HISTOLOGICAL AND BIOPSYCHOSOCIAL PREDICTORS OF QUALITY OF LIFE IN SPANISH AND UK COHORTS OF PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Background

- It is unclear what biopsychosocial factors affect the impact of non-alcoholic fatty liver disease (NAFLD) on quality of life (QoL):
  - The evidence to date on the effect of fibrosis on the QoL of NAFLD patients is inconsistent [1-4]
  - Obesity comorbid to NAFLD has likewise been reported as reducing HRQoL [3,5]. Although other studies have not provided any evidence of such a relationship [4,6]
  - There is more consistency with respect to impact of gender on HRQoL in NAFLD patients, with females reporting a greater decrement on physical and mental functioning compared with males [1-3]
  - The influence on HRQoL of other sociodemographic factors such as age, education or employment status have also been investigated in patients with NAFLD, but there is no conclusive evidence of an impact to date [1,2,6]
- Only one study has compared the HRQoL of NAFLD patients in different European countries [3]
- It is important to determine whether there are geographic variations in how NAFLD and biopsychosocial factors affect QoL, and whether these impacts may differ between areas

Aims

1) Compare QoL of NAFLD patients based on place of origin (Spain or UK) and liver severity (liver fibrosis)
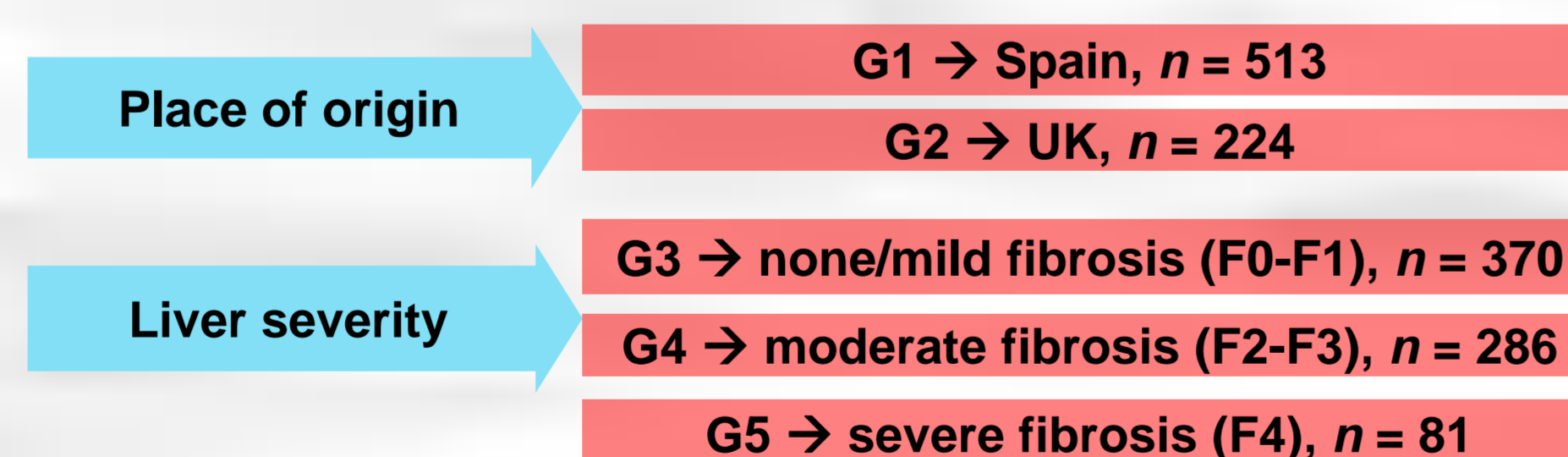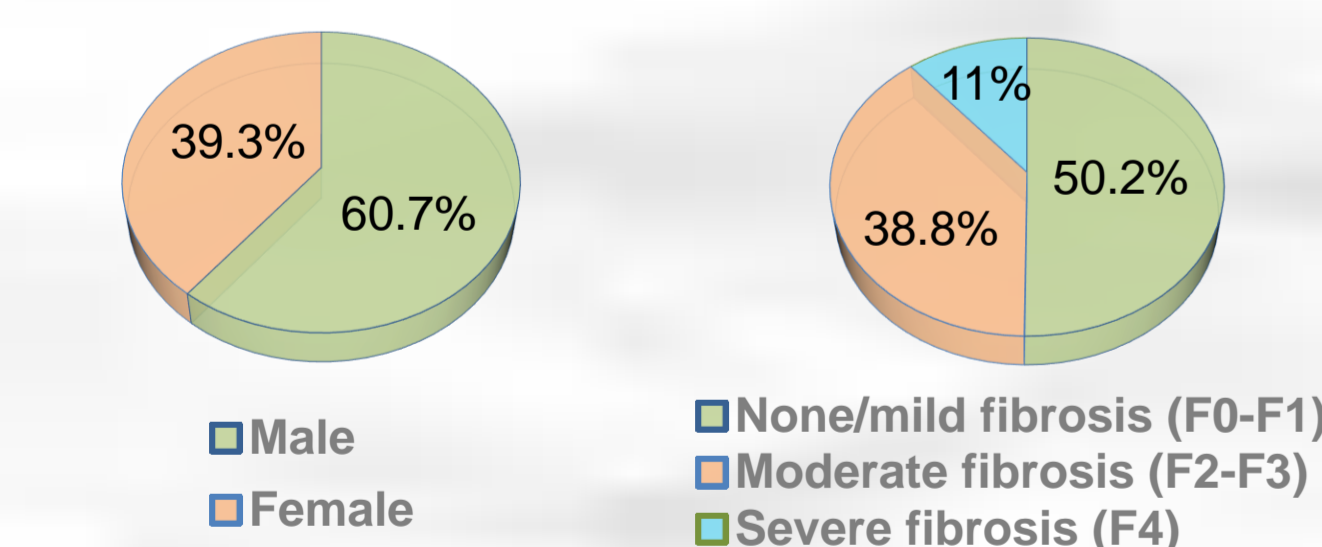2) Identify which biopsychosocial variables predict QoL in Spanish and UK patient cohorts

