School of Medicine

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Background

Osteoarthritis (OA) is a chronic degenerative condition present in 43% of Veterans using VA healthcare services. Pedometry and 30-s Chair Stand Test are validated objective indices of function. Self-report questionnaires (Knee Injury and Osteoarthritis Outcome Score (KOOS) and Lower Activity Extremity Activity Scale (LEAS) are validated measures of function and response to OA treatments. One study (Frimpong et al., 2020) correlating KOOS to activity after total knee arthroplasty (TKA) found no correlation between activity level and pedometer steps after TKA. Saleh et al. (1994) correlated the LEAS to activity level after TKA as well which conversely showed a significant correlation between the LEAS and pedometer outcomes. To our knowledge this is the first study investigating correlations between subjective functional questionnaires and objective reports of function in the Veteran population with knee OA. We hypothesized linear relationships among pain, self-reported function, and objective functional outcome measures, perhaps similar to other studies with non-Veteran patients monitored after a knee replacement surgery.

Methods

Ambulatory Veterans between the ages of 25 and 75 years with painful knee OA were recruited to participate in this prospective cross-sectional study. The convenience sample included 25 Veterans with knee OA in need of hyaluronic acid injections. No financial incentive was provided; participation was voluntary. Major medical comorbidities and those with active rheumatic conditions and ongoing spinal stenosis were excluded. Patients were provided a pedometer and instructed to wear it daily for up to a week. After this time of usual activity, study

Results

Table 1. Demographics of the sample of 25 Veteran patients with knee OA

	Mean ± SD
Age (years)	62.56 ± 11.343
Body Mass Index (kg/m^2)	32.18 ± 6.934
Years of Pain	19.4 ± 12.423
	% with History of
Smoking	24%
Use of Topical NSAIDs	44%
Use of Opioids	16%
Use of Bracing	52%

Table 2. Correlations Among Functional and Subjective Measures

	Spearman Rho (r-value)	P-Value	(R-value)^2
KOOS Overall			
LEAS	-0.515	0.008	.265
Numeric Pain Rating Scale	0.517	0.008	.267
Pedometer Steps	-0.310	0.171	
30s CST	-0.727	0.000	.529
LEAS			
Numeric Pain Rating Scale	-0.559	0.004	.312
Pedometer Steps	0.322	0.154	
30s CST	0.413	0.040	.170
KOOS Overall	-0.515	0.008	.265
30-s Chair Stand Test			
Numeric Pain Rating Scale	-0.508	0.010	.258
Pedometer Steps	0.351	0.119	
LEAS	0.413	0.040	.170
KOOS Overall	-0.727	0.000	.529

Discussion

- The study demonstrated statistically significant but overall weak linear correlations among the 30-s Chair Stand Test objective measure, KOOS questionnaire, LEAS questionnaire, and numeric pain rating scale.
- No significant correlation was found between the pedometer readings, Numeric Pain Rating Scale, overall self-reported functional questionnaires and objective functional outcome measures.
- Some reasons for this would possibly be due to the relatively small sample size. It must also be noted that several patients endorsed overall decreased activity due to the current COVID-19 pandemic potentially limiting pedometer data. Additionally, the poor user-friendliness of the pedometer may have influenced adherence to use. Patients may need more instruction and incentive to be adherent with the pedometer protocol.
- Data collection for this study is ongoing and more data are needed before further conclusions can be made.

Clinical Significance

- The results of this study may further validate the use of the KOOS and LEAS questionnaires and pedometer to measure function objectively.
- Our results thus far suggest that the rapidly administered LEAS questionnaire can as effectively extract valuable information regarding function as the validated and widely used KOOS questionnaire. This suggests that the LEAS questionnaire may represent a more practical and rapid alternative to assessing function.