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Original Article

Assessing the knowledge, Awareness, and potential impact of physiotherapy in fracture rehabilitation among Al-Baha Population: A comprehensive analysis

Faisal Alzahrani[1], Adel Alghamdi[1*], Amer Alghamdi[1], Khader Alghamdi[1], Nada Alghamdi[1], Anmar Alghamdi[1], Alaa Alzahrani[1], Hashim Alghamdi[1], Ahmed Khallufah[1], Yousef Alghamdi[2]

[1.] Faculty of Medicine, Al-Baha University, Al-Baha, Saudi Arabia.
[2.] Department of Surgery, Faculty of Medicine, Al-Baha University, Al-Baha, Saudi Arabia.

*Corresponding Authors: dr1adelghamdi@gmail.com

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Abstract

Background: Fractures represent one of the most significant public health concerns globally, impacting different individuals. Understanding the public perspectives on managing fractures, including physical therapy (PT), is essential. Therefore, this study aimed to assess the knowledge, Awareness, and potential impact of physiotherapy in fracture rehabilitation among the Al-Baha Population. **Methodology:** This cross-sectional Study was conducted in the Al-Baha region of Saudi Arabia. It relied on a structured Arabic online questionnaire designed by the authors, considering the characteristics of the study population. A pilot study was conducted to refine the questionnaire before distributing it. A convenience sample of 429 participants (243 males and 186 females) with a mean age of 34.06 ± 12.43 years responded to the questionnaire. Data regarding demographic information, previous fracture experience, knowledge, and attitudes toward physical therapy were collected. The Chi-Square test was used to assess significant associations between variables. **Results:** Among the participants, 32.6% reported a history of fractures, with splinting being the most common treatment modality (30.5%). It was found that 65.3% strongly agree that physical therapy plays a pivotal role in fracture healing. Participants emphasized the significance of early PT (73.4% very Important) and patient education regarding physiotherapy (71.6% very important) post-fracture. Support for resource allocation towards PT research (64.6% strongly agree) and integration into fracture treatment plans (50.3% strongly agree) was also substantial. Educational attainment significantly influenced knowledge levels about physical therapy. **Conclusion:** This Study underscores the community's recognition of physical therapy as integral to fracture management, advocating for its early implementation and robust support in healthcare policies. Enhanced educational initiatives and equitable access to rehabilitative services are essential to optimize fracture recovery outcomes and reduce long-term sequelae.

Keywords: Physiotherapy, Physical therapy, fractures, knowledge, awareness, bone fractures

Introduction

Managing the physical effects of fractures and achieving full recovery involves addressing structural healing and overall functionality. PT is crucial in this process; it can be tailored for fracture support and bone healing and enhance overall functional recovery (Tasheva, 2020). However, many individuals tend to underestimate the importance of physical therapy. In some cases, it needs to be sufficiently emphasized within orthopedic care, leading to poor adherence to treatment plans (O'Brien, 2012). Research consistently demonstrates that PT is effective across various orthopedic fracture scenarios (Atkinson et al., 2005). This research highlights the problem-solving approach fundamental to PT, especially in the context of fractures (Krischak et al., 2009). For instance, a randomized controlled trial indicated that an exercise program could be as effective as traditional PT for restoring wrist function after volar plating for wrist fractures. Studies from 2006 emphasized the positive impact of physiotherapeutic methods on quality of life and reduction of complications following osteoporotic fractures (Jasiak-Tyrkalska & Czerwiński, 2006).

Additionally, other research underscores the significance of PT in recovering normal knee function after surgically managed proximal tibia fractures (Tasheva, 2020). A study conducted in India assessing Awareness of PT among medical and non-medical populations revealed a need for increased public education on physiotherapy. It highlighted the need for extensive educational programs to better inform the general public and healthcare professionals (Doshi et al., 2017). After outlining the prior studies, it is reasonable to say that when looked at collectively, these concerns highlight physical therapy's crucial role in the thorough recovery from orthopedic fractures. No previous study had assessed Al-Baha population awareness toward PT in fracture management, and such a Study would provide a cornerstone for future scientific works. This study aims to assess the knowledge, Awareness, and potential impact of PT in fracture rehabilitation among the Al-Baha Population.

