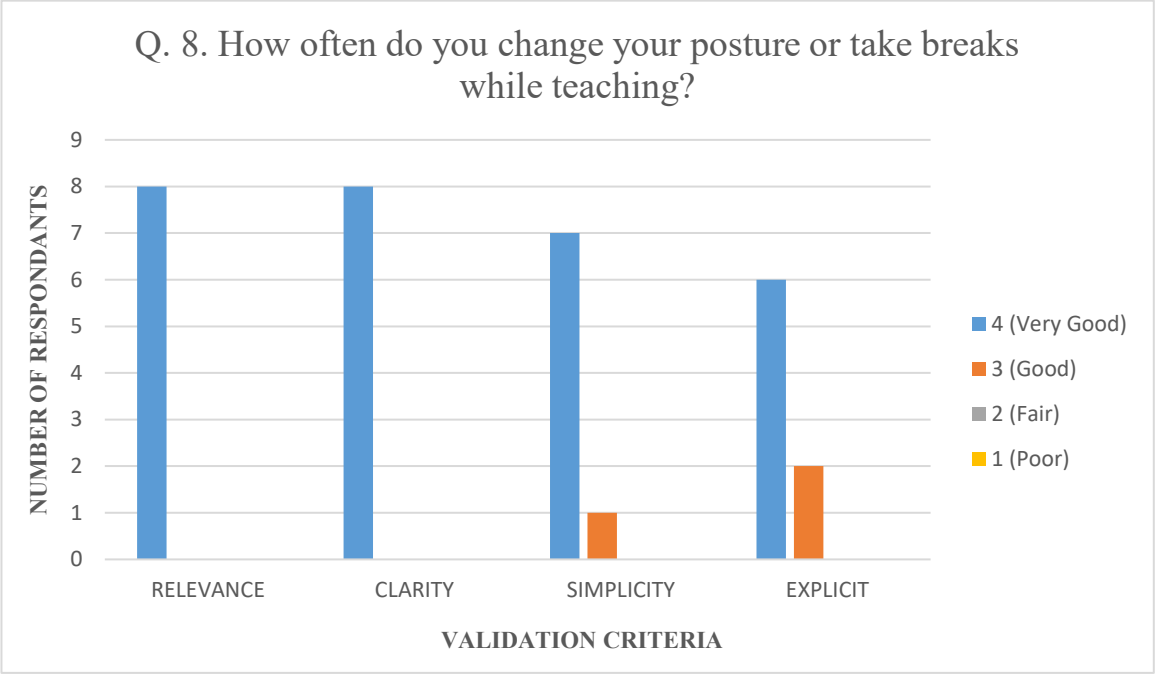
The graph shows the validation results for the question: "Has your musculoskeletal discomfort affected your ability to perform teaching activities?"

- Writing on the board
- Using a computer
- Standing for long hours
- Lifting books or materials
- sitting for long periods
- No effect

Based on four validation criteria. A total of 8 responses are reflected in the data points:
Relevance: All 8 respondents rated it as Very Good (4).
Clarity: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).
Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Explicitness: 5 respondents rated it as Very Good (4), while 3 respondents rated it as Good (3).



The graph shows the validation results for the question: "How often do you perform repetitive movements (e.g., writing on a board, using a mouse) during teaching?"
a) Rarely (less than 1 hour/day)
b) Occasionally (1–3 hours/day)
c) Frequently (3–6 hours/day)
Based on four validation criteria. A total of 8 responses are reflected in the data points:
Relevance: All 8 respondents rated it as Very Good (4).
Clarity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Simplicity: All 8 respondents rated it as Very Good (4).
Explicitness: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).



