INTRODUCTION
Due to the prolonged life expectancy and increase in aged population, it is estimated that disability in hip joint associated with osteoporosis will increase four times till 2020. Concurrently, hip replacement aiming to promote quality of life by alleviating patients’ pain and limitation of mobility are increasing. Each year, over 1 million total hip procedures are performed in the United States. As the demand for joint replacement surgery grows, hospitals and healthcare providers face more challenges. Such a large increase in demand is unexampled and must be counterbalanced with effective planning of healthcare services for these individuals, not only during the perioperative period but also throughout the postoperative home care.

In order to maintain daily living activities at home after hip replacement, it is important to know and implement how to practice safe mobility and exercise to achieve early mobility and enhance physical coherence. While the patients are under supervision of healthcare professionals when they are hospitalised, they may neglect exercise programme or exercise wrongly after discharge. Studies show that home exercise programmes after hip prosthesis surgery is effective on strengthening muscles, maintaining high level functioning and preventing complications by sustaining the continuity of exercise programmes. However, there are differences in the initiation time, frequency, components, and duration of home exercise programmes performed during home visits. Due to this fact, this study aimed at conducting a systematic review of the research that assessed the effects of home exercise programmes, performed on patients after hip replacement.

METHODOLOGY
Publications on the topic were searched retrospectively in PubMed (MEDLINE) (3 records), Wiley Online Library (146 records), EBSCOhost (55 records), Science Direct (285 records) databases with the keywords “hip replacement, home exercise programme and home visit”. Eleven original articles were retrieved. Different parameters were used in the trials to assess the physical functions, mobility and quality of life of patients. In six trials, the intervention group achieved significantly better improvements statistically in all parameters after home exercise programmes. In three trials, the intervention group achieved better but not significant outcomes. Early recovery in daily living activities with home exercise programme was reported only in one trial. Reviewed studies suggest that home exercise programmes, implemented during home visits after hip replacement, improve patients’ physical functions and life quality.

Key Words: Hip replacement. Home exercise programme. Home visit.

SYSTEMATIC REVIEW
Effects of Home Exercise Programmes During Home Visits After Hip Replacement: A Systematic Review
Ozlem Ozdemir and Betül Tosun

ABSTRACT
This study systematically reviews the research, focused on the effects of home exercise programmes implemented during home visits after hip replacement on patients. PubMed (MEDLINE), Wiley Online Library, EBSCOhost, Science Direct databases (between 2004 and June 2015) were searched with the keywords “hip replacement, home exercise programme and home visit”. Eleven original articles were retrieved. Different parameters were used in the trials to assess the physical functions, mobility and quality of life of patients. In six trials, the intervention group achieved significantly better improvements statistically in all parameters after home exercise programmes. In three trials, the intervention group achieved better but not significant outcomes. Early recovery in daily living activities with home exercise programme was reported only in one trial. Reviewed studies suggest that home exercise programmes, implemented during home visits after hip replacement, improve patients’ physical functions and life quality.

Key Words: Hip replacement. Home exercise programme. Home visit.

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Home exercise programmes after hip replacement

were as follows: functioning focused exercise programme in one study, aerobic exercise programme in three studies, 15 15 m walk, sitting and standing activity, active one-leg standing, stairs climbing, hip abduction, heel raise and side stepping exercise programme in one study, 10 ROM exercise in one study, portable progressive resistance exercise machine in two studies, supine, prone-lying, sitting and standing exercises in one study, promoting mobility (ProMo) exercise programme for physical rehabilitation, and physical activity in three studies. 14-16 Studies were planned and conducted by multidisciplinary teams. The outcomes were physical function, mobility, pain, quality of life, daily living activities, self-efficacy, exercise behaviour and motivation.

RESULTS

All of the studies (n=11) were randomised controlled trials on patients aged 60 - 94 years. Duration of the home exercise programmes in the trials were ranging from two weeks to twelve months; 2 weeks to 2 months in one trial, 8,10 two months in one trial, 9, 12 two and-a-half months in two trials each, 15 months in three trials, 8,11,13,15 and 4 months; 6 months, 17 and 12 months in one trial each. 15 The frequency of the home visits were mentioned in two trials as 8 times and 20 times, while the frequency is not mentioned in the rest of the trials but planned in accordance with exercise programmes. In all the trials, home visits were done by physiotherapists. Different parameters were used in the trials to assess the physical functions, mobility and quality of life of patients, 6-minute walk test (6 MWT) in three trials, Short Physical Performance Battery (SPPB) in 2 trials, Study 36 Form Health Survey (SF-36) in 2 trials, Instrumental Activities of Daily Living (IADL) in two trials, Western Ontario and McMasters University Osteoarthritis Index (WOMAC) in two trials, Berg Balance Scale in four trials, and Visual Analog Skala (VAS) in one trial. 15 In almost all of the trials, the patients who accomplished home exercise programme achieved improvement in physical functions, daily living activities, and quality of life. After home exercise programmes, in six of the trials, intervention group achieved statistically significantly better improvements in all parameters, while in three trials, intervention group achieved better but not significant outcomes, in one trial outcomes were not assessed because the trial has not ended, and in one trial, intervention group achieved better improvements in all parameters but only one parameter (Modified Physical Performance Test) was statistically significant. Early recovery in daily living activities with home exercise programme was reported only in one trial. In one another trial, all patients who were given four different interventions within the exercise programme are reported to exercise more. Only in four of the trials, as part of the exercise programme, environmental reorganisation, assessment and training for safe walking was given. Almost in all of the trials, duration of the home exercise was 30 - 45 minutes. Pain assessment and training for pain management was done in all of the trials. Home exercise programme during home visits for patients undergoing hip surgery is recommended in all of the trials assessed in our review (Table I).

