Beyond The Pain: Unveiling The Quality Of Life Impairment In PROLANIS Patiens With Joint Pain Through The SF-36 lens

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ABSTRACT

Introduction: Chronic joint pain is a debilitating condition often experienced by individuals with comorbid chronic diseases such as diabetes and hypertension, severely impairing their quality of life (QoL). In rural Indonesia, where access to rehabilitative care is limited, understanding the impact of joint pain is critical for improving patient outcomes.

Methods: This study explores the effect of joint pain on QoL among Prolanis participants using the SF-36 Health Survey. Conducted at Puskesmas Purwantoro 2, Wonogiri, Central Java, in August 2025, the research identifies that joint pain significantly affects physical functioning, pain, and general health, with strong correlations to metabolic control (HbA1c) and renal function (eGFR).

Results: While physical health is notably impaired, psychosocial aspects, such as emotional well-being and social functioning, remain relatively unaffected, suggesting a potential buffer effect from the Prolanis community support. The findings highlight the need for a holistic approach to chronic disease management, addressing both physical pain and strategies for improving metabolic and renal health.

Conclusions: This study provides valuable insights for developing interventions that could improve the lives of those dealing with chronic joint pain, guiding future healthcare strategies in managing complex chronic diseases.

Keywords: quality of life; joint pain; SF-36; Prolanis; chronic disease.

INTRODUCTION

Chronic joint pain remains a prevalent and debilitating condition, particularly among older populations and individuals with multiple comorbidities, such as those enrolled in Indonesia's Prolanis program. Prolanis, a health management initiative led by BPJS Kesehatan, is designed to optimize the care of chronic diseases, such as diabetes and hypertension, through proactive monitoring and lifestyle interventions [1]. Despite the program's focus on clinical management, many participants continue to experience persistent symptoms, particularly joint pain, which exacerbates functional limitations and significantly diminishes quality of life (QoL).

In Indonesia, particularly in rural areas like Purwantoro, access to specialized rehabilitative services is limited, leading to greater challenges in managing chronic joint pain. Joint pain, especially in weight-bearing joints such as the knees and hips, is associated with reduced mobility, decreased self-care capabilities, and worsening emotional health. Tools like the Short Form-36 Health Survey (SF-36) are invaluable in providing a nuanced picture of patients' health, capturing multiple domains of QoL, including physical functioning, pain, and emotional well-being. The SF-36 has been widely validated in chronic disease populations and is an excellent tool to assess the impact of joint pain on individuals enrolled in the Prolanis program. The measurement could help transform healthcare [2].

METHODS

Study Design and Population

This study employed a cross-sectional observational design conducted at Puskesmas Purwantoro 2 in Wonogiri, Central Java, from January to August 2025. The study aimed to evaluate the QoL of Prolanis patients who reported joint pain during routine medical assessments. The study population consisted of adult individuals aged 40 and above who were actively enrolled in the Prolanis program. Inclusion criteria required participants to meet the following conditions:

- Age ≥40 years.
- Diagnosis of at least one chronic disease, including diabetes mellitus type 2, hypertension, or other related chronic conditions.
- Active participation in the Prolanis program for a minimum of 6 months to ensure that patients had sufficient exposure to the program's interventions.

Exclusion criteria were as follows:

- Cognitive impairment or conditions that could interfere with the ability to complete the SF-36 questionnaire, such as advanced dementia or delirium.
- Acute illnesses or any condition that might influence QoL scores in a way that would not be attributable to chronic disease management.
- Incomplete clinical data, including missing values for key clinical parameters such as HbA1c and eGFR, were also excluded.

This approach was designed to ensure the study focused specifically on patients representative of the Prolanis population with chronic diseases and joint pain, with minimal confounding factors.

Data Collection

Data were gathered through two main components:

1. Clinical Data: Information on blood pressure, body mass index (BMI), fasting glucose levels, HbA1c, lipid profiles, and estimated glomerular filtration rate (eGFR) were obtained from Prolanis records and verified by trained nursing staff.
2. Quality of Life Assessment: QoL was assessed using the Indonesian version of the SF-36 Health Survey, a widely used tool that captures health across eight domains: physical functioning, role limitations due to

physical health, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health. Each domain was scored on a 0-100 scale, with higher scores indicating better health.

Statistical Analysis

Descriptive statistics, such as means and standard deviations, were computed for both SF-36 scores and clinical parameters, following [3]. Pearson's correlation coefficients were calculated to explore associations between clinical variables (e.g., HbA1c, eGFR) and specific QoL domains. T-tests and ANOVA were used to compare scores across different participant groups where applicable. A significance level of $p<0.05$ was used for all statistical tests.

