Real-world efficacy of dupilumab and clinical predictors of treatment response in atopic dermatitis - a Polish multicenter retrospective study

Magdalena Trzeciak[1], Weronika Zysk[1], Aleksandra Wilkowska[1], Roman J. Nowicki[1], Alina Jankowska-Konsur[2], Adam Zalewski[2], Joanna Narbutt[3], Aleksandra Lesiak[3], Agata Szymaszkiewicz[3], Justyna Ceryn[3], Natalia Bień[3], Irena Walecka[4], Anna Czaplicka[4], Witold Owczarek[5], Agnieszka Terlikowska-Brzósko[5], Maciej Pastuszczak[6], Iwona Flisiak[7], Julia Nowowiejska[7], Agnieszka Owczarczyk-Saczonek[8], Natalia Zdanowska[8], Lidia Rudnicka[9], Małgorzata Maj[9], Jacek Szepietowski[10], Adrian Chwojnicki[10], Rafał Dulski[10], Beata Kręcisz[11], Joanna Cudzik-Dziurzyńska[11], Anna Wojas-Pelc[12], Andrzej Jaworek[12], Przemysław Hałubiec[12], Agnieszka Żebrowska[13], Aleksandra Kośny[13], Aleksandra Dańczak-Pazdrowska[14], Dorota Jenerowicz[14], Katarzyna Waligóra-Dziwak[14], Adam Reich[15], Justyna Szczęch[15], Dorota Krasowska[16], Mariola Marchlewicz[17], Justyna Rajchert[17]

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The learning objective of the presentation: to evaluate the real-world efficacy of dupilumab in patients with moderate-to-severe atopic dermatitis in Poland and to identify potential clinical factors associated with nonresponse to dupilumab

Can we predict who will respond to dupilumab?

Observational Study > Australas J Dermatol. 2024 Mar;65(2):153-162. doi: 10.1111/ajd.14196. Epub 2023 Dec 6.

Assessment of potential predictive factors of dupilumab response in patients with moderate-to-severe atopic dermatitis

Gemma Melé-Ninot [1], Laia Curto-Barredo [2], Montserrat Bonfill-Ortí [3], Vicente Expósito-Serrano [4], Mónica Munera-Campos [5], Ignasi Figueras Nart [2], Constanza Riquelme-Mc Loughlin [6], Sara Gómez-Armayones [6], Jorge Spertino [7], Esther Serra-Baldrich [7]

*…**older age**, **higher body weight**, **lower baseline thymus and activation-regulated chemokine**, and **Asian race** were associated with slightly **lower EASI response**…*

> Pharm Res. 2023 Nov;40(11):2653-2666. doi: 10.1007/s11095-023-03616-8. Epub 2023 Dec 11.

Integrated Exposure-Response of Dupilumab in Children, Adolescents, and Adults With Atopic Dermatitis Using Categorical and Continuous Efficacy Assessments: A Population Analysis

Emily Briggs [#1,2], Mohamed A Kamal [3], Matthew P Kosloski [4], Ian Linsmeier [5], Natalie Jusko [1,6], Nancy Dolphin [6], Jason Chittenden [4], Eric L Simpson [7], Amy S Paller [8,9], Elaine C Siegfried [10,11], Brad Shumel [4], Noah A Levit [12], Ashish Bansal [4], John D Davis [4], Sunny Chapel [1,11], David E Smith [1], Nidal Huniti [6]

***Women** were 3.6 times **more likely to achieve EASI-75 response** than men. While **increased body mass index significantly reduced the probability** of obtaining an improvement of ≥2 points in the IGA scale at week 52.*

> J Eur Acad Dermatol Venereol. 2021 Dec;35(12):e896-e898. doi: 10.1111/jdv.17541. Epub 2021 Aug 16.

Dupilumab in atopic dermatitis: predictors of treatment outcome and time to response

E Nettis [1], S M Ferrucci [2,3], G Pellacani [4], E Di Leo [5], G Argenziano [6], C Foti [7], F Rongioletti [8], C Patruno [9], M Ortoncelli [10], L Macchia [11], S Tavecchio [2,3], L Bonzano [12], D Di Bona [11], G Calabrese [6], G Fabbrocini [13]; STUDY GROUP

*…**early-onset AD** appear to be reliable and strong predictors of **super response** at 16 weeks.*

> Cent Eur J Public Health. 2022 Mar;30(1):46-50. doi: 10.21101/cejph.a6885.

Real-life experience in the effectiveness, impact on quality of life and safety of dupilumab treatment in patients with moderate to severe atopic dermatitis in the Czech Republic

Milena Tánczosová [1], Martina Kojanová [2], Monika Arenbergerová [1], Petr Arenberger [1], Tomáš Doležal [3], Daniela Štrosová [3], Jorga Fialová [2], Spyridon Gkalpakiotis [1]

EASI responses were independent of BMI.

> J Eur Acad Dermatol Venereol. 2024 May 19. doi: 10.1111/jdv.20111. Online ahead of print.

The impact of body mass index on dupilumab treatment outcomes in adult atopic dermatitis patients

Cataldo Patruno [1], Luca Potestio [2], Daniele Cecere [2], Andrea Cosenza [2], Claudio Brescia [2], Maddalena Napolitano [2]

*…**a higher BMI** is correlated with a **lower effectiveness of dupilumab** during the first weeks of therapy.*

Meta-Analysis > J Allergy Clin Immunol Pract. 2024 Nov;12(11):3044-3056. doi: 10.1016/j.jaip.2024.08.054. Epub 2024 Sep 13.

Factors Associated With Dupilumab Response in Atopic Dermatitis: A Systematic Review and Meta-Analysis

Piyaporn Chokevittaya [1], Noraworn Jirattikanwong [2], Torpong Thongngarm [1], Phichayut Phinyo [3], Chamard Wongsa [4]

***Female sex**, **young age**, **absence of allergic rhinitis**, **low body mass index**, and **low blood eosinophil count** were associated with **a favorable response to dupilumab** in patients with AD.*

Can we predict who will respond to dupilumab?

ABSTRACT BOOK

14th Georg Rajka International Symposium on Atopic Dermatitis

Doha, Qatar

October 24–26, 2024

***P8.21*#402**

CAN WE PREDICT DUPILUMAB TREATMENT OUTCOMES IN ADULT PATIENTS WITH ATOPIC DERMATITIS? A RETROSPECTIVE SINGLE-CENTER STUDY

Weronika ZYSK, Magdalena TRZECIAK, Aleksandra HERKO-WIAK, Jowita SROKA-TOMASZEWSKA, Aleksandra WILKOW-SKA, Roman Janusz NOWICKI

Department of Dermatology, Venereology and Allergology, Faculty of Medicine, Medical University of Gdańsk, Gdańsk, Poland

Dupilumab is the first biological agent approved for the treatment of moderate-to-severe atopic dermatitis (AD). Real-life data regarding the potential impact of patient-related factors on therapeutic response to dupilumab are largely unknown. To attempt to identify potential factors affecting the dupilumab treatment outcomes. A monocentric, retrospective study was performed to analyze data from adult patients with moderate-to-severe AD who started dupilumab treatment between April 2022 and January 2024. Patients' baseline factors including gender, age at dupilumab initiation, EASI, age of AD onset, duration of AD, atopic comorbidities, atopic family history, body mass index (BMI), smoking, and blood eosinophil count were analyzed with the treatment outcomes. Clinical improvement was evaluated at each follow-up (week 16, 28, 40). In total, 42 adult patients with AD (69.1% of males; mean age of 35.6 ± 13.7 years) were enrolled. At week 16, 61.9% of patients achieved an improvement of ≥75% in the Eczema Area and Severity Index from baseline (EASI-75). Early-onset AD (at <2 years of age) and smoking were significantly associated with reduced odds of achieving EASI-75 at week 16 (OR = 0.122, 95% CI: 0.023-0.650; p = 0,014, OR = 0.168, 95% CI: 0.035 – 0.795; p = 0.025, respectively). Patients with baseline eosinophilia (≥500/μL) had a better response to dupilumab at week 16 (EASI-75, OR = 4.156, 95% CI: 1.098 – 15.721; p = 0.036). At week 28, only smoking was still significantly associated with reduced odds of achieving EASI-75 (OR = 0.13, 95% CI: 0.023-0.734; p = 0.021), being not significant at week 40 (p = 0.127). Early-onset AD, smoking, and baseline eosinophilia may help to predict treatment outcomes and the time of good clinical response to dupilumab in AD. Importantly, smoking seems to reduce the effectiveness of dupilumab in the long term.

42 adults with AD

Nonresponse (not achieving EASI-75) at W16 was linked to:

- Early-onset AD
- Smoking

Patients with baseline eosinophilia (≥500/ μL) had a better response to Dupilumab at W16

Material & methods

Study design:

to evaluate the real-world efficacy of dupilumab in patients with moderate-to-severe atopic dermatitis in Poland and to identify potential clinical factors associated with nonresponse to dupilumab

- retrospective, observational, multicenter study
- 17 hospitals in Poland
- patients with moderate-to-severe AD treated with dupilumab
- visits: baseline, week 4, 16 (±2), and 52 (±2)
- analysis by EASI-75 response:
  - **responders:** achieved EASI-75
  - **non-responders:** did not achieve EASI-75

In Poland, dupilumab is reimbursed through the National Health Fund's Drug Program B.124 for eligible patients meeting specific criteria.

Eligibility criteria include:

EASI score ≥ 20, despite topical therapy and:

→ for patients aged ≥ 6 years: inadequate response to systemic therapy or phototherapy

Additionally, patients must meet one of the following criteria:

→ for those aged 12–17 years: (I) failure of systemic immunosuppressive therapy, (II) contraindications to such treatment, or (III) treatment-related adverse events;

→ for patients aged 18 years and older: (I) failure of cyclosporine A (CyA), (II) contraindications to CyA, or (III) CyA-related adverse events.

