

# MUSCLE FUNCTION AS PREDICTOR OF MORTALITY IN MAINTENANCE HEMODIALYSIS PATIENTS

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## 1. INTRODUCTION

Muscle wasting is a strong predictor of mortality in hemodialysis patients. Besides muscle size, muscle function also may be a predictor of mortality.

## 2. OBJECTIVE

To assess if muscle function is associated with mortality in maintenance hemodialysis patients.

## 3. MATERIALS AND METHODS

- Prevalent hemodialysis patients between July 2012 and August 2014
  - Demographic characteristics, clinical data and laboratory measurements (serum urea, creatinine, albumin, CRP)
  - Muscle function: handgrip strength
  - Patients were followed up until October 2014
  - Censure:** switch off dialysis, renal transplantation, transference to another facility, or death.
- Statistical analysis (SPSS)**
    - Student's t test and Wilcoxon
    - Chi-square
    - ROC curves
    - Kaplan-Meier and log rank test
    - Cox proportional hazard analysis adjusted for demographic, biochemical and anthropometrical variables
    - p<0.05

## 4. RESULTS

Main characteristics of all patients and according to survival

Variables	All (n=218)	Survivals (n=188)	Non-survivals (n=30)
Gender [M(%)]	124 (56.9)	110 (58.5)	14 (44.7)
Age (years)	58.3 ± 14.7	57.9 ± 14.4	61.7 ± 15.1
Dialysis vintage (months)	16.4 (6.8,40.8)	15.6 (6.8, 37.4)	28.5 (10.3, 75.3)
Diabetes (%)	98 (44.9)	80 (42.5)	17 (56.7)
Time of follow up (days)	404 ± 233	426 ± 232	261 ± 184 *
Handgrip strength (kg)	19 ± 11	20 ± 11	12 ± 9 *
BMI (kg/m <sup>2</sup> )	26 ± 6	25.9 ± 5.6	26.7 ± 8.2
%TST	106.8 ± 60.7	107.3 ± 62.4	101.5 ± 49.9
%MAMC	99.3 ± 17	99.4 ± 16.5	98.1 ± 20.5
Serum Urea (mg/dl)	106.9 ± 33.8	108.3 ± 34.1	97.8 ± 31.8
Serum Creatinine (mg/dl)	9.2 ± 8.1	8.8 ± 2.9	7.6 ± 2.5*
Albumin (g/dl)	3.8 ± 0.6	3.9 ± 0.6	3.6 ± 0.4
CRP (mg/dl)	1 (0.5,1.9)	0.9 (0.5, 1.8)	1.5 (0.7,2)

\*p<0.05 comparing group survivals vs. non survivals

Follow-up :

