Study Protocol

Total Hip Replacement (THR) is a common surgical procedure performed in patients who do not respond to long-term conservative treatment to reduce high pain sensation and movement limitation in the joint (Li and Xu, 2018). Physiotherapy and rehabilitation routinely applied to regain functional independence in daily living, restore pain and joint range of motion, eliminate muscle weakness, regulate walking pattern, prevent falls, loosening, revision surgery and dislocations in the prosthesis, increase participation in activities of daily living (ADL), quality of life (QoL) and patient satisfaction levels after THR (Louw et al., 2013; Galea et al., 2008). It was determined in Kennedy et al. (2017) that patients have education expectations on recognition of the surgical team, general information about the disease and prosthesis, rehabilitation, pain management, home care activities, complications, medications, ADL after THR surgery. At the present time, with the help of demographic changes in the society and patients, changes in healthcare provision, and technological approaches, discharge education became more effective with video assistance (Abu Abed et al., 2014). The aim of our study was to investigate the effect of a video-assisted discharge education program on activities of daily living, functionality, and patient satisfaction after total hip replacement surgery.

Methods:

The study was approved by the Non-invasive Clinical Researches Ethics Committee (60116787-020/58408) on 04.09.2018. The participants included in the study were informed about the study and informed consent form was signed by all participants. Our study was performed between September 2018 and June 2019.

Of the 36 participants who met the inclusion criteria, 5 were excluded from the study for missing follow-ups or not wanting to participate in the study. The 31 participants included

in the study were randomized using systematic sampling. According to last number of file numbers odd numbers included in the physiotherapy (PT) group (n=18), and even numbers included in the video-assisted discharge education (VADE) group (n=13). The first meeting with participants was made in the hospital room within the first 5 days after THR surgery in both groups. Participants and their relatives were given physiotherapy and video-assisted discharge education by the same physiotherapist without being told which group they were in.

The physiotherapy program given to the PT group included breathing exercises, positioning, hip range of motion and strengthening exercises, and information about walking and ambulation. The whole program was taught verbally and practically to participants and their relatives. Information was given about the exercises to be added at the end of the first week and in the 4th week. A physiotherapy booklet prepared with the same content was given to the participants. The booklet was examined by the patient and relatives, and the questions they asked were answered by the same physiotherapist. The participants were informed that they should continue the exercises for 12 weeks.

VADE group received video-assisted discharge education in addition to the physiotherapy program given to the PT group on the same day by the same physiotherapist. The VADE program included information about THR, preventive rehabilitation approaches, transfer activities, using stairs, self-care activities, home settings by modifying the treatment and discharge protocols of Lucas (2008). VADE was prepared as a presentation of written information and videos which is shown this information by a professional model. Video shoots were done by a physiotherapist experienced in the field of physiotherapy and rehabilitation after THR surgery. The presentation was stopped when participants have questions or have points were not understood and the necessary explanations were shown verbally and practically. Along with the physiotherapy booklet, the participants were given an educational booklet containing written and visual information prepared in the same content as VADE. The booklet was

examined by the patient and relatives during VADE, and the questions they asked were answered by the same physiotherapist.

Patient interviews were completed in approximately 30 minutes in the PT group and approximately 45 minutes in the VADE group. A healthy person was used to prevent damage to the hip joints of those who had undergone surgery in photographs and videos in the VADE and booklets. In the booklets, easily understandable sentences were used by participants and their relatives. Booklets were prepared in Arial font and 11-point size. All participants were called by phone every 15 days for 12 weeks, and their participation in the exercises and ADL was followed.

Assessments were performed within the first 5 days after the THR surgery (Descriptive Information, Pain, Patient Satisfaction Questionnaire) in the hospital room after physiotherapy and VADE programs, and at the 3rd-month control (Pain, Harris Hip Score (HHS), Tampa Scale of Kinesiophobia (TSK), Nottingham Extended Activities of Daily Living Scale (NEADL), Patient Satisfaction Questionnaire) in orthopedics and traumatology clinic.

Statistical Analysis Plan

In the statistical analysis of data obtained in this study, Windows-based SPSS (IBM SPSS Statistics, Version 24.0, Armonk, NY, USA) package program was used. It was calculated that the number of patients included in our study was 89% power and 95% confidence for each group. Continuous variables were expressed as a mean ± standard deviation or as a median (minimum-maximum values), and categorical variables as a number and percent. Analytical (Kolmogorov-Smirnov/Shapiro-Wilks test) and visual (Histogram and probability graphs) methods were used to test the conformity of data for normal distribution. When the parametric test assumptions were provided, Independent Sample T-Test was used to compare independent group differences; when the parametric test assumptions were not provided, Mann

Whitney-U test was used to compare independent group differences. In the dependent group analyzes; when the parametric test assumptions were provided, Paired Sample T-Test was used; when the parametric test assumptions were not provided, Wilcoxon Test was used. Chi-Square Analysis and Fisher Exact Test were used compare differences between categorical variables. The statistical significance level was assumed at $p < 0.05$ in this study.

