

Appendix 1 - Portuguese studies on the prevalence of hypovitaminosis D

	Sample T/F	Study duration	Age group (years) ^h	Sample characteristics	Analytical method	Mean (\bar{x}) \pm SD / Median (m_e) (nmol/L)	D < 30 (nmol/L)	D \geq 50 (nmol/L)	D \geq 75 (nmol/L)
Wielen ¹⁰	59/30	01/1989-03/1989	Elderly	Random sampling Vila Franca de Xira - SENECA	Competitive protein-binding assay	39.0 (\bar{x})	31.0% ^a 33.0% ^b	-	-
Cabral ¹¹	521/273	2003-2004	13	Random sampling Porto - EPITeen	DiaSorin LIAISON	41.3 (\bar{x}) \pm 14.3	33.8% ^c	22.6%	-
Raposo ¹²	500/286	02/2007-07/2009	\geq 18	Random sampling Portugal mainland - PORMETS	DiaSorin LIAISON	34.5 (m_e) (24.3/44.0) ⁱ	37.7%	14.4%	-
Craveiro ¹³	499/262	2011-2013	21	Random sampling Porto - EPITeen	DiaSorin LIAISON	55.0(\bar{x}) \pm 27.8	14.2%	51.1%	-
Duarte ¹⁴	3,092/1,626	09/2011-12/2013	\geq 18	Random sampling Mainland Portugal and islands - EpiReumaPt	Advia Centaur Siemens	42.2 (\bar{x}) \pm 17.1	25.1%	29.8%	3.6%
Carvalho Silva ¹⁵	335/167	04/2012-4/2014	7	Random sampling Porto – Geração 21	ECLIA (Cobas, Roche)	-	-	-	34.9%
Leitão ¹⁶	789/373	2012-2015	18-79 49.9 \pm 17.0	Random sampling Portugal mainland	ECLIA (Cobas, Roche)	64.8 (\bar{x}) \pm 24.5	7.2%	71.2%	31.6%
Santos ¹⁷	1,500/872	12/2015-06/2016	\geq 65	Random sampling Mainland Portugal and islands - Nutrition UP 65	ECLIA (Cobas, Roche)	42.3 (\bar{x}) \pm 29.7 36.1 (m_e) (35.5) ⁱ	39.6%	31.0%	11.8%
Rebello-Marques ¹⁸	329/172	05/2016-10/2016	50-69 59.6 \pm 5.4	Random sampling USF Condeixa	ECLIA (Cobas, Roche)	57.2 (\bar{x})	3.3% ^d	60.2%	18.5%
Cunha ¹⁹	92/51	09/2017-04/2018	> 18 41.0 \pm 14.8	Random sampling Coimbra Epilepsy	DiaSorin LIAISON	48.8 (\bar{x}) \pm 23.5	-	44.0%	20.9%
Santiago ²⁰	123/64	04/2004-05/2004	71.0 \pm 17.0	Convenience sample Coimbra Internal Medicine Service Admission	DiaSorin LIAISON	-	67.5% ^d	7.3%	-
Silva ²¹	42/39	07/2009-10/2009	35-85 64.0 \pm 10.2	Convenience sample Porto Low-impact wrist fracture	Unidentified	64.0 (\bar{x})	-	71.4%	26.2%
Matias ²²	158/84	Published 2010	62.8 \pm 14.8	Convenience sample Vila Franca de Xira Hemodialysis patients	RIA IDS (Boldon, UK)	55.8 (\bar{x}) \pm 30.0	-	-	~20.0%
Rocha ²³	73/37	03/2008-07/2010	1-17	Convenience sample Porto Pediatric Consultation	Unidentified	64.6 (\bar{x}) \pm 57.1 54.7 (m_e)	-	60.3%	17.8%
Alves ²⁴	2,071/1,270	09/2010-12/2010	54.0 \pm -	Convenience sample Coimbra Hospital laboratory data	DiaSorin LIAISON	-	-	35.0%	11.9%
Ferreira ²⁵	122/-	2011-2012	5-18	Convenience sample Porto Pediatric Consultation	Unidentified	-	6.0% ^d	38.7%	7.5%
Garrido ²⁶	3,591/2,428	2013	\geq 18	Convenience sample Porto Hospital laboratory data	ECLIA (Cobas, Roche)	46.0 (m_e) (41) ⁱ	21.4% ^d	44.8%	20.0%
Castro ²⁷	76/55	07/2013-08/2013	33.8 \pm 10.2	Convenience sample Guimarães Inflammatory bowel disease	Advia Centaur Siemens	65.0 (\bar{x}) \pm 25.0	-	69.7%	31.6%
Santos-Antunes ²⁸	68/51	2009-2014	41.9 \pm 10.3	Convenience sample Porto Inflammatory bowel disease	Chemiluminescent immunoassay	23.0 (\bar{x}) \pm 15.8	-	-	7.0%
