



Using the Social Cognitive Theory to Investigate the Factors Influencing Working Women's Ability to Maintain Proper Posture at Work

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ABSTRACT

Aims: This study is centered on the identification of key factors that contribute to the maintenance of proper posture, aiming to mitigate the occurrence of musculoskeletal disorders (MSDs) arising from repetitive motions and inadequate body positioning in work settings.

Methods: This cross-sectional research was performed to examine the factors influencing the maintenance of proper body posture while working in the assembly line by 250 female workers. The study employed a two-phase cluster sampling technique for participant selection and gathered information about demographic traits, variables associated with Social Cognitive Theory (SCT), and behavior through self-report surveys. The amassed data were subjected to analysis using SPSS version 21 software. This analysis encompassed statistical techniques including Pearson's correlation and regression tests which all conducted at a significance threshold of $p < 0.05$.

Findings: Totally 250 female workers with mean age of 35.15 ± 7.99 took part in the study. The mean years of their work experience was 8.00 ± 5.91 . The study's results demonstrated a noteworthy correlation between maintaining proper body posture during work and SCT constructs ($p < 0.05$), except for outcome expectations. Moreover, barrier structures, normative beliefs, intention, and knowledge were recognized as the most crucial determinants of behavior.

Conclusions: The study reveals a noteworthy connection between proper posture and (SCT) components, validating its predictive capacity for endorsing ergonomic practices. This enriches our comprehension of how SCT factors impact the adoption of correct task posture, aiding in targeted interventions and underlining the need for varied strategies to tackle the complex behavioral influences in workplaces.

Keywords: Working Body Posture, Female Worker, Social Cognitive Theory

Introduction

Work-related Musculoskeletal Disorders (WMSDs) are a common health issue affecting workers in various industries. These diseases are caused by repetitive motions, poor postures, heavy lifting, and other factors [1-3]. A study on Iranian workers showed that the highest prevalence of skeletal disorders in the last twelve months is related to the lumbar region with a prevalence rate of 62.1% [4]. This problem can significantly impact workers with consequences like pain, discomfort, reduced productivity, and the potential for long-term disability and chronic health issues [5-6].

Female assembly line workers are vulnerable to WMSDs due to factors such as repetitive motions, awkward postures, forceful exertions, insufficient rest breaks, lack of ergonomic considerations, and lack of training and awareness [7]. Proper body position during work is vital to prevent WMSDs in assembly line workers, as it reduces strain on muscles and joints, minimizes repetitive motion injuries, improves biomechanics, enhances blood circulation, and supports musculoskeletal health [8-9]. Educational theory is essential in preventing WMSDs among assembly line workers [10-11]. As

an educational framework, social cognitive theory involves a wide range of factors that influence behavior [12-13]. Social cognitive theory is a theoretical framework that examines how symbolic communication influences human thought, attitude, and action. It is rooted in an agentic perspective which emphasizes that individuals contribute to their life circumstances rather than being passive recipients. The theory distinguishes among three modes of agency: direct personal agency, proxy agency relying on others, and collective agency through coordinated effort. Cognitive, vicarious, self-reflective, and self-regulatory processes play a central role in analyzing human agency. Social cognitive theory provides a framework to analyze the psychosocial factors that influence the acquisition and adoption of new behaviors and the social networks that support their spread [14]. By addressing these factors, educational interventions can help workers develop the knowledge and skills necessary to maintain proper body positioning and reduce the risk of WMSDs [15].

The use of theoretical frameworks in studies examining ergonomic behaviors in industrial settings has been significantly overlooked [16]. Studies that examine the behavior of workers in industrial settings with regards to ergonomics have mostly overlooked the application of theoretical frameworks [16,17]. The primary objective of this study was to identify the factors that influence the adoption of proper posture during work among female assembly line workers at Neyshabur Industries.

Method and Materials

This cross-sectional study was conducted in Neyshabur of Iran using a two-stage cluster sampling method to select participants from industries with assembly lines where women were employed. The sample size was

determined to be 250 people, considering a potential dropout rate of 15%. Inclusion criteria for the study included being over 20 years old, being employed in an assembly line, and having the ability to read and write, while specific output criteria were not considered.

A researcher-made questionnaire based on social cognitive theory was utilized to evaluate participants' correct body posture. The questionnaire's reliability and validity were demonstrated by CVR coefficients of 0.92 and CVI of 0.97, and an overall Cronbach's alpha coefficient of 0.79. Exploratory factor analysis accounted for 65.25% of the variance, and confirmatory factor analysis confirmed the model's appropriateness. The questionnaire included 10 dimensions related to social cognitive theory, such as outcome expectations, normative beliefs, perceived barriers, social support, observational learning, reinforcement, behavioral skills, self-efficacy, intention, and knowledge. Respondents used a 5-point Likert scale to express their opinions, and data collection was done through self-reporting methods.

The behavioral measurement focused on maintaining proper posture during work, with participants rating their responses on a 3-point Likert scale from never to always. The questionnaires were administered during a 20-minute break for the empowerment of working women on the assembly line and were completed through self-reporting. Statistical analysis of questionnaire data was conducted using SPSS 21 software, employing descriptive statistics methods such as frequency, percentage, mean, and standard deviation to describe the studied population. Additionally, Pearson's correlation and linear regression was used to analyze the relationship between dependent and independent variables, determining the most significant constructs affecting behavior.

