Clinical Trial Protocol
Iranian Registry of Clinical Trials

28 Feb 2026

Evaluation of the effect of adding duloxetine to exercise therapy on pain and function of patients with knee osteoarthritis

Protocol summary

Study aim
Evaluation of the effect of adding duloxetine to exercise therapy on pain and function of patients with knee osteoarthritis

Design
A semi-experimental clinical trial, with a control group, randomized by a numerical random selection, unblinded, phase 3 on 60 patients

Settings and conduct
The participants are selected from people who come to the sports medicine department of Imam Khomeini Hospital in Sari because of knee pain. The intervention in the first group is the administration of duloxetine (Abidi company) along with exercise therapy. The intervention in the second group is exercise therapy alone.

Participants/Inclusion and exclusion criteria
Inclusion Criteria: Patients 40-80 years old Knee pain during the 3-month period before the first visit more than 14 days per month with an average pain score of Visual Analogue score ≥ 4 Osteoarthritis grade 2 and 3 based on Kallgren-Lawrence BMI ≤40 Stable knee Exclusion Criteria: Deformity of the knee Spondylolisthesis Radiculopathy Inflammatory arthritis Autoimmune disorder Septic arthritis Contraindications for duloxetine Previous exposure or allergy to duloxetine Simultaneous use of other drugs affecting the central nervous system Metabolic diseases Anticoagulation therapy pregnancy Aggressive knee treatments in the last 6 months Any knee replacement or current infection

Intervention groups
Intervention group: administration of duloxetine (Abidi company) along with exercise therapy Control group: exercise therapy For both groups, exercise therapy will be knee and hip isometric exercises and hamstring muscle stretching, and then progress to hip flexion and knee extension isotonic exercises in a sitting position.

Main outcome variables
Primary outcomes: Breif pain Inventory questionnaire, Western Ontario and McMaster Universities Arthritis Index questionnaire Secondary outcomes include knee extension strength, Timed Up and Go test

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20230821059204N1**
Registration date: **2023-10-08, 1402/07/16**
Registration timing: **prospective**

Last update: **2023-10-08, 1402/07/16**
Update count: **0**

Registration date
2023-10-08, 1402/07/16

Registrant information

Name
Hanieh Ahmadi

Name of organization / entity

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2023-10-22, 1402/07/30

Expected recruitment end date
2024-03-19, 1402/12/29

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Evaluation of the effect of adding duloxetine to exercise therapy on pain and function of patients with knee osteoarthritis

Public title
Effect of Duloxetine in knee osteoarthritis

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Patients aged 40-80 years Knee pain more than 14 days per month and the average pain score Visual Analogue score (VAS) ≥ 4 during the 3-month period before the first visit The grade of knee osteoarthritis is 2 and 3 based on the Kallgren-Lawrence classification BMI ≤40 The knee should be stable Good cognitive status The ability to understand the study protocol and the mental ability to answer the questions of the questionnaires Willingness to participate in the study

Exclusion criteria:
Deformity of the knee Spondylolisthesis Lumbar radiculopathy Inflammatory arthritis Autoimmune disorder Septic arthritis Any other concomitant disease such as liver and kidney disease Contraindications for duloxetine (current use of monoamine oxidase inhibitors or poorly controlled angle-closure glaucoma) Previous exposure to duloxetine Concomitant use of other drugs that affect the central nervous system (such as benzodiazepines) History of allergy to duloxetine Metabolic diseases Anticoagulation therapy pregnancy History of aggressive knee treatments in the last 6 months Knee joint replacement at any time Current infection in the affected limb

Age
From **40 years** old to **80 years** old

Gender
Both

Phase
3

Groups that have been masked
No information

Sample size
Target sample size: **60**

Randomization (investigator's opinion)
Randomized

Randomization description
Participants are randomly divided into two groups by numerical random selection process, which are odd numbers for the first group (duloxetine combined with exercise therapy) and even numbers for the second group (exercise therapy).

Blinding (investigator's opinion)
Not blinded

Blinding description

Placebo
Not used

Assignment
Other

Other design features
The intervention in the first group is the administration of duloxetine (Abidi company) along with exercise therapy. The intervention in the second group is exercise therapy alone.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics Committee of Mazandaran University of Medical Sciences, Imam Hospital

Street address
Serah Joibar, the beginning of Vali Asr Highway, the headquarters of Mazandaran University of Medical Sciences and Health Services

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sari

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Postal code
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Approval date
2023-04-19, 1402/01/30

Ethics committee reference number
IR.MAZUMS.IMAMHOSPITAL.REC.1402.14934

Health conditions studied

1

Description of health condition studied
Osteoarthritis of knee

ICD-10 code
M17

ICD-10 code description
Osteoarthritis of knee

Primary outcomes

1

Description
The patient's pain level is based on the BPI (Brief Pain Inventory) short pain questionnaire, in the range of 0 to 10

Timepoint
At the beginning of the study before the start of the intervention and at the end of the fourth week and then at the end of the study at the end of the 12th week of the intervention

Method of measurement
The patient will be asked about her/his pain level using the BPI (Brief Pain Inventory) short pain questionnaire in the range of 0 to 10.