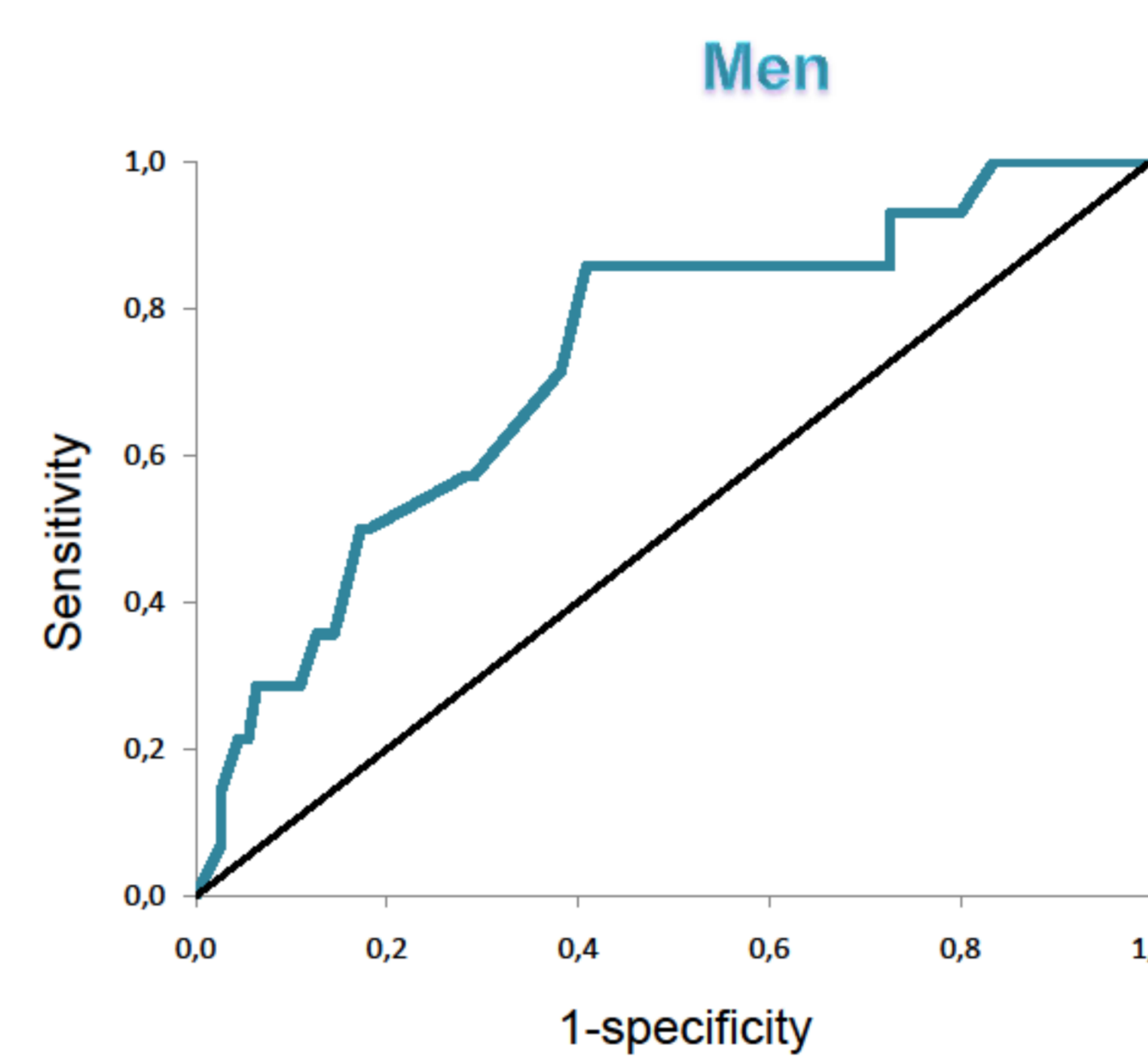
- 30 deaths (13.8%)
- 19 received kidney transplants (8.7%)
- 4 patients transferred to another facility (1.8%)

### Cox proportional hazard analysis

	HR (CI 95%)	p
Handgrip strength	0.934 (0.896-0.973)	0.001

	OR (CI 95%)	p
Handgrip strength	0.929 (0.884-0.975)	0.003
Gender	1.676 (0.738-3.803)	0.217
Age	0.992 (0.964-1.021)	0.584
Diabetes	0.778 (0.351-1.725)	0.537
Serum albumin	0.688 (0.415-1.142)	0.148
Serum creatinine	0.891 (0.762-1.043)	0.152
BMI	1.017 (0.956-1.083)	0.585