The graph shows the validation results for the question: "How often do you change your posture or take breaks while teaching?"

a) Every 15–30 minutes

b) Every hour

c) Every few hours

d) Rarely or never

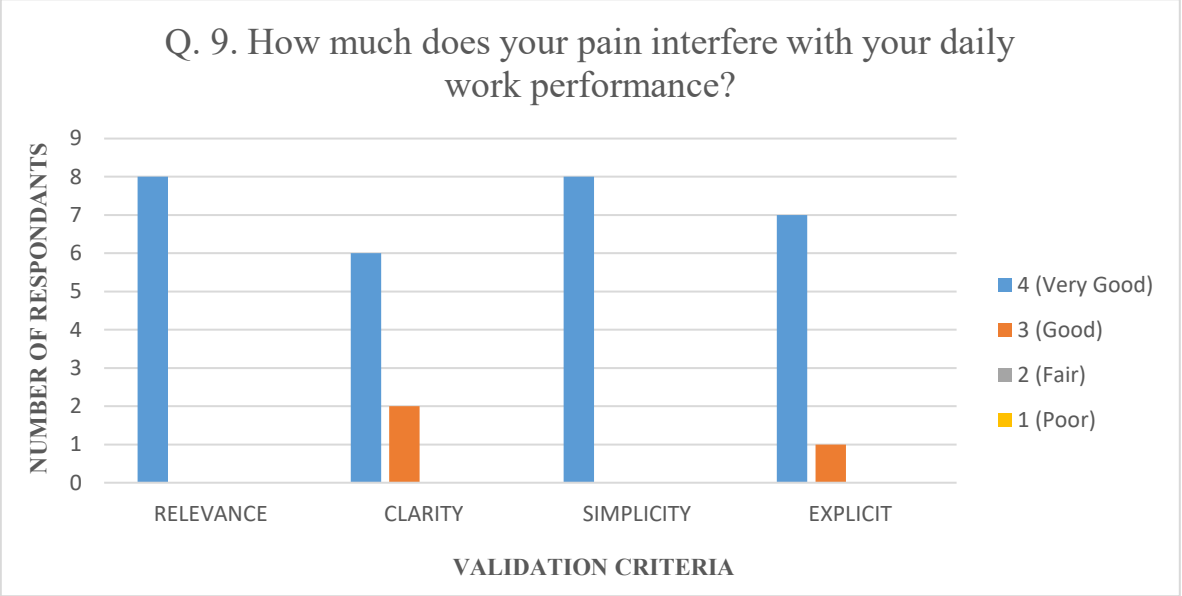
Based on four validation criteria. A total of 8 responses are reflected in the data points:

Relevance: All 8 respondents rated it as Very Good (4).

Clarity: All 8 respondents rated it as Very Good (4).

Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).

Explicitness: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).



The graph shows the validation results for the question: “How much does your pain interfere with your daily work performance?"

a) Not at all

b) Slightly

c) Moderately

d) Severely

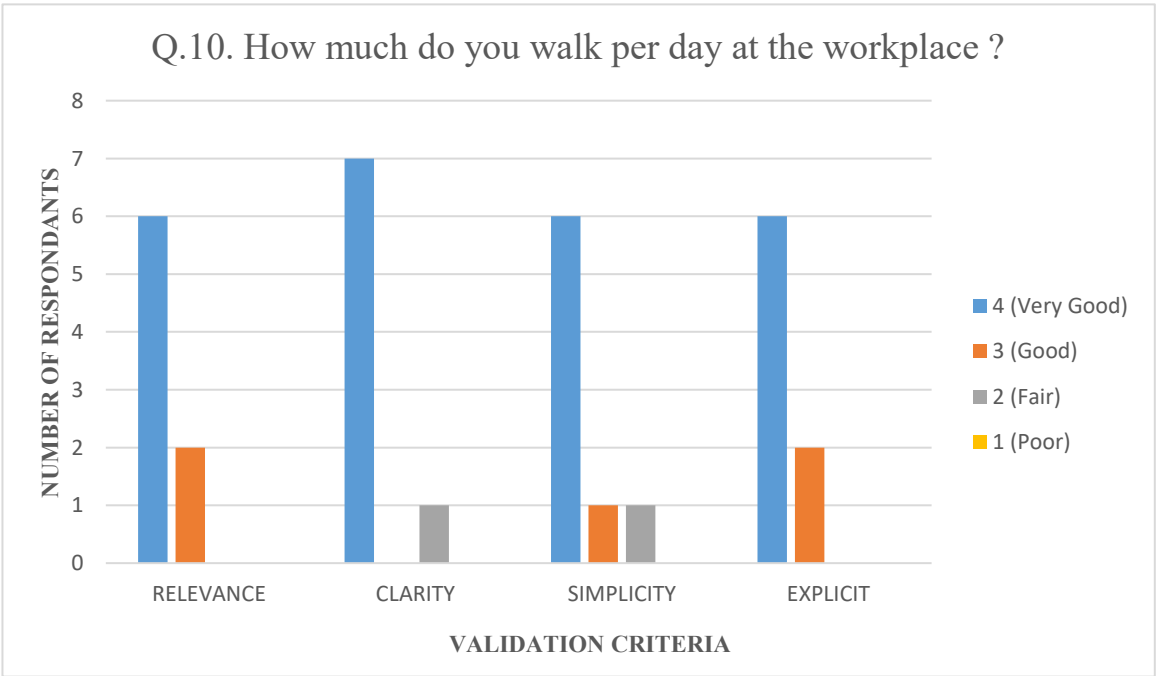
Based on four validation criteria. A total of 8 responses are reflected in the data points:

