Effects Of Functional Ability In Patients With Knee Osteoarthritis After Taking Corticosteroid Injection And Routine Physical Therapy
Maha Mohiuddin¹, Fareeha Amjad¹, Ayesha Arooj¹*
¹University Institute of Physical Therapy, Faculty of Allied Health Sciences, University of Lahore, Lahore, Pakistan

ABSTRACT
Osteoarthritis (OA) is the most well-known type of joint inflammation. It is degenerative joint disease or "extent" joint pain. OA can cause irritation, stiffness, and swelling. Objective: To determine the functional ability of knee OA patients after intra-articular corticosteroid injection and routine physical therapy. Methods: A cross-sectional study was conducted with over 150 participants and the data was collected from Haq hospital and the University of Lahore teaching hospital for 6 months. The data was collected using the nonprobability purposive sampling technique. The knee injury and OA outcome score questionnaire were utilized as the outcome measure (KOOS). SPSS V.25 was used for statistical analysis. Results: The mean age for the subjects was 55.08±11.88. The statistically significant results were found with pain, symptoms, improved activities of daily living, sports and recreation, and quality of life in the group of patients who have received physical therapy. Conclusions: It is concluded that physical therapy shows better functional ability as compared to corticosteroid injection. But the corticosteroid injections are useful in short-term treatment and exercise therapy can be recommended for patients with severe arthritis as an effective method for long-term improvement.

INTRODUCTION
Osteoarthritis (OA) is the most widely recognized joint disease, afflicting more than 7 million people in various parts of the world. Knee OA is seen to be a critical treatment concern [1]. OA is a prevalent kind of arthritis that affects not just the joint lining but also the cartilage, ligaments, and bone. The bulk of published review studies for the previous 10 years have not been specialized in OA of the knee, and the strength of evidence and clinical guidelines have not been adequately presented [2]. Exposed clinically as a moved growing of a joint's hyaline tendon, OA prompts the tendon, to wear, or obscure completely. Bradley et al note that OA is a degenerative issue, which is the most broadly perceived issue of joints. 80% of individuals 45 years of age and increasingly prepared have OA on any occasion 1 joint. The joints most regularly affected by OA are usually weight-bearing joints, for instance, the spine, hips, knees, and lower legs. These joints expect commanding activity to a person's ability to perform step-by-step works. Treatment generally included drugs to control the pain and some kind of movement [3]. OA is a horrifying disease with a joint illness described by assistant changes to the whole joint, including loss of tendon, improvement of osteophytes, synovial troubling, subchondral bone changes, meniscal hurt, muscle deficiency, and ligament at the knee [4]. In spite of the fact that intra-articular treatment is broadly utilized in the treatment of OA, sticky supplementation may offer a little longer advantage. Intra-articular radiotherapy probably presents no advantage. Antagonistic impacts are uncommon yet nearby impacts may happen in up to 10% of patients [5]. For the treatment of knee OA, the American College of Rheumatology advises against using intra-articular corticosteroid implantations. The length of modification from burden is one to around fourteen days in various essentials, with a few exhibiting updates enduring three to four weeks. Research also supports the safety of intra-articular corticosteroid blends.
for the treatment of knee OA; however, these assessments are limited by a lack of histologic data and a lack of overall improvement [6].

People with unending states of maturing, for example, OA involve a huge and developing measure of the population. Even however standard exercise has demonstrated well-being and useful advantages. Dormancy increments as the patient ages. Surely, in patients with OA, ordinary exercise can improve agony control, proprioception, power, weakness, and toughness. All of which improve practical opportunity Treatment methodologies for OA of the knee have cautious exercise as a significant non-pharmacological methodology. What's more, it practically diminishes insufficiency and adjusts walking [7]. Physiotherapy intercessions for patients with OA of the knee demonstrate that activity can diminish agony and improve work in patients with knee OA. Physiotherapy can improve pain and capacity and assume a significant job in overseeing patients with knee OA. Estimating introduction means contrasting genuine clinical practice with pick clinical practice [8].

METHODS
A cross-sectional study was conducted with over one hundred and fifty participants. A nonprobability purposive sampling technique was used. The data was collected from Haq hospital and the University of Lahore teaching hospital for 6 months, the data was collected using the non-probability purposive sampling technique. The outcome measure used was the knee injury and OA outcome score questionnaire (KOOS). Verbal consent was taken from the subjects before their recruitment to the study. An ethical letter was taken before the data collection procedure. The inclusion criteria were both male and female gender, knee OA diagnosed for more than 6 months, and patients with sub-acute and chronic stages. The exclusion criteria were any neurological involvement, stroke at the affected side, or any recall problem due to nervous disorder. SPSS version 25.0 was used for data analysis.

