ORIGINAL ARTICLE

Correlation Between Work-Related Low Back Pain and Quality of Life Among Physical Therapists: A Cross-Sectional Study

IJPHY

*[1]Feras Alsultan
[1]Fay M. Alomair
[1]Norah E. Alrashidi
[1]Amal A. Alharbi
[1,2]Faisal Alhuthaifi
[1]Saleh M. Aloraini

ABSTRACT

Background: Work-related low back pain (LBP) is a common musculoskeletal disorder related to work and contributes to decreased employee health and productivity. Physical therapists (PTs) are more susceptible to developing LBP than other healthcare employees. Although LBP might contribute to decreased quality of life (QoL) among PTs, factors underpinning correlations between work-related musculoskeletal disorders and QoL among PTs are not substantiated. This study aimed to investigate correlations between work-related LBP and QoL among PTs.

Methods: This cross-sectional study used an online survey completed by PTs. The survey form was based on a previously published questionnaire for assessing the experience of work-related LBP and the 36-Item Short Form Health Survey for evaluating QoL. The dependent variable was QoL; the independent variables were LBP rating, how LBP impacted the work of the PTs, weekly hours of direct patient contact, experience as a PT, and income.

Results: A total of 690 PTs, consisting of males (375) and females (315), completed the survey form. Correlation analysis revealed significant correlations between QoL and the following variables: income (r=0.42, p < 0.01), LBP impact on participant's job performance (r=0.41, p < 0.01), experience as a PT (r=0.17, p < 0.01), weekly hours of direct patient contact (r=0.11, p < 0.01), rating of LBP (r=-0.64, p < 0.01) and area of PT specialty (r=-0.15, p < 0.01).

Conclusions: The study showed correlations related to multiple factors between QoL and work-related LBP among PTs. Further investigation is needed to obtain more knowledge about these correlations.

Keywords: low back pain; quality of life; physical therapists; work; musculoskeletal disorder.

www.ijphy.com

CORRESPONDING AUTHOR

*[1]**Feras Alsultan BSc (PT), MSc, PhD**

Assistant Professor, Department of Physical Therapy, College of Applied Medical Sciences Qassim University, Buraydah, 51452 Saudi Arabia.
Email: f.alsultan@qu.edu.sa

[1]Department of Physical Therapy, College of Applied Medical Sciences, Qassim University, Buraydah, Saudi Arabia.
[2]Department of Physical Therapy and Rehabilitation, Qassim University Medical City, Qassim University, Buraydah, Saudi Arabia.

BACKGROUND

Work-related low back pain (LBP) is a common musculoskeletal disorder [1]. Work-related LBP impacts health and productivity negatively, affecting employees and employers [2]. Healthcare providers, including physical therapists, are at high risk of developing work-related LBP [3,4], which may limit employees' ability to perform their work [5].

Based on a previous systematic review, physical therapists were more susceptible to developing LBP compared to other healthcare professionals [6], including on-the-job injuries that can have serious consequences, such as torn ligaments and dislocations [7]. A high prevalence of LBP was reported among physical therapists, with approximately 49% of LBP cases due to work [8,9].

Most healthcare professionals are required to perform repeated tasks, which might impact the back region [10]. This can lead to LBP and reduce quality of life (QoL) [10]. Physical therapists' work is especially likely to include physical tasks, including manual therapy techniques, which can lead to LBP [3].

LBP is one of the main reasons for work absence and notably impacts QoL [1,11]. Even though LBP might, therefore, contribute to decreasing QoL among physical therapists [3,12], little is known regarding correlations between work-related musculoskeletal disorders and QoL in this specific professional group [13]. It is essential to determine factors impacting QoL among healthcare workers [14]. Therefore, this research aimed to identify and evaluate correlations between work-related LBP and QoL among physical therapists.

METHODS

2.1. Study design

A cross-sectional study design was established, with data gathered via an online questionnaire. One group of physical therapists completed the online form based on a previously published questionnaire [9,15]. Minor modifications were made to the questionnaire by adapting the 36-item Short Form Health Survey (SF-36) to answer our research question [16]. This research followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines [17].