Relevance: 8 respondents rated it as Very Good (4).

Clarity: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).

Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).

Explicitness: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3)



The graph shows the validation results for the question: “How much do you walk per day at the workplace?"

a) <500mtr
b) 1-2km
c) 2-3km
d) 3-4km
e) >5km

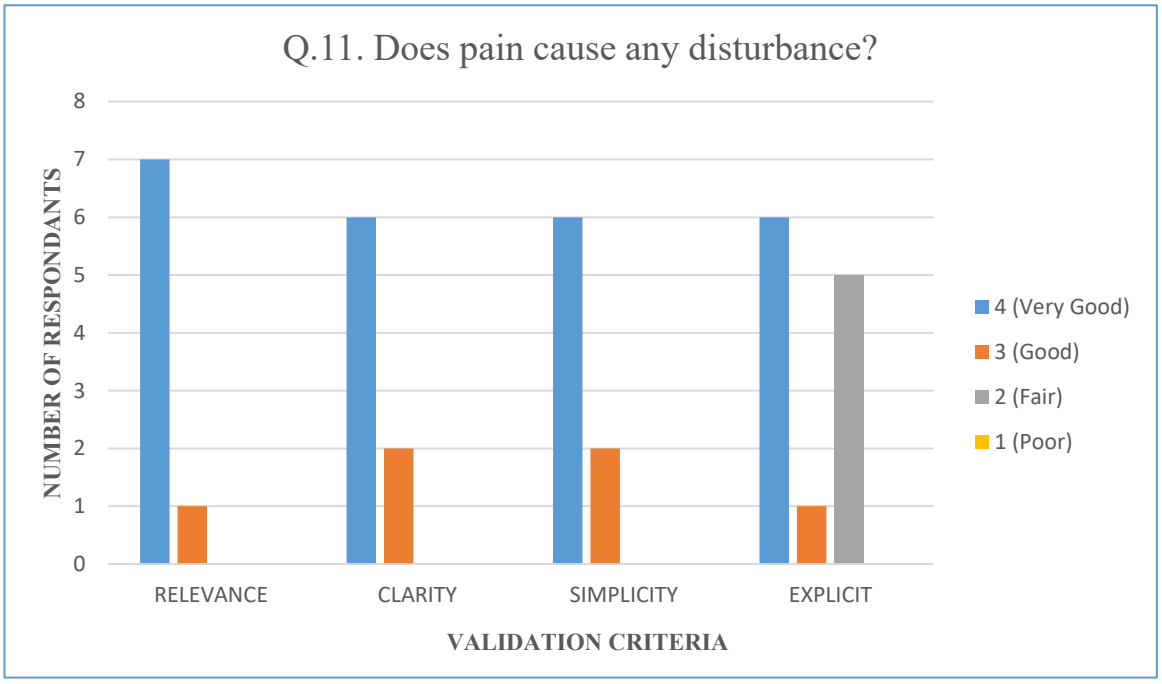
Based on four validation criteria. A total of 8 responses are reflected in the data points:

Relevance: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).

Clarity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Fair (2).

Simplicity: 6 respondents rated it as Very Good (4), 1 respondent rated it as Good (3), and 1 respondent rated it as Fair (2).

Explicitness: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).