Methodology

Study design, sample, and participants

A cross-sectional study based on a convenience sample was conducted in the Al-Baha Region, Saudi Arabia, including its major cities: Al-Baha City, Baljurashi, Al-Makhwah, and Qilwah. The total population of the Al-Baha was estimated to be around 487,108, with 389,483 of them being Saudis, according to the Saudi Building Code National Committee [SBCNC], n.d.)

Using the Raosoft online system, a sample size of 384 participants was calculated to provide a 95% confidence interval with an acceptable margin of error, typically 5%. The sample of 429 participants exceeded this requirement, improving the study's precision.

To qualify for the study, participants had to be Saudi, 18 years old or older, and reside in the Al-Baha region. Individuals residing outside Al-Baha or non-citizens were excluded.

Data collection

A self-reported questionnaire, written in Arabic and designed by the study authors after referring to different surveys used in previous similar studies, was created with consideration of the population's social, environmental, and cultural background. The questionnaire was reviewed and edited by experts. A pilot study was conducted to refine the questionnaire prior to its distribution.

Between April 2024 and July 2024, the questionnaire was distributed using major social media platforms (WhatsApp, X, Snapchat) to reach as much of the study population as possible. The data were collected anonymously using Google Forms after consent was obtained from each participant before they began filling out the questionnaire.

Questionnaire Structure

The questionnaire is designed in four sections. The first section was a consent for participation in the study and questions to include or exclude participants. The second section was for participants' demographic details, including age, gender, and level of education. Ages were divided into five groups: 18-29, 30-39, 40-49, 50-59 and over 60. Likewise, there were groups for educational levels: no education, academic below secondary, academic post-secondary, academic college, and outside schooling years. Occupations of participants were also collected by choosing from a list. The third section of the questionnaire consists of 3 questions related to previous experience with fractures and physiotherapy. The fourth section included ten

multiple-choice questions about knowledge, attitude, and perception of PT in managing fractures. Each correct answer in this section was awarded one point, with no points for wrong answers and blank "I don't know" responses. Participants were indexed according to their scores into three categories: high (8–10 points, representing 80% or more of all correct answers), moderate (6–7 points, showing results compatible with 60-79% overall correct answers), and low (less than 6 points, representing 59% or less on the total correct answers).

Ethical Consideration

The study received ethical approval from the Scientific Research and Ethics Committee of the Faculty of Medicine of Al Baha University in March 2024, with a reference number [REC/SUR/BU-FM/2024/26].

Statistical analysis

Microsoft Excel 2021 was utilized for data entry, cleaning, and coding. SPSS version 26 was employed for the statistical analysis. Descriptive statistics for categorical variables were presented using frequencies and percentages, displayed through tables and graphs. For categorical data, a Chi-Square test was applied to assess associations between demographic factors and levels of knowledge, adhering to Chi-Square test assumptions. Statistical significance was determined using a p-value threshold of 0.05.

Results

The study was conducted among 429 participants, most young adults, with 52.4% falling within the 18-29 age category. Men accounted for more than half of the respondents, representing 56.6%. Additionally, most participants had received higher education, with 65.7% having attended college. Most participants were students (38.9%), while teachers comprised 24.5%, followed by homemakers at 8.4% (Table 1). Furthermore, 67.4% of the participants reported no experience with bone fractures, while 32.6% had experienced at least one fracture. Among those with fractures, the majority were treated with a splint (29.9%), 19.8% did not include PT in their treatment, and 12.8% did (Table 2). The Chi-Square test was used to analyze the association between demographic factors and fracture experience.

Table 1: Demographic factors.