RESULTS
A total of 150 patients were recruited for the study and were equally divided into two groups i.e. corticosteroid injection group and the physical therapy group. The mean age for the subjects was 55.08±11.88. A total of 53 (33%) were males and 98 (66%) were females in the study. Table 1 shows the functional ability in knee OA patients after corticosteroid injection and routine physical therapy in subscales of the five scoring questionnaire (KOOS). Table 2 shows the individual characteristics of each group along with their statistical significance. Figure 1 shows the histogram of age distribution.

| Subscale of KOOS | Corticosteroid injection group | Physical therapy group |
|------------------|--------------------------------|------------------------|
| PAIN SCORES      | Mean±SD = 53.31±15.36          | Mean±SD = 44.21±10.29  |
| SYMPTOMS SCORE   | Mean±SD = 54.68±12.87          | Mean±SD = 43.25±9.45   |
| ADLs             | Mean±SD = 55.31±12.92          | Mean±SD = 34.71±11.23  |
| SPORTS SCORE     | Mean±SD = 49.65±15.17          | Mean±SD = 41.23±14.31  |
| QOL              | Mean±SD = 51.51±13.744         | Mean±SD = 45.07±12.48  |

Table 1: Functional ability in patients after corticosteroid injection and routine physical therapy

| Group                        | Mean±SD | P-value |
|------------------------------|---------|---------|
| Pain                         |         |         |
| Physical therapy             | 14.72±4.00 | 0.001   |
| Corticosteroid injection     | 21.23±4.59 | 0.11    |
| Symptoms                     |         |         |
| Physical therapy             | 8.25±3.51 | 0.01    |
| Corticosteroid injection     | 16.12±3.23 | 0.12   |
| Activity of daily livings    |         |         |
| Physical therapy             | 28.9±7.19 | 0.03    |
| Corticosteroid injection     | 37.48±5.07 | 0.01   |
| Sports and recreation function|       |         |
| Physical therapy             | 6.66±2.7  | 0.01    |
| Corticosteroid injection     | 11.25±3.14 | 0.05   |
| Quality of life              |         |         |
| Physical therapy             | 3.73±1.91 | 0.01    |
| Corticosteroid injection     | 11.52±1.48 | 0.06   |

Table 2: Individual Characteristics of Each Group
DISCUSSION
In this study of effects of corticosteroid injections versus routine physical therapy were measured on the functional ability of patients with knee OA. The results showed that functional ability with knee OA showed better results for those who had physical therapy as their treatment rather than those who had intraarticular corticosteroid injections. Although corticosteroids had an earlier response on treatment. The American College of Rheumatology recommended intraarticular corticosteroids injections for knee pain in OA and improves functional ability in patients with inflammation. They also recommended that intraarticular corticosteroid injections are used for short-term pain management [9]. Our study was an observational study; no treatments were given only data was collected through questionnaires and interviews in which subjects had the treatments in the past. And according to the data collected the functional ability was increased in those who were undergone physical therapy treatment. Hence, they had physical therapy sessions for six months and on the other hand, corticosteroids were a short-term treatment and given results earlier but after 3-4 months no functional rehabilitation was attained.

In a study in 2017, it was stated that physical therapy had more effects on functional rehabilitation although it takes time. Even after 2-3 physical therapy sessions, however, everyday activities and quality of life improved. Recently, the American Academy of Orthopedic Surgeons (AAOS) 2013 intraarticular injections are more used in pain relief and improve the functional ability and quality of life.10 Functional ability and quality of life were reported in 2013. Moderate pain was reported 45% by OA patients, 55% improvement in ADLs [11]. Pain, stiffness, and functional ability improved after two steroid injections spaced four weeks apart. Following injections, there were significant improvements in QOL. In physical domains, the changes were more pronounced [12]. Intra-articular corticosteroid injections may provide short-term symptomatic relief in patients with knee OA, with less risk of adverse effects. There are good results after using steroid injection in a review of physical therapy interventions for patients with knee corticosteroid injection is commonly used to relieve symptoms of knee OA [13]. However, making it difficult to select patients who are most likely to be successfully treated using this approach [14]. The frequency of crepitus decreased on the least affected side (p < .01). But contrary to these results, the study was non-significant as the p-value is less after physical therapy as compared to steroid injection [15]. Other researchers have also discussed and observed similar findings [16-20]. Although the duration of this study was relatively short and led to a lack of time for more patients to participate. It was an observational study, on the basis of which just a questionnaire survey was conducted which resulted in small-scaled and limited findings.

CONCLUSIONS
It is concluded that the physical therapy shows better functional ability as compared to corticosteroid injection. But the corticosteroid injections are useful in short-term treatment and exercise therapy can be recommended for patients with severe arthritis as an effective method for long-term improvement.

