FSM Fundació Sanitària Mollet

GEMAV

DIFERENCIAS EN EL ACCESO VASCULAR SEGÚN GÉNERO DE LOS PACIENTES INCIDENTES EN HEMODIÁLISIS DE CATALUNYA

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Miembro de la Junta Directiva de la Vascular Access Society (VAS) 2011-2023

Conflicto de intereses: ninguno

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GENDER DIFFERENCES IN VASCULAR ACCESS FOR INCIDENT HAEMODIALYSIS PATIENTS. A REGISTRY-BASED STUDY.

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INTRODUCTION: Gender disparities in some aspects of vascular access (VA) for haemodialysis (HD) have been reported

AIM: To analyze the VA profile of incident HD patients (pts) depending on gender in Catalonia

METHOD. Data from the Catalan Renal Registry of 22,859 end-stage kidney disease (ESKD) pts older than 18 years of age starting HD therapy was examined over a 24-year period (1997-2021)

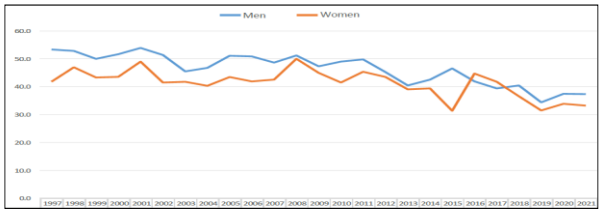
RESULTS I. COMPARATIVE CHARACTERISTICS BETWEEN MALE (N=14,921) AND FEMALE (N=8038)

		Men		Women		Total			
		n	%	n	%	n	%	p	% miss.inf
Global		14,821	64.8	8038	35.2	22,859	100.0	-	
Mean age, years (SD)		66.2 (14.2)		67.2 (14.4)		66.6 (14.3)		<0.001	0%
Age group (years)	18-44	1327	9.0	705	8.8	2032	8.9	<0.001	0%
	45-64	4241	28.6	2070	25.8	6311	27.6		
	65-74	4331	29.2	2228	27.7	6559	28.7		
	≥75	4922	33.2	3035	37.8	7957	34.8		
Primary kidney disease	Unknown	3677	25.7	1998	25.5	5675	25.6	<0.001	3%
	Glomerular disease	1809	12.6	760	9.7	2569	11.6		
	Interstitial disease	1132	7.9	794	10.1	1926	8.7		
	Polycystic kidney disease	762	5.3	650	8.3	1412	6.4		
	Vascular	2532	17.7	963	12.3	3495	15.8		
	Diabetic nephropathy	3309	23.1	1821	23.3	5130	23.2		
	Others	1110	7.8	843	10.8	1953	8.8		
ESKD presentation	Acute	1446	10.6	777	10.4	2223	10.5	0.044	7%
	Acute-on-chronic	4440	32.5	2314	31.0	6754	31.9		
	Steady progression	7782	56.9	4386	58.7	12,168	57.6		
Predialysis nephrology care (years)	<1	4397	35.4	2284	34.2	6681	35.0	0.327	16%
	1-2	2831	22.8	1522	22.8	4353	22.8		
	3-4	1899	15.3	1034	15.5	2933	15.4		
	≥5	3300	26.6	1840	27.5	5140	26.9		
Previous median time of follow-up (years)		2.5 (0.5-5.7)		2.6 (0.7-6)		2.5 (0.6-5.8)		0.025	
Functional status	Normal physical activity	5803	40.2	2610	33.2	8413	37.7	<0.001	2%
	Almost normal physical activity	3526	24.4	1896	24.1	5422	24.3		
	Limited physical activity	3752	26.0	2281	29.0	6033	27.0		
	Special care or hospitalization	1374	9.5	1071	13.6	2445	11.0		
Comorbidities	Coronary artery disease	3750	25.5	1253	15.7	5003	22.0	<0.001	1%
	Heart failure	4669	31.7	2363	29.6	7032	31.0	0.001	1%
	Cardiac conduction disorders	2773	18.9	1388	17.5	4161	18.4	0.006	1%
	Cerebrovascular disease	2196	14.9	869	10.9	3065	13.5	<0.001	1%
	Peripheral vascular disease	3899	26.5	1187	14.9	5086	22.4	<0.001	1%
	Hypertension	11,876	80.9	6337	79.6	18,213	80.5	0.017	1%
At least one cardiovascular comorbidity		8546	58.3	3817	48.0	12,363	54.7	<0.001	1%
Body mass index (Kg/m²)	<18.5	341	2.4	327	4.2	668	3.0		3%
	18.5-25	6330	43.9	3041	38.9	9371	42.2	<0.001	
	26-30	5422	37.6	2451	31.3	7873	35.4		
	>30	2312	16.1	2007	25.7	4319	19.4		
Median body mass index (Kg/m²)		25.4 (22.9-28.2)		25.9 (22.6-30.1)		25.5 (22.8-28.9)		<0.001	

RESULTS II. FIRST VASCULAR ACCESS USED FOR STARTING HD

VASCULAR ACCESS	MEN	WOMEN	p
ARTERIOVENOUS FISTULA: % (n)	46.1 (6308)	41.3 (3088)	<0.001
ARTERIOVENOUS GRAFT: % (n)	0.8 (108)	1.7 (129)	<0.001
TUNNELLED CATHETER: % (n)	20.4 (2789)	23.0 (1719)	<0.001
NON-TUNNELLED CATHETER: % (n)	32.8 (4488)	34.0 (2537)	0.083

