

Supplementary information for the article entitled: “Self- reported sleep quality and longitudinal amyloid burden in cognitively unimpaired adults from the AMYPAD study”

SUPPLEMENTARY TABLES:

Supplementary Table 1: Demographics and key variables described by sex

	Total (n=417)	Females (n=252, 60.4%)	Males (n=165, 39.6%)	p value
Age (years) - mean (SEM)	63.44 (0.31)	63.22 (0.41)	63.77 (0.47)	0.39
<i>APOE</i> - ϵ 4 (carriers) - n (%)	181 (43.4)	103 (40.9)	78 (47.3)	0.235
Anxiety (yes) - n (%)	98 (23.5)	72 (28.6)	26 (15.8)	0.004 *
Depression (yes) - n (%)	29 (7.0)	21 (8.3)	8 (4.8)	0.242
Anxiety or Depression (yes) - n (%)	102 (24.5)	75 (29.8)	27 (16.4)	0.003 *
PSQI (global score) - mean (SEM)	5.78 (0.17)	6.19 (0.23)	5.17 (0.26)	0.004 *
PET baseline (CL) - mean (SEM)	9.09 (0.94)	9.22 (1.18)	8.91 (1.52)	0.871
Time PSQI-PET (days) - mean (SEM)	71.15 (3.79)	70.83 (4.49)	71.65 (6.68)	0.915

SEM: Standard Error of the Mean, *APOE*: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

P values correspond to ANOVA * p<0.05

Supplementary Table 2: Demographics and key variables described by the presence or not of anxiety or depression

	Total (n=417)	Presence of Anxiety or Depression (n=102, 24.5%)	Absence of Anxiety and Depression (n=315, 75.5%)	p value
Age (years) - mean (SEM)	63.44 (0.31)	62.15 (0.57)	63.85 (0.37)	0.019 *
Sex (females) - n (%)	252 (60.4)	75 (73.5)	177 (56.2)	0.003 *
<i>APOE</i> - ϵ 4 (carriers) - n (%)	181 (43.4)	48 (47.1)	133 (42.2)	0.458
Anxiety (yes) - n (%)	98 (23.5)	98 (96.1)	0 (0.0)	<0.001 **
Depression (yes) - n (%)	29 (7.0)	29 (28.4)	0 (0.0)	<0.001 **
PSQI (global score) - mean (SEM)	5.78 (0.17)	7.42 (0.35)	5.25 (0.19)	<0.001 **
PET baseline (CL) - mean (SEM)	9.09 (0.94)	9.86 (2.14)	8.85 (1.02)	0.642
Time PSQI-PET (days) - mean (SEM)	71.15 (3.79)	72.32 (8.4)	70.77 (4.21)	0.861

SEM: Standard Error of the Mean, *APOE*: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

P values correspond to ANOVA * p<0.05, ** p<0.001

Supplementary Table 3: Demographics and key variables described by *APOE*- ϵ 4 status

	Total (n=417)	<i>APOE</i> - ϵ 4 carrier (n=181, 43.4%)	<i>APOE</i> - ϵ 4 non carrier (n=236, 56.6%)	p value
Age (years) - mean (SEM)	63.44 (0.31)	62.29 (0.44)	64.31 (0.43)	0.001 *
Sex (females) - n (%)	252 (60.4)	103 (56.9)	149 (63.1)	0.235
Anxiety (yes) - n (%)	98 (23.5)	46 (25.4)	52 (22.0)	0.49
Depression (yes) - n (%)	29 (7.0)	14 (7.7)	15 (6.4)	0.723
Anxiety or Depression (yes) - n (%)	102 (24.5)	48 (26.5)	54 (22.9)	0.458
PSQI (global score) - mean (SEM)	5.78 (0.17)	5.85 (0.25)	5.73 (0.24)	0.737
PET baseline (CL) - mean (SEM)	9.09 (0.94)	14.64 (1.72)	4.84 (0.9)	<0.001 **
Time PSQI-PET (days) - mean (SEM)	71.15 (3.79)	75.4 (5.65)	67.89 (5.09)	0.327