Criteria		N (%)
Age	18-29	225 (52.4%)
	30-39	49 (11.4%)
	40-49	87 (20.3%)
	50-60	64 (14.9%)
	> 60	4 (0.9%)
Gender	Male	243 (56.6%)
	Female	186 (43.4%)
Educational Level	Illiterate	1 (0.2%)
	Primary school	2 (0.5%)
	Intermediate school	6 (1.4%)
	High school	80 (18.6%)
	Diploma	41 (9.6%)
	College	282 (65.7%)
	Master's Degree	15 (3.5%)
	Doctoral Degree	2 (0.5%)
Occupation	Not working	32 (7.5%)
	Student	167 (38.9%)
	Housewife	36 (8.4%)
	medical profession	28 (6.5%)
	Teacher	105 (24.5%)
	Retired	24 (5.6%)
	Other	37 (8.6%)

Table 2: Prevalence of fractures.

Criteria	Response	N (%)
Have you ever had a fracture?	No	289 (67.4%)
	Yes	140 (32.6%)
If yes, did your treatment plan include physical therapy sessions?	No previous fracture	289 (67.4%)
	No	85 (19.8%)
	Yes	55 (12.8%)
If yes, how was the fracture treated?	No previous fracture	289 (67.4%)
	Surgery	1 (0.2%)
	Splint	128 (29.9%)
	Surgery and splint	10 (2.3%)
	Fixation without splint	1 (0.2%)

As shown in Table 3, the acknowledgment of participants that PT plays a vital role in the recovery from a fracture was virtually unanimous. Regarding physical therapy's role in recovery from fractures, 65.3% of the participants feel that PT makes a significant contribution, while an additional 27.0% say this is true. Concerning the timing of physical therapy, 73.4% of participants strongly agreed that they must start therapy early after the fracture, and 18.2% also agreed with its importance.

Table 3: The Awareness of the participants considering the importance of physical therapy

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Physical therapy plays a big role in the fracture healing process.	2 (0.5%)	0 (0%)	31 (7.2%)	116 (27%)	280 (65.3%)
Health organizations should allocate more resources to research and develop physical therapy techniques for treating fractures.	1 (0.2%)	2 (0.5%)	18 (4.2%)	131 (30.5%)	277 (64.6%)
Do you support incorporating physical therapy into the treatment plan for all types of fractures?	4 (0.9%)	10 (2.3%)	48 (11.2%)	151 (35.2%)	216 (50.3%)
Should health organizations implement strategies such as subsidizing costs and offering tele-physical therapy to ensure equal access to physical therapy after fractures?	3 (0.7%)	1 (0.2%)	20 (4.7%)	144 (33.6%)	261 (60.8%)
	Not important	Not sure of its importance	Neutral	Important	Very important
How important is early physical therapy after a fracture?	3 (0.7%)	19 (4.4%)	14 (3.3%)	78 (18.2%)	315 (73.4%)
How important is it to educate patients about physical therapy after a fracture?	1 (0.2%)	5 (1.2%)	12 (2.8%)	104 (24.2%)	307 (71.6%)
How vital are awareness campaigns in promoting the importance of physical therapy in fracture healing and rehabilitation?	3 (0.7%)	0 (0%)	15 (3.5%)	119 (27.7%)	292 (68.1%)
	Healthcare providers	Friends/relatives	Internet and social media	Books/Magazine	All of them
What sources do you rely on primarily for information about treating fractions?	265 (61.8%)	27 (6.3%)	114 (26.6%)	19 (4.4%)	4 (0.9%)

As for patient education about physical therapy after a fracture, 71.6% said it was "very important."

Also, most participants felt there needed to be more research and development in PT techniques to treat broken bones: 64.6% called for this vigorously, while 30.5% agreed. It was similarly powerful in supporting the inclusion of PT in all fracture patients ' regimes: 50.3% were very much in favor, and 35.2% agreed.

Most participants (60.8%) strongly supported health organizations implementing strategies to make PT more accessible, such as subsidizing costs or providing remote PT services. Another 33.6% said this was important too. Additionally, 68.1% of participants believed that awareness campaigns promoting the benefits of PT on healing and rehabilitation after a fracture were significant, while 27.7% found them essential. As for where participants got information about the treatment of fractures, the majority (61.8%) relied on healthcare providers. The Internet and social media were the most common sources, cited by 26.6% of participants; friends or relatives held a mere 6.3%. Descriptive statistics were used to present these findings, with statistical significance assessed using a Chi-Square test with a p-value threshold of 0.05.