Material & methods

Patient characteristics analyzed as potential factors influencing EASI-75:

Demographic

- Sex
- Age at dupilumab initiation

Disease severity

- Baseline EASI score

Symptoms

- Pruritus (P-NRS)
- Sleep disturbances (SD-NRS)

Disease history

- Duration of AD (from onset to dupilumab initiation)
- Early-onset AD (<2 years of age)
- Adult-onset AD (≥18 years of age)

Comorbidities

- Atopic comorbidities

Other factors

- Sensitizations
- Atopic family history first-degree relative
- Eosinophili count
- Body mass index (BMI)
- Smoking status
- Place of residence

Patients' baseline characteristics were analyzed in relation to the EASI-75 response at each follow-up visit.

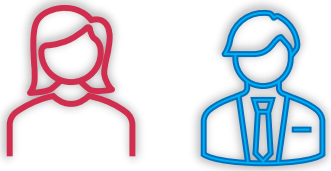
ADULTS

Results

Baseline characteristics of the study population

ADULTS

422 adults (67.7%)



198 (46.9%) | 224 (53.1%)

Age at dupilumab initiation: 35.3 ± 13.3 years

EASI score: 31.1 ± 11.2
DLQI score: 20.8 ± 6.2
Pruritus (P-NRS): 8.2 ± 1.6
Sleep disturbances (SD-NRS): 5.7 ± 2.7

Duration of AD (from onset to dupilumab initiation): 24.3 ± 14.2 years

Early-onset AD (< 2 years of age): 183 (44.6%)
Adult-onset AD (≥ 18 years of age): 97 (23.4%)
Late-onset AD (≥ 60 years of age): 4 (0.9%)

Atopic family history (first-degree relative): 127 (37.6%)
Eosinophili count: 579.1 ± 465.6 cells/ µL

Atopic comorbidities (at least one): 250 (62.7%)
Asthma: 136 (34.1%)
Allergic rhinitis: 183 (45.9%)
Food allergy: 59 (14.8%)

Airborne sensitization: 242 (63.4%)
Food sensitization: 132 (34.6%)
Contact sensitization: 38 (9.9%)

Body mass index (BMI): 24.6 ± 4.4 kg
≥ 25: 150 (41.4%)
≥ 30: 40 (11.1%)

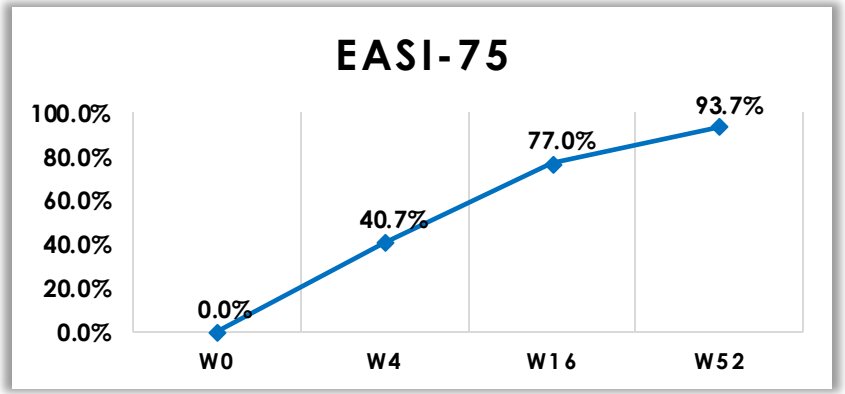
Smoking (current or past): 86 (25.1%)
current: 51 (14.9%)

Place of residence
Rural: 57 (14.2%)
Urban: 344 (85.8%)

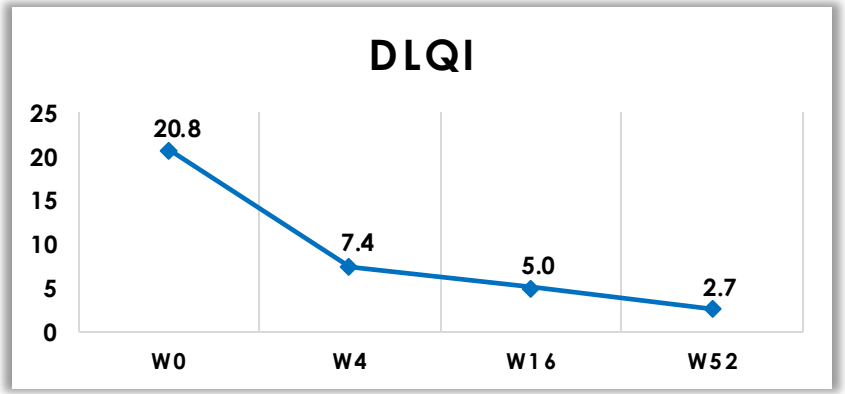
Results

Clinical scores of atopic dermatitis treatment with dupilumab

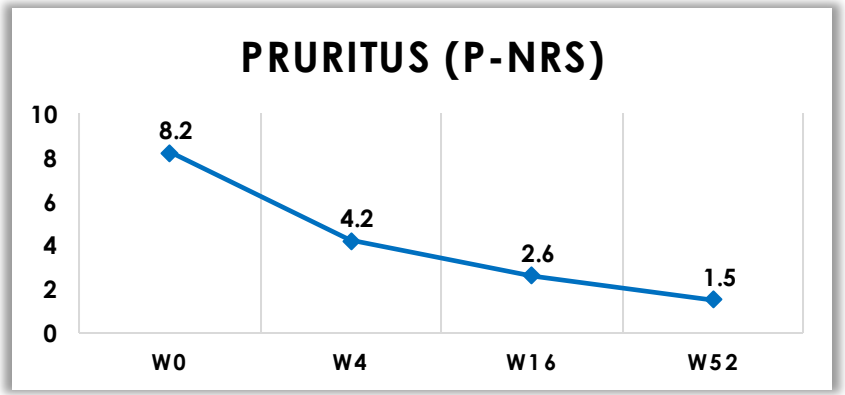
ADULTS



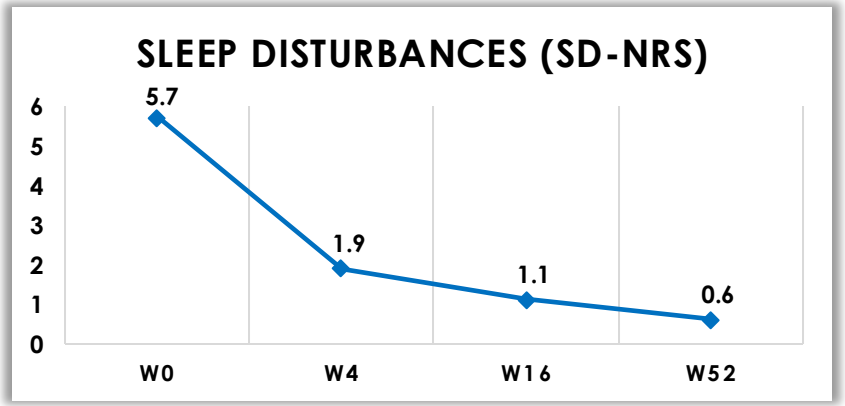
	W0	W4	W16	W52
EASI-75, *n*	0/0	68/167	292/379	254/271