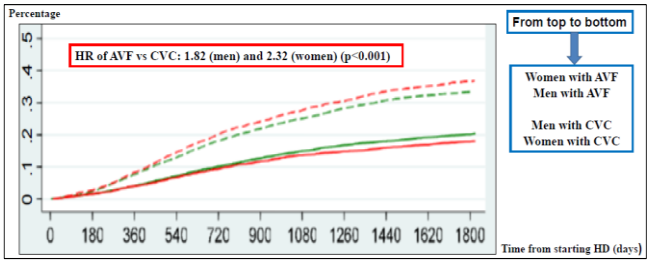
RESULTS III. PERCENTAGE OF INCIDENT PATIENTS WHO STARTED HD BY FISTULA ACCORDING TO YEAR AND GENDER



RESULTS IV. PROBABILITY OF STARTING HD BY AVF

	Odds Ratio	p	IC 95%	
Age group (years)				
18-44	1 (reference)			
45-64	1.31	<0.001	1.15	1.49
65-74	1.37	<0.001	1.21	1.57
≥75	1.38	<0.001	1.21	1.58
Body mass index (kg/m²)				
<18.5	1 (reference)			
18.5-25	1.35	0.005	1.09	1.65
26-30	1.58	<0.001	1.29	1.95
>30	1.61	<0.001	1.30	1.99
Primary kidney disease				
Glomerular disease	1 (reference)			
Unknown	0.92	0.141	0.82	1.03
Interstitial disease	1.06	0.382	0.93	1.22
Polycystic kidney disease	2.03	<0.001	1.73	2.38
Vascular disease	1.09	0.165	0.96	1.23
Diabetic nephropathy	0.91	0.095	0.81	1.02
Others	0.69	<0.001	0.59	0.81
Gender				
Female	1 (reference)			
Male	1.32	<0.001	1.23	1.41
Functional status				
Special care or hospitalization	1 (reference)			
Normal physical activity	2.45	<0.001	2.15	2.78
Almost normal physical activity	2.27	<0.001	1.99	2.57
Limited physical activity	1.70	<0.001	1.51	1.93
Cardiovascular disease				
Yes	1 (reference)			
No	1.23	<0.001	1.14	1.32
ESKD presentation				
Acute	1 (reference)			
Acute-on-chronic	5.05	<0.001	4.18	6.11
Steady progression	23.30	<0.001	19.37	28.03
Constant	0.014	<0.001	0.010	0.019

RESULTS V. PROBABILITY TO RECEIVE THE FIRST KIDNEY GRAFT AT FIVE YEARS DEPENDING ON THE FIRST VA (AVF or CVC) USED FOR STARTING HD



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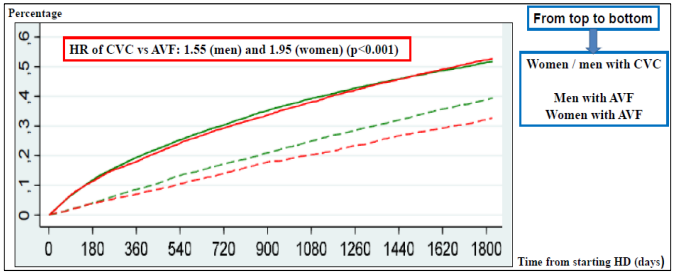
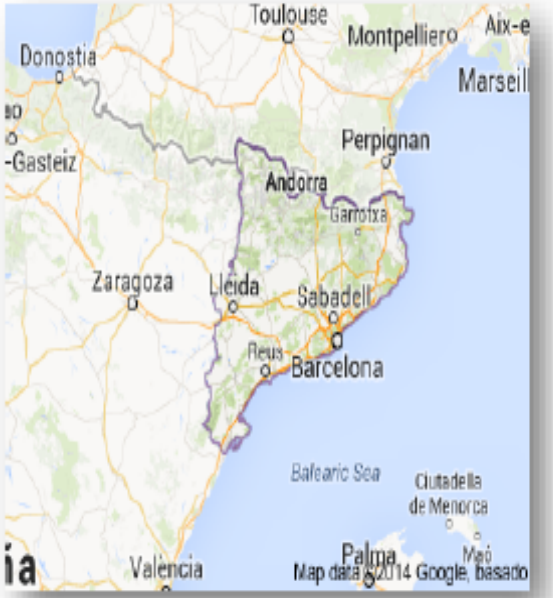


CONCLUSIONS: 1) Although AVF was the main type of VA used for starting HD in both sexes, the percentage of AVF was significantly lower in women at the expense of AVG and tunnelled catheter. 2) Male gender was an independent factor associated with a 32% greater probability of starting HD by AVF than female. 3) Women initiating HD by AVF were more likely to receive a KG over time than men with an AVF. 4) Men and women shared the same probability to die over time after starting HD with a catheter. 5) Men starting HD by AVF were more likely to die over time than women with an AVF. 6) Regardless of gender, initiating HD by catheter was associated with a lower probability of receiving a KG and a higher probability of dying over time compared to AVF.