Material and Methods

❖ Participants

- 737 biopsy-proven NAFLD patients
  - Mean age of 55±12 years

- Male 60.7%, Female 39.3%
- None/mild fibrosis (F0-F1) 50.2%, Moderate fibrosis (F2-F3) 38.8%, Severe fibrosis (F4) 11%

❖ Instruments

- Psychosocial interview
- Chronic Liver Disease Questionnaire (CLDQ)

❖ Statistical analyses

- 1st objective: 2x3 factorial analysis of variance (Snedecor's F).
  Cohen's d was computed as an effect size index

- Place of origin:
  - G1 → Spain, $n = 513$
  - G2 → UK, $n = 224$
- Liver severity:
  - G3 → none/mild fibrosis (F0-F1), $n = 370$
  - G4 → moderate fibrosis (F2-F3), $n = 286$
  - G5 → severe fibrosis (F4), $n = 81$

- 2nd objective: binary logistic regression analysis
  - Independent variables: NASH, liver fibrosis, MELD score, body mass index (BMI), gender, age, education and employment status
  - Dependent variable: QoL (total score on the CLDQ questionnaire)

Results

Table 1	Main effects	
	Place of origin $F_{(1,731)}\ p\ (d)$	Liver fibrosis $F_{(2,731)}\ p\ (d)$
Abdominal symptoms	0.39 0.531 (-0.052 N)	7.66 / 0.001 G5-G6: 0.002 (0.168 N) G5-G7: <0.001*** (0.434 S) G6-G7: 0.028* (0.321 S)
Activity	1.01 0.315 (-0.078 N)	10.93 / <0.001 G5-G6: <0.001*** (0.265 S) G5-G7: <0.001*** (0.464 S) G6-G7: 0.112 (0.244 S)
Emotional function	10.03 0.002** (0.252 S)	9.33 / <0.001 G5-G6: <0.001*** (0.257 S) G5-G7: <0.001*** (0.427 S) G6-G7: 0.186 (0.213 S)
Fatigue	1.58 0.209 (0.092 N)	13.43 / <0.001 G5-G6: <0.001*** (0.231 S) G5-G7: <0.001*** (0.537 M) G6-G7: 0.004** (0.401 S)
Systemic symptoms	20.72 <0.001*** (0.366 S)	12.05 / <0.001 G5-G6: <0.001*** (0.246 S) G5-G7: <0.001*** (0.496 S) G6-G7: 0.018* (0.325 S)
Worry	46.85 <0.001*** (0.531 M)	12.27 / <0.001 G5-G6: <0.001*** (0.230 S) G5-G7: <0.001*** (0.515 M) G6-G7: 0.010* (0.357 S)
Total	7.09 0.008** (0.203 S)	17.32 / <0.001 G5-G6: <0.001*** (0.302 S) G5-G7: <0.001*** (0.642 M) G6-G7: 0.004** (0.400 S)

Effect sizes: N, null; S, small; M, medium. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1

5.36 5.55 5.49 4.90 5.65 5.84 5.43
5.26 5.42 5.12 4.73 5.18 5.06 5.17

Place of origin

G1. Spain (n = 513)
G2. UK (n = 224)

Note: Lower scores show worse QoL

(Abdominal symptoms, Activity, Emotional function, Fatigue, Systemic symptoms, Worry, Total)

1st objective:
- UK participants (G2) had less emotional function, more systemic symptoms, more worry and lower total QoL than Spanish participants (G1), irrespective of the level of fibrosis (Table 1 and Figure 1)
- Participants had an increasing impairment in QoL as the level of fibrosis increased (Table 1 and Figure 2)

Figure 2

5.68 5.89 5.64 5.28 5.74 5.82 5.67
5.37 5.45 5.28 4.87 5.42 5.48 5.31
4.88 5.12 5.01 4.31 5.08 5.06 4.91

Liver fibrosis

G3. None/mild fibrosis (n = 370)
G4. Moderate fibrosis (n = 286)
G5. Severe fibrosis (n = 81)

Note: Lower scores show worse QoL

(Abdominal symptoms, Activity, Emotional function, Fatigue, Systemic symptoms, Worry, Total)

2nd objective:
- For Spanish participants, QoL reduced as liver fibrosis, MELD score and BMI increased. Lower QoL was also independently associated with female gender (Table 2).
- For UK participants, QoL reduced as BMI increased. Lower QoL was also independently associated with female gender, non-active employment status and younger age (Table 3).

Table 2	Total CLDQ					
Spain	Coefficient	SE	p	OR	95% CI Lower	95% CI Upper
NASH	0.342	0.268	0.202	1.408	0.833	2.381
Liver fibrosis	-1.239	0.286	<0.001***	0.290	0.165	0.507
MELD score	-0.157	0.071	0.027*	0.855	0.744	0.982
BMI	-0.082	0.026	0.002**	0.921	0.875	0.970
Gender	-1.215	0.268	<0.001***	0.297	0.176	0.501
Age	0.014	0.013	0.251	1.015	0.990	1.040
Education	0.104	0.295	0.725	1.109	0.622	1.979
Employment	-0.224	0.287	0.435	0.799	0.455	1.403