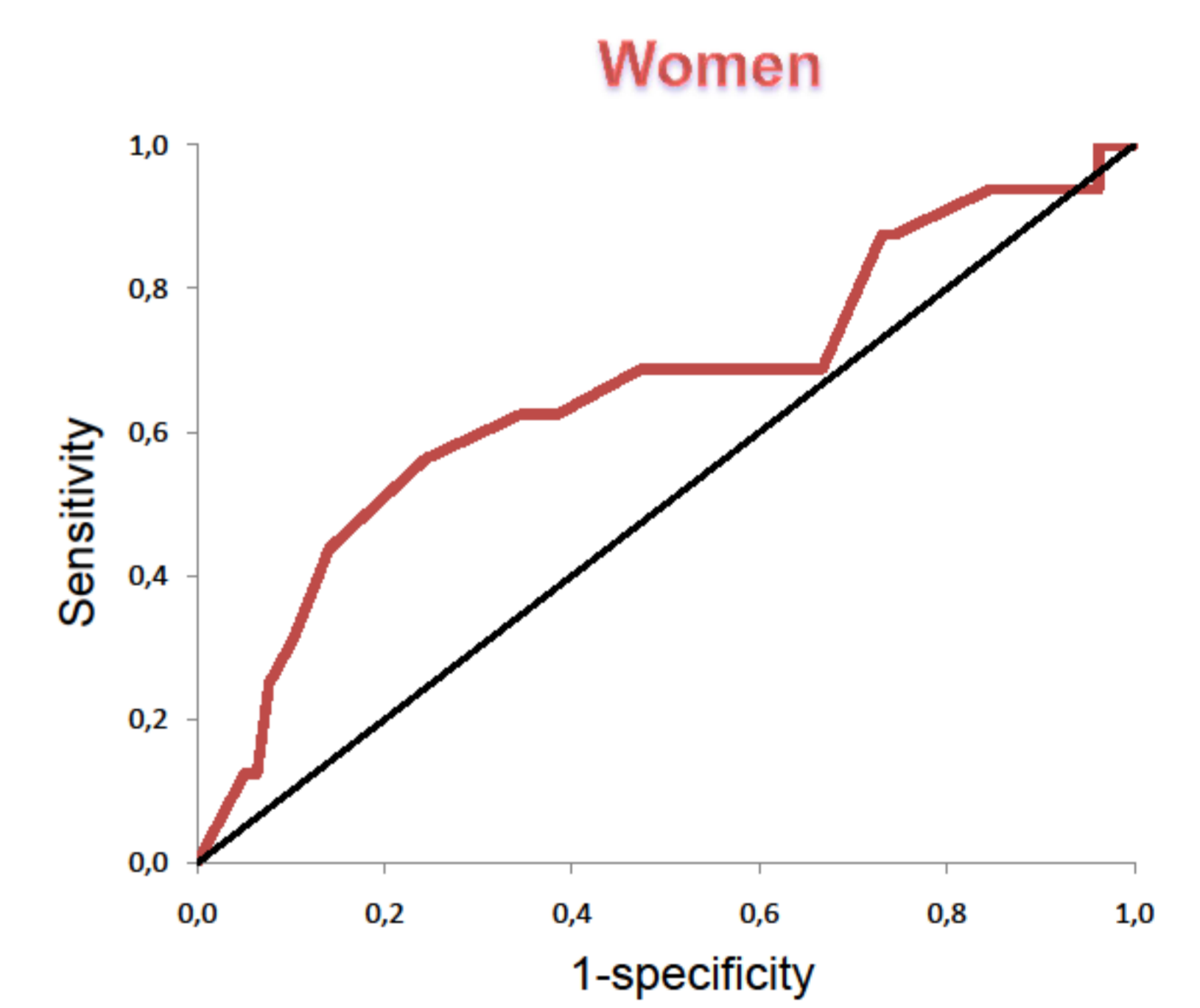
ROC curve



Area under the curve	CI (95%)	p
0.728	0.591-0.864	<0.01

Cutoff	Sensitivity	Specificity
22.5	85.7%	59.1%

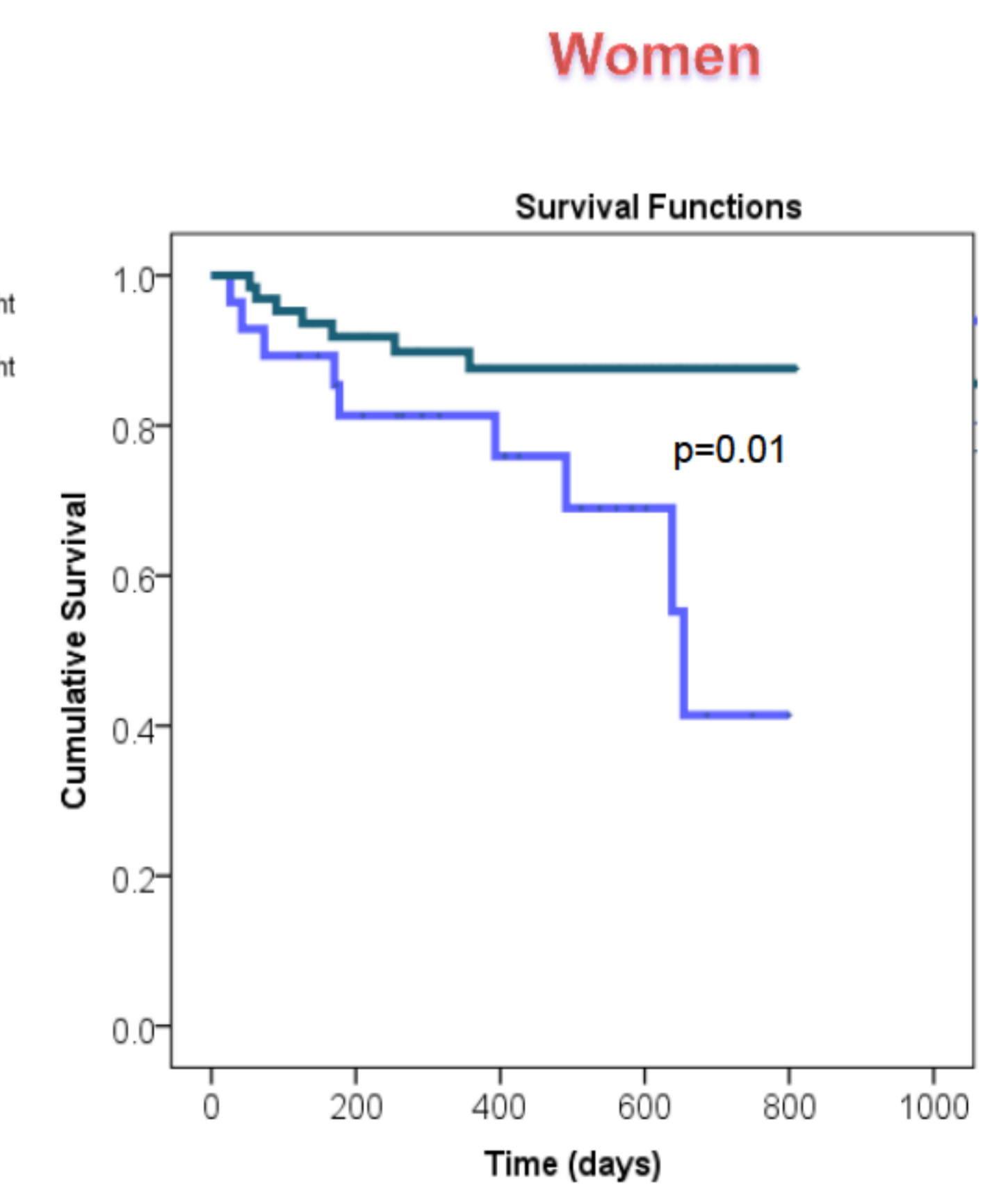