AIMS

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METHOD

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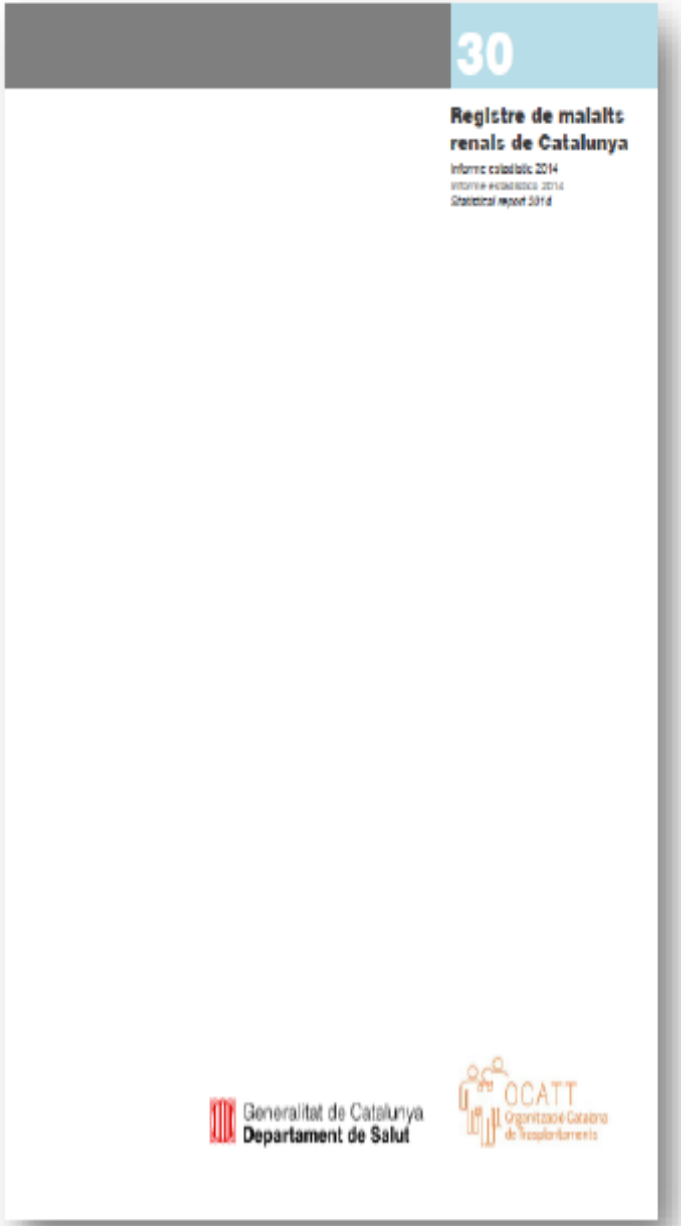

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	>30	2312	16.1	2007	25.7	4319	19.4		
Median body mass index (Kg/m²)		25.4 (22.9-28.2)		25.9 (22.6-30.1)		25.5 (22.8-28.9)		<0.001	

RESULTS I

Male (n=14,921) and female (n=8038) characteristics were different regarding:

- Mean age (years): 66.2±14.2 vs 67.2±14.4
- Vascular disease as primary kidney disease (%): 17.7 vs 12.3
- Normal functional status (%): 40.2 vs 33.2
- Cardiovascular disease (%): 58.3 vs 48
- Obesity rate (body mass index BMI>30 kg/m²): 16.1% vs 25.7%

(for all comparisons, p<0.001)