The graph shows the validation results for the question: “Does pain cause any disturbance?"

a) Mental disturbance
b) Sleep disturbance
c) Social Disturbance

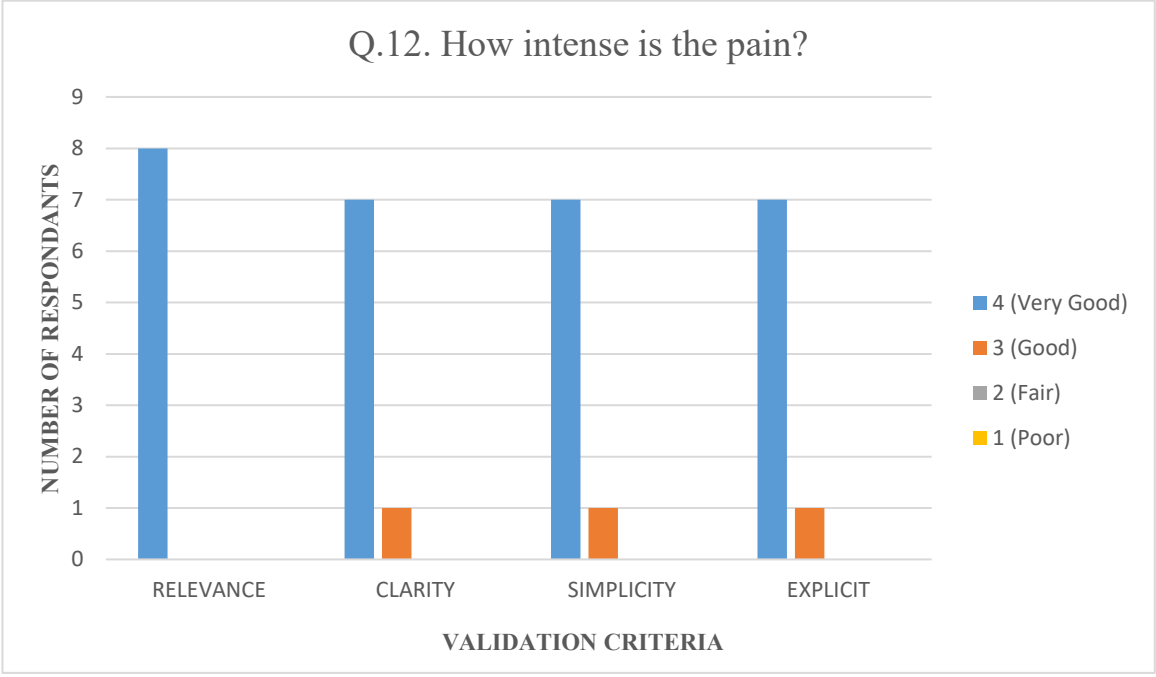
Based on the four validation criteria, a total of 8 responses were recorded:

Relevance: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).

Clarity: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).

Simplicity: 6 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3), and 1 respondent rated it as Fair (2).

Explicitness: 6 respondents rated it as Very Good (4), 1 respondent rated it as Good (3), and 1 respondent rated it as Fair (2).



The graph shows the validation results for the question: “How intense is the pain?"