2.2. Study setting

An online questionnaire was sent to physical therapists in different cities and regions in the Kingdom of Saudi Arabia (KSA) between February 2022 and September 2022.

2.3. Participants

Participants were recruited through advertisements from local and national physical therapy departments and centers in KSA. An online link to the questionnaire form was sent to physical therapists, accompanied by an invitation to participate in the research. The link led to a web page with a complete study description. Potential participants could then either provide informed consent or decline to participate.

The convenience sample recruited was similar to those in previous studies investigating outcome measures, including SF-36, used by physical therapists [18,19]. Inclusion criteria specified licensed physical therapists currently practicing their profession in KSA. Participants were excluded if they had any congenital deformity, a recent back injury/surgery, or were pregnant females.

Ethical approval was obtained from the Research Ethics Committee at Qassim University before commencing the study (Approval No: 21-08-13). All participants provided informed consent.

2.4. Instruments and outcomes

The online form used in this study was divided into three parts. The first part collected biographical information (age, gender, past medical history, etc.) of participants. Subsequently, the questionnaire collected data on the physical therapists' professional career (e.g., experience, patient contact hours per week, presence and characteristics of LBP, etc.). This part was used to assess the experience of work-related LBP among physical therapists. Further, to investigate how LBP is related to the quality of life (QoL) among physical therapists, the SF-36 was used. The SF-36 is a valid and reliable instrument [20] used to evaluate quality of life. It includes multiple domains related to QoL, such as physical functioning, bodily pain, and social functioning, to provide an overall evaluation of QoL [16,21]. SF-36 scores ranged from 0 (lowest) to 100 (highest), with the highest score referring to the absence of impairment [21].

2.5. Data analysis

Data was analyzed using SPSS 23 statistical software (Armonk, NY: IBM Corp.). Descriptive statistics were obtained, including means, standard deviations, and frequencies. Spearman's rank correlation coefficient (rho) assessed associations between the different outcome measures. The dependent variable was QoL, and the independent variables were LBP rating, how LBP impacted the work of the physical therapist, weekly hours of direct patient contact, experience as a physical therapist (PT), and income.

A multiple linear regression model was used to investigate the interaction between QoL and the following independent variables: LBP rating, whether the participant suffered from LBP, how LBP impacted the work of the PT, weekly hours of direct patient contact, experience as a PT, income, and area of PT specialty. The strength of the correlation can be categorized as follows: poor correlation: <0.3; fair correlation: between 0.3 and 0.5; moderately strong correlation: between 0.6 and 0.8; and very strong correlation: >0.8, according to the guidelines set by Chan (2003)[22]. The level of statistical significance was set at $p < 0.01$.

RESULTS

In total, 690 subjects completed the questionnaire and met the inclusion criteria. The sample consisted of more male (375) than female (315) participants. *Table 1* shows a summary of the participants' characteristics.

Table 1. Participants' characteristics

Demographics	IG Group
N (males/females)	690 (375/315)
Age – mean (SD)	30.8 years (6.3)
Previous medical history (e.g., diabetes or HTN) prior to LBP	Yes (31); No (659)
Previous physical disabilities prior to LBP	Yes (59); No (631)
Experience as a physical therapist	≤5 years (380); >5 years (310)
Direct patient contact hours per week – mean (SD)	34.4 hours/week (15.5)
Did you have LBP prior to working as a physical therapist?	Yes (295); No (395)
Did you have LBP after working as a physical therapist?	Yes (570); No (120)
Did low back pain affect your job as a physical therapist?	Yes (465); No (225)
If you have low back pain, how would you score your pain on a scale from 0-10 – mean (SD)?	6.7/10 (2.4)
Quality of life (SF-36) – mean (SD)[1]	66.8 (17.1)
Quality of life (SF-36) – mean (SD)[2]	80.9 (15.1)
Participants who had LBP after working	82.60% (570)
Participants whose LBP after working affected their jobs	81.57% (465)

SD: Standard deviation; LBP: Low back pain; HTN: Hypertension; SF-36: 36-Item Short Form Survey

[1] Participants who had LBP after working as a PT.