RESULTS II

FIRST VASCULAR ACCESS USED FOR STARTING HEMODIALYSIS

VASCULAR ACCESS	MEN	WOMEN	p
ARTERIOVENOUS FISTULA: % (n)	46.1 (6308)	41.3 (3088)	<0.001
ARTERIOVENOUS GRAFT: % (n)	0.8 (108)	1.7 (129)	<0.001
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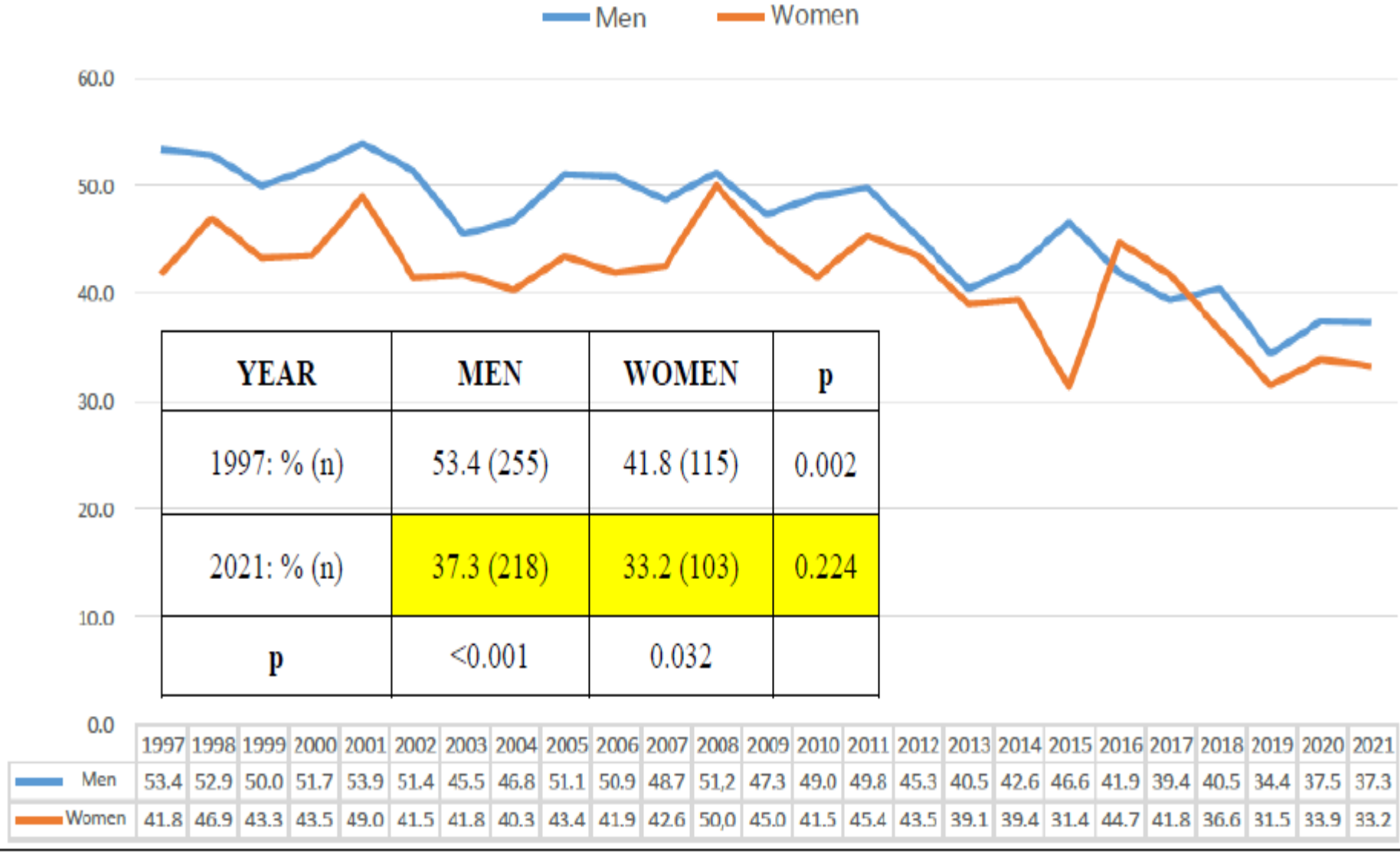
NON-TUNNELLED CATHETER: % (n)	32.8 (4488)	34.0 (2537)	0.083

Missing information: 7%

RESULTS III

PERCENTAGE OF INCIDENT PATIENTS WHO STARTED HD BY FISTULA ACCORDING TO YEAR AND GENDER



YEAR	MEN	WOMEN	p
1997: % (n)	53.4 (255)	41.8 (115)	0.002
2021: % (n)	37.3 (218)	33.2 (103)	0.224
p	<0.001	0.032	

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Men	53.4	52.9	50.0	51.7	53.9	51.4	45.5	46.8	51.1	50.9	48.7	51,2	47.3	49.0	49.8	45.3	40.5	42.6	46.6	41.9	39.4	40.5	34.4	37.5	37.3
Women	41.8	46.9	43.3	43.5	49.0	41.5	41.8	40.3	43.4	41.9	42.6	50,0	45.0	41.5	45.4	43.5	39.1	39.4	31.4	44.7	41.8	36.6	31.5	33.9	33.2

	Odds Ratio	p	IC 95%	
Age group (years)				
18-44	1 (reference)			
45-64	1.31	<0.001	1.15	1.49
65-74	1.37	<0.001	1.21	1.57
≥75	1.38	<0.001	1.21	1.58
Body mass index (kg/m²)				
<18.5	1 (reference)			
18.5-25	1.35	0.005	1.09	1.65
26-30	1.58	<0.001	1.29	1.95
>30	1.61	<0.001	1.30	1.99
Primary kidney disease				
Glomerular disease	1 (reference)			
Unknown	0.92	0.141	0.82	1.03
Interstitial disease	1.06	0.382	0.93	1.22
Polycystic kidney disease	2.03	<0.001	1.73	2.38
Vascular disease	1.09	0.165	0.96	1.23
Diabetic nephropathy	0.91	0.095	0.81	1.02
Others	0.69	<0.001	0.59	0.81
Gender				
Female	1 (reference)			
Male	1.32	<0.001	1.23	1.41
Functional status				
Special care or hospitalization	1 (reference)			
Normal physical activity	2.45	<0.001	2.15	2.78
Almost normal physical activity	2.27	<0.001	1.99	2.57
Limited physical activity	1.70	<0.001	1.51	1.93
Cardiovascular disease				
Yes	1 (reference)			
No	1.23	<0.001	1.14	1.32
ESKD presentation				
Acute	1 (reference)			
Acute-on-chronic	5.05	<0.001	4.18	6.11
Steady progression	23.30	<0.001	19.37	28.03
Constant	0.014	<0.001	0.010	0.019