Figure 1 highlights participants' views on the benefits of physical therapy in treating fractures. We asked what the benefits of physical therapy are in treating fractures.

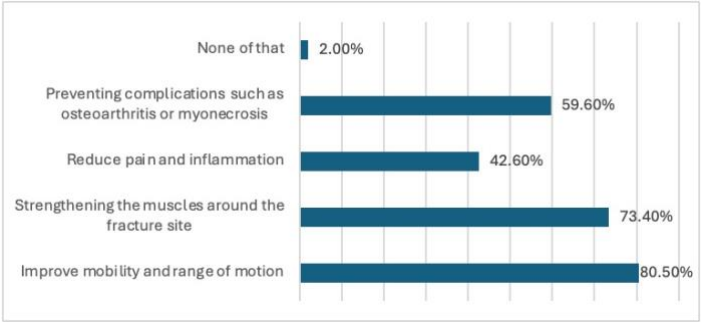

Fig. 1: Benefits of physical therapy in treating fractures.

Most respondents (80.5%) believe PT improves mobility and range of motion. Also, 73.4% said physical therapy is vital for strengthening the muscles around a fracture site. Furthermore, 59.6% believe that physical therapy can reduce complications directly related to a bone fracture (i.e., osteoarthritis) or more distant problems like myonecrosis.

Meanwhile, 42.6% of participants noted physical therapy's effectiveness in lessening pain and swelling. Only a few of us (2.0%) felt that physical therapy has no significant benefits. Most participants appreciate the role of physical therapy in improving function and preventing complications of fractures. However, less than half of the participants acknowledge the role of physical therapy in reducing pain and inflammation. Descriptive statistics were used to summarize the participants' response.

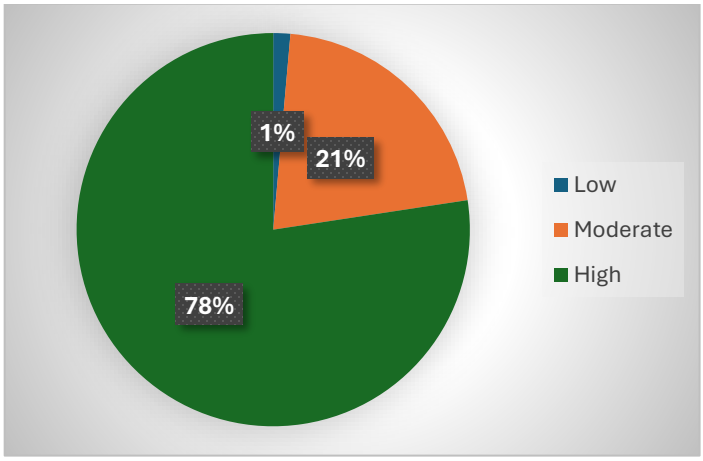

Figure 2: Level of knowledge about Physiotherapy.