SE, standard error; OR, odds ratio; CI, confidence interval. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3	Total CLDQ					
UK	Coefficient	SE	p	OR	95% CI Lower	95% CI Upper
NASH	-0.045	0.415	0.914	0.956	0.424	2.155
Liver fibrosis	-0.403	0.426	0.344	0.668	0.290	1.541
MELD score	-0.154	0.130	0.235	0.857	0.665	1.006
BMI	-0.059	0.030	0.047*	0.942	0.889	0.999
Gender	-0.803	0.364	0.028*	0.448	0.219	0.915
Age	0.063	0.017	<0.001***	1.065	1.029	1.102
Education	0.267	1.229	0.828	1.307	0.117	1.537
Employment	-1.089	0.405	0.007**	0.336	0.152	0.745

SE, standard error; OR, odds ratio; CI, confidence interval. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
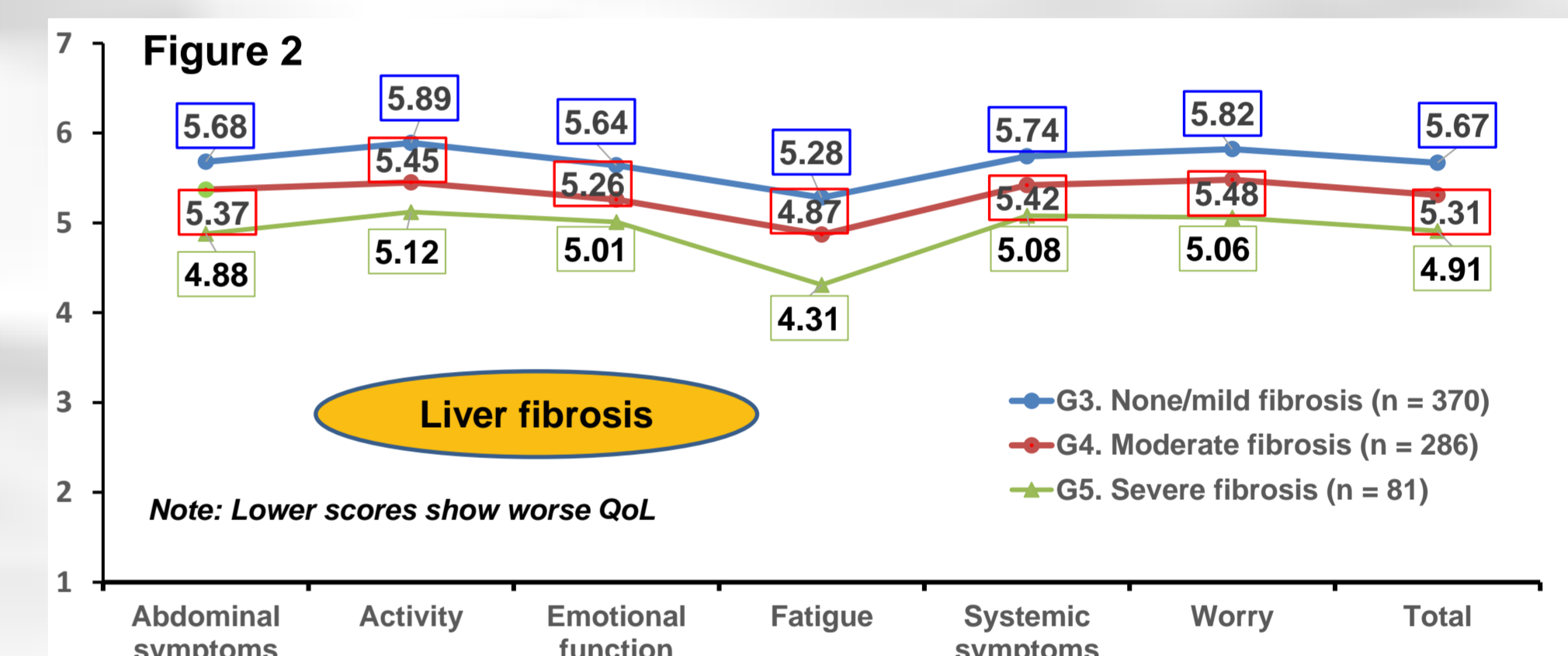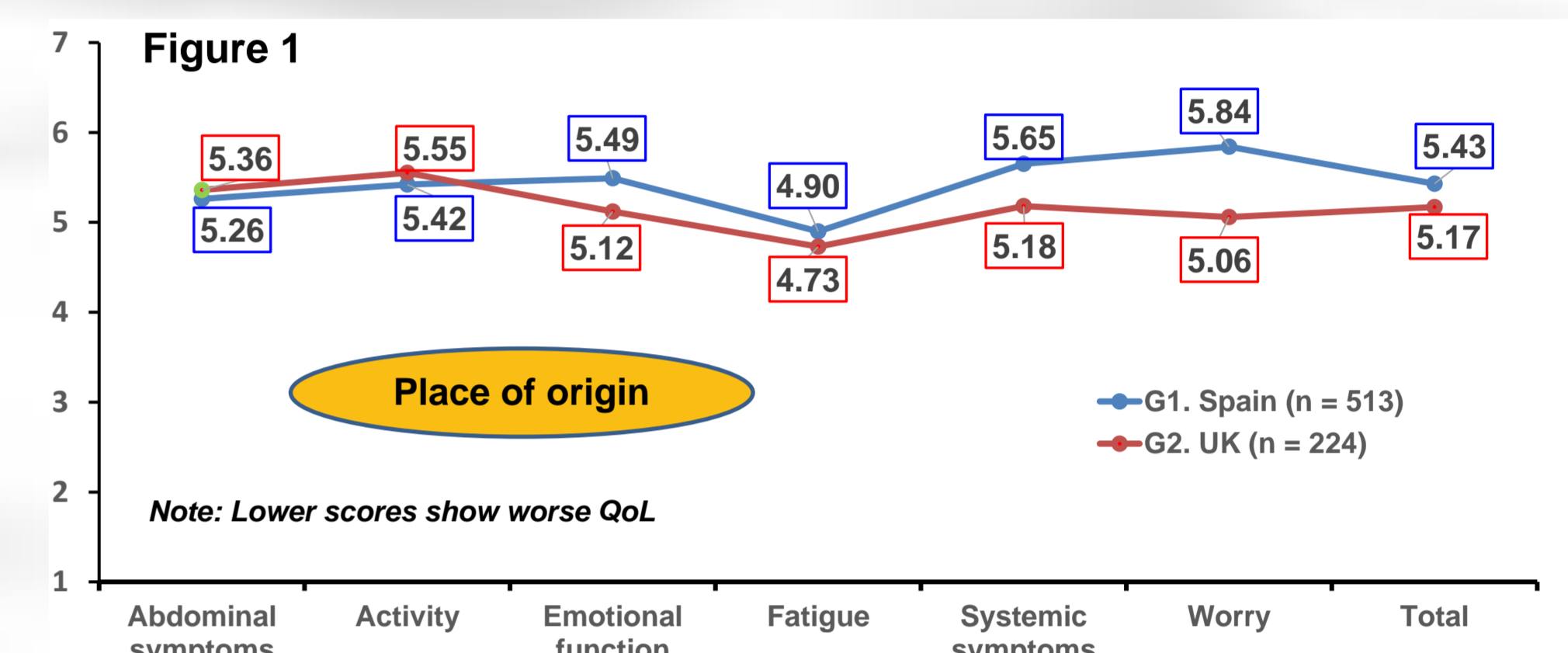
Conclusions

- QoL was mainly lower in UK compared with Spanish participants. UK participants had more physical symptoms, more mood and sleep disturbances, and more worry about liver disease
- Higher fibrosis stage predicted lower QoL, mainly in the Spanish cohort
- Female gender and higher BMI were independently associated with lower QoL in both Spanish and UK participants
- Results will enable healthcare professionals to better understand the biopsychosocial factors that predict and contribute to the impact of NAFLD on patient QoL, as well as identify important differences in QoL of Spanish and UK patients with NAFLD

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