[2] Participants who did not have LBP after working as a PT.

Of the participants who completed the questionnaire, approximately 82.60% (570) suffered from LBP following their work as a physical therapist. Furthermore, 81.57% (465) of those with LBP indicated that LBP affected their jobs as physical therapists. Finally, the overall QoL reported by participants who had LBP after working as a PT was 66.8%, while those who did not have LBP after working as a PT had a QoL of 80.9%. There was no missing data in this study.

3.1. Findings of Spearman's rank correlation coefficient (rho)

Correlations between QoL and other variables

Results of the correlation analysis showed that there was a significant and positive correlation between QoL and income (r=0.42, p < 0.01) and between QoL and LBP that impacted the participant's job performance (r=0.41, p < 0.01). The strength of both of these correlations was fair. Further, a significant and positive poor correlation was located between QoL and experience as a PT (r=0.17, p < 0.01), as well as between QoL and weekly hours of direct patient contact (r=0.11, p < 0.01). There was also a significant and moderately strong negative correlation between QoL and rating of LBP (r=-0.64, p < 0.01). Also, a significant but poor negative correlation was found between QoL and area of PT specialty (r=-0.15, p < 0.01).

Correlation between independent variables

There was a significant but poor positive correlation between experience as a PT and the following variables: weekly hours of direct patient contact (r=0.14, p < 0.01) and LBP that affected the participant in doing their job (r=0.20, p < 0.01). In addition, a significant and fair positive correlation was revealed between experience as PT and income (r=0.47, p < 0.01). A significant and poor negative correlation between experience as a PT and area of PT specialty (r=-0.15, p < 0.01) was found. However, no significant correlation was observed between PT experience and LBP rating (r=-0.03, p > 0.01).

A significant but poor positive correlation was observed between weekly hours of direct patient contact and income (r=0.16, p < 0.01). However, there were no significant correlations between weekly hours of direct patient contact and three variables: LBP rating (r=0.03, p > 0.01), LBP that affected the participant's job performance (r=0.06, p > 0.01), and area of PT specialty (r=0.07, p>0.01).

There was a significant and fair negative correlation between LBP affecting the participant's job performance and LBP rating (r=-0.54, p < 0.01) and a significant but poor negative correlation between LBP affecting the participant's job performance and the following variables: income (r=-0.12, p < 0.01) and area of PT specialty (r=-0.10, p < 0.01).

A significant but poor negative correlation between LBP rating and area of PT specialty (r=-0.14, p < 0.01) was found. No significant correlation was found between LBP rating and income (r=0.05, p > 0.01). Also, there was no significant correlation between income and area of PT specialty (r=-0.11, p > 0.01). A summary of the correlation analysis is presented in *Table 2*.

Table 2. Results of correlation analysis

	QoL (SF-36)	Experience as a PT	Weekly hours of direct patient contact	Did LBP affect you from doing your job?	Rating of LBP (0-10)	Income	Area of PT specialty
QoL (SF-36)	1.00						
Experience as a PT	0.17*	1.00					
Weekly hours of direct patient contact	0.11*	0.14*	1.00				
Did LBP affect you from doing your job?	0.41*	0.20*	0.06	1.00			
Rating of LBP (0-10)	-0.64*	-0.03	0.03	-0.54*	1.00		
Income	0.42*	0.47*	0.16*	-0.12*	0.05	1.00	
Area of PT specialty	-0.15*	-0.15*	0.07	-0.10*	-0.14*	-0.11	1.00

*= correlation significant at p < 0.01

QoL: Quality of life; SF-36: 36-Item Short Form Survey; PT: Physical therapist; LBP: Low back Pain.

3.2. Findings based on the multiple linear regression model

The multiple linear regression model results indicated that the independent variables explained 54% of QoL as measured by the SF-36 (R^2=0.54). In the model, interaction with LBP rating (Regression Coefficient [RC]: -1.8; 95% CI: -2.4 to -1.2; P <0.001), LBP affected job performance (RC: 10.8; 95% CI: 7.9 to 13.7; P <0.001), experience as PT (RC: -2.8; 95% CI: -0.1 to -3.04; P= 0.002), and income (RC: 4.8; 95% CI: 3.4 to 6.2; P<0.001) were all significantly associated with QoL among physical therapists.