Table 4: The relation between level of knowledge and demographic factors

		Knowledge Level						
		Low		Moderate		High		P-value
		Count	%	Count	%	Count	%	
Age	18-29	3	1.3%	43	19.1%	179	79.6%	0.883
	30-39	1	2.0%	13	26.5%	35	71.4%	
	40-49	2	2.3%	21	24.1%	64	73.6%	
	50-60	0	0.0%	13	20.3%	51	79.7%	
	> 60	0	0.0%	1	25.0%	3	75.0%	
Gender	Male	5	2.1%	53	21.8%	185	76.1%	0.377
	Female	1	0.5%	38	20.4%	147	79.0%	
Educational level	Illiterate	0	0.0%	0	0.0%	1	100.0%	0.000*
	Primary school	1	50.0%	0	0.0%	1	50.0%	
	Intermediate school	0	0.0%	1	16.7%	5	83.3%	
	High school	1	1.3%	20	25.0%	59	73.8%	
	Diploma	0	0.0%	7	17.1%	34	82.9%	
	College	3	1.1%	61	21.6%	218	77.3%	
	Master's degree	1	6.7%	1	6.7%	13	86.7%	
	Doctoral Degree	0	0.0%	1	50.0%	1	50.0%	
Occupation	Not working	0	0.0%	5	15.6%	27	84.4%	0.439
	Student	2	1.2%	28	16.8%	137	82.0%	
	Housewife	0	0.0%	11	30.6%	25	69.4%	
	medical profession	0	0.0%	6	21.4%	22	78.6%	
	Teacher	2	1.9%	26	24.8%	77	73.3%	
	Retired	0	0.0%	6	25.0%	18	75.0%	
	Other	2	5.4%	9	24.3%	26	70.3%	
Have you ever had a fracture?	No	3	1.0%	62	21.5%	224	77.5%	0.654
	Yes	3	2.1%	29	20.7%	108	77.1%	

Figure 2 shows that most participants (77.4%) had a high level of knowledge about PT. Another 21.2% had a moderate-to-high understanding, while only a small fraction (1.4%) showed limited knowledge about physical therapy. This suggests that most participants strongly understand PT, indicating that educational efforts may have been practical. However, the small percentage of participants with limited knowledge highlights an opportunity for further outreach and education in this area. Descriptive statistics were used to present these findings.

The survey examined how differing demographic characteristics in Albaha City, Saudi Arabia, affected respondents' views of physical therapy using Chi-Square tests for categorical data. The results showed that education level showed a significant relationship with knowledge of PT ($p < 0.001$), while other factors like age and occupation did not show statistically significant effects ($p > 0.05$). Impressively, on the other hand, neither age nor sex no occupation had an especially significant effect, even when account was taken of the fact that many respondents had broken a bone at some point in their respective lifetimes (albeit not constituting statistical significance), it turns out that both young adults (18-29 years of age) and older ones (50 to 60 years), plus everybody in between, knew much indeed about PT (Table 4). The chi-square test was used to assess the relationship between the level of knowledge and demographic factors.

Discussion

Fractures are a significant health problem worldwide, affecting people from all walks of life. The current study was conducted to explore the prevalence of fractures among citizens of Albaha City, Saudi Arabia, and their views on the role of PT in managing their fractures. The opinions expressed by community participants in this research help us understand how bone fractures are perceived.

Prevalence of Fractures and Treatment Patterns

The prevalence of having at least one previous fracture in the current study was 32.6 %, indicating a common fracture occurrence in the community. This prevalence reflects accidental injuries and potential gaps in preventive measures (Montero-Odasso et al., 2022) and is comparable to findings from other studies conducted in Saudi Arabia (Sadat-Ali et al., 2012; Saleh et al., 2022). Among participants reporting having a previous fracture, most of them reported having used a splint in their treatment, which is in agreement with the conventional orthopedic practices that aimed to stabilize fractures and facilitate healing without using surgical intervention (Liang et al., 2024; Schlickewei et al., 2019), which was less frequently reported (2.3%).

In addition, the current study reported that many participants did not have PT to treat fractures. This may suggest a gap in post-fracture rehabilitation strategies, possibly influenced by varying levels of Awareness and access to healthcare services. Among participants with a history of fractures, 19.8% did not include PT in their treatment plan, highlighting potential missed opportunities for optimizing recovery outcomes. Conversely, 12.8% of those with fractures did undergo PT, indicating a positive uptake of rehabilitative services in managing fracture recovery.

Awareness and Perceptions of Physical Therapy

The data also showed participants' Awareness of and views on the position and importance of physical therapy in healing fractures. Most participants felt that physical therapy is crucial in fracture healing: 65.3% strongly agreed, and 27.0% agreed. There was a strong consensus among participants that PT should be recognized as a part of comprehensive fracture management strategies, which could not be replaced by anything else (Meeks, 2005; Alshammari et al., 2023).