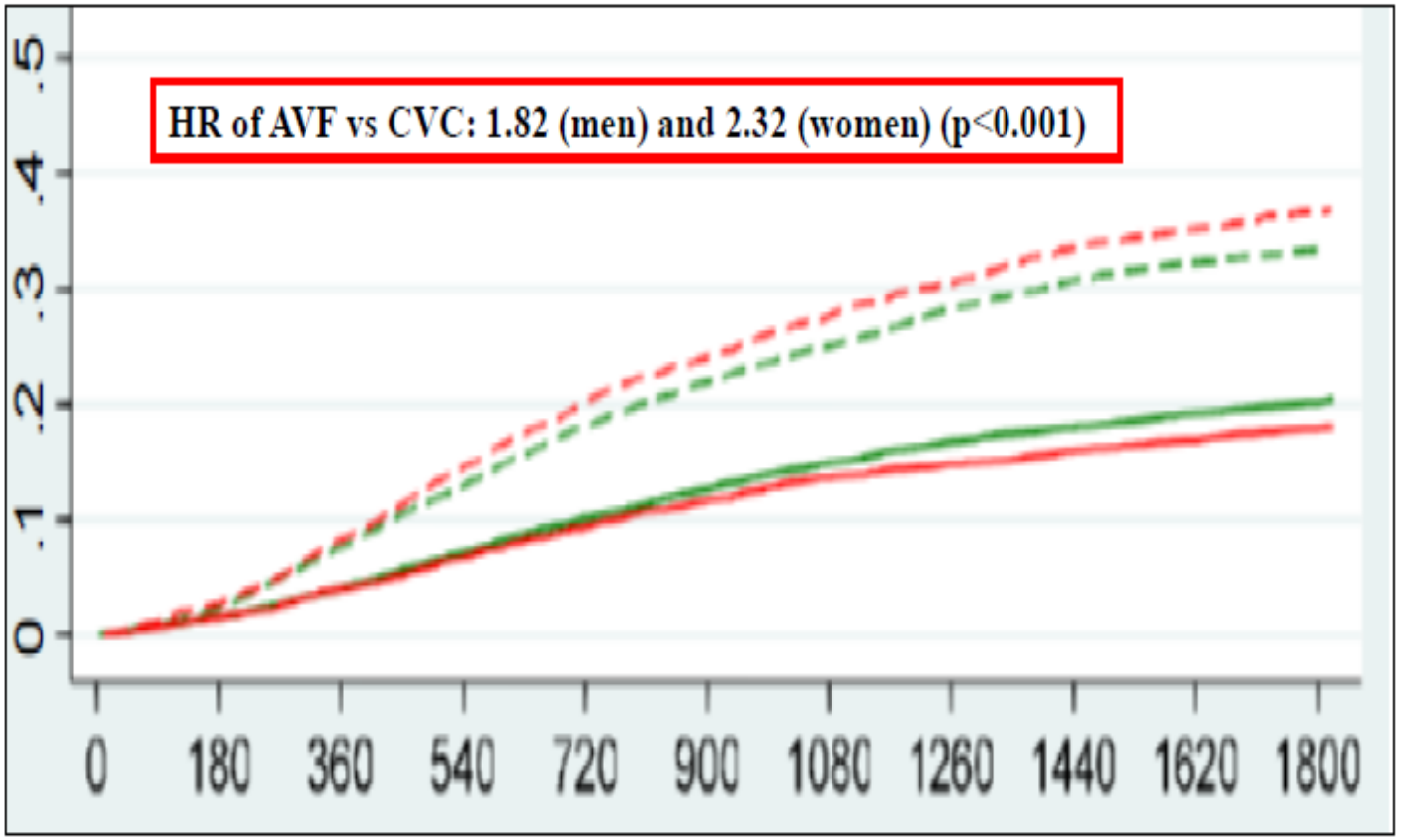
RESULTS IV

PROBABILITY OF STARTING HD BY AVF (multivariate logistic regression analysis)

RESULTS V

PROBABILITY TO RECEIVE THE FIRST KIDNEY GRAFT AT FIVE YEARS DEPENDING ON GENDER AND THE FIRST VASCULAR ACCESS (AVF or CVC) USED FOR STARTING HD