Results

A total of 31 patients, aged between 25 and 70 years (PT Group=55.33 ± 11.83 years, VADE Group=49.61±9.52 years) were included in this study. There was no significant difference in age, body mass index, daily work and standing times between the two groups ($p > 0.05$). Other demographic characteristics of the patients are presented in Table 1.

When the patients' pain perception levels were compared within the group, a statistically significant decrease in sleep, rest, and activity were detected between the 1st week and 3rd-month evaluations in both groups ($p<0.05$). There was a statistically significant difference between groups in scores on resting pain levels in the 1st week and on resting and activity pain levels in the 3rd month in favor of the VADE group ($p<0.05$) (Table 2).

While no difference was found between the groups in the pain levels sub-parameter of HHS ($p>0.05$), there was a statistically significant difference in favor of the VADE group in function, absence of deformity and ROM scores and total scores ($p<0.05$). When GYA levels were examined, no significant difference was found in the sub-parameters of NEADL in favor of the VADE group ($p>0.05$), except for the movement score ($p<0.05$). According to the results of TSK, the level of kinesiophobia of the VADE group was found to be statistically significantly lower than the PT group ($p<0.05$) (Table 3). When patient satisfaction levels were compared, there was a statistically significant difference between groups on scores of all parameters in the

1st week and 3rd month significantly higher scores were seen in the VADE group versus to PT group ($p<0.05$) (Table 4).

Table 1. Demographic Data of Patients

Variables	PT Group (n=18)		VADE Group (n=13)		p
	x̄±SD		x̄±SD		
Age (years)	55.33±11.83		49.61±9.52		0.16[a]
BMI (kg/m^2)	26.86±2.68		26.07±2.50		0.41[a]
Daily Working Times	2.00±3.67		5.15±5.28		0.11[b]
Variables	**PT Group**		**VADE Group**		
	n	%	n	%	p
Sex					
Female	12	66.7	9	69.2	1.00[d]
Male	6	33.3	4	30.8	
Use of Cement					
Cemented	6	33.3	3	23.1	0.69[d]
Cementless	12	66.7	10	76.9	
Dominance on Upper Extremity					
Right	16	88.9	12	92.3	1.00[d]
Left	2	11.1	1	7.7	
Dominance on Lower Extremity					
Right	12	66.7	10	76.9	0.69[d]
Left	6	33.3	3	23.1	
Affected Extremity					
Right	8	44.4	7	53.8	0.60[c]
Left	10	55.6	6	46.2	
Education level					
Illiterate	3	16.7	1	7.7	-
Primary school	7	38.9	4	30.8	-
Middle School	2	11.1	1	7.7	-
High school	4	22.2	4	30.8	-
Associate degree	1	5.6	1	7.7	-
Undergraduate degree	1	5.6	2	15.4	-
Profession					
Retired	5	27.7	3	23.07	-
Housewife	7	38.8	3	23.07	-
Worker	2	11.1	2	15.3	-
Officer	1	5.5	1	7.6	-
Teacher	1	5.5	1	7.6	-
Farmer	2	11.1	-	-	-
Artisan	-	-	1	7.6	-
Cleaning staff	-	-	1	7.6	-
Chef	-	-	1	7.6	-

PT: Physiotherapy, VADE: Video-assisted discharge education, BMI: Body Mass Index, kg: kilogram, m: meter, $p<0.05$: statistically significant difference, n: Sample size, x̄: mean, SD: standard deviation, p[a]: Independent Sample T-Test, p[b]: Mann Whitney-U test, p[c]: Chi-Square Analysis, p[d]: Fisher Exact Test

Table 2. Comparison of Pain Levels of Patients

VAS (In-group)		**PT Group**		**p**
		1st week	3rd month	
		x̄±SD	x̄±SD	
Sleep		5.54±2.69	3.06±2.28	0.008[a*]
Rest		6.97±1.72	3.86±2.05	0.000[c*]
Activity		8.54±1.51	5.98±2.24	0.000[a*]
VAS (In-group)		**VADE Group**		**p**
		1st week	3rd month	
		x̄±SD	x̄±SD	
Sleep		5.5±2.01	2.09±2.26	0.000[a*]
Rest		4.8±2.67	2.02±1.51	0.005[a*]
Activity		7.13±2.42	3.78±2.38	0.002[a*]
VAS (Between groups)		**PT Group**	**VADE Group**	**p**
		Median (min-max)	Median (min-max)	
Sleep	1st week	4.9 (0-10)	5.4 (2.7-9.5)	0.96[a]
	3rd month	2.5 (0-8.8)	1.5 (0-7.4)	0.13[b]
Rest	1st week	6.8 (4.2-10)	5 (0-8.9)	0.01[a*]
	3rd month	3.45 (4-8.40)	1.8 (0-4.5)	0.01[a*]
Activity	1st week	8.9 (4.6-10)	7.4 (3-10)	0.13[b]
	3rd month	5.5 (2.2-10)	3.5 (0-7.5)	0.01[a*]