SEM: Standard Error of the Mean, *APOE*: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

P values correspond to ANOVA * p<0.05, ** p<0.001

Supplementary Table 4: Demographics and key variables across cohorts

	Total (n=417)	ALFA+ (n=162, 38.8%)	EPAD LCS (n=97, 23.3%)	FACEHBI (n=158, 37.9%)	p value
Age (years) - mean (SEM)	63.44 (0.31)	60.5 (0.36)	65.48 (0.61)	65.19 (0.56)	<0.001 **
Sex (females) - n (%)	252 (60.4)	95 (58.6)	56 (57.7)	101 (63.9)	0.517
<i>APOE</i> - ϵ 4 (carriers) - n (%)	181 (43.4)	97 (59.9)	38 (39.2)	46 (29.1)	<0.001 **
Anxiety (yes) - n (%)	98 (23.5)	36 (22.2)	23 (23.7)	39 (24.7)	0.873
Depression (yes) - n (%)	29 (7.0)	7 (4.3)	14 (14.4)	8 (5.1)	0.004 *
Anxiety or Depression (yes) - n (%)	102 (24.5)	38 (23.5)	24 (24.7)	40 (25.3)	0.925
PSQI (global score) - mean (SEM)	5.78 (0.17)	5.21 (0.26)	5.36 (0.35)	6.63 (0.29)	0.001 *
PET baseline (CL) - mean (SEM)	9.09 (0.94)	10.04 (1.25)	10.09 (2.12)	7.52 (1.65)	0.423
Time PSQI-PET (days) - mean (SEM)	71.15 (3.79)	124.31 (5.15)	45.52 (10.08)	32.39 (1.8)	<0.001 **

SEM: Standard Error of the Mean, *APOE*: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

P values correspond to ANOVA * p<0.05, ** p<0.001

Supplementary Table 5: Model 1 (417 subjects, 915 observations)

Amyloid PET (CL)			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-27	-46.13 – -7.87	0.006
PSQI	0.12	-0.41 – 0.66	0.658
Visit years	1.21	0.68 – 1.74	<0.001
Age	0.50	0.22 – 0.78	<0.001
Sex [Female]	1.85	-1.58 – 5.28	0.290
Anxiety/Depression	0.86	-6.69 – 8.41	0.823
<i>APOE</i> [ε4 carrier]	7.33	3.85 – 10.82	<0.001
Cohort [ALFA+]	0.70	-4.11 – 5.51	0.775
Cohort [FACEHBI]	-2.93	-7.55 – 1.69	0.214
PSQI x visit years	0.04	-0.04 – 0.11	0.352

APOE: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

Supplementary Table 6: Model 2 (417 subjects, 915 observations)

<i>Predictors</i>	Amyloid PET (CL)		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-5.30	-15.08 – 4.47	0.287
PSQI	-0.04	-0.31 – 0.24	0.786
Visit years	0.46	-0.06 – 0.97	0.082
Amyloid PET status [Grey-zone]	21.96	17.94 – 25.97	<0.001
Amyloid PET status [Positive]	60.66	52.95 – 68.37	<0.001
Age	0.09	-0.05 – 0.23	0.218
Sex [Female]	-0.19	-1.89 – 1.50	0.823
Anxiety/Depression	-1.99	-5.64 – 1.65	0.283
<i>APOE</i> [ε4 carrier]	1.21	-0.57 – 3.00	0.183
Cohort [ALFA+]	0.63	-1.70 – 2.95	0.597
Cohort [FACEHBI]	-1.03	-3.24 – 1.18	0.361
PSQI x visit years	0.03	-0.05 – 0.10	0.448
PSQI x Amyloid PET status [Grey-zone]	0.31	-0.32 – 0.93	0.333
PSQI x Amyloid PET status [Positive]	1.24	0.20 – 2.28	0.019
Visit years x Amyloid PET status [Grey-zone]	1.82	0.65 – 3.00	0.002
Visit years x Amyloid PET status [Positive]	7.08	4.69 – 9.48	<0.001
(PSQI x visit years) x Amyloid PET status [Grey-zone]	0.22	0.04 – 0.41	0.017
(PSQI x visit years) x Amyloid PET status [Positive]	-0.41	-0.73 – -0.10	0.010