	W0	W4	W16	W52
DLQI, *n*	421	165	377	268



	W0	W4	W16	W52
pruritus, *n*	213	160	185	119

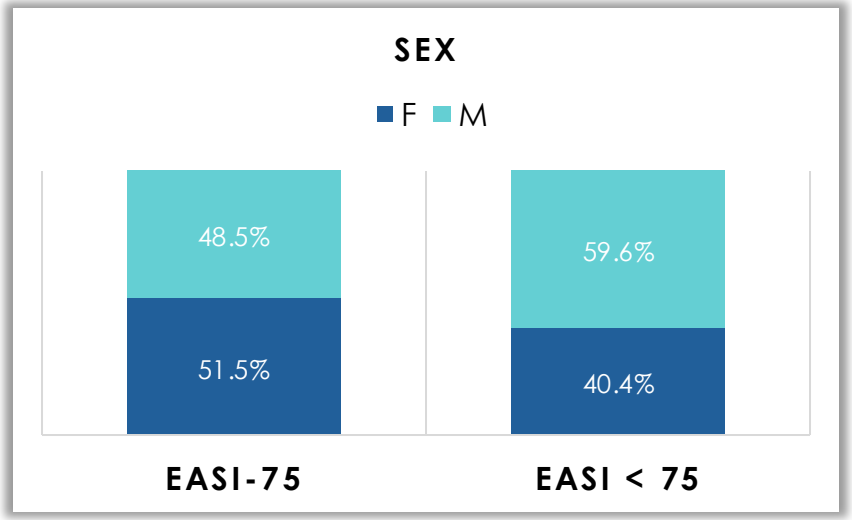


	W0	W4	W16	W52
sleep, *n*	134	112	113	77

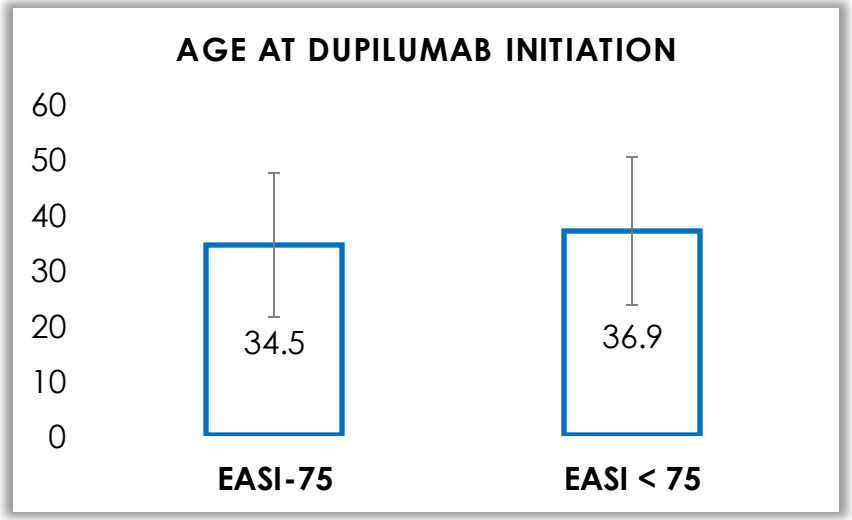
Results

DEMOGRAPHIC

WEEK 4



$p = 0.158$

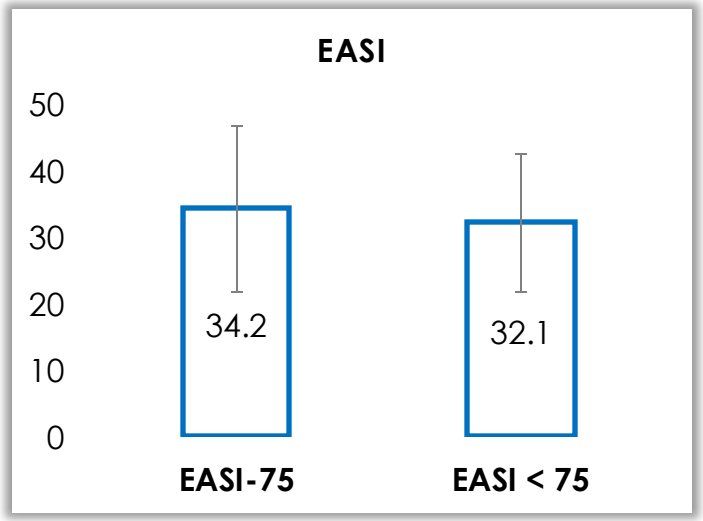


$p = 0.221$

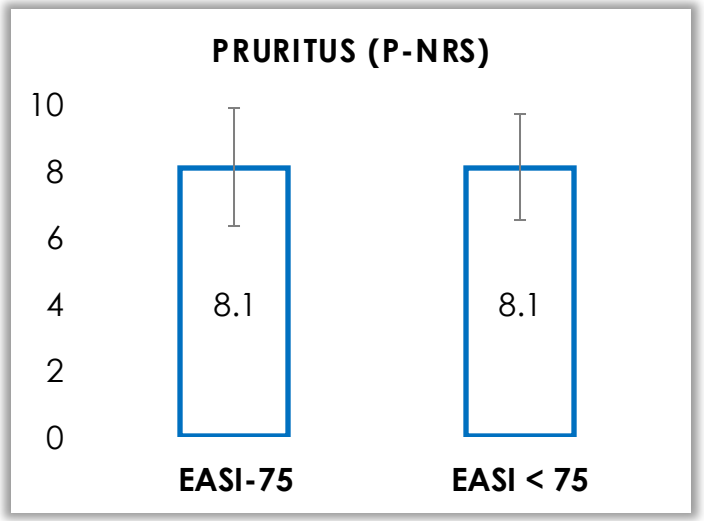
Results

DISEASE SEVERITY

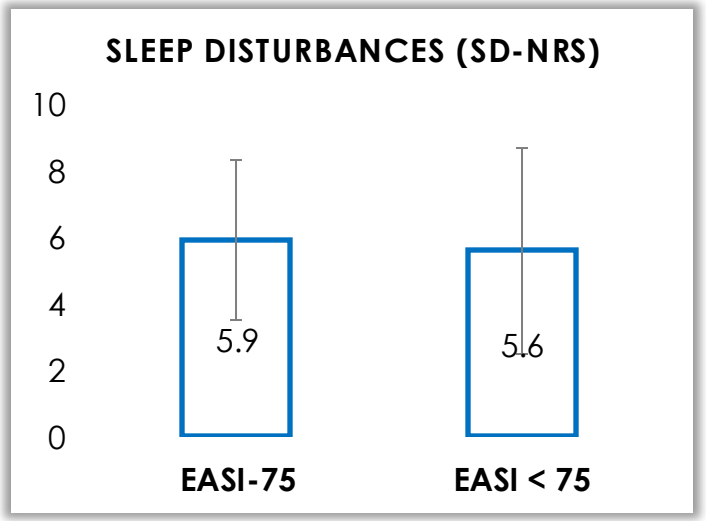
WEEK 4



$p = 0.436$



$p = 0.672$

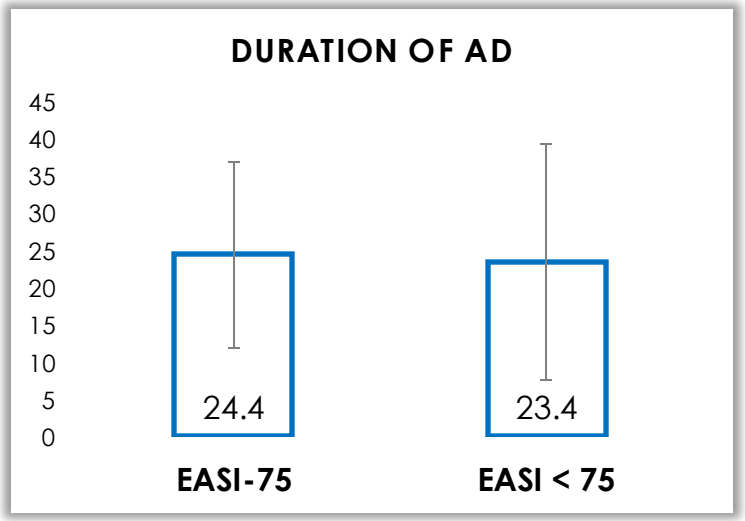


$p = 0.843$

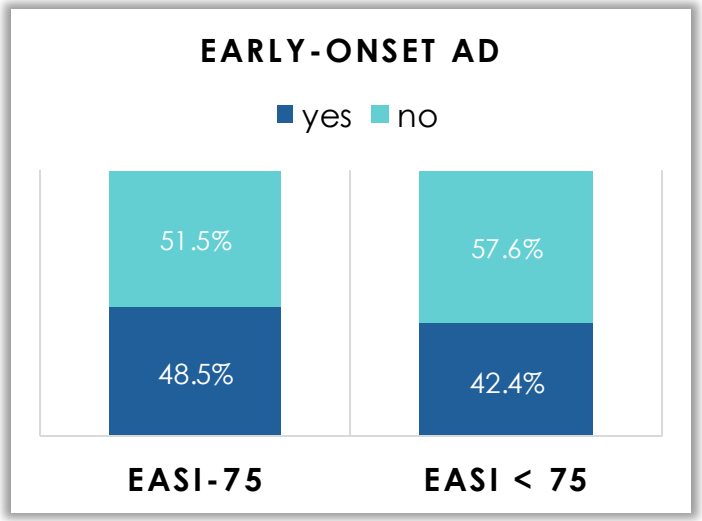
Results

DISEASE HISTORY

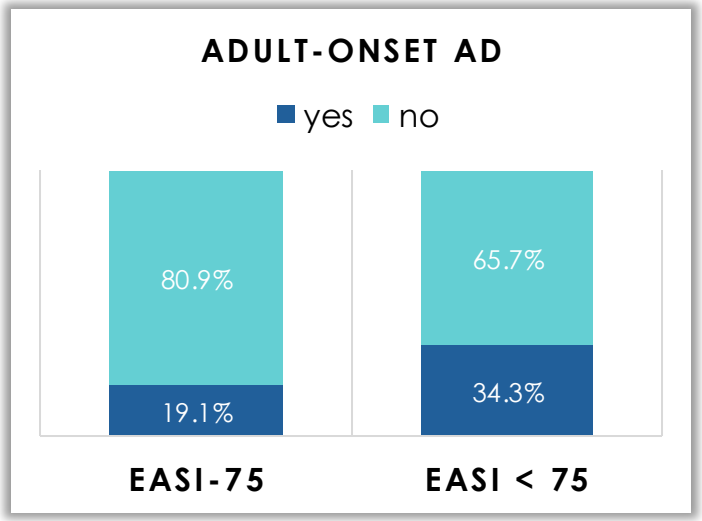
WEEK 4



$p = 0.428$



$p = 0.436$

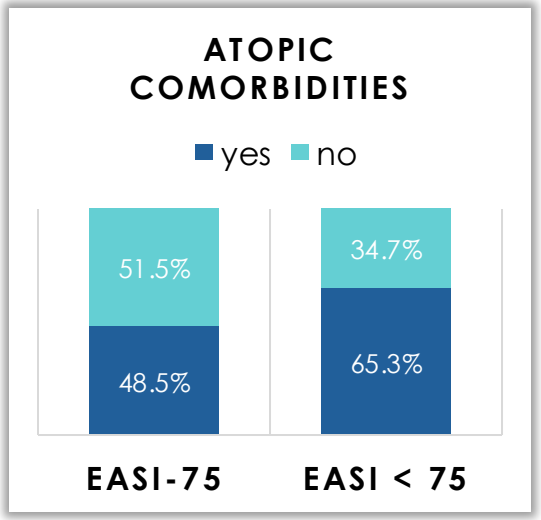


OR = 0.4519;
95% CI: 0.2171-0.9406;
p = 0.034

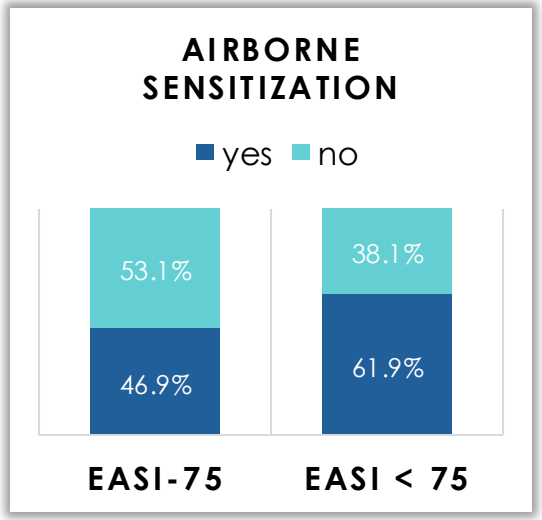
Results

ATOPIC COMORBIDITIES AND SENSITIZATIONS

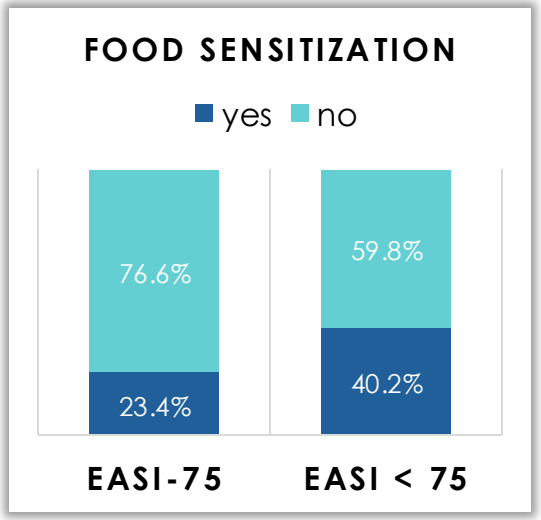
WEEK 4



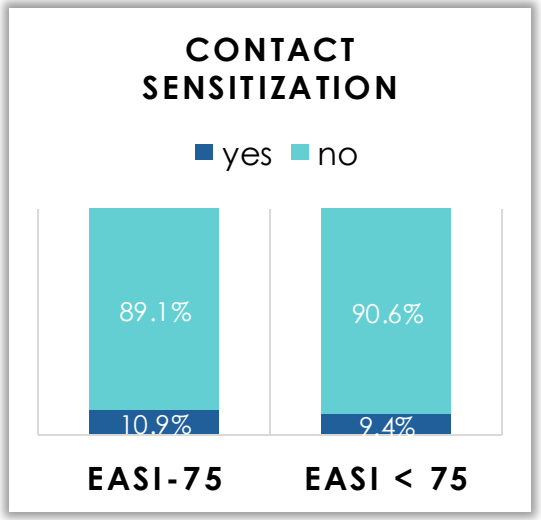
OR = 0.5009;
95%CI: 0.2663 - 0.9422;
p = 0.032