PT: Physiotherapy, VAS: Visual Analog Scale, VADE: Video-assisted discharge education, min: Minimum, max: Maximum, $p<0.05$: statistically significant difference, x̄: mean, SD: standard deviation, p^a: Paired Sample T-Test, p^b: Mann Whitney-U test p^c: Wilcoxon Test

Table 3. Comparison of Hip Function, Activities of Daily Living and Kinesiophobia

HHS	**PT Group**		**VADE Group**		**p**
	x̄±SD	Median (min- max)	x̄±SD	Median (min- max)	
Pain	28.44±13.38	30 (10-44)	35.84±8.84	40 (20-44)	0.135[b]
Function	29.22±10.22	29.5 (11-47)	40.07±5.80	39 (29-47)	0.002[a*]
Absence of Deformity	1.50±1.20	1 (0-4)	3.15±0.80	3 (2-4)	0.000[b*]
ROM	4.57±0.62	4.8 (2.5-5)	4.92±0.10	4.95 (4.69-5)	0.034[b*]
Total	63.74±23.49	62.72 (23.5-98)	83.99±12.46	81.8 (66.85-100)	0.004[b*]
NEADL	**PT Group**		**VADE Group**		**p**
	Median (min-max)		Median (min-max)		
Movement	13 (5-18)		16 (7-18)		0.038[b*]
Kitchen Activities	12 (3-15)		15 (7-15)		0.106[b]
Housework	11 (2-15)		13 (9-15)		0.146[b]
Leisure-time Activities	12 (5-18)		15 (4-18)		0.352[b]
Total	47.5 (17-66)		59 (41.64)		0.170[b]
TSK	**PT Group**		**VADE Group**		**p**
	x̄±SD		x̄±SD		
Total	48.05±6.59		39.38±8.13		0.003[a*]

PT: Physiotherapy, VADE: Video-assisted discharge education, ROM: Range of motion, HHS: Harris Hip Score, NEADL: Nottingham Extended Activities of Daily Living Scale, TSK: Tampa Scale of Kinesiophobia, min: Minimum, max: Maximum, $p<0.05$: statistically significant difference, x̄: mean, SD: standard deviation, p^a: Independent Sample T-Test, p^b: Mann Whitney-U test.

Table 4. Comparison of Patient Satisfaction Levels

Patient Satisfaction Questionnaire (In-group)		**PT Group**		**p**
		1st week	3rd month	
		x̄±SD	x̄±SD	
Surgical Procedure		5.15±2.56	5.77±2.29	0.123[a]
Physiotherapy or VADE Program		6.38±2.93	6.87±2.46	0.273[a]
ADL and Prevention Protocols		6.06±2.66	7.01±2.34	0.028[a*]
Transfer Activities		6.67±2.20	6.85±2.24	0.705[a]
Home Settings		6.17±2.16	6.62±2.12	0.201[a]
Patient Satisfaction Questionnaire (In-group)		**VADE Group**		**p**
		1st week	3rd month	
		x̄±SD	x̄±SD	
Surgical Procedure		8.35±1.51	8.62±1.12	0.615[a]
Physiotherapy or VADE Program		9.12±0.89	9.46±0.64	0.279[a]
ADL and Prevention Protocols		8.96±1.34	9.48±0.52	0.251[a]
Transfer Activities		9.13±1.06	9.72±0.36	0.091[c]
Home Settings		8.57±1.95	9.52±0.55	0.068[c]
Patient Satisfaction Questionnaire (Between groups)		**PT Group**	**VADE Group**	**p**
		Median (min-max)	Median (min-max)	
Surgical Procedure	1st week	5.6 (0.4-8.9)	8.5 (4.7-10)	0.000[a*]
	3rd month	5.7 (1.2-8.5)	8.6 (6.8-10)	0.000[a*]
Physiotherapy or VADE Program	1st week	7.2 (0-10)	9.3 (7.2-10)	0.001[a*]
	3rd month	7.2 (2.3-10)	9.6 (8.2-10)	0.001[b*]
ADL and Prevention Protocols	1st week	6.2 (0-10)	9.6 (6-10)	0.000[b*]
	3rd month	7.3 (2.8-10)	9.5 (8.5-10)	0.001[b*]
Transfer Activities	1st week	6.5 (3.3-10)	9.5 (6.3-10)	0.001[b*]
	3rd month	6.95 (2.4-10)	10 (9-10)	0.000[b*]
Home Settings	1st week	63.5 (26-96)	92 (31-100)	0.001[b*]
	3rd month	71 (30-96)	97 (83-100)	0.000[b*]

PT: Physiotherapy, VADE: Video-assisted discharge education, min: Minimum, max: Maximum, ADL: Activities of daily living, $p<0.05$: statistically significant difference, x̄: mean, SD: standard deviation, p[a]: Paired Sample T-Test, p[b]: Mann Whitney-U test p[c]: Wilcoxon Test