APOE: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

Supplementary Table 7: Model 2 excluding Positive baseline A β category (394 subjects, 865 observations)

<i>Predictors</i>	Amyloid PET (CL)		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-3.73	-12.61 – 5.16	0.411
PSQI	0.02	-0.23 – 0.26	0.902
Visit years	0.44	-0.06 – 0.94	0.085
Amyloid PET status [Grey-zone]	22.39	18.80 – 25.99	<0.001
Age	0.06	-0.07 – 0.19	0.349
Sex [Female]	0.24	-1.31 – 1.78	0.764
Anxiety/Depression	-3.60	-7.03 – -0.18	0.039
<i>APOE</i> [ϵ 4 carrier]	0.62	-1.01 – 2.26	0.455
Cohort [ALFA+]	1.06	-1.09 – 3.21	0.334
Cohort [FACEHBI]	-1.64	-3.70 – 0.42	0.118
PSQI x visit years	0.03	-0.04 – 0.10	0.459
PSQI x Amyloid PET status [Grey-zone]	0.26	-0.30 – 0.82	0.368
Visit years x Amyloid PET status [Grey-zone]	1.74	0.60 – 2.88	0.003
(PSQI x visit years) x Amyloid PET status [Grey-zone]	0.24	0.06 – 0.42	0.009

APOE: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

Supplementary Table 8: Model 2 excluding subjects with anxiety or depression at baseline (315 subjects, 688 observations)