p = 0.061



OR = 0.4553;
95%CI: 0.2246 - 0.9228;
p = 0.029

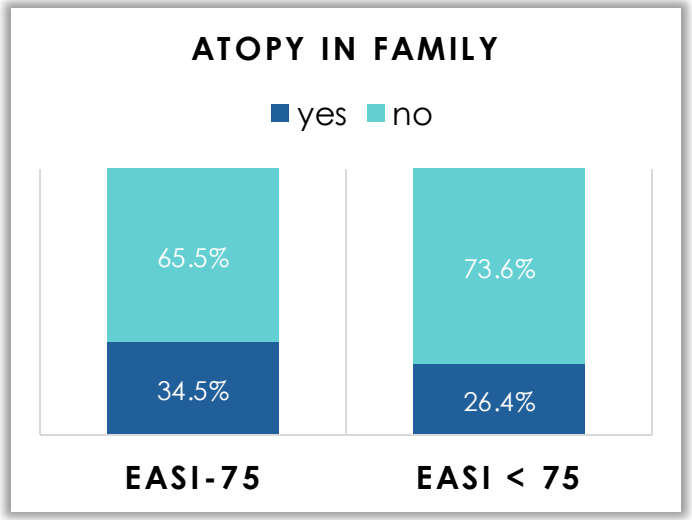


p = 0.747

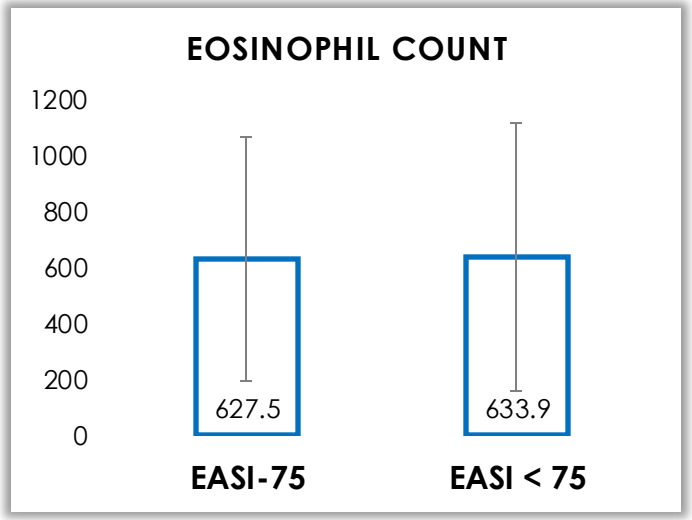
Results

OTHER FACTORS

WEEK 4



$p = 0.320$

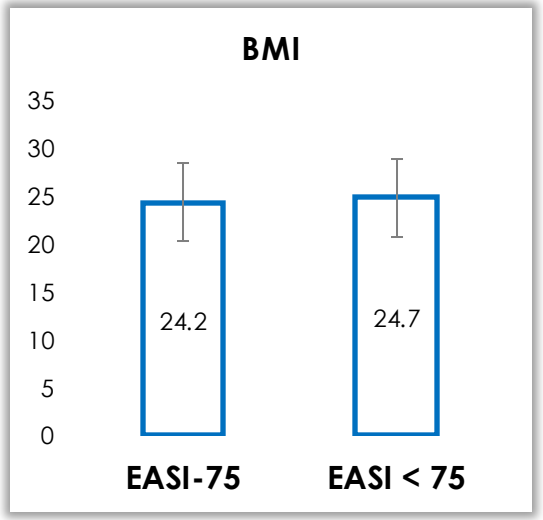


$p = 0.945$

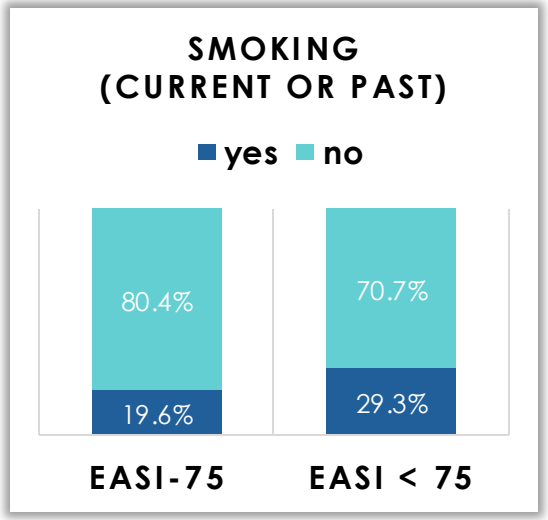
Results

OTHER FACTORS

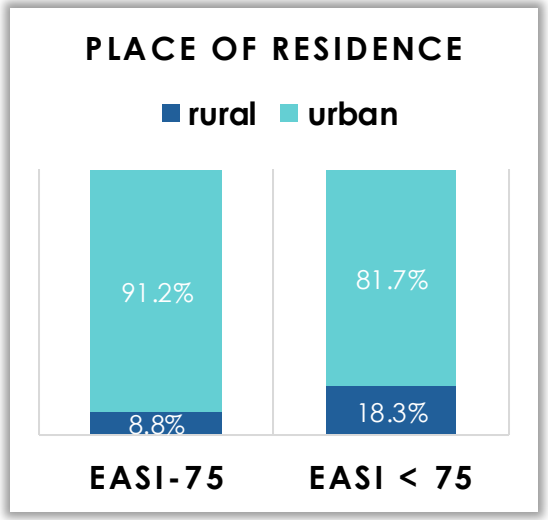
WEEK 4



$p = 0.326$



$p = 0.218$

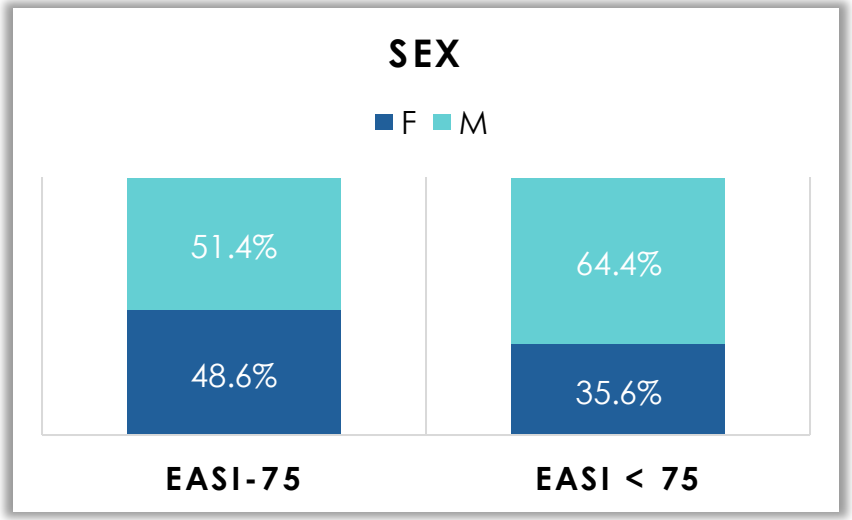


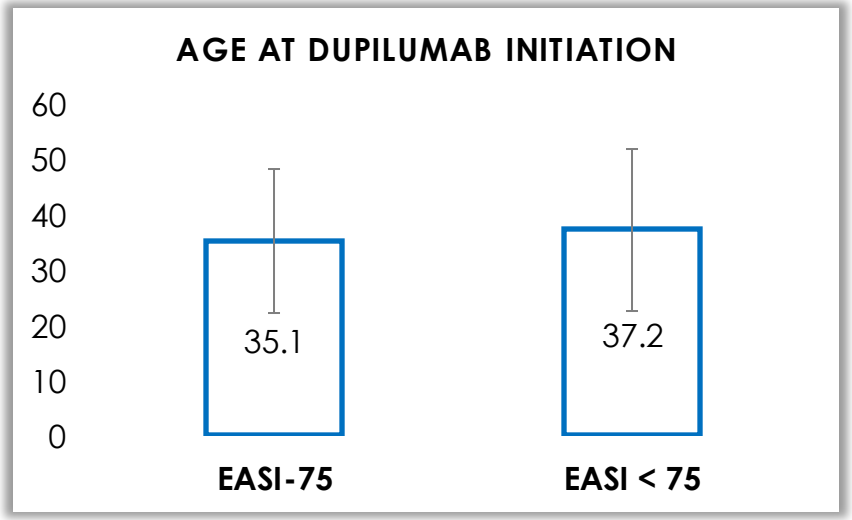
$p = 0.090$

Results

DEMOGRAPHIC

WEEK 16





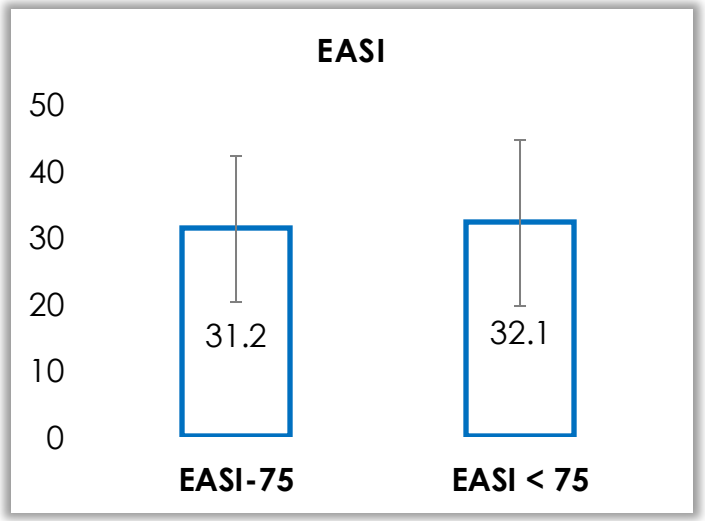
OR = 0.5848: 95%CI: 0.3564-0.9595; p = 0.033

