



Validity and Reliability Test of the Office Syndrome Screening Questionnaire

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Abstract

Office Syndrome is increasingly common due to sedentary work environments and inadequate ergonomic practices. This condition is characterized by a variety of symptoms, such as musculoskeletal pain, visual fatigue, sensory disturbances, sleep disturbances, and mental stress, which impact workers' health and reduce productivity. However, the assessment of this condition is often hampered by the lack of comprehensive and standardized measurement tools. This study aims to develop and test the validity and reliability of an office syndrome screening questionnaire that covers seven dimensions: physical pain, muscle fatigue, visual fatigue, sensory disturbances, decreased productivity, sleep disturbances, and mental stress. The study was conducted cross-sectionally involving 47 office workers in the Jababeka area, Cikarang, who met the inclusion criteria. Data were collected using a questionnaire that was filled out independently via Google Form. Validity testing was carried out using Pearson correlation analysis (items are valid if $r > 0.3$ and $p < 0.05$), while reliability testing used Cronbach's Alpha (reliable if $\alpha > 0.7$). The results showed that all items had a significant correlation to the total score ($p < 0.05$), with correlation values ranging from 0.416 to 0.697. The highest correlation was found in the items "Decreased work efficiency" ($r = 0.697$) and "Difficulty concentrating" ($r = 0.673$), while the item "Muscle tension" had the lowest correlation ($r = 0.416$) but was still valid. The overall Cronbach's Alpha was 0.745, indicating good reliability. This screening questionnaire was proven to be valid and reliable to measure symptoms of office syndrome comprehensively.

Introduction

The increase in sedentary work and poor ergonomic practices have led to a high prevalence of Office Syndrome, a multifactorial condition often experienced by individuals who work at a desk continuously (Lee et al., 2023). Office syndrome is a series of symptoms that generally arise from the habit of working in a static position for a long time, which is often experienced by office workers (Taber, 2018). The prevalence of Office Syndrome reaches 71-74%, with the main symptoms characterized by musculoskeletal pain, such as neck, back, and shoulder pain (ACTRN12619000057189, 2019). In addition, Office Syndrome problems also include visual fatigue, sensory disturbances, sleep disturbances, and mental stress. These symptoms not only have a negative impact on workers' health but also reduce productivity in the workplace,

making it an increasingly pressing public health problem in the modern work environment (Seguí et al., 2015; Siqueira et al., 2017).

Office Syndrome management still faces significant challenges. One of the major issues is the lack of standardized and comprehensive assessment tools to evaluate the various symptoms of this syndrome. Most of the existing diagnostic approaches only focus on specific musculoskeletal symptoms without covering the full dimensions of the Office Syndrome, for example, the Nordic musculoskeletal questionnaire, the Turkish-Cornell Musculoskeletal Discomfort Questionnaire, and so on (Quemelo et al., 2015). This limited scope of Office Syndrome diagnostics hinders health professionals and researchers from understanding this condition holistically, making it difficult to design effective interventions and prevention strategies. The research gap lies in the development and validation of tools that are able to cover the full spectrum of Office Syndrome symptoms, including physical pain, visual fatigue, sensory disturbances, decreased productivity, and psychological stress. Diagnostic tools for early detection of Office Syndrome holistically are still very limited, so further research is needed (Arshad et al., 2022; Alberdi et al., 2016).

In addition to the limitations of diagnostic tools in the form of questionnaires that do not cover all symptoms of Office Syndrome, there are still other problems in the form of varying validity and reliability of the tools (Siriteerathitikul et al., 2022). This raises doubts about the consistency and accuracy of the data produced. The availability of validated and reliable Office Syndrome diagnostic tools is essential for identifying individuals at risk, monitoring symptom development, and evaluating the impact of health interventions in the workplace. The absence of standardized instruments limits the ability to generate insights that can be applied in ergonomic policies and health promotion in the workplace. Until now, there is still a gap in the availability of complete and holistic Office Syndrome early detection instruments, which have been tested for both validity and reliability. This study aims to address this gap by developing and testing the validity and reliability of a comprehensive Office Syndrome Questionnaire. This questionnaire covers seven main dimensions: physical pain and discomfort, muscle fatigue, visual fatigue, sensory disturbances, decreased productivity, sleep disturbances, and mental stress. Through rigorous psychometric property testing, this study is expected to produce a reliable tool to evaluate Office Syndrome systematically and standardized. The results of this study are expected to contribute to improving the identification, management, and prevention of Office Syndrome, as well as improving the health and productivity of workers in the modern workplace.

Methods

This study used a quantitative design with a cross-sectional descriptive-analytical approach. The target population was office workers who work in office buildings or factories, use work tools such as laptops or computers, and work in a sitting position. Samples were taken using the consecutive sampling method with a minimum of 30 participants, according to literature recommendations for validity and reliability tests.

The research instrument was a questionnaire developed based on a literature study, consisting of 15 items covering seven dimensions of symptoms: pain and physical discomfort, muscle fatigue, visual fatigue, tingling or numbness, decreased productivity, sleep disturbances, and stress and mental tension. Each item was measured using a Likert scale of 1–5.

Data collection was carried out using an electronic questionnaire using a Google form which was distributed directly to participants. The location of the study was employees at several agencies in the Jababeka Area, Cikarang, Bekasi Regency for one day. Participants were given an explanation of the purpose of filling out the questionnaire and were asked for consent before filling out the questionnaire voluntarily.