DISCUSSION

Home exercise programmes after hip replacement have a key role in regaining physical functions, daily living activities, and assessment of home environment. Almost all of the trials reveal that improvements achieved in physical functioning; and mobility and daily living activities by patients given home exercise programme after hip prosthesis surgery was more than the control group. This finding supports the idea that home exercise programme is effective on and necessary for achieving compliance with exercise programme. The duration of the home exercise programme was ranging from 2 weeks to 12 months but the home exercise programmes during home visits were no longer than 2 years in any trial. This represents a need for randomised controlled trials that implement and assess the home exercise programme for a longer time. Home visits open a window to picture and evaluate the individuals in the community and their living environment, which is one of the essential missions and responsibilities of the nurses. Despite the fact, in all the trials, home visits were conducted by physiotherapists. In order to manage the patients in a more comprehensive and holistic approach, supervise the care and exercise programme in harmony, the nurses should take more active roles.

Different parameters were used in the trials to assess the physical function, mobility and daily living activities, while pain assessment was an indispensable component in almost all of the trials. Presence of pain during the home exercise programme is a key factor in patients’ desire to actively implement the exercise programme. Consequently, pain assessment with
The intervention group - received functionally oriented exercises taught by a physical therapist and performed in their homes for 6 months. The control group - received in-home and telephone-based cardiovascular nutrition education.

**PPBP: AM-PAC: Berg Balance Test score; Self-Efficacy for Exercise Scale; Outcome Expectations for Exercise Scale; Modified Falls Self-Efficacy Scale.**

Physical function improved in the intervention group

Mean SPBP scores for intervention group: 6.2 at baseline, 7.2 at 6 months; control group: 6.0 at baseline, 6.2 at 6 months p < .001; mean AM-PAC mobility scores for intervention group: 56.2 at baseline, 58.1 at 6 months; control group: 56 at baseline, 56.6 at 6 months P = .03; mean AM-PAC daily activity scores for intervention group: 57.4 at baseline, 61.3 at 6 months; control group: 58.2 at baseline, 58.6 at 6 months p = .03

The effectiveness of the program can only be assessed at the end of the study.

**Yu-Yahiro et al. 2009**

<table>
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<th>Study</th>
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| Latham et al. 2014 | n=195 (100 in the intervention group; 95 in the control group) | The intervention group - received functionally oriented exercises taught by a physical therapist and performed in their homes for 6 months. The control group - received in-home and telephone-based cardiovascular nutrition education. | SPPB; AM-PAC: Berg Balance Test score; Self-Efficacy for Exercise Scale; Outcome Expectations for Exercise Scale; Modified Falls Self-Efficacy Scale. | Physical function improved in the intervention group

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The effectiveness of the program can only be assessed at the end of the study. |
specific scales for pain and informing patients on pain management are core components of exercise programme to be effective.

Exercising regularly is important and necessary in recovering physical function and daily living activities after hip replacement.6,18 The duration of the exercise was 30-45 minutes in almost all of the trials and different exercise programmes, focusing on enhancing physical functions and muscle strength, were preferred in the trials. Regular exercises (resistive and/or aerobic) are effective on avoiding mineral loss, promoting mobility, increasing walking speed, and improving quadriceps strength.6,19,20

The parameters of intervention group were better than the control group, but the difference was not significant in four trials.7,13,15 This fact calls for further studies, which should be better planned and standardised in context of confounding factors.

All of the patients who were given four different exercise programmes as home exercise were shown to exercise more.9 This fact shows that regular home visits and personal motivation of patients are effective on compliance with exercise programme.

Environmental reorganization at home, assessment and training on safe walking were present in four trials.11,14-16 Assessing and reorganising patients’ daily living environment and training patients on safe walking is important in minimising possible home accidents. Limitation of this systematic review was searching articles written only in English and published in journals indexed with Science Citation Index (SCI).

CONCLUSION

The trials reviewed in this paper show that home exercise programmes, during home visits conducted after hip replacement, promotes physical functions and quality of life. It is recommended to assess the environment of patients living in the community after undergoing hip replacement with follow-up home visits and motivate them to accomplish the home exercise programme.

REFERENCES