REFERENCES
1. Deyle GD, Allison SC, Matekel RL, Ryder MG, Stang JM and Gohdes DD et al. Physical therapy treatment effectiveness for osteoarthritis of the knee: a randomized comparison of supervised clinical exercise and manual therapy procedures versus a home exercise program. Physical therapy. 2005;85(12):1301-17. doi.org/10.1093/ptj/85.12.1301.
2. Alshami AM. Knee osteoarthritis related pain: a narrative review of diagnosis and treatment. International journal of health sciences. 2014;8(1):85. doi.org/10.12816/0006075

3. WYATT FB, Milam S, Manske RC and Deere R. The effects of aquatic and traditional exercise programs on persons with knee osteoarthritis. The Journal of Strength & Conditioning Research. 2001;15(3):337-40. doi.org/10.1519/00124278-200108000-00013

4. Bennell KL, Hunter DJ and Hinman RS. Management of osteoarthritis of the knee. Bmj. 2012;345:e4934. doi.org/10.1136/bmj.e4934.

5. Kirwan JR and Rankin E. Intra-articular therapy in osteoarthritis. Bailliere's clinical rheumatology. 1997;11(4):769-94. doi.org/10.1016/S0950-8178(97)80009-X.

6. Foster ZJ, Voss TT, Hatch J, Frimodig A and Foster ZJ. Corticosteroid injections for common musculoskeletal conditions. American family physician. 2013;92(8).

7. Petrella RJ. Is exercise effective treatment for osteoarthritis of the knee? British journal of sports medicine. 2000;34(5):326-31. doi.org/10.1136/bjsm.34.5.326.

8. Jamtvedt G, Dahm KT, Holm I and Flottorp S. Measuring physiotherapy performance in patients with osteoarthritis of the knee: a prospective study. BMC health services research. 2008;8(1):145. doi.org/10.1186/1472-6963-8-145.

9. Ringdahl E and Pandit S. Treatment of knee osteoarthritis. American family physician. 2011;83(11).

10. Nejati P, Farzinmehr A and Moradi-Lakeh M. The effect of exercise therapy on knee osteoarthritis: a randomized clinical trial. Medical journal of the Islamic Republic of Iran. 2015;29:186.

11. Fisher NM, Gresham GE, Abrams M, Hicks J, Horrigan D and Pendergast DR. Quantitative effects of physical therapy on muscular and functional performance in subjects with osteoarthritis of the knees. Archives of physical medicine and rehabilitation. 1999;74(8):840-7. doi.org/10.1016/0003-9993(93)90011-X.

12. French HP, Fitzpatrick M and FitzGerald O. Responsiveness of physical function outcomes following physiotherapy intervention for osteoarthritis of the knee: an outcome comparison study. Physiotherapy. 2011;97(4):302-8. doi.org/10.1016/j.physio.2010.03.002.

13. Brus H, van de Laar M, Taal E, Rasker J, Wiegman O and editors. Compliance in rheumatoid arthritis and the role of formal patient education. Seminars in arthritis and rheumatism; 1997: Elsevier. doi.org/10.1016/S0049-0172(97)80006-6.

14. Fibel KH, Hillstrom HJ and Halpern BC. State-of-the-Art management of knee osteoarthritis. World Journal of Clinical Cases: WJCC. 2015;3(2):89. doi.org/10.12998/wjcc.v3.i2.89.

15. Kon E, Filardo G, Drobnic M, Madry H, Jelic M and van Dijk N et al. Non-surgical management of early knee osteoarthritis. Knee Surgery, Sports Traumatology, Arthroscopy. 2012;20(3):436-49. doi.org/10.1007/s00167-011-1858-5.

16. Medical Advisory Secretariat. Intra-articular viscosupplementation with hylan g-f 20 to treat osteoarthritis of the knee: an evidence-based analysis. Ont Health Technol Assess Ser. 2005;5(10):1-66.

17. Gibson JN, Poyser NL, Morrison WL, Scrimgeour CM, Rennie MJ. Muscle protein synthesis in patients with rheumatoid arthritis: effect of chronic corticosteroid therapy on prostaglandin F2 alpha availability. Eur J Clin Invest. 1991 Aug;21(4):406-12. doi: 10.1111/j.1365-2362.1991.tb01388.x.

18. Liang K, Ou X, Huang X, Lan Q. Adrenocortical hypofunction with simultaneous primary aldosteronism: A case report. Medicine (Baltimore). 2019 Mar;98(13):e15033. doi: 10.1097/MD.00000000000015033.

19. Habib GS. Systemic effects of intra-articular corticosteroids. Clin Rheumatol. 2009 Jul;28(7):749-56. doi: 10.1007/s10067-009-1135-x.

20. Askari A, Gholami T, NaghiZadeh MM, Farjam M, Kouhpayeh SA, Shahabardi Z. Hyaluronic acid compared with corticosteroid injections for the treatment of osteoarthritis of the knee: a randomized control trial. Springerplus. 2016 Apr 12;5:442. doi: 10.1186/s40064-016-2020-0.