In addition, the multiple linear regression model revealed that participants suffering from LBP during their work as a PT (RC: 4.2; 95% CI: 0.54 to 7.9; P =0.025), weekly hours of direct patient contact (RC: 0.06; 95% CI: -0.006 to 0.13; P= 0.07), and area of PT specialty (RC: -0.17; 95% CI: -0.59 to 0.25; P=0.43) were not significantly associated with QoL among physical therapists (see *Table 3*).

Table 3. Multiple Linear Regression Model

Model R²=0.54			
Independent Variable	**Regression Coefficient**	**95% Confidence Interval**	**p-value**
Rating of LBP (0-10)	-1.8	-2.4 ; -1.2	<0.001
Did you suffer from LBP during your work as a PT?	4.2	0.54 ; 7.9	0.025
Did LBP affect you from doing your job?	10.8	7.9 ; 13.7	<0.001
Weekly hours of direct patient contact	0.06	-0.006 ; 0.13	0.07
Experience as a PT	-2.8	-0.1 ; -3.04	0.002
Income	4.8	3.4 ; 6.2	<0.001
Area of PT specialty	-0.17	-0.59 ; 0.25	0.43

*= correlation significant at p < 0.01

LBP: Low back pain; PT: Physical therapist.

DISCUSSION

This research was designed to identify and evaluate correlations between work-related LBP and QoL among physical therapists. The current study showed correlations between QoL and work-related LBP related to income, whether LBP impacted the participant's job performance, experience as a PT, weekly hours of direct patient contact, rating of LBP, and area of PT specialty. Furthermore, LBP ratings LBP that affected job performance, experience as a PT, and income were associated with QoL among physical therapists.

4.1. Correlation between QOL and work-related LBP

This study's findings agreed with previous studies that investigated correlations between QoL and work-related LBP among healthcare providers. For example, Mroczek et al. (2020) showed that back pain was associated with decreased QoL in most healthcare workers, including nurses, midwives, and physical therapists [10]. These authors used the Visual Analogue Scale (VAS) to evaluate back pain and the World Health Organization Quality of Life BREF (WHOQoL-BREF) to assess QoL [10]. The mean (SD) QoL among healthcare workers found in this study was 65.11 (9.74), which is similar to the mean (SD) 66.8 (17.1) seen in the physical therapists who participated in our study [9]. The difference in outcome measures used prevents more comparisons between the study findings. However, WHOQoL-BREF and the SF-36 instruments provide similar measures and have moderate relationships among domains [23].

Morimoto et al. (2019) used the Numerical Pain Scale (NPS) to evaluate LBP and the SF-36 to assess QoL. They demonstrated a decrease in QoL among nurses with LBP compared with nurses without LBP [24]. Specifically, statistically significant decreases in QoL were found in the following domains: physical functioning and physical role, general health perceptions, vitality, pain, and mental health [24].

In keeping with the findings of our study, previous research by Mroczek et al. (2020) and Morimoto et al. (2019) also demonstrated consistent findings of reduced QoL among different groups of healthcare workers, even though various tools to assess LBP and QoL were used in these studies [10, 24]. Further investigation is suggested to obtain more knowledge regarding correlations between LBP and QoL. Studies should be conducted among particular groups of healthcare professionals, including physical therapists, using similar instruments and outcome measures to allow direct comparisons between findings.

4.2. Multiple linear regression model findings

This research demonstrates that physical therapists who report a high level of LBP and/or have more years of experience as a PT are more likely to report decreased QoL, suggesting that these factors are predictive of decreased QoL. Previous studies showed a positive correlation between pain intensity and QoL in individuals with LBP [25–27]. Pain intensity could also predict poor QoL among people with pain [28]. Therefore, physical therapists who experience more LBP could also be more likely to experience reduced QoL [28].