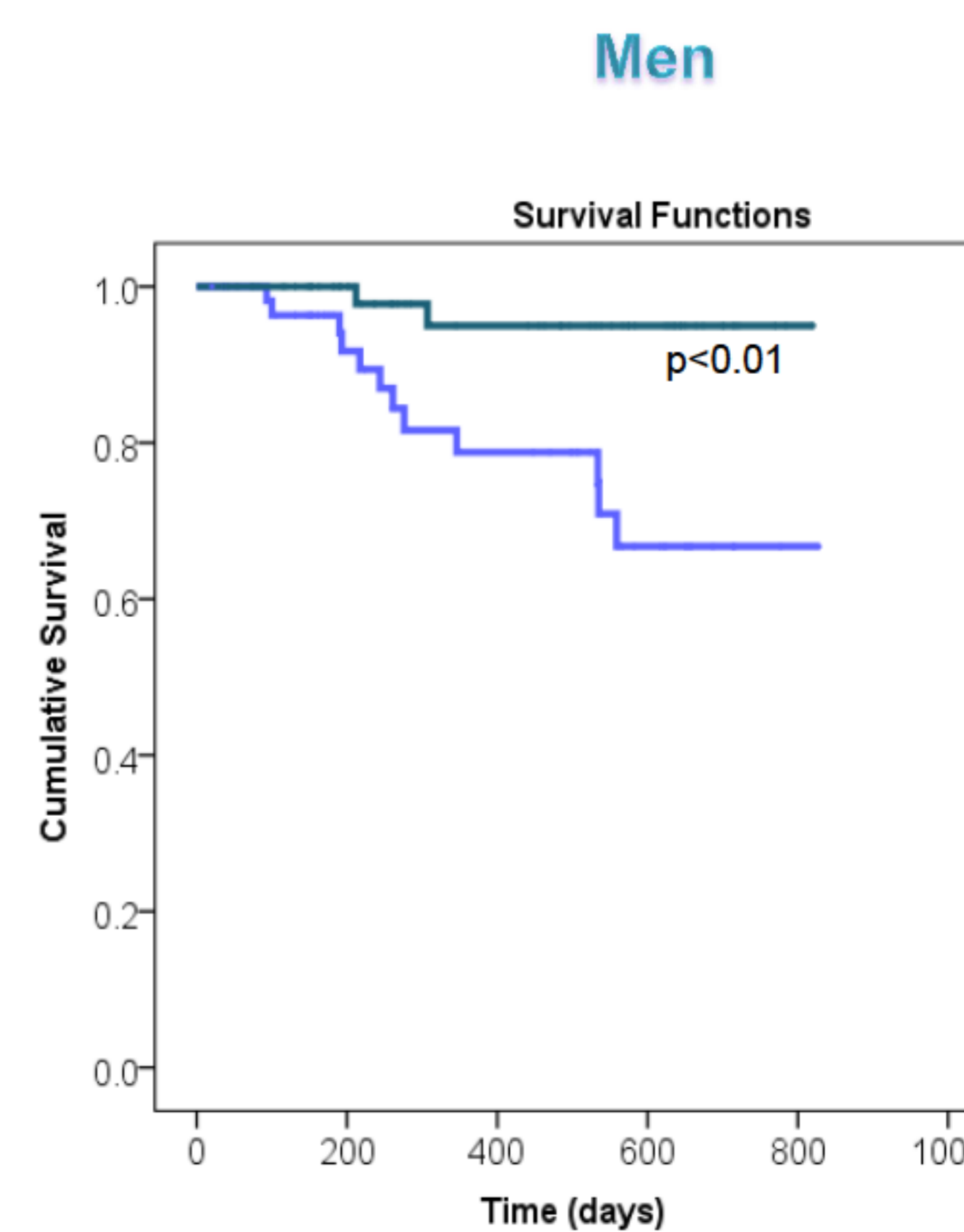


Area under the curve	CI (95%)	p
0.657	0.495-0.819	0.049

Cutoff	Sensitivity	Specificity
9	56.2%	75.6%

Kaplan - Meier plots



## 5. CONCLUSION

The cutoffs of handgrip strength for men and women found were 22.5 kg and 9 kg, respectively. They were useful to predict mortality in prevalent maintenance hemodialysis patients.