Percentage



From top to bottom

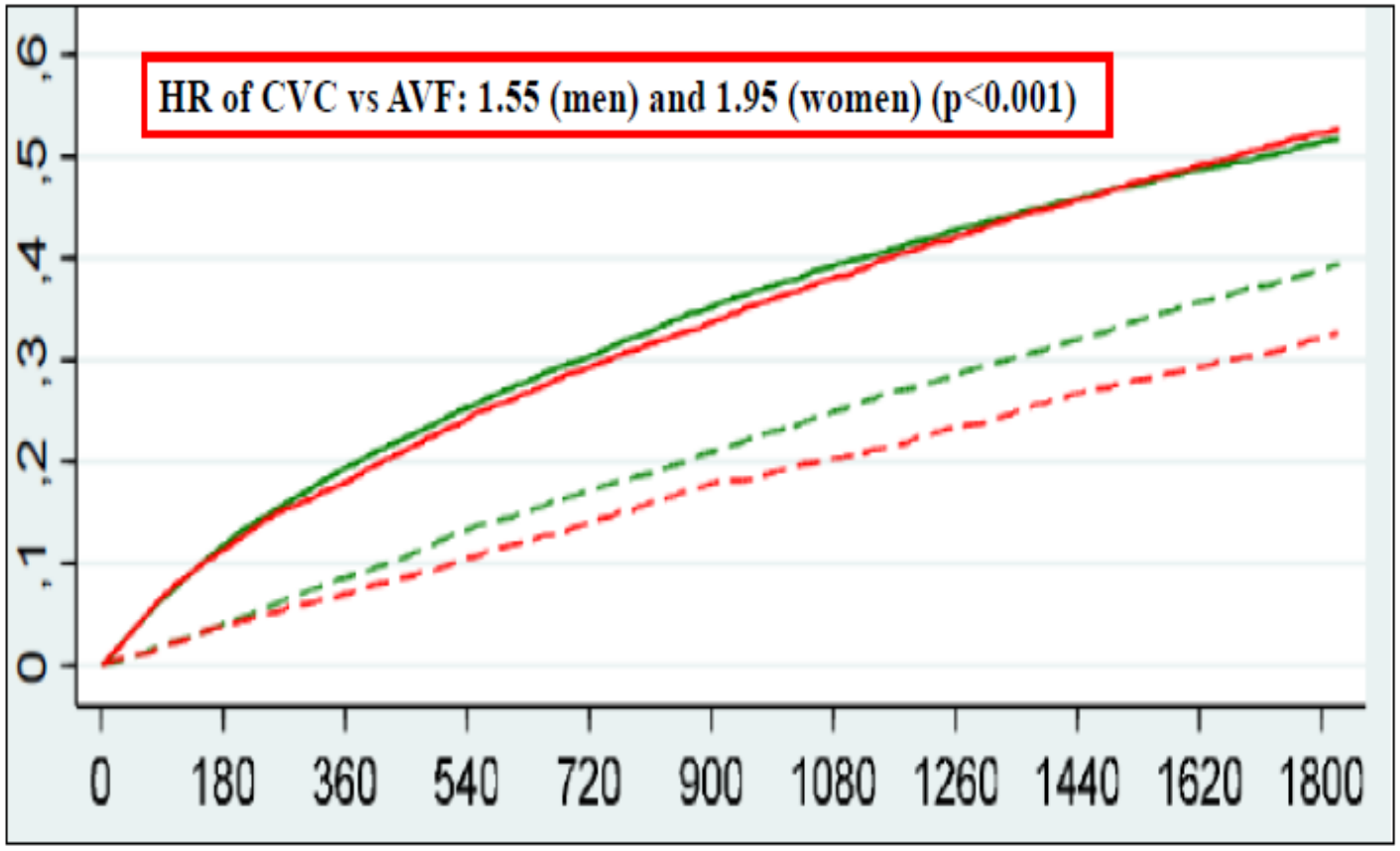
Women with AVF
Men with AVF

Men with CVC
Women with CVC

Competing risk model:"death", "transfer to peritoneal dialysis", "kidney function recovery" and "lost of follow-up" were the events that competed with "first kidney transplantation"

RESULTS VI

PROBABILITY TO DIE AT FIVE YEARS DEPENDING ON GENDER AND THE FIRST VASCULAR ACCESS (AVF or CVC) USED FOR STARTING HD



From top to bottom

Women / men with CVC

Men with AVF
Women with AVF

Competing risk model: "changing treatment to kidney transplantation or peritoneal dialysis", "kidney function recovery" and "lost of follow-up" were the events that competed with "death"

CONCLUSIONS

1) Although AVF was the main type of VA used for starting HD in both sexes, the percentage of AVF was significantly lower in women at the expense of AVG and tunnelled catheter.
2) Male gender was an independent factor associated with a 32% greater probability of starting HD by AVF than female.
3) Women initiating HD by AVF were more likely to receive a KG over time than men with an AVF.
4) Men and women shared the same probability to die over time after starting HD with a catheter.
5) Men starting HD by AVF were more likely to die over time than women with an AVF.
6) Regardless of gender, initiating HD by catheter was associated with a lower probability of receiving a KG and a higher probability of dying over time compared to AVF.

DISCUSSION

Clinical Kidney Journal, 2022, vol. 15, no. 11, 2144–2153

https://doi.org/10.1093/ckj/sfac179
Advance Access Publication Date: 2 August 2022
Original Article

ORIGINAL ARTICLE

Is there sex disparity in vascular access at dialysis initiation in France? A mediation analysis using data from the Renal Epidemiology and Information Network registry

Mathilde Beaumier[1,2], Maxence Ficheux[1], Cécile Couchoud[3], Mathilde Lassalle[3], Ludivine Launay[2], Cécile Courivaud[3,4], Aurélien Tiple[3,5], Thierry Lobbedez[1,2] and Valérie Chatelet[1,2]; on behalf of the REIN registry

N= 16 032 patients

Sex ratio (male to female): 10 405:5627

Multivariable analysis: women were associated with a greater risk of starting dialysis with a catheter {odds ratio [OR], **1.32** [95% CI: 1.23–1.42]}

CONCLUSION

Women were associated with a higher risk of starting dialysis through an HD catheter

Nephrol Dial Transplant (2014) 0: 1–9
doi: 10.1093/ndt/gfu253

ndt
Nephrology Dialysis Transplantation

Original Article

Use of vascular access for haemodialysis in Europe: a report from the ERA-EDTA Registry

Marlies Noordzij[1], Kitty J. Jager[1], Sabine N. van der Veer[2,3], Reinhard Kramar[4], Frederic Collart[5], James G. Heaf[6], Olivera Stojceva-Taneva[7], Torbjørn Leivestad[8], Jadranka Buturovic-Ponikvar[9], Manuel Benítez Sánchez[10], Fransesc Moreso[11], Karl G. Prütz[12,13], Alison Severn[14], Christoph Wanner[15], Raymond Vanholder[16] and Pietro Ravani[17]