The results of this study demonstrate that when physical therapists receive a low income, it is also a predictor for low QoL. Lee, Park, Seo, and Kim (2011) also reported that income level could impact QoL among physical therapists [29]. In the current study, physical therapists on lower incomes might be less likely to miss work even if they are in pain or could struggle more than better-paid PTs to obtain adequate treatment for LBP.

In addition, this study suggests that QoL could predict whether LBP prevents physical therapists from performing their job duties. To our knowledge, no previous studies have investigated these variables, which prevents direct comparison.

4.3. Strengths and limitations

Based on our knowledge, this is the first study to locate correlations between work-related LBP and QoL using a special questionnaire designed for measuring LBP among physical therapists. Although this questionnaire provides information about work-related LBP, it has not been tested for validity and reliability. The included sample in this study was a convenience sample, and the sample

size was not calculated priori; thus, the generalisability of the study findings may be reduced. In addition, causal relationships cannot be determined in a cross-sectional study. Nevertheless, the results of this study highlight the presence of correlations between QoL and work-related LBP and substantiate that these are related to different factors. Therefore, further research is suggested to investigate correlations between work-related LBP and QoL among physical therapists to obtain more knowledge about any correlations.

CONCLUSIONS

This research revealed correlations between QoL and work-related LBP among physical therapists. These correlations were related to various factors, including income, whether LBP impacted the participant's job performance, experience as a PT, weekly hours of direct patient contact, rating of LBP, and area of PT specialty. Further investigation is needed to obtain more information about the nature of these correlations.

REFERENCES

[1] Park JH, Lee SH, Ko DS. The effects of the Nintendo Wii exercise program on chronic work-related low back pain in industrial workers. J Phys Ther Sci. 2013;25(8):985–8.

[2] Pransky G, Benjamin K, Hill-Fotouhi C, Himmelstein J, Fletcher KE, Katz JN, et al. Outcomes in work-related upper extremity and low back injuries: Results of a retrospective study. Am J Ind Med. 2000;37(4):400–9.

[3] Ahmed S, Numan SM, Rahman MH. Prevalence of work-related low back pain and associated risk factors among physiotherapists in Dhaka, Bangladesh: a cross-sectional study. Int J Ther Rehabil. 2023;30(9):1–11.

[4] Almalki M, Alkhudhayri MH, Batarfi AA, Alrumaihi SK, Alshehri SH, Aleissa SI, et al. Prevalence of low back pain among medical practitioners in a tertiary care hospital in Riyadh. Saudi Journal of Sports Medicine. 2016;16(3):205–9.

[5] Reme SE, Shaw WS, Steenstra IA, Woiszwillo MJ, Pransky G, Linton SJ. Distressed, immobilized, or lacking employer support? A sub-classification of acute work-related low back pain. J Occup Rehabil. 2012;22:541–52.

[6] Al Amer HS. Low back pain prevalence and risk factors among health workers in Saudi Arabia: A systematic review and meta-analysis. J Occup Health. 2020;62(1):e12155.

[7] Obembe AO, Teslim OA, Johnson O, Emechete A, Oyinlola M. Occupational injuries among physical therapists in South-West, Nigeria. Nigerian Journal of Medical Rehabilitation. 2008;13:25-30.

[8] Mierzejewski M, Kumar S. Prevalence of low back pain among physical therapists in Edmonton, Canada. Disabil Rehabil. 1997;19(8):309–17.

[9] Shehab D, Al-Jarallah K, Moussa MAA, Adham N. Prevalence of low back pain among physical therapists in Kuwait. Medical Principles and Practice. 2003;12(4):224–30.

[10] Mroczek B, Lubkowska W, Jarno W, Jaraczewska E, Mierzecki A. Occurrence and impact of back pain on the quality of life of healthcare workers. Annals of Agricultural and Environmental Medicine. 2020;27(1):36–42.

[11] Járomi M, Szilágyi B, Velényi A, Leidecker E, Raposa BL, Hock M, et al. Assessment of health-related quality of life and patient's knowledge in chronic non-specific low back pain. BMC Public Health. 2021;21(1):1–8.