a) Mild

b) Moderate

c) Severe

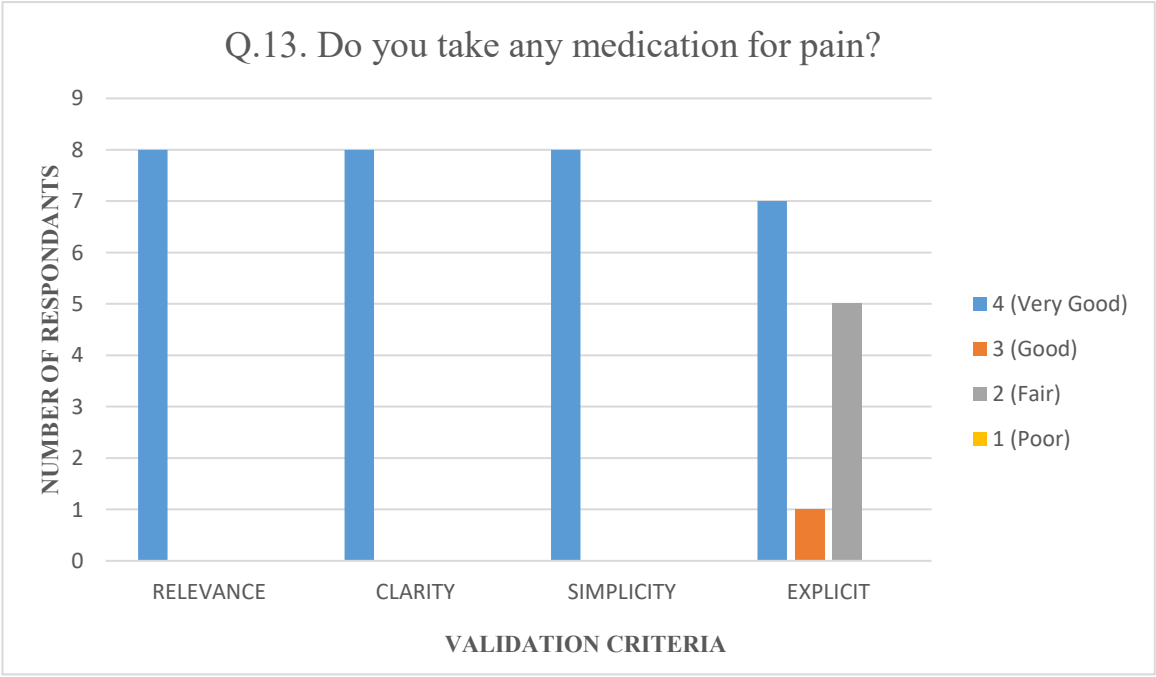
Based on the four validation criteria, a total of 8 responses were recorded:

Relevance: All 8 respondents rated it as Very Good (4).

Clarity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).

Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).

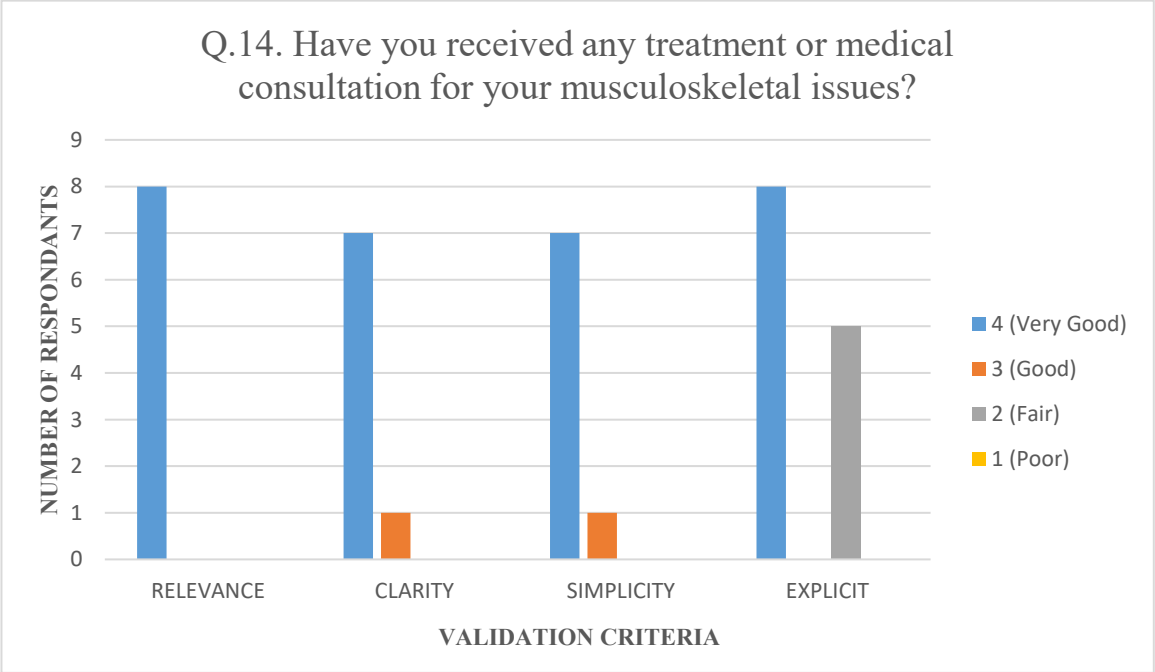
Explicitness: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).