Boura ²⁹	518/197	2012-01/2014	46.0 \pm 11.0	Convenience sample Lisbon HIV infection	Unidentified	50.0 (m_e)	-	50.8%	19.9%
Santos ³⁰	5,439/2,992	06/2012-11/2014	0-99	Convenience sample Coimbra Hospital laboratory data	DiaSorin LIAISON	42.5 (m_e) (25.0/65.0) ⁱ	-	39.7%	18.9%
Marques da Costa ³¹	315/315	2004-2015	63.0 \pm 7.2	Convenience sample Lisbon Gynecology Consultation	Unidentified	60.0 (\bar{x}) \pm 19.0	-	66.0%	21.6%
Carvalho ³²	64/30	03/2012-03/2015	65.0 \pm 8.0	Convenience sample Guimarães/Vizela Cognitive profile study	LC-MS	47.0 (m_e) (38.0/60.0) ⁱ	15.6%	40.6%	10.9%
Bettencourt ³³	244/151	Published 2018	41.1 \pm 11.3	Case-control study Porto Multiple sclerosis	ECLIA (Cobas, Roche)	39.9 (\bar{x}) \pm 22.1	-	33.6%	8.2%
Bettencourt ³³	198/95	Published 2018	43.1 \pm 12.1	Case-control study ^o Porto Control group	ECLIA (Cobas, Roche)	55.4 (\bar{x}) \pm 23.4	-	52.0%	21.7%
Bettencourt ³⁴	198/95	07/2015-08/2015 04/2016	18-67 43.1 \pm 12.1	Convenience sample ^o Porto Blood donors	ECLIA (Cobas, Roche)	55.4 (\bar{x}) \pm 23.4 50.9 (m_e)	-	52.0%	21.7%
Branco ³⁵	152/73	01/2016-07/2016	\geq 18 47.2 \pm 17.3	Convenience sample Amadora Inflammatory bowel disease	DiaSorin LIAISON	42.8 (\bar{x}) \pm 20.0	17.7% ^d	31.6%	9.2%
Morrão ³⁶	219/-	02/2016-04/2016	19-64 47.1 \pm 12.5	Convenience sample Porto Five Family Health Units	Advia Centaur Siemens	42.3 (\bar{x}) \pm 16.1	7.3%	42.5%	16.4%
Reis ³⁷	9,060/5,676	01/2015-12/2018	1-101 62.3 \pm 19.5	Convenience sample Covilhã Hospital laboratory data	ECLIA (Cobas, Roche)	45.3 (\bar{x}) \pm 26.3 41.5 (m_e) (25.8/60.5) ⁱ	-	37.6%	14.3%
Faria ³⁸	320/165	01/2016-05/2017 01/2018-12/2018	10-18 13.6 \pm 2.1	Convenience sample Lisbon Pediatric Consultation	Unidentified	66.0 (\bar{x}) \pm 21.3	-	79.4%	30.3%
Lopes ³⁹	182/96	2018	> 18 43.0 \pm 14.0	Convenience sample Porto Type 1 diabetes	Unidentified	53.3(\bar{x}) \pm 27.3	-	47.3%	20.9%
Henriques ⁴⁰	2,782/1,079	05/2014-11/2020	18-65	Convenience sample Lisbon and Porto Military hospital	Alinity – Abbott (Lisboa) Advia Centaur Siemens (Porto)	61.3 (\bar{x}) \pm 26.5 ^f 59.3 (\bar{x}) \pm 28.8 ^g	-	65.4% ^f 58.9% ^g	25.2% ^f 23.5% ^g
Freitas ⁸	490/217	08/2020-01/2021	\geq 18 69.7 \pm 15.8	Convenience sample Lisbon and Porto COVID-19	ECLIA (Cobas, Roche)	-	-	75.5%	12.0%

Mota ⁴¹	30.625/-	01/2022-03/2022	19-65	Convenience sample Porto (urban) Laboratory data	Unidentified	-	-	45.1%	17.2%
Mota ⁴¹	583/-	01/2022-03/2022	19-65	Convenience sample Porto (rural) Laboratory data	Unidentified	-	-	38.%	12.6%
Henriques ⁴²	735/84	12/2023-3/2024	18-65 38.3±9.5	Convenience sample Mainland Portugal and islands Navy personnel	Alinity – Abbott	54.5 (m _e) (40.8/68.8) ^l	2.9% ^d	57.8%	16.7%

^a: male; ^b: female; ^c: < 35 nmol/L; ^d: <25 nmol/L; ^e: the samples include the same participants; ^f: military personnel; ^g: civilian personnel; ^h: age range/mean age±standard deviation; ⁱ: the 25th/75th percentiles; ^l: interquartile range.

T: sample size; F: female; SD: standard deviation; D: serum 25-hydroxyvitamin D levels; LC-MS: liquid chromatography with mass spectrometry.