Early intervention by the physical therapist after fracture was rated very important by 73.4% and essential by 18.2%. In the authors' judgment, this reflects the benefits felt from early mobilization and functional reinforcement and the prevention of complications after long periods of immobilization (Singam, 2024; Alaparthi

et al., 2020).

The online survey also asked how well educational campaigns about PT after fractures were taken up. Participants overwhelmingly sided with these initiatives, with 71.6% viewing them as necessary. Almost a quarter of people saw this as crucial at 24.2%, lending further evidence to support or challenge the hypothesis. This finding indicates the community's receptiveness to educational campaigns that enhance understanding and adherence to rehabilitation protocols.

Support for Enhanced Resources and Access

Participants strongly supported allocating more resources to research and develop physical therapy techniques for treating fractures, with 64.6% strongly agreeing and 30.5% agreeing. This reflects a community interest in developing therapeutic modalities that maximize recovery outcomes after fracture and minimize long-term sequelae (Alaparthi et al., 2020).

Additionally, there was substantial support for integrating PT into the treatment plan for all types of fractures, with 50.3% strongly agreeing and 35.2% agreeing. This reveals a community consensus about how rehabilitative care practices should be standardized across different types of fractures to ensure each patient receives comprehensive treatment.

Moreover, conference participants called on health organizations to help society implement strategies such as making it easier for patients to pay costs and providing tele-physical therapy to ensure that rehabilitation services are fully available and equally accessible. The majority of participants (60.8% strongly endorsed and 33.6% agreed) thus supported these measures, embodying a community-based approach to healthcare accessibility and affordability.

Demographic Influences on Knowledge Levels

Educational level was found to impact participants' knowledge levels about PT significantly. For example, when we compared educational qualifications, college graduates (77.3 percent), junior college graduates (82.9 percent), and master's degree holders (86.7 percent) had relatively high knowledge levels. This shows that education raises Awareness and understanding of preventive practices in different groups (Alhumaid & Said, 2023; Albishi, 2024).

Age, gender, occupation, and history of fractures had no statistically significant effect on participants' knowledge levels of PT. Nonetheless, the high levels of knowledge shown by young adults (18-29 years) and older people (50--60 years) present a broad general awareness in different people groups.

Study Limitations and Implications

This study has several limitations that should be considered. First, the reliance on self-reported data via an online questionnaire introduces the possibility of response bias, as participants may over-report their knowledge or positive attitudes due to social desirability bias. This may impact the accuracy of our findings. Furthermore, using convenience sampling, while practical, may lead to selection bias, as participants were not randomly selected. This could affect the sample's representativeness, particularly if certain groups—such as the elderly, less educated individuals, or those without reliable internet access—were underrepresented due to limited access to or familiarity with social media. This limitation should be considered when interpreting the results, as it affects the generalizability of the findings beyond Al-Baha City.

Additionally, the cross-sectional design restricts our ability to establish causal relationships between variables. Since data were collected at a single point, we cannot make inferences about how physical therapy influences fracture recovery over the long term. To address this limitation, future research could benefit from longitudinal studies or randomized controlled trials (RCTs), which would be more suitable for assessing the long-term effects of PT on fracture recovery.

While this study provides valuable insights into the prevalence of fractures and community views on PT, further research is needed. Specifically, studies could

explore the long-term outcomes of PT in managing different types of fractures. Moreover, there is a need to investigate barriers to accessing rehabilitation services, particularly among rural or low-income populations and those without reliable internet access. The potential for tele-physical therapy to improve access to care for these disadvantaged groups also warrants further exploration.

Conclusion

In conclusion, this study underlines the necessity of integrating PT into comprehensive fracture management strategies. It calls for educational campaigns and policy revisions to maximize rehabilitation results and achieve fair access to healthcare services.

Conflicts of Interest

The authors declare no conflicts of interest regarding this manuscript. They also do not have financial or personal relationships with other people or organizations that could inappropriately influence this work.

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