The graph shows the validation results for the question: “Do you take any medication for pain?"

a) Daily
b) Weekly
c) Monthly
d) Random
e) No

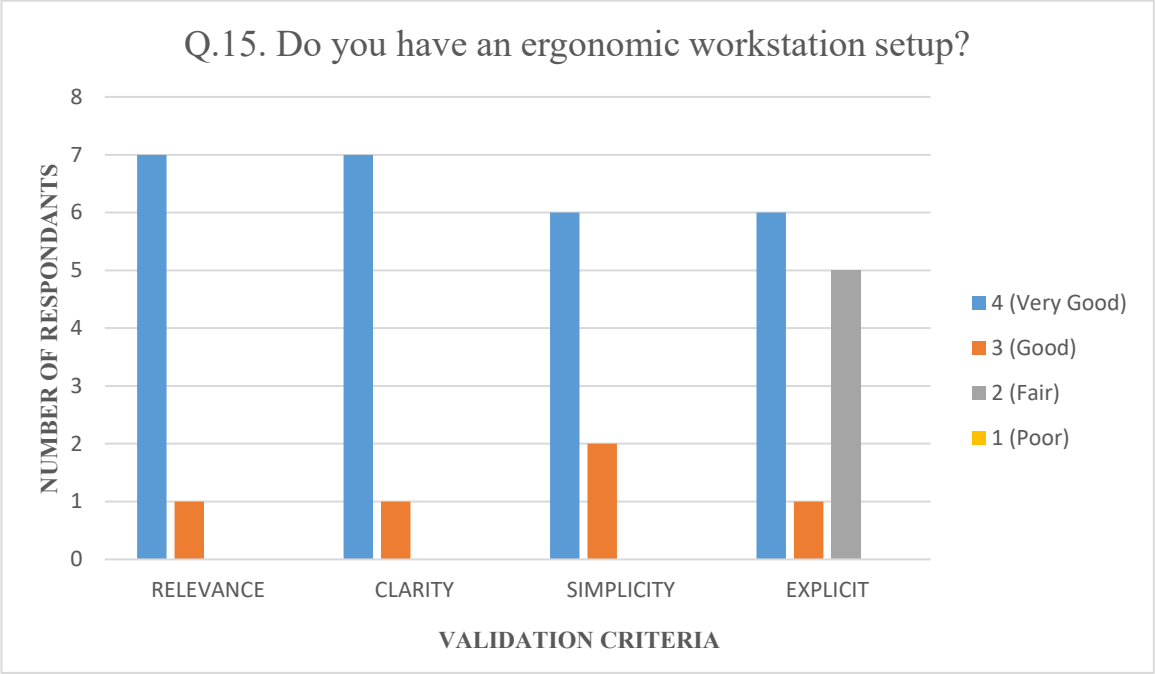
Based on the four validation criteria, a total of 8 responses were recorded:
Relevance: All 8 respondents rated it as Very Good (4).
Clarity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Explicitness: 5 respondents rated it as Very Good (4), 1 respondent rated it as Good (3), and 2 respondents rated it as Fair (2).