Table 3. Crude and adjusted[a] ORs with 95% CI for the likelihood to start HD using an AVF in the incident cohort ($n = 13\,044$)

	Crude OR (95% CI)	Adjusted OR[a] (95% CI)
Age at start HD (years)		
20–44	1.0	1.0
45–59	1.13 (1.00–1.30)	1.20 (1.05–1.37)*
60–69	1.01 (0.86–1.14)	1.08 (0.95–1.22)
70–79	0.86 (0.76–0.97)*	0.93 (0.82–1.05)
≥ 80	0.66 (0.58–0.76)*	0.77 (0.67–0.90)*
Sex		
Male	1.0	1.0
Female	0.85 (0.79–0.91)*	0.84 (0.78–0.90)*
Diabetes mellitus		
No diabetic nephropathy	1.0	1.0
Diabetic nephropathy	1.03 (0.94–1.12)	0.99 (0.91–1.08)

[a]Multivariate model: age, sex, presence of diabetes mellitus as primary renal disease, year of start HD and country.
*$P < 0.05$.

Table 4. Logistic model: predictors of AVF use among incident ESRD patients in networks 5, 6, 8, 11, and 13[b]

Patient characteristic	Adjusted OR of AVF use	95% CI	p value
Race			
Black	1.00	0.92–1.09	0.9455
White[a]	1	–	
Gender			
Female	0.64	0.59–0.69	<0.0001
Male[a]	1	–	
Age			
18–29	0.61	0.47–0.80	0.0004
30–39	0.80	0.67–0.96	0.0155
40–49	0.89	0.78–1.01	0.0761
50–59	1.01	0.90–1.13	0.8693
60–69[a]	1	–	–
70–79	0.93	0.84–1.04	0.2018
80+	0.83	0.72–0.95	0.0068

American Journal of Nephrology

Original Report: Patient-Oriented, Translational Research

Am J Nephrol 2010;32:234–241
DOI: 10.1159/000318152

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Published online: July 27, 2010

Racial and Gender Differences in Arteriovenous Fistula Use among Incident Hemodialysis Patients

Haimanot Wasse[a, b] Sari D. Hopson[b] William McClellan[a, b]

N= 28,712 US patients

13,303 were females (46.3%) and

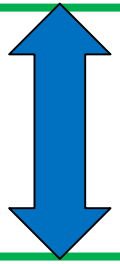
15,409 were males (53.3%)

Women were 36 % less likely than men to use an AVF at HD initiation

Venous Access: Women Are Equal

Nina Caplin, MD, Martin Sedlacek, MD, Victoria Teodorescu, MD, Abigail Falk, MD, and Jaime Uribarri, MD

Am J Kidney Diseases 2003; 41: 429-432



Disparities in Fistula Maturation Persist Despite Preoperative Vascular Mapping

William J. Peterson,* Jill Barker,† and Michael Allon*

**Division of Nephrology, University of Alabama at Birmingham, Birmingham, Alabama; and †Department of Microbiology, Montana State University, Bozeman, Montana*

Clin J Am Soc Nephrol 3: 437-441, 2008

Review Article

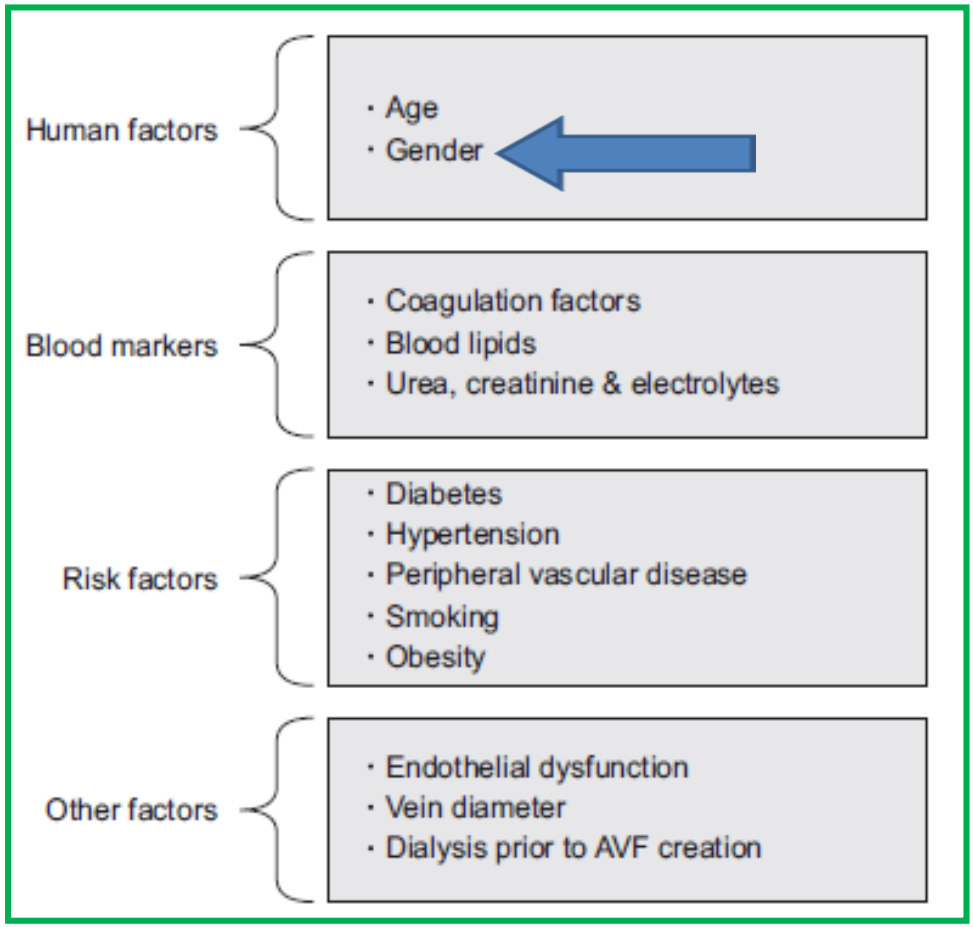
Kidney Res Clin Pract 36:318-328, 2017
pISSN: 2211-9132 • eISSN: 2211-9140
https://doi.org/10.23876/j.krcp.2017.36.4.318