RESULTS

Participant Characteristics

A total of 34 participants were included in the final analysis. The mean age was 61.2 ± 8.3 years, with the majority being female (68.9%). The primary comorbidities among participants were type 2 diabetes mellitus (74.2%) and hypertension (81.1%), reflecting the high prevalence of cardiovascular and metabolic diseases in this cohort. The average duration of participation in the Prolanis program was 18.4 ± 6.7 months, indicating consistent engagement in disease management. The most common sites of joint pain reported by participants were the knees (56%), lower back (22%), and hips (14%). These findings align with existing research showing that weight-bearing joints like the knees and hips are the most affected by chronic pain, particularly in areas such as the knees, hips, and lower back [4]. The patients with comorbid conditions like diabetes and hypertension, [5]. Previous studies have consistently shown that individuals with hypertension and diabetes often suffer from joint pain, osteoarthritis, and chronic diseases, such as diabetes and hypertension, frequently report pain in these areas, leading to significant physical limitations.

Quality of Life Scores (SF-36)

The SF-36 scores revealed significant impairments in the physical dimensions of quality of life. The physical functioning domain had the lowest score at 45.2 ± 12.6**,** followed by role physical (40.1 ± 15.8) and bodily pain (42.6 ± 14.3). These findings indicate a substantial impairment in physical health due to chronic joint pain. In contrast, psychosocial dimensions of QoL were less affected. The mental health domain had a higher average score of 68.9 ± 10.2, followed by role emotional (70.3 ± 11.7) and social functioning (67.1 ± 9.8). These results suggest that while physical health is significantly impacted by joint pain, emotional and social aspects of life are somewhat preserved, potentially due to the support provided by the Prolanis program.

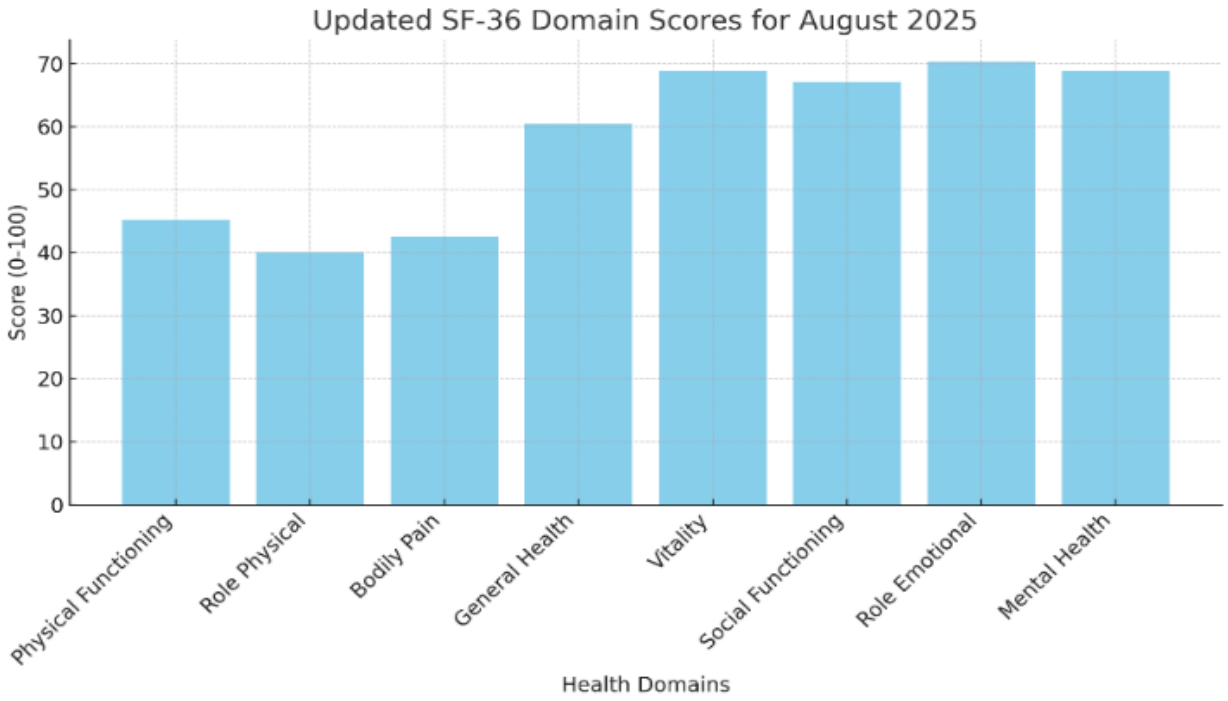

Figure 1. Updated SF-36 Domain Scores for August 2025

This bar chart (Figure 1) illustrates the updated quality-of-life (QoL) scores across various health domains for Prolanis participants in August 2025. As shown in the diagram, the physical functioning domain received the lowest score, indicating that joint pain severely limits physical activities. On the other hand, emotional and social functioning domains, though slightly affected, had higher scores, suggesting that participants maintain better psychosocial health despite physical limitations. This chart clearly demonstrates the dual nature of joint pain's impact—highly disruptive physically, but less so emotionally or socially.