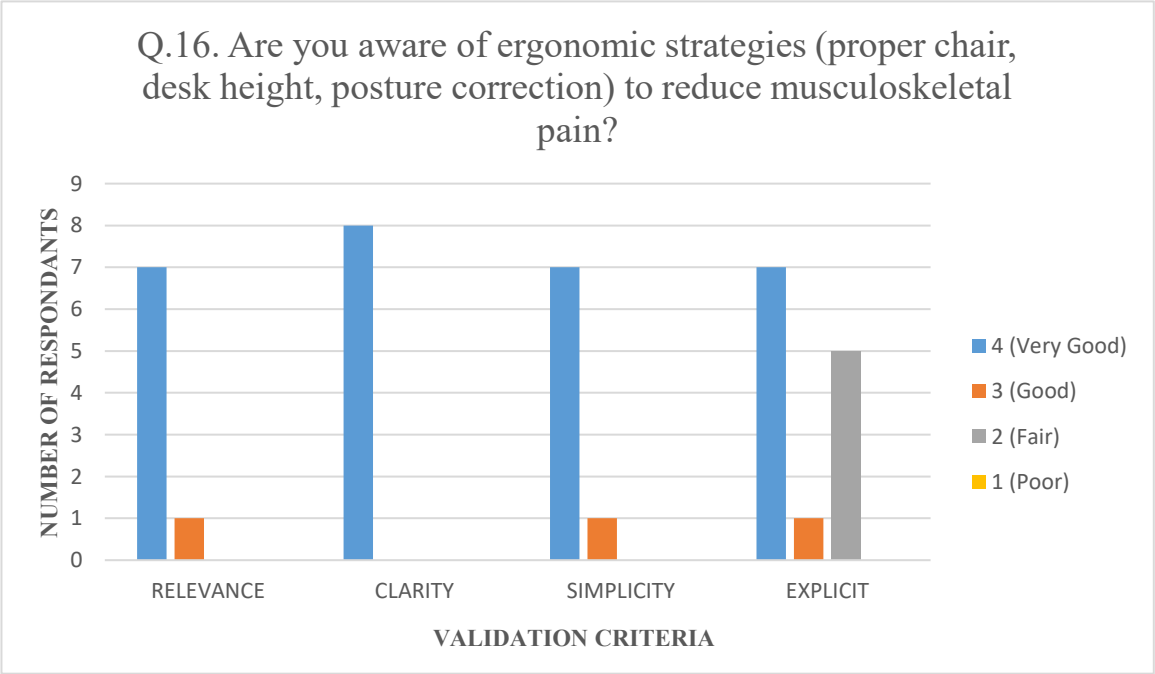
The graph shows the validation results for the question: “Have you received any treatment or medical consultation for your musculoskeletal issues?"

a) Yes, from a doctor
b) Yes, from a physiotherapist
c) Yes, self-managed (e.g., exercises, painkillers)
d) No treatment

Based on the four validation criteria, a total of 8 responses were recorded:
Relevance: All 8 respondents rated it as Very Good (4).
Clarity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Explicitness: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Fair (2).



The graph shows the validation results for the question: "Do you have an ergonomic workstation setup?"
a) Yes
b) No
c) Not sure
Based on the four validation criteria, a total of 8 responses were recorded:
Relevance: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Clarity: 6 respondents rated it as Very Good (4), while 2 respondents rated it as Good (3).
Simplicity: 5 respondents rated it as Very Good (4), while 3 respondents rated it as Good (3).
Explicitness: 5 respondents rated it as Very Good (4), 2 respondents rated it as Fair (2), and 1 respondent rated it as Good (3).



The graph shows the validation results for the question: “Are you aware of ergonomic strategies (proper chair, desk height, posture correction) to reduce musculoskeletal pain?"
a) Yes, and I practice them
b) Yes, but I don’t practice them
c) No, I am not aware
Based on the four validation criteria, a total of 8 responses were recorded:
Relevance: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Clarity: All 8 respondents rated it as Very Good (4).
Simplicity: 7 respondents rated it as Very Good (4), while 1 respondent rated it as Good (3).
Explicitness: 5 respondents rated it as Very Good (4), 1 respondent rated it as Good (3), and 2 respondents rated it as Fair (2).
The developed questionnaire was evaluated by eight respondents, including physiotherapists, orthopedic specialists, and laypersons, using four criteria: **Relevance, Clarity, Simplicity, and Explicitness**. Each item was graded on a four-point scale—Poor, Fair, Good, and Very Good—allowing for a detailed assessment of the tool’s quality.
Overall,the results indicate that most items were rated highly, reflecting strong agreement on the questionnaire’s effectiveness. **Relevance** received the highest ratings, with nearly all items considered Very Good, indicating that the questions effectively cover essential aspects of musculoskeletal disorders among academicians, such as prevalence, affected body regions, occupational risk factors, ergonomic practices, and functional limitations.
Clarity was generally rated Very Good or Good, showing that most items were easy to understand and free from ambiguity. A few complex questions, such as multi-part pain scales or detailed symptom checklists, received Fair ratings, suggesting minor wording adjustments could improve comprehension.
Most items were also rated highly for **Simplicity**, though some detailed or multi-step questions received Good or Fair ratings. Simplifying these items or breaking them into smaller parts could reduce respondent effort, improve accuracy, and enhance usability, especially for longer sections.
Explicitness showed slightly more variation. While many items clearly conveyed their intent, a few—particularly those involving symptom lists or medical treatments—received Fair or Poor ratings. Refinements such as clear instructions, examples, or visual cues could improve understanding and response accuracy.
To assess internal consistency, Cronbach’s alpha was calculated for the questionnaire, and the result were found to be significant, confirming that the tool is reliable and consistent in measuring the constructs of interest.
Despite minor variations, the overall findings support the validity and appropriateness of the questionnaire. The high ratings across most items indicate that it effectively captures key constructs, is understandable, and is user-friendly. The few lower-rated items provide guidance for refinement, primarily to improve explicitness and simplify detailed symptom questions.
In conclusion, the questionnaire is a reliable, well-structured tool for assessing musculoskeletal disorders among academicians. It can effectively identify risk factors, assess prevalence, and evaluate the impact of MSDs on occupational health and performance, supporting future research and preventive interventions in academic settings.