p = 0.275

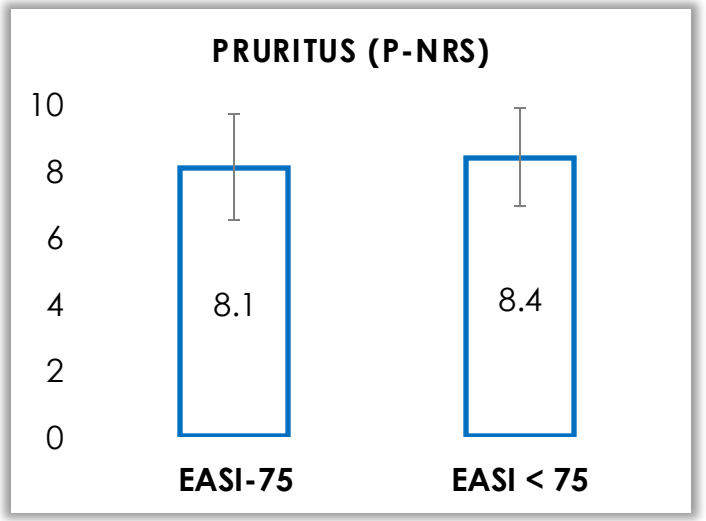
Results

DISEASE SEVERITY

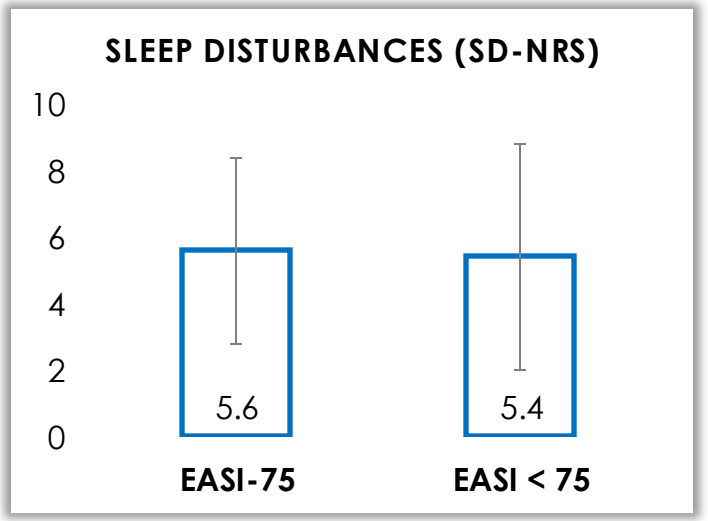
WEEK 16



$p = 0.239$



$p = 0.500$

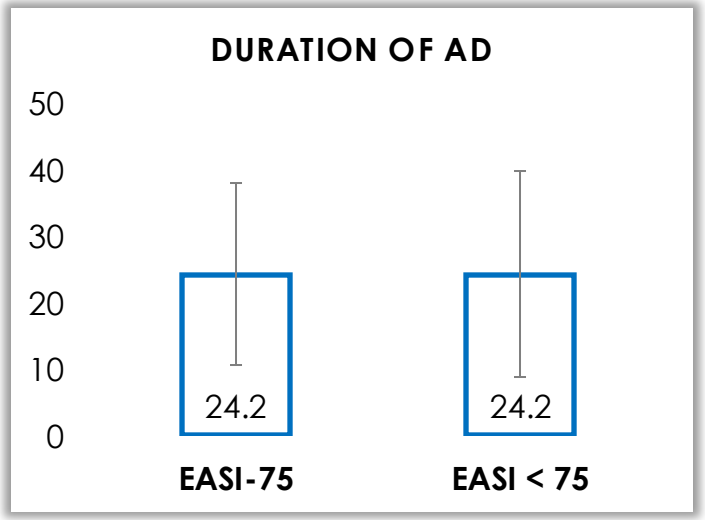


$p = 1.0$

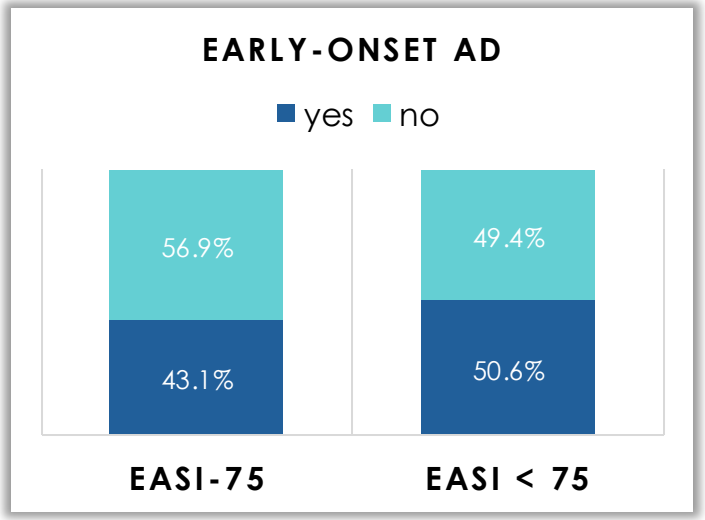
Results

DISEASE HISTORY

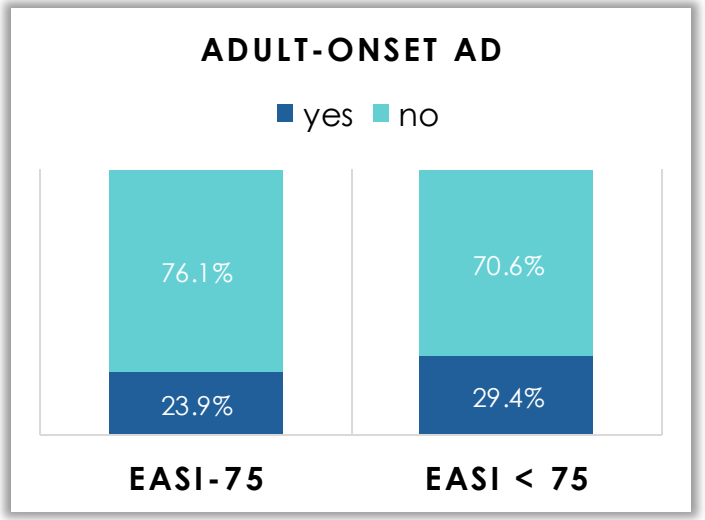
WEEK 16



$p = 0.997$



$p = 0.224$

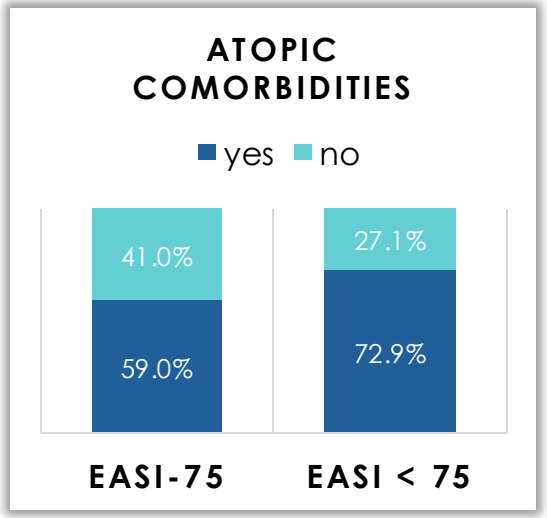


$p = 0.300$

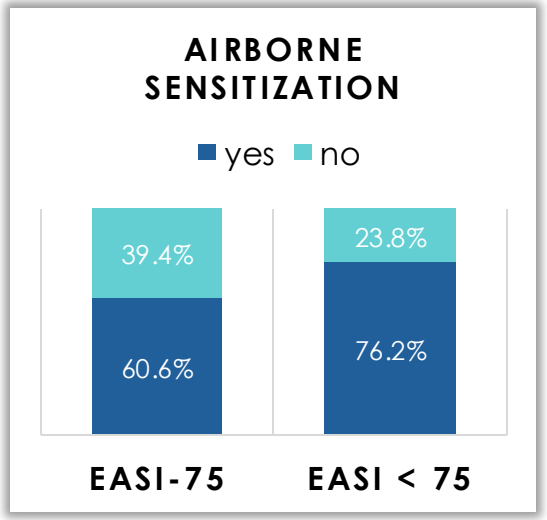
Results

ATOPIC COMORBIDITIES AND SENSITIZATIONS

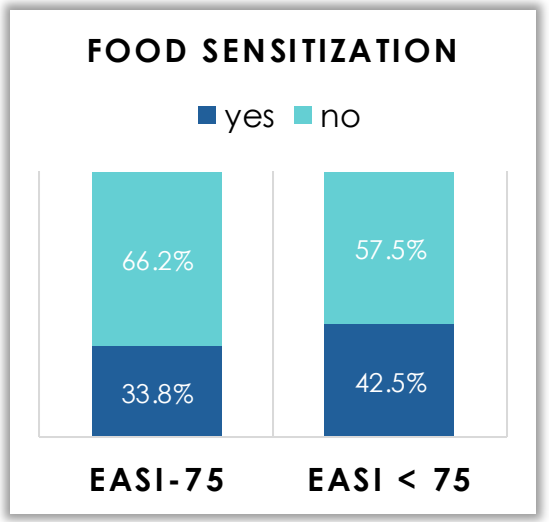
WEEK 16



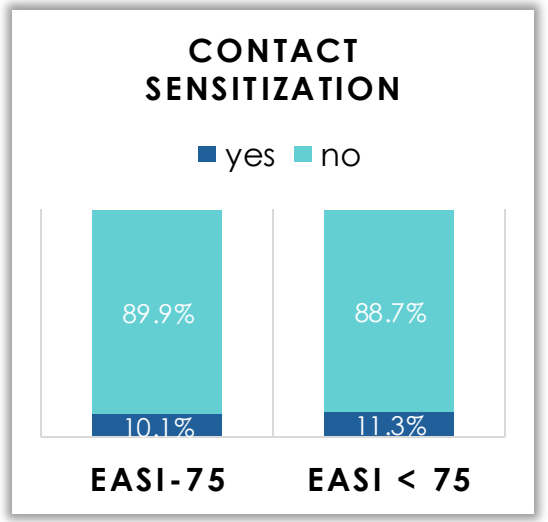
OR = 0.5337;
95%CI: 0.3126 - 0.9111;
p = 0.021



OR = 0.4790;
95%CI: 0.2708 - 0.8470;
p = 0.011



p = 0.156

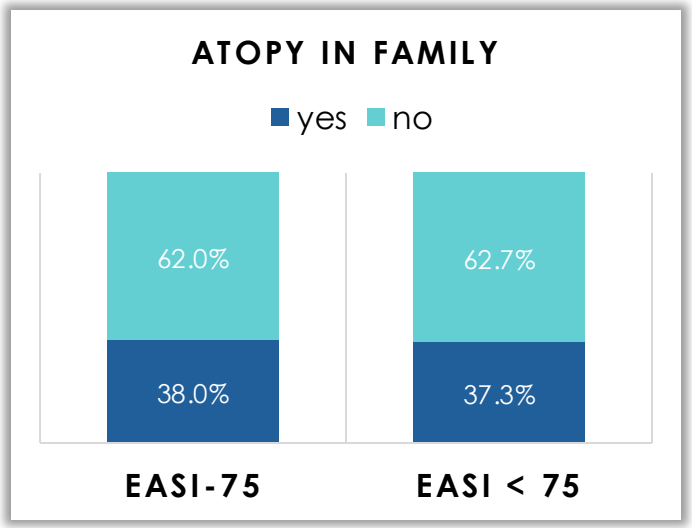


p = 0.762

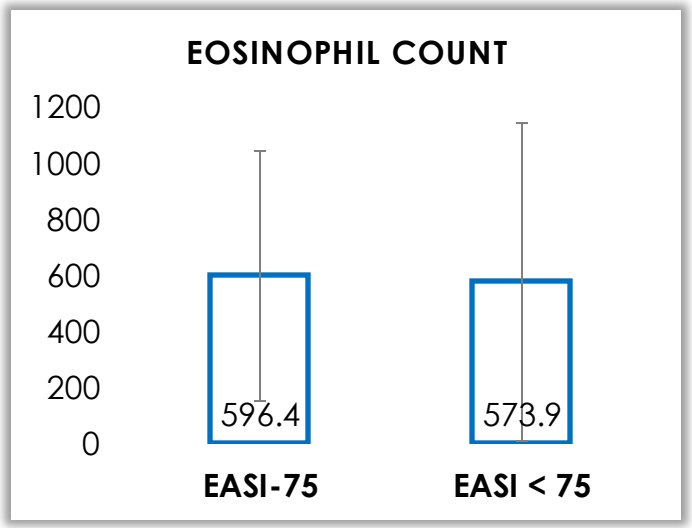
Results

OTHER FACTORS

WEEK 16



$p = 0.915$

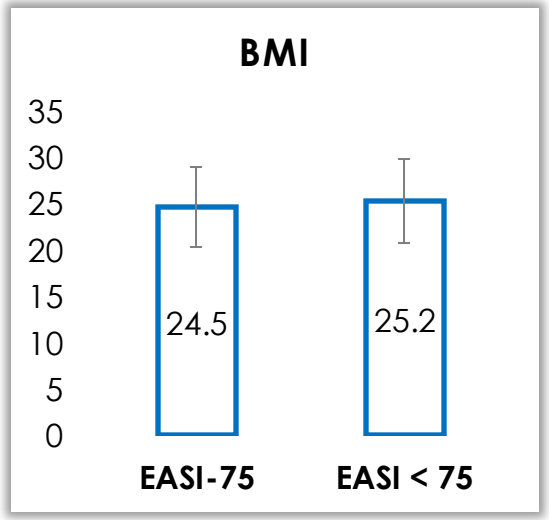


$p = 0.191$

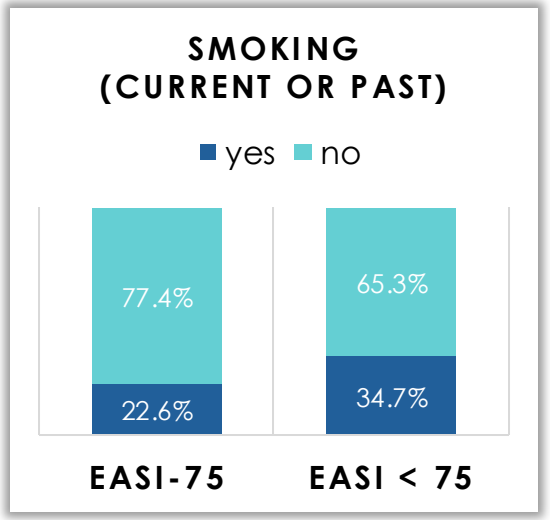
Results

OTHER FACTORS

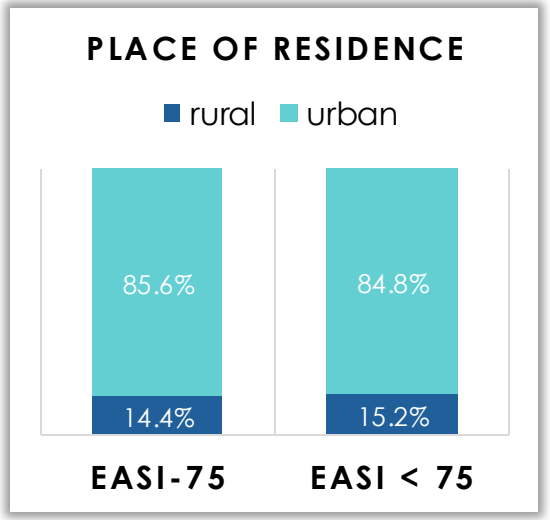
WEEK 16



$p = 0.239$



OR = 0.5505;
95%CI: 0.3102 - 0.9770;
$p = 0.041$

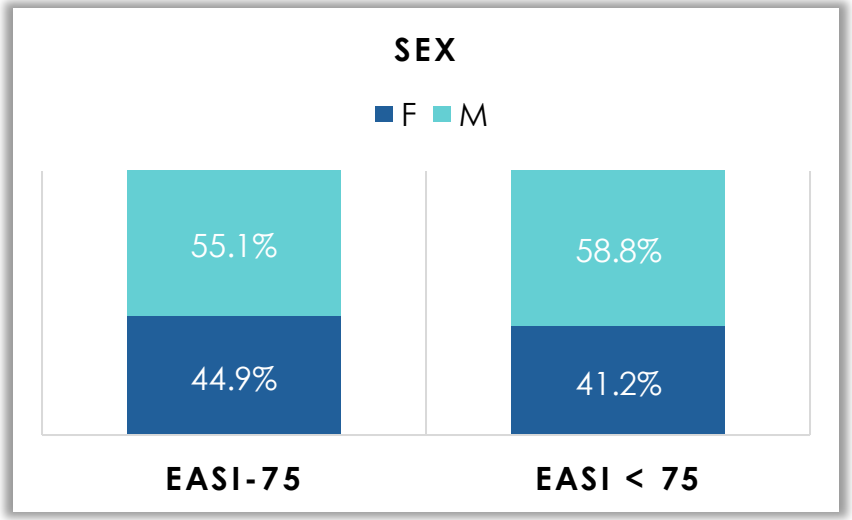


$p = 0.867$

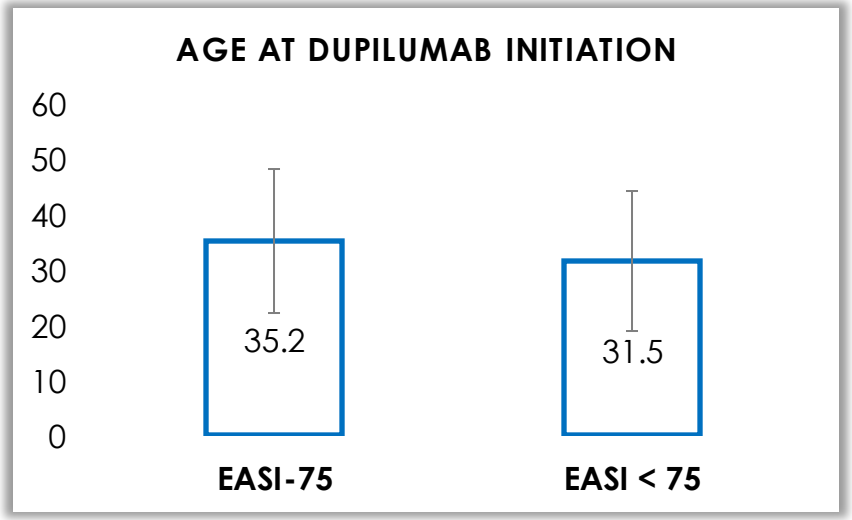
Results

DEMOGRAPHIC

WEEK 52



$p = 0.766$

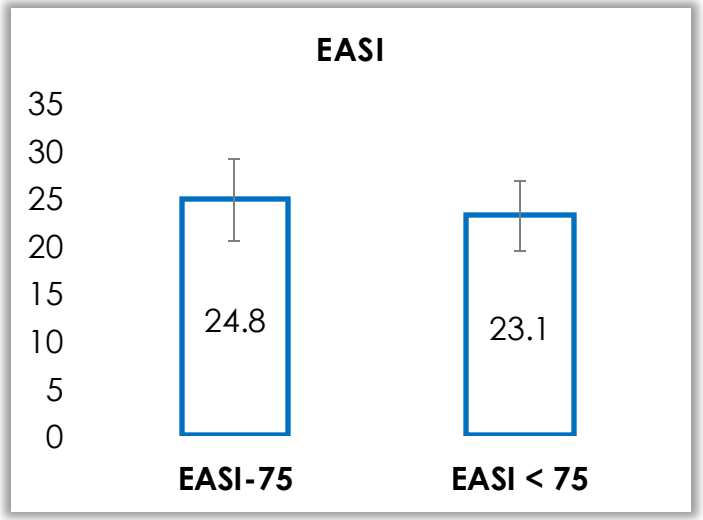


$p = 0.184$

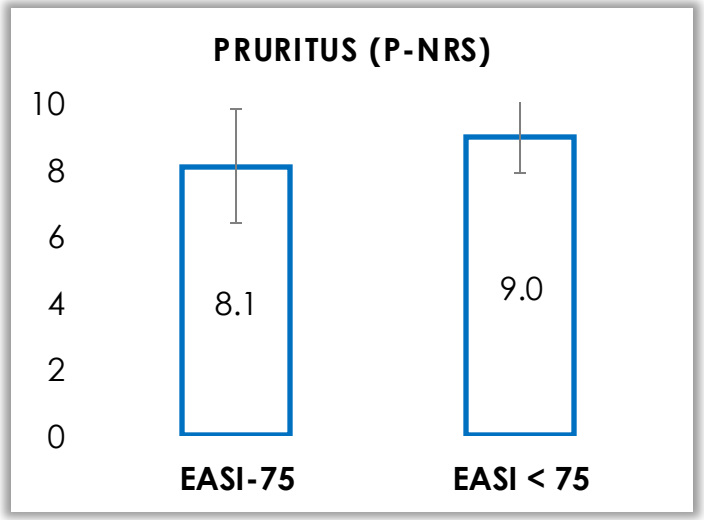
Results

DISEASE SEVERITY

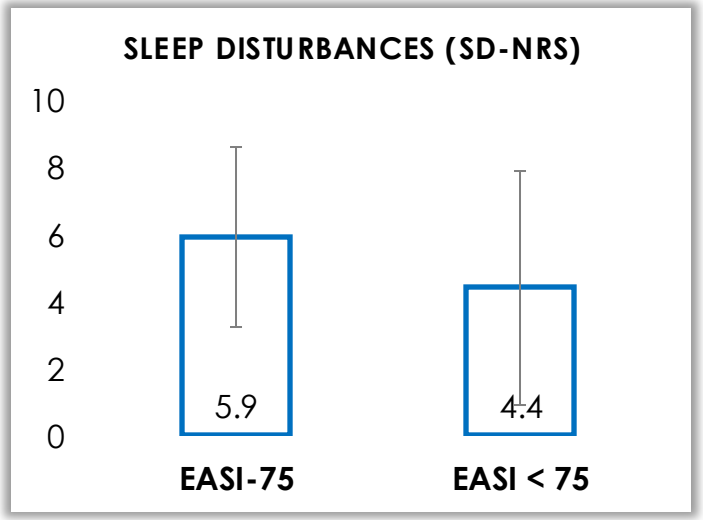
WEEK 52



$p = 0.667$



$p = 0.139$

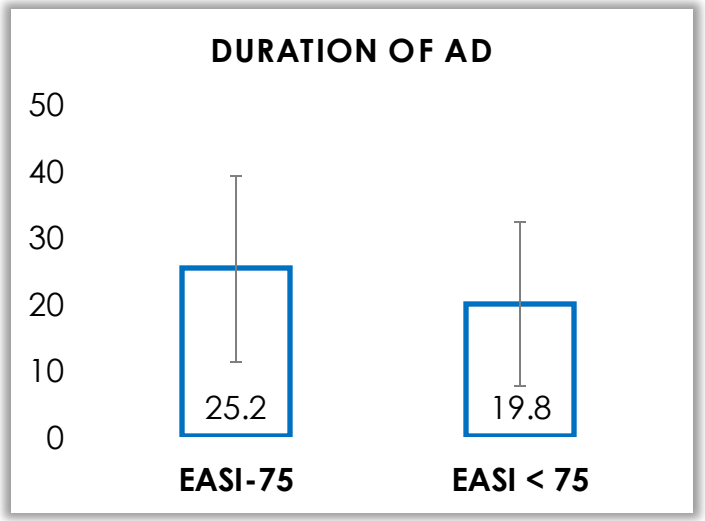


$p = 0.290$

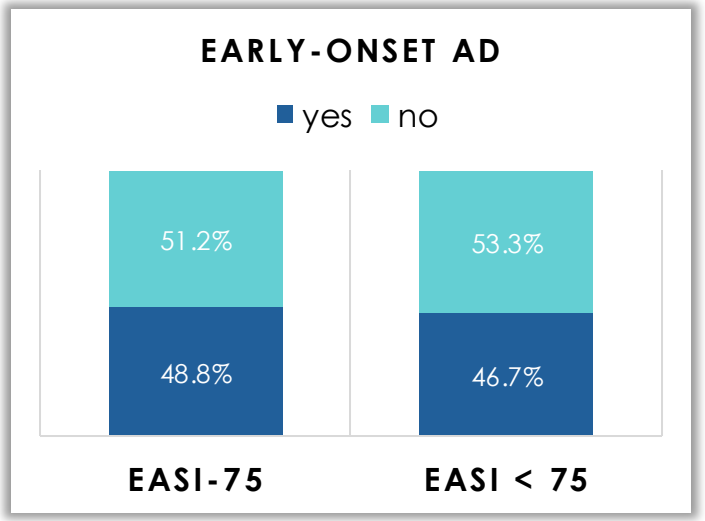
Results

DISEASE HISTORY

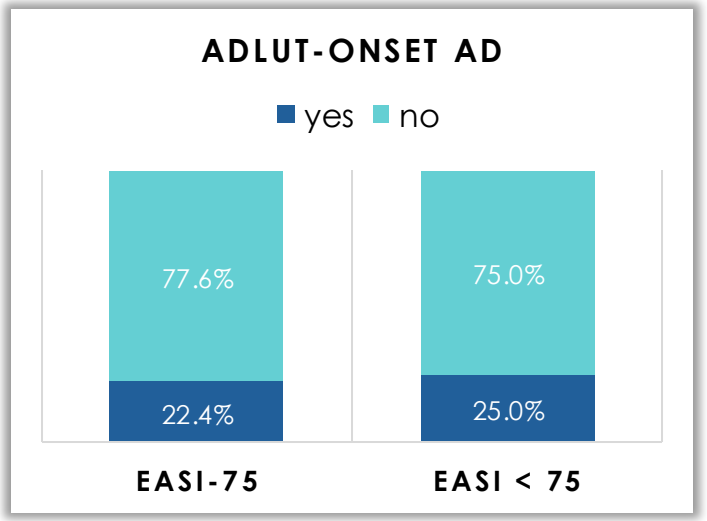
WEEK 52



$p = 0.197$



$p = 0.872$

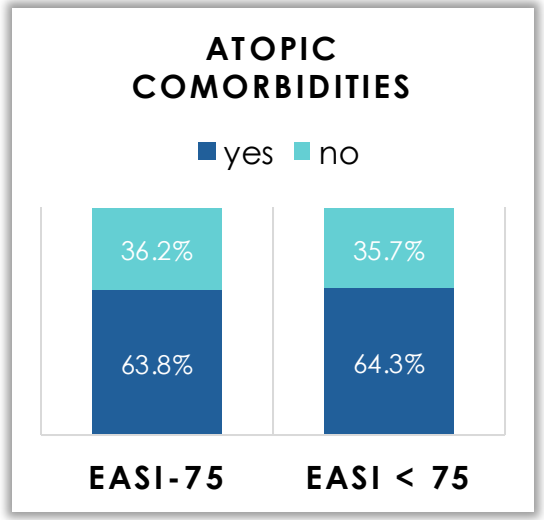


$p = 0.763$

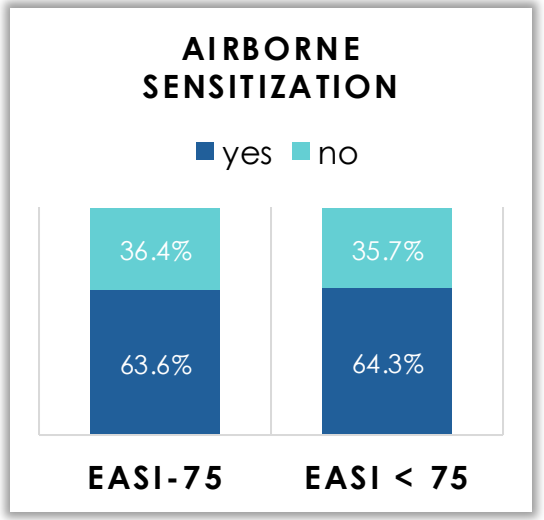
Results

ATOPIC COMORBIDITIES AND SENSITIZATIONS

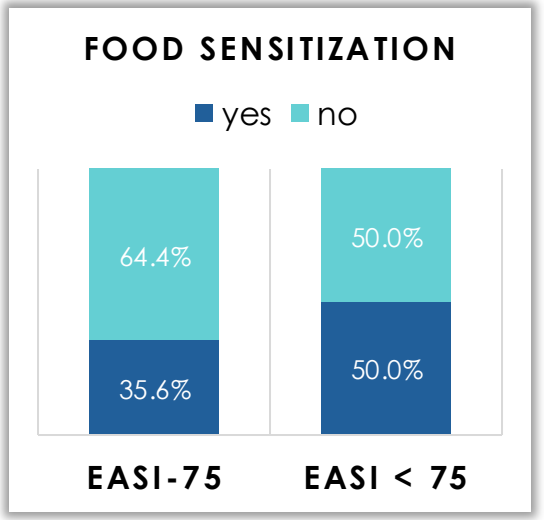
WEEK 52



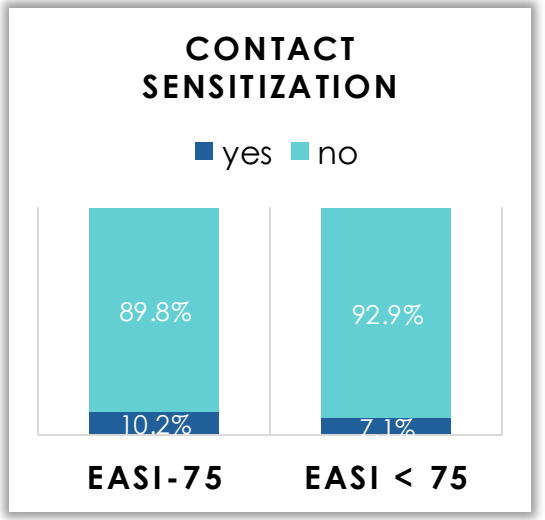
$p = 0.972$



$p = 0.956$



$p = 0.276$

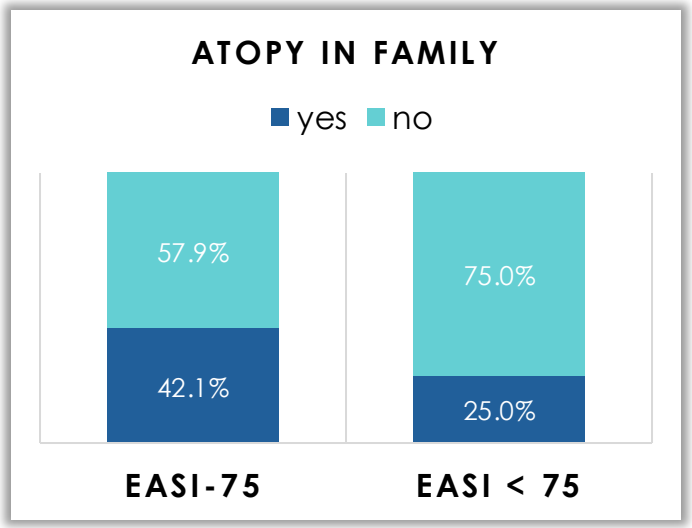


$p = 1.0$

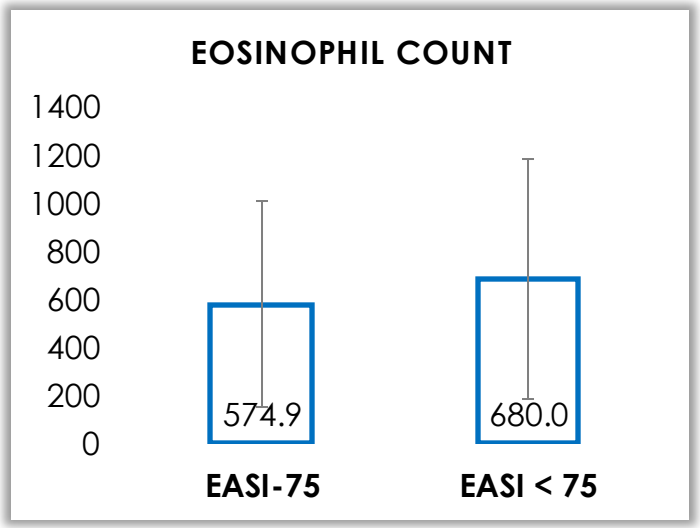
Results

OTHER FACTORS

WEEK 52



$p = 0.366$

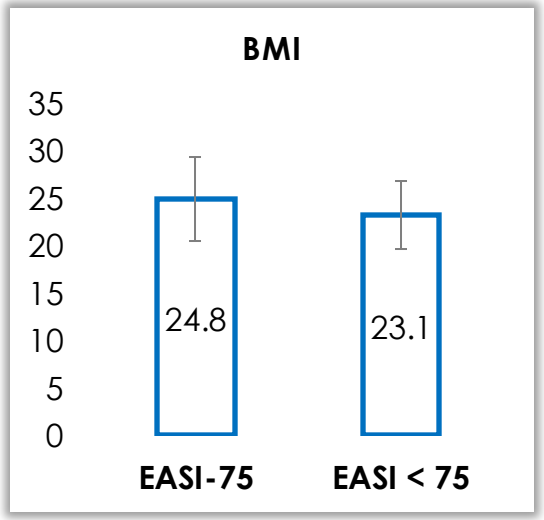


$p = 0.479$

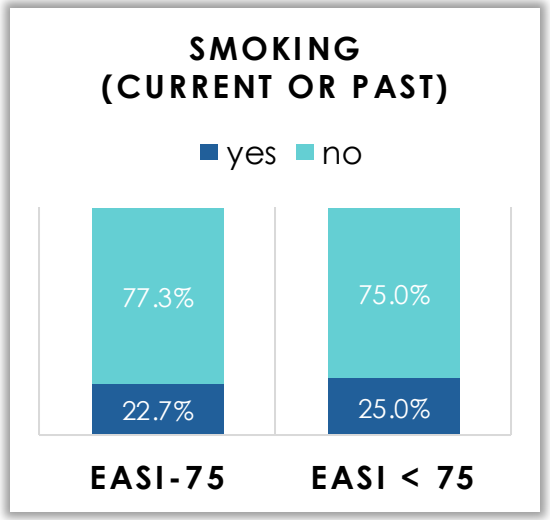
Results

OTHER FACTORS

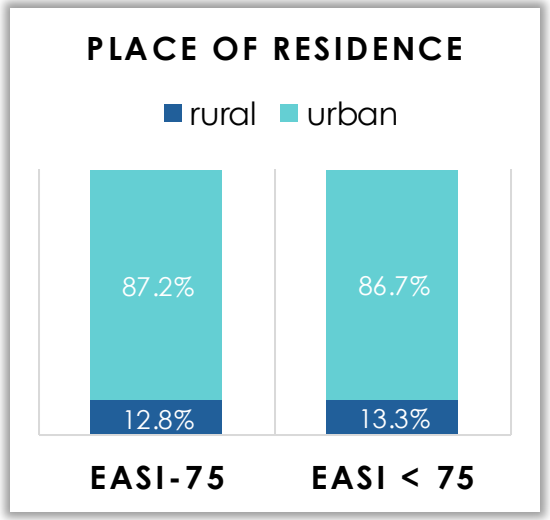
WEEK 52



$p = 0.288$



$p = 1.0$



$p = 0.953$

Results

Potential factors predicting dupilumab treatment outcomes in adults

nonresponse was linked to:

→ At W4:

- adult-onset AD
- atopic comorbidities (at least one)
- food sensitization

→ At W16:

- male sex
- atopic comorbidities (at least one)
- airborne sensitization
- smoking (current or past)

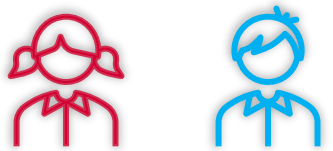
CHILDREN AND ADOLESCENTS

Results

PEDIATRIC POPULATION

Baseline characteristics of the study population

201 children and adolescents (32.3%)



105 (52.2%) | 96 (47.8%)

Age at dupilumab initiation: 11.1 ± 3.4 years

EASI score: 28.8 ± 9.6
DLQI score: 20.3 ± 6.4
Pruritus (P-NRS): 7.8 ± 1.8
Sleep disturbances (SD-NRS): 5.3 ± 2.8

Duration of AD (from onset to dupilumab initiation): 9.5 ± 4.6

Early-onset AD (< 2 years of age): 141 (70.5%)

Atopic family history (first-degree relative): 88 (44.4%)
Eosinophili count: 875.0 ± 665.7 cells/ µL

Atopic comorbidities (at least one): 143 (73.7%)
Asthma: 56 (28.9%)
Allergic rhinitis: 120 (61.9%)
Food allergy: 34 (17.5%)

Airborne sensitization: 133 (73.1%)
Food sensitization: 79 (43.4%)
Contact sensitization: 79 (6.6%)

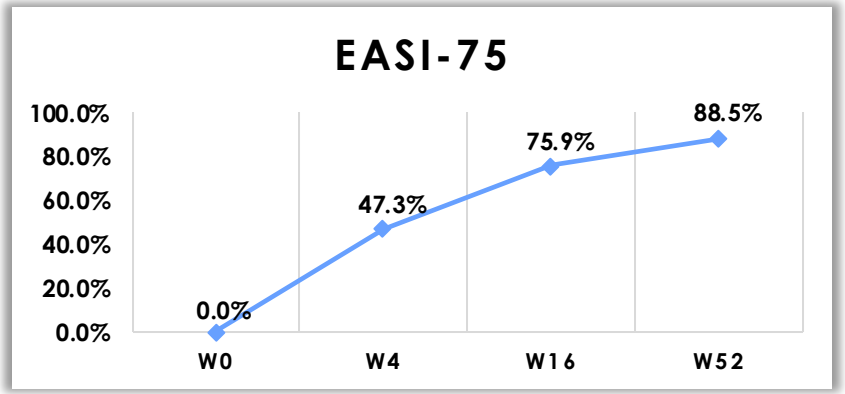
Body mass index (BMI): 18.9 ± 3.8
overweight: 33 (17.0%)
obesity: 8 (4.1%)

Place of residence
Rural: 46 (23.0%)
Urban: 154 (77.0%)

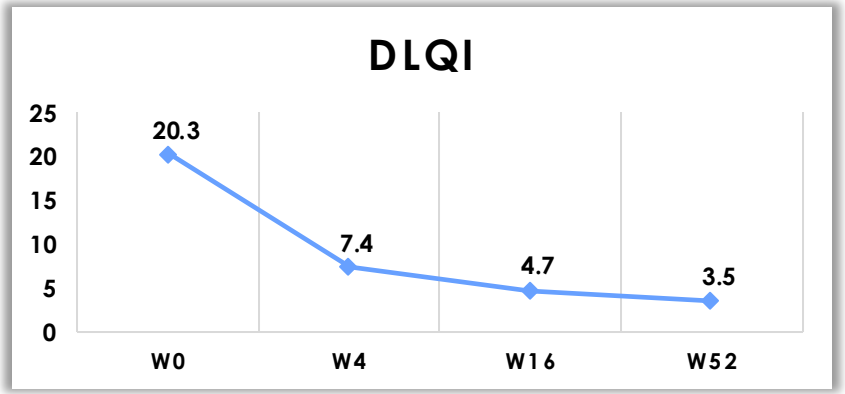
Results

Clinical scores of atopic dermatitis treatment with dupilumab