Table 1) Demographic characteristics of the studied women.

Variable		Mean±SD	
Age (year)		35.15±7.99	
Work experience (year)		8.00±5.91	
		Number	Percent
Education	Under diploma	112	44.8
	diploma and Upper diploma	138	55.2
Marital status	Single	57	22.8
	Married	145	58.0
	Widowed	48	19.2

Findings

The study participants' average age was 35.15 ± 7.99 , with over half of the women having more than 8 years of work experience (Table 1). The outcomes of Pearson's correlation analysis revealed a statistically significant association between maintaining the correct body posture at work and all constructs of social cognitive theory, except for outcome expectations (Table 2).

Table 2) The relationship between body posture and constructs from social cognitive theory

Studied variables of SCT constructs	Posture Correlation
Intention	0.362**
Social Support	0.345**
Observational learning	0.322**
Reinforcement	0.256**
Barriers	-0.332**
Outcome expectations	0.126*
Self-efficacy	0.331**
Normative beliefs	0.348**
Behavioral skills	0.329**

SCT: Social Cognitive Theory **P < 0.001, *P < 0.05

The results of the linear regression analysis reveal that 30% of the variance in maintaining the correct body position during work can

be attributed to social cognitive theory. Particularly, among the theory's constructs, barriers, normative beliefs, intention, and knowledge emerged as the most influential predictors (Table 3).

Table 3) Linear regression analysis for constructs of Social Cognitive Theory

Variables	Coefficient	Standard Error	P-value
Barriers	-0.223	0.008	< 0.001
Normative beliefs	0.200	0.020	0.002
Intention	0.169	0.016	0.023
Knowledge	0.123	0.030	0.037

Discussion

The objective of this study was to identify the influential factors in promoting proper body posture among women employed on assembly lines, utilizing the principles of SCT. The results revealed a substantial correlation between desired ergonomic behaviors and the constructs of SCT, with the exception of outcome expectations. Furthermore, barrier structures, normative beliefs, intention, and knowledge emerged as the most significant predictors of behavior.

The study found a significant relationship between maintaining correct body posture at work and various aspects of social cognitive theory, except for outcome expectations. A study conducted

on computer users found a significant correlation between SCT constructs and the implementation of preventive measures to avoid musculoskeletal disorders [17-18]. Likewise, research on women who have survived breast cancer discovered notable connections between body mass index (BMI) and SCT-related factors, including self-efficacy, hindrances to exercising, social support, and anticipated outcomes [19]. The reasons for these findings may be related to the impact of body posture on physiological and psychological processes [20]. Proper posture enhances brain function, decision-making abilities, self-confidence, and self-efficacy [21]. It also influences mood, with standing posture associated with positive affect and slouched posture linked to negative affect.

Interestingly, the study showed that outcome expectations may not be a significant factor influencing posture maintenance behavior, highlighting the need for further research on individual differences in motivation and perceived benefits to understand this discrepancy. The finding that 30% of the variance in maintaining the correct body position during work can be attributed to social cognitive theory is consistent with previous research that has applied this theory to predict health behaviors [22-23]. In our study, outcome expectations did not have a significant relationship with maintaining correct posture during work, while some studies provide insights into the role of outcome expectations in the initiation and maintenance of physical activity behavior, which may contribute to understanding the role of outcome expectations in maintenance behavior. Physical condition is relevant. For example, one study found that met outcome expectations were a significant predictor of successful adoption and maintenance of physical activity behavior [24]. Another study found that outcome expectations differ based

on the level of involvement and experience with exercise behavior [25]. These findings suggest that outcome expectations may play a role in the initiation and maintenance of physical activity behavior, but more research is needed to understand their role in posture maintenance behavior specifically. The finding that 30% of the variance in maintaining the correct body position during work can be attributed to social cognitive theory is consistent with previous research that has applied this theory to predict health behaviors [26-27]. This result emphasizes the power of SCT in explaining and predicting complex behaviors such as maintaining body posture in occupational environments. Previous research has emphasized the role of SCT constructs, such as self-efficacy, outcome expectations, and social support, in shaping people's intentions and actions regarding health-related practices [28-29]. The strong relationship between SCT and adherence to good posture emphasizes the relevance of this theory in guiding interventions [30]. A study conducted by Luszczynska et al. in 2015 discovered that Social Cognitive Theory (SCT) is a valuable tool for predicting and encouraging physical activity among adults with chronic diseases [31]. The strong association between SCT and adherence to good physical condition highlights the importance of SCT constructs, such as self-efficacy and social support, in shaping individuals' intentions and actions concerning health-related practices.

Conclusions

The study's results revealed that a significant correlation between desired ergonomic behaviors and SCT components, bolstering the theory's capacity to forecast supported ergonomic actions. These insights enhance our comprehension of the intricate interplay between SCT structures and the implementation of proper body posture

during work. This heightened awareness not only facilitates the creation of tailored intervention strategies but also underscores the diverse nature of endeavors aimed at addressing the various factors influencing behavior in occupational settings.

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Conflict of Interest: Not applicable

Ethical Permission: The current study has obtained ethical approval from the Ethical Committee of Tarbiat Modares University under the reference number IR.MODARES.REC.1401.110. An informed consent form were completed by all study participants.

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