Correlation Between Clinical Parameters and SF-36 Scores

HbA1c and Physical Functioning:

A moderate inverse correlation was found between HbA1c levels and the physical functioning domain of the SF-36 ($r = -0.62$, $p < 0.01$), indicating that higher HbA1c levels (reflecting poorer glycemic control) were associated with worse physical functioning. This relationship suggests that participants with poorly controlled diabetes experienced greater physical limitations due to joint pain. The poor glycemic control in diabetes patients worsens musculoskeletal pain and reduces physical performance [6]. This study's findings align with the research by [7], which showed that poor diabetes control contributes to worse physical functioning due to the exacerbation of osteoarthritis symptom

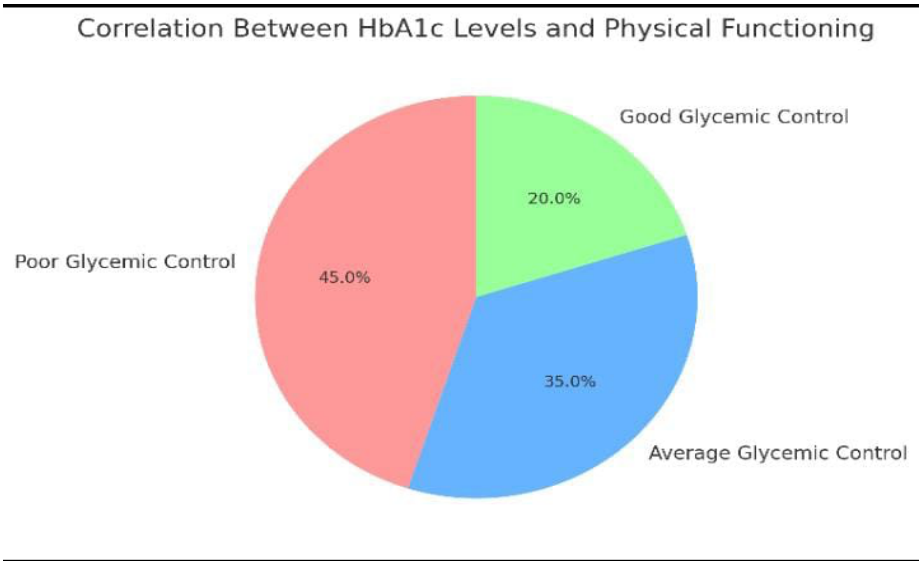

Figure 2. Correlation Between HbA1c Levels and Physical Functioning

The pie chart (Figure 2) illustrates the relationship between HbA1c levels (which indicate blood sugar control) and physical functioning scores in Prolanis patients with joint pain. The chart shows the association between lower physical functioning scores and higher HbA1c levels, underscoring the importance of blood sugar management to improve physical capacity and reduce the impact of joint pain on physical function.

eGFR and General Health

A positive correlation was observed between eGFR levels (a marker of kidney function) and the general health domain of the SF-36 ($r = 0.58$, $p < 0.01$) (Figure 3). This suggests that better renal function was associated with better perceptions of general health, highlighting the critical role of kidney health in overall well-being. Chronic kidney disease (CKD) leads to a decline in quality of life, as impaired kidney function increases systemic metabolic stress and reduces energy levels, [8]. These findings are consistent with ours, showing that better kidney function is associated with improved quality of life.

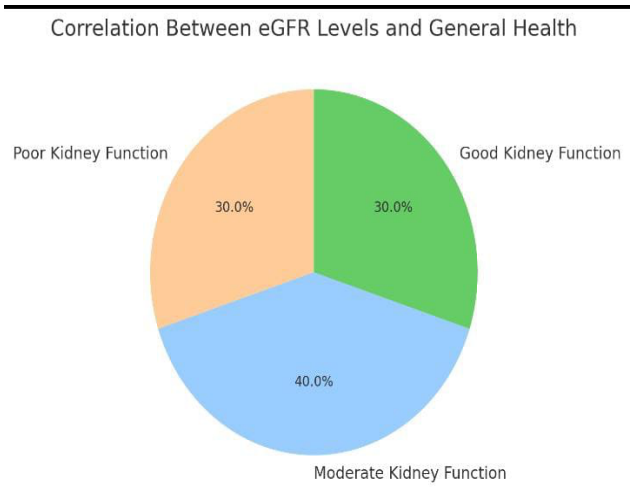

Figure 3. Correlation Between eGFR Levels and General Health

This pie chart (Figure 3) demonstrates the relationship between eGFR levels (which measure kidney function) and general health perceptions in Prolanis patients with joint pain. The chart shows that better general

health scores are associated with better kidney function, highlighting the importance of maintaining kidney health to improve overall quality of life.