[12] Abu-Taleb W, Rehan Youssef A. Work-related musculoskeletal disorders among Egyptian physical therapists. Bulletin of Faculty of Physical Therapy. 2021;26:1–11.

[13] Bae YH, Min KS. Associations between work-related musculoskeletal disorders, quality of life, and workplace stress in physical therapists. Ind Health. 2016;54(4):347–53.

[14] Iwakiri K, Sotoyama M, Takahashi M, Liu X. Organization factors influencing quality of work life among seniors' care workers with severe low back pain. J Occup Health. 2023;65(1):e12378.

[15] Alghadir A, Zafar H, Iqbal ZA, Al-Eisa E. Work-related low back pain among physical therapists in Riyadh, Saudi Arabia. Workplace Health Saf. 2017;65(8):337–45.

[16] Framework IC. The MOS 36-item short-form health survey (SF-36). Med Care. 1992;30(6):473–83.

[17] Cuschieri S. The STROBE guidelines. Saudi J Anaesth. 2019;13(Suppl 1):S31.

[18] Jette DU, Halbert J, Iverson C, Miceli E, Shah P. Use of standardized outcome measures in physical therapist practice: perceptions and applications. Phys Ther. 2009;89(2):125–35.

[19] Pigati PA da S, Righetti RF, Dourado VZ, Nisiaymamoto BTC, Saraiva-Romanholo BM, Tibério I de FLC. Resilience Improves the Quality of Life and Subjective Happiness of Physiotherapists during the COVID-19 Pandemic. Int J Environ Res Public Health. 2022;19(14):8720.

[20] Brazier JE, Harper R, Jones NM, O'cathain A, Thomas KJ, Usherwood T, et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. Br Med J. 1992;305(6846):160–4.

[21] García M, Rohlfs I, Vila J, Sala J, Pena A, Masiá R, et al. Comparison between telephone and self-administration of Short Form Health Survey Questionnaire (SF-36). Gac Sanit. 2005;19:433–9.

[22] Chan YH. Biostatistics 104: correlational analysis. Singapore Med J. 2003;44(12):614–9.

[23] Abbasi-Ghahramanloo A, Soltani-Kermanshahi M, Mansori K, Khazaei-Pool M, Sohrabi M, Baradaran HR, et al. Comparison of SF-36 and WHOQoL-BREF in Measuring Quality of Life in Patients with Type 2 Diabetes. Int J Gen Med [Internet]. 2020 Aug;Volume 13:497–506. Available from: https://www.dovepress.com/comparison-of-sf-36-and-whoqol-bref-in-measuring-quality-of-life-in-pa-peer-reviewed-article-IJGM

[24] Morimoto HC, Jones A, Natour J. Assessment of gesture behavior and knowledge on low back pain among nurses. Advances in Rheumatology. 2019;58.

[25] Comachio J, Magalhães MO, Marques AP. A cross-

sectional study of associations between kinesiophobia, pain, disability, and quality of life in patients with chronic low back pain. Advances in Rheumatology. 2019;58.

[26] Kovacs FM, Abraira V, Zamora J, del Real MTG, Llobera J, Fernandez C. Correlation between pain, disability, and quality of life in patients with common low back pain. Spine (Phila Pa 1976). 2004;29(2):206–10.

[27] Yamada K, Matsudaira K, Takeshita K, Oka H, Hara N, Takagi Y. Prevalence of low back pain as the primary pain site and factors associated with low health-related quality of life in a large Japanese population: a pain-associated cross-sectional epidemiological survey. Mod Rheumatol. 2014;24(2):343–8.

[28] Yazdi-Ravandi S, Taslimi Z, Jamshidian N, Saberi H, Shams J, Haghparast A. Prediction of quality of life by self-efficacy, pain intensity and pain duration in patient with pain disorders. Basic Clin Neurosci. 2013;4(2):117.

[29] Lee IH, Park SY, Seo ST, Kim YN. A survey of the subjective quality of life of clinical physical therapists and factors affecting their work satisfaction factors. J Phys Ther Sci. 2011;23(3):503–8.