2

Description

Estimating pain, stiffness and physical activity in patients with knee osteoarthritis using the WOMAC (The Western Ontario and McMaster Universities Arthritis Index) questionnaire

Timepoint

At the beginning of the study before the start of the intervention and at the end of the fourth week and then at the end of the study at the end of the 12th week of the intervention

Method of measurement

The performance of the patient will be measured using the WOMAC (The Western Ontario and McMaster Universities Arthritis Index) questionnaire, the level of the patient's performance will be measured in the range of 0 to 96.

Secondary outcomes

1

Description

Knee extension strength based on 1-RM (one-repetition maximum)

Timepoint

At the beginning of the study before the start of the intervention and at the end of the fourth week and then at the end of the study at the end of the 12th week of the intervention

Method of measurement

Using the knee extension machine, we obtain the maximum weight that a person can lift in the range of 4 to 10 repetitions, then by the formula one-repetition maximum = weight/1- (0.02*repetition) the amount of one-repetition maximum; where weight is the amount of the last weight that the person was able to lift and repetition is the number of repetitions of the lifted weight.

2

Description

Evaluation of patients' functional mobility during daily activities using the Timed Up and Go (TUG) test.

Timepoint

At the beginning of the study before the start of the intervention and at the end of the fourth week and then at the end of the study at the end of the 12th week of the intervention

Method of measurement

In the Timed Up and Go test, after familiarizing the person with how to do it, the patient first gets up from a standard chair (the chair does not have handles and the height from the seat of the chair to the floor is 50 cm), then walks 3 meters, then turns and goes back to the chair with the same speed as usual and sits on the chair. The time spent for this movement sequence will be recorded in seconds using a stopwatch. The best time will be recorded after three times of testing.

Intervention groups

1

Description

Intervention group: The prescription of Duloxetine (Abidi Company) is 20 mg per day for one week, then 30 mg per day for the next week, and finally 40 mg per day for the continuation of the study, which is done along with exercise therapy. After the end of 12 weeks of therapeutic intervention, in order to reduce the side effects of drug discontinuation, patients enter the drug tapering phase and receive duloxetine 20 mg for one week, and finally the drug is discontinued. Exercise therapy will be knee and hip isometric exercises and hamstring muscle stretching, and then progress to hip flexion and knee extension isotonic exercises in a sitting position with ankle weights at 50-70% of one repetition maximum . Exercise is home-based, where basic training will be given by the doctor in the clinic, and a booklet containing the form and explanation of how to do the exercises will be provided to the patients as a guide for doing the exercises at home. A phone number will also be provided to patients so that they can contact their doctor if they have any questions or problems about taking medicine or exercising. Exercises are for 4 weeks and 5 times a week. Each exercise is performed in three sets with 10 repetitions until exhaustion. Exercises include (1) seated isotonic exercise for the quadriceps, (2) isometric exercise for the quadriceps, (3) supine isotonic exercise for the hip extensors, (4) isometric seated exercise on the chair for the hip adductors, (5) side-lying isotonic exercise for the hip abductors, (6) low-distance squats, and (7) the seated hamstring stretch.

Category

Treatment - Drugs

2

Description

Control group: Exercise therapy will be knee and hip isometric exercises and hamstring muscle stretching, and then progress to hip flexion and knee extension isotonic exercises in a sitting position with ankle weights at 50-70% of one repetition maximum . Exercise is home-based, where basic training will be given by the doctor in the clinic, and a booklet containing the form and explanation of how to do the exercises will be provided to the patients as a guide for doing the exercises at home. A phone number will also be provided to patients so that they can contact their doctor if they have any questions or problems about taking medicine or exercising. Exercises are for 4 weeks and 5 times a week. Each exercise is performed in three sets with 10 repetitions until exhaustion. Exercises include (1) seated isotonic exercise for the quadriceps, (2) isometric exercise for the quadriceps, (3) supine isotonic exercise for the hip extensors, (4) isometric seated exercise on the chair for the hip adductors, (5) side-lying isotonic exercise for the hip abductors, (6) low-distance squats, and (7) the seated hamstring stretch.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center
Department of Sports Medicine, Mostafavian Clinic, Sari Imam Khomeini Hospital

Full name of responsible person
Hanieh Ahmadi

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
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Full name of responsible person
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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
Yes

Title of funding source
Mazandaran University of Medical Sciences

Proportion provided by this source
100

Public or private sector
Public

Domestic or foreign origin
Domestic

Category of foreign source of funding
empty

Country of origin

Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact

Name of organization / entity
Mazandaran University of Medical Sciences

Full name of responsible person
Hanieh Ahmadi

Position
Associate professor

Latest degree
Specialist

Other areas of specialty/work
Sport Medicine

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

Study Protocol
Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan
Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available

Analytic Code
Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available