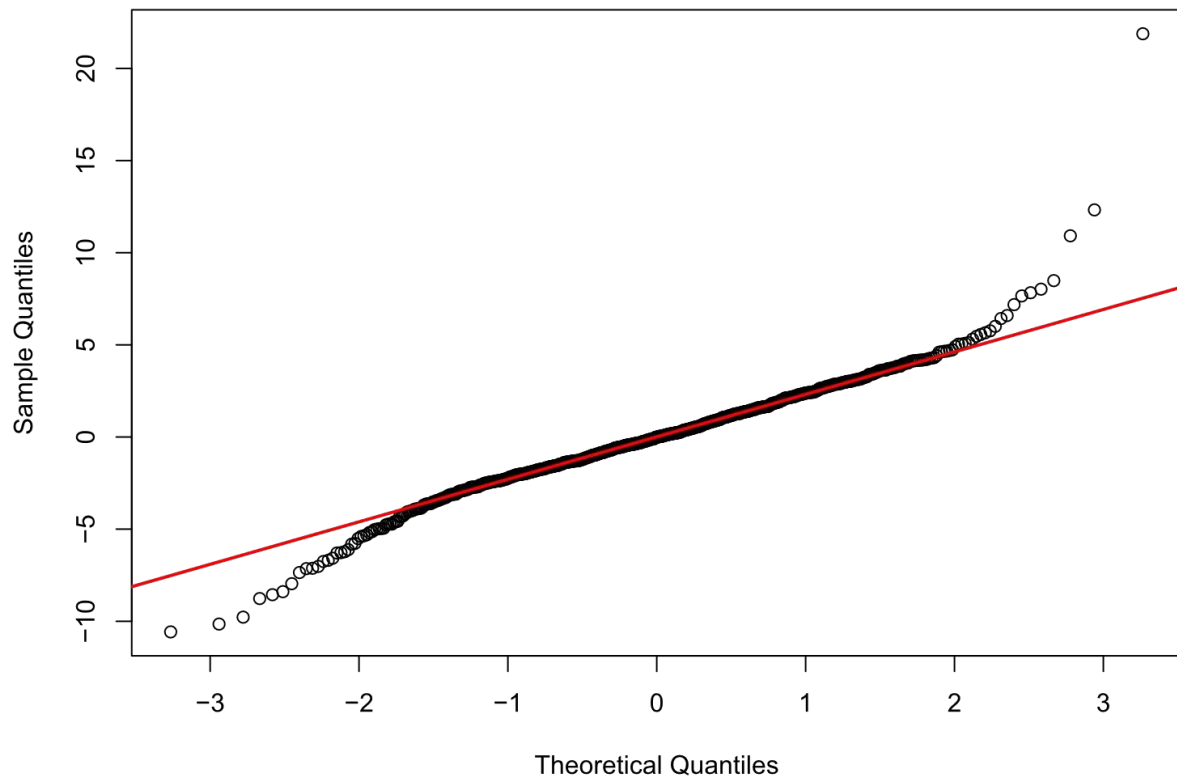
<i>Predictors</i>	Amyloid PET (CL)		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.74	-11.59 – 10.12	0.894
PSQI	0.11	-0.21 – 0.43	0.501
Visit years	0.58	-0.01 – 1.17	0.052
Amyloid PET status [Grey-zone]	24.98	20.72 – 29.24	<0.001
Amyloid PET status [Positive]	64.23	55.84 – 72.62	<0.001
Age	0.01	-0.15 – 0.17	0.875
Sex [Female]	-0.26	-2.14 – 1.63	0.790
<i>APOE</i> [ε4 carrier]	0.86	-1.15 – 2.87	0.400
Cohort [ALFA+]	0.14	-2.47 – 2.76	0.916
Cohort [FACEHBI]	-1.73	-4.20 – 0.74	0.169
PSQI x visit years	0.01	-0.08 – 0.10	0.830
PSQI x Amyloid PET status [Grey-zone]	-0.12	-0.81 – 0.58	0.746
PSQI x Amyloid PET status [Positive]	-0.13	-1.38 – 1.12	0.841
Visit years x Amyloid PET status [Grey-zone]	1.85	0.58 – 3.13	0.005
Visit years x Amyloid PET status [Positive]	7.46	4.84 – 10.08	<0.001
(PSQI x visit years) x Amyloid PET status [Grey-zone]	0.22	0.00 – 0.43	0.045
(PSQI x visit years) x Amyloid PET status [Positive]	-0.35	-0.73 – 0.04	0.082

APOE: Apolipoprotein E, PSQI: Pittsburgh Sleep Quality Index.