Data processing and analysis of the study used SPSS version 26. Validity testing was carried out using Pearson correlation analysis to assess construct validity, with the criteria of correlation value (r) > 0.3 and p value < 0.05 . Reliability testing was carried out with Cronbach's Alpha, with a value > 0.7 considered to indicate good reliability. Confidentiality of participant data is guaranteed, and participation in the study is voluntary. This study has received approval from the Ethics Committee of the National Research and Innovation Agency (BRIN) No.206 / KE.03 / SK / 11/2024.

Result and Discussion

A total of 47 participants who are employees working in several companies in the Jababeka area, Cikarang, Bekasi Regency were involved in filling out this office syndrome screening questionnaire. Table 1 shows the results of the validity test of the screening questionnaire.

Table 1. Results of the Validity Test of the Office Syndrome Screening Questionnaire

Variables	Pearson Correlation (r)	Significance (p)	Conclusion
Neck Pain	0,580	0,000	Valid
Back Pain	0,504	0,000	Valid
Shoulder Pain	0,486	0,001	Valid
Headache	0,602	0,000	Valid
Muscle Tension	0,416	0,004	Valid
Muscle Fatigue	0,694	0,000	Valid
Tired Eyes	0,454	0,001	Valid
Blurred Vision	0,612	0,000	Valid
Tingling Hands/Fingers	0,511	0,000	Valid
Numbness in Feet	0,507	0,000	Valid
Difficulty Concentrating	0,673	0,000	Valid
Decreased Work Efficiency	0,697	0,000	Valid
Difficulty Sleeping	0,594	0,000	Valid
Increased Stress	0,598	0,000	Valid
Irritability	0,627	0,000	Valid

Validity Test

The results of the validity test using Pearson correlation analysis showed that all items in the questionnaire had a significant correlation value to the total score ($p < 0.05$) with a correlation value (r) > 0.3 . The highest correlation was found in the items "Decreased work efficiency" ($r = 0.697$) and "Difficulty concentrating" ($r = 0.673$), which reflects a strong contribution to the overall Office Syndrome construct. In contrast, items with lower correlations, such as "muscle tension" ($r = 0.416$), still meet the established validity criteria, indicating their relevance in measuring the dimensions of Office Syndrome symptoms.

Reliability Test

The reliability test showed a Cronbach's Alpha value of 0.745 for all 15 questionnaire items. This value is in the good reliability category, indicating adequate internal consistency between items (Besharati et al., 2020).

The results of this study indicate that the developed office syndrome questionnaire has good validity and reliability in measuring early symptoms of office syndrome. In a questionnaire validity test, a high validity value indicates that a questionnaire is correct in measuring what is to be measured (Janwantanakul et al., 2008). Based on the validity analysis using Pearson correlation, all items showed significant correlation values to the total questionnaire score ($p < 0.05$). The highest correlation was found in the items "decreased work efficiency" ($r = 0.697$) and "difficulty concentrating" ($r = 0.673$), reflecting the strong contribution of these symptoms

to the office syndrome construct. In contrast, items with lower correlations, such as "muscle tension" ($r = 0.416$), still met the established validity criteria, indicating their relevance in measuring related dimensions (Suharsimmi, 2020).

In addition to the validity test, a questionnaire is declared reliable if it shows the extent to which a measurement is consistent when repeated on different subjects, and can be assessed using Cronbach's alpha (Demissie et al., 2024). The results of the reliability test showed a Cronbach's Alpha value of 0.745 for all 15 questionnaire items. This value is in the good reliability category. This good reliability indicates that the screening instrument can be used consistently in various measurements, both in research environments and clinical practice. The questionnaire in this study can summarize the Computer Vision Syndrome (CVS) questionnaire which focuses on visual symptoms due to exposure to computer screens, and the Pittsburgh Sleep Quality Index (PSQI) questionnaire which systematically evaluates sleep disorders (Gomzi & Bobić, 2009). In the context of stress, the Visual Analog Scale (VAS)-based stress questionnaire also shows a multidimensional approach to measuring symptoms of stress and mental tension, which is relevant to the findings in this study. In addition, the instrument developed in this study has relevance to syndromes that have other work environment symptoms, such as Sick Building Syndrome, which highlights physical and mental complaints that arise due to a non-ergonomic work environment or exposure to certain conditions in the work space (Alhakami et al., 2022).

The validity and reliability demonstrated by this questionnaire strengthen its potential use as an initial assessment tool for office syndrome in the workplace. With its ability to comprehensively measure symptoms of office syndrome, this questionnaire can be used by occupational health practitioners and researchers to monitor workers' conditions and evaluate the effectiveness of ergonomic interventions (Ardahan & Simsek, 2016). With relevant validity, this questionnaire can also help identify areas that need improvement and follow-up to improve the quality of workers' health. Some limitations still need to be considered, such as the lower correlation value for the item "Muscle tension" ($r = 0.416$). This could be due to variations in respondents' perceptions of the intensity of muscle tension experienced or work environment factors that have not been fully measured in this study (Chauhan & Nandi, 2020). Further research is recommended to re-evaluate the technical aspects of this item to improve the overall validity of the questionnaire. In addition, this questionnaire can be adapted for other populations or work conditions to expand its application, including workers with high exposure to technology or risky work environments.

Conclusion

Overall, this office syndrome screening questionnaire is a valid and reliable tool for screening office syndrome symptoms. Its use can support data-based decision-making in the prevention and management strategies of office syndrome, especially in modern work environments that increasingly demand attention to ergonomics and worker health. Further research is needed to test the external validity of this questionnaire across different working populations and industry sectors to ensure the generalizability of the results. Thus, this questionnaire has great potential to contribute to improving workers' quality of life and organizational productivity.

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