KIDNEY RESEARCH AND CLINICAL PRACTICE

Check for updates

Maturation of arteriovenous fistula: Analysis of key factors

Muhammad A. Siddiqui[1], Suhel Ashraff[2], Thomas Carline[3]



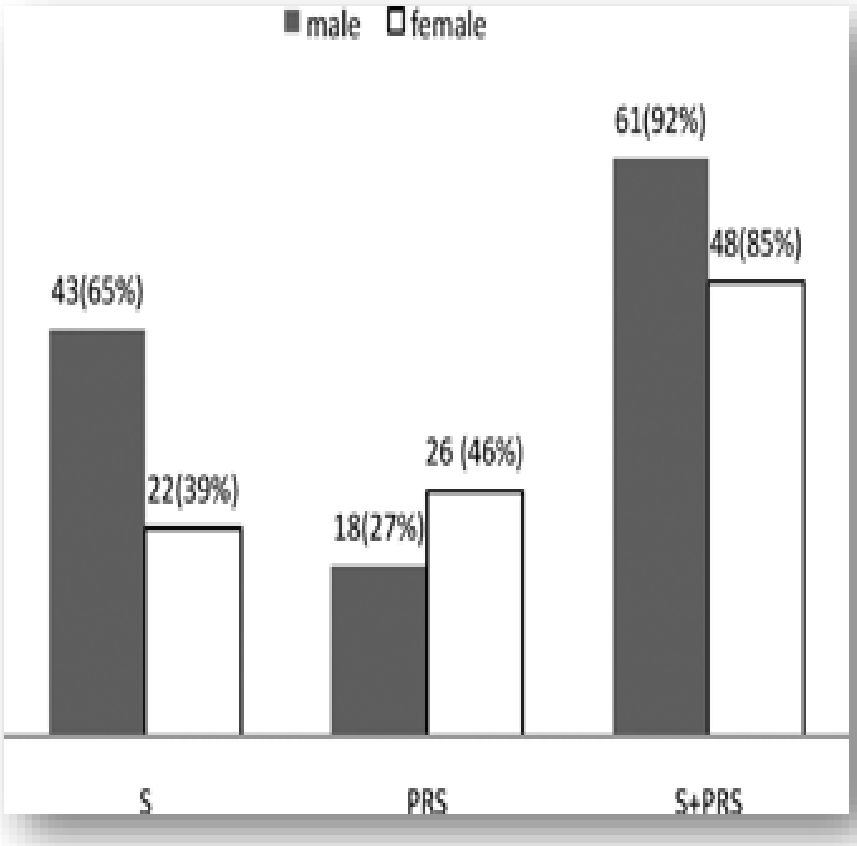
Factors affecting the maturation of arteriovenous fistula (AVF)

JVasc Access 2013; 14 (4): 356-363
DOI: 10.5301/jva.5000163

ORIGINAL ARTICLE

Morphologic and functional vessels characteristics assessed by ultrasonography for prediction of radiocephalic fistula maturation

Tamara K. Jemcov



Arteriovenous fistula outcome during the following period of maturation.S = success maturation after 4 weeks; PRS = prolonged success maturation after 8 weeks.

- The exact cause for the lower AVF maturation rate in women (even when routine preoperative vascular mapping is used) is still not fully clarified:

  vessel diameter ?

  venous compliance ?

- Women need more time for successful AVF maturation

WOMEN NEED MORE TIME FOR SUCCESSFUL ARTERIOVENOUS FISTULA MATURATION

КЛИНИЧКИ ЦЕНТАР СРБИЈЕ

Jemcov K Tamara

Clinic of Nephrology, Clinical Center of Serbia, Belgrade, Serbia

Conclusion

…therefore, they should be considered for RCAVF placement earlier than men.

Muchas

FSM Fundació Sanitària Mollet

IX JORNADA SOBRE EL ACCESO VASCULAR PARA HEMODIÁLISIS EN EL VALLÈS ORIENTAL

I REUNIÓ ANUAL GRUP TREBALL ACCÉS VASCULAR SOCIETAT CATALANA DE NEFROLOGÍA

29 de febrero de 2024

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Gracias