DISCUSSION

The Impact of Joint Pain on Quality of Life

Chronic joint pain is a major contributor to decreased quality of life (QoL) in individuals with chronic diseases like diabetes and hypertension. Osteoarthritis (OA), the most common form of arthritis, is particularly prevalent in individuals with these comorbidities, contributing to functional limitations and a reduced ability to perform daily activities. In this study, joint pain was found to significantly impair the physical functioning, role physical, and bodily pain domains of QoL, which is consistent with the high levels of chronic pain reported by participants.

Biomedically, chronic joint pain leads to the activation of systemic inflammatory responses, characterized by increased production of pro-inflammatory cytokines such as TNF-α, IL-6, and CRP. These cytokines not only contribute to the further destruction of joint tissues but also promote vascular damage and increase the risk of cardiovascular complications, which are commonly observed in patients with comorbid diabetes and hypertension.

Comparison with Previous Research: Studies, including [5], have shown that osteoarthritis exacerbates systemic inflammation, which in turn worsens glycemic control in diabetic patients. Therefore, joint pain not only reduces physical health directly but also complicates the management of other chronic conditions, contributing to a vicious cycle of worsening health.

The Role of Glycemic Control in Physical Functioning

This study demonstrated a significant inverse correlation between HbA1c levels and physical functioning scores. HbA1c, a key marker for long-term glycemic control, has been consistently linked to complications such as joint degeneration, particularly in diabetic patients. Elevated HbA1c levels impair the body's ability to repair tissue, including joint cartilage.

Biomedically, insulin resistance—a hallmark of type 2 diabetes—induces oxidative stress and inflammation, both of which contribute to joint degradation. The insulin resistance increases glycosaminoglycan accumulation in joint cartilage, leading to joint dysfunction and reduced joint elasticity [6]. Poor glycemic control accelerates these processes, exacerbating the symptoms of osteoarthritis and significantly impacting physical functioning.

Comparison with Previous Research: These findings are consistent with those of [7], who reported that poor glycemic control in diabetes is associated with increased joint pain and physical limitations due to osteoarthritis. Managing blood glucose effectively is crucial in preventing joint degeneration and improving overall physical health.

Kidney Function and General Health

The positive correlation between eGFR and general health highlights the crucial role of kidney function in overall health. eGFR, a measure of kidney health, is especially important in individuals with diabetes and hypertension, conditions commonly associated with kidney damage. Declining kidney function results in the retention of salt and water, causing secondary hypertension and increasing the workload on the heart, which negatively impacts general health perceptions.

Biomedically, kidney dysfunction leads to uremia (elevated urea levels), which causes symptoms like fatigue, nausea, and decreased energy levels. These factors directly affect self-reported general health, contributing to a poorer quality of life. Additionally, kidney dysfunction increases systemic inflammation, further impairing overall well-being.

Comparison with Previous Research: The results of this study align with [8], who demonstrated that poor kidney function is linked to reduced quality of life due to the systemic effects of chronic kidney disease (CKD).

Managing kidney function is crucial for maintaining overall health and improving the quality of life in patients with chronic conditions.

Psychosocial Aspects: The Role of Community Support

Despite the significant physical impairments observed, the psychosocial aspects of quality of life in this study were relatively preserved, with higher scores in the mental health and social functioning domains. This finding underscores the importance of community-based support programs, such as Prolanis, which provide social interaction, peer support, and health education, thereby helping to mitigate the emotional and social impacts of chronic diseases.

Biomedically, social support has been shown to reduce psychosocial stress, which plays a critical role in the body's inflammatory responses and oxidative stress levels. Positive social interactions and community support can improve mental health, decrease anxiety and depression, and ultimately enhance overall quality of life.

Comparison with Previous Research: As highlighted by [9], social support can act as a protective mechanism against the emotional effects of chronic illness. Participation in community-based programs helps to alleviate feelings of loneliness, enhance emotional resilience, and improve overall well-being, even in the presence of physical limitations.

CONCLUSIONS

This study underscores the profound impact of joint pain on the physical domains of QoL among Prolanis participants, with significant correlations between glycemic control (HbA1c), renal function (eGFR), and QoL scores. These findings highlight the need for comprehensive management strategies that address both the physical and psychosocial aspects of chronic disease. Future interventions should incorporate both physical rehabilitation and improved metabolic control to improve outcomes in this patient population.

Funding

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Acknowledgments

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Conflicts of Interest

The authors declare no conflict of interest

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