DISCUSSION

Musculoskeletal disorders (MSDs) are a significant occupational concern among academicians, with many reporting discomfort in the neck, shoulders, and lower back. High prevalence is often linked to prolonged teaching hours, static postures, repetitive activities, and inadequate ergonomic support [1,3,4,11]. These factors create a work environment that places considerable physical strain on educators.

Studies consistently show that teachers and professors experience MSDs at high rates, and the severity of discomfort can impact both daily functioning and work performance [12,14]. Static postures, poor workstation design, and repetitive tasks are common contributors, while occupational stress and lifestyle factors can further exacerbate symptoms [2,4,13]. This highlights that MSDs are influenced not only by physical workload but also by psychosocial conditions, making them a multifactorial problem.

Similar patterns are observed in other professions involving prolonged sitting or repetitive tasks, such as office workers, nurses, and dental professionals [5,6,8]. Across these groups, complaints often involve the back, neck, and shoulders, reinforcing the idea that MSDs are widespread among individuals who spend long hours in static positions or perform repetitive movements.

Given this context, the development of a dedicated questionnaire for academicians is crucial. A well-designed tool can capture the prevalence of MSDs, identify risk factors, and evaluate the impact on occupational health and performance. By involving experts in the validation process and using clear criteria for relevance, clarity, simplicity, and explicitness, each item was carefully refined to ensure it is meaningful, understandable, and applicable. This process enhances the reliability and content validity of the questionnaire, making it a practical tool for assessing musculoskeletal health in academic settings.

Moreover, MSDs are not just a matter of discomfort—they can reduce productivity and impair quality of life. Chronic pain can affect teaching efficiency and daily functioning, emphasizing the need for early identification and preventive strategies [10,12,14]. A comprehensive questionnaire allows for systematic assessment, helping institutions implement targeted interventions, ergonomic improvements, and stress management strategies to support the well-being of educators.

Overall, the evidence indicates a high prevalence of MSDs among academicians, driven by a combination of physical and psychosocial factors [1–14]. A structured, validated questionnaire provides an effective way to assess these risks, guiding preventive measures and promoting healthier, more sustainable work environments for educators.

CONCLUSION

Musculoskeletal disorders (MSDs) are highly prevalent among teachers and other sedentary professionals, largely due to poor ergonomics, prolonged sitting, and repetitive tasks. Multiple studies confirm this, supported by a validated questionnaire that reliably assesses MSD-related pain, risk factors, and functional limitations. These findings highlight the urgent need for ergonomic interventions and preventive measures to protect occupational health in academic settings.

LIMITATIONS

The study is limited to the development and validation of the questionnaire, without collecting actual data or assessing its applicability in broader academic settings.

SUMMARY

Musculoskeletal disorders (MSDs) are highly prevalent among academicians due to prolonged teaching

hours, static postures, repetitive tasks, poor ergonomics, and psychosocial stressors. These factors collectively contribute to discomfort in the neck, shoulders, and lower back, affecting daily functioning, teaching efficiency, and quality of life. Similar trends are observed in other sedentary or repetitive professions, including office workers, nurses, and dental professionals. To address this issue, developing a dedicated, validated questionnaire for academicians is essential. Such a tool can systematically assess prevalence, risk factors, and the impact of MSDs, enabling institutions to implement targeted interventions, ergonomic improvements, and preventive strategies to promote occupational health and well-being.

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