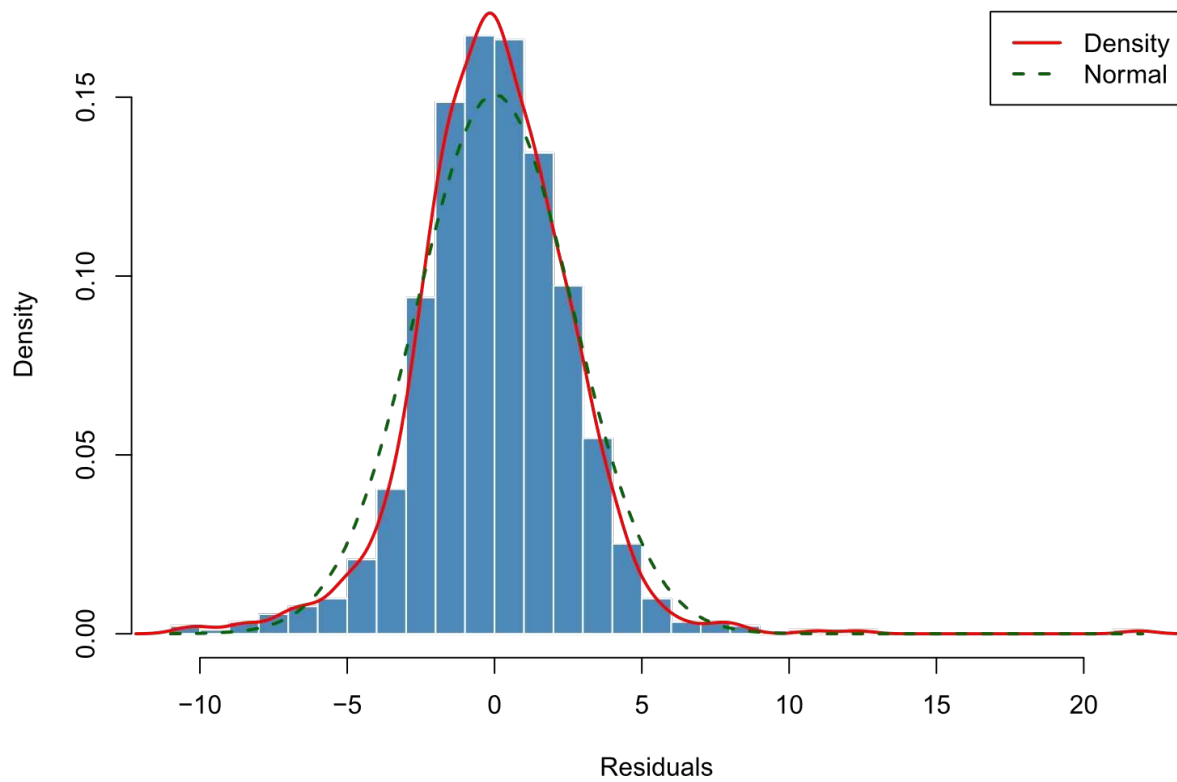
SUPPLEMENTARY FIGURES:

Supplementary Figure 1: QQ plots (top) and residuals distribution (bottom) for Model 1.

QQ Plot of Residuals

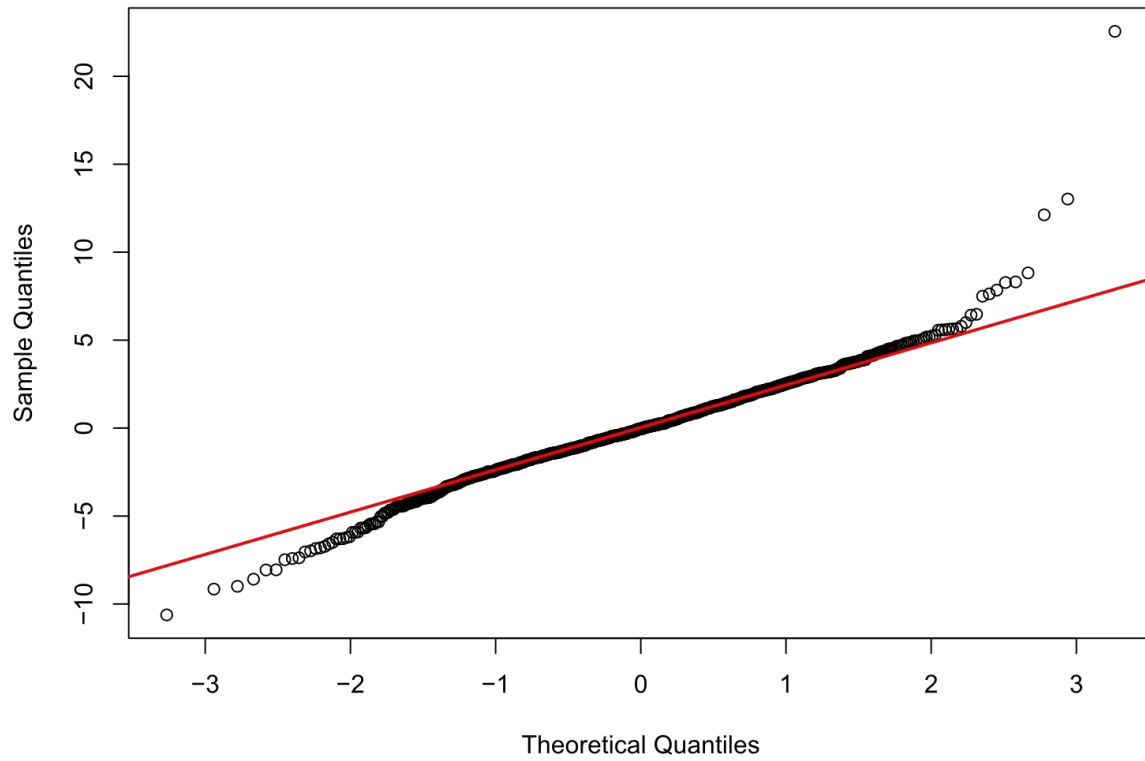


Residuals Distribution

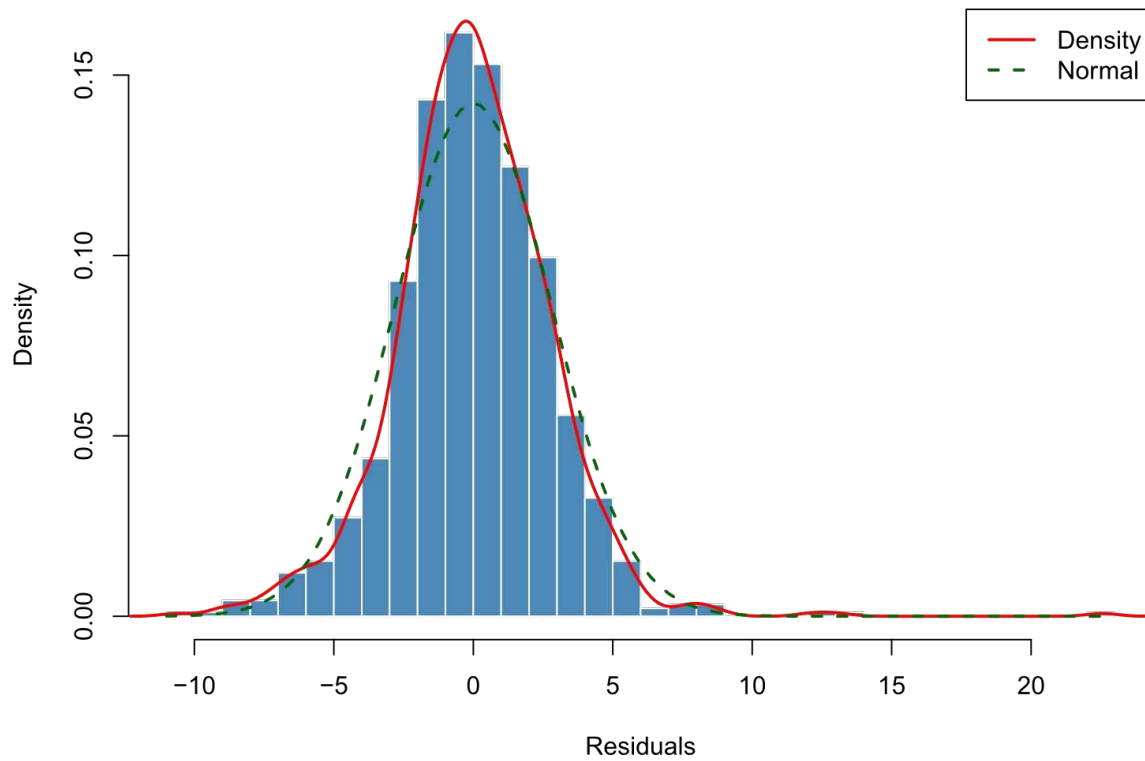


Supplementary Figure 2: QQ plots (top) and residuals distribution (bottom) for Model 2:

QQ Plot of Residuals



Residuals Distribution



Supplementary Figure 3: Histograms of PSQI values in each category of baseline amyloid burden. Vertical lines correspond the representative values of PSQI scores for each tertile (green for good sleep quality, orange for medium sleep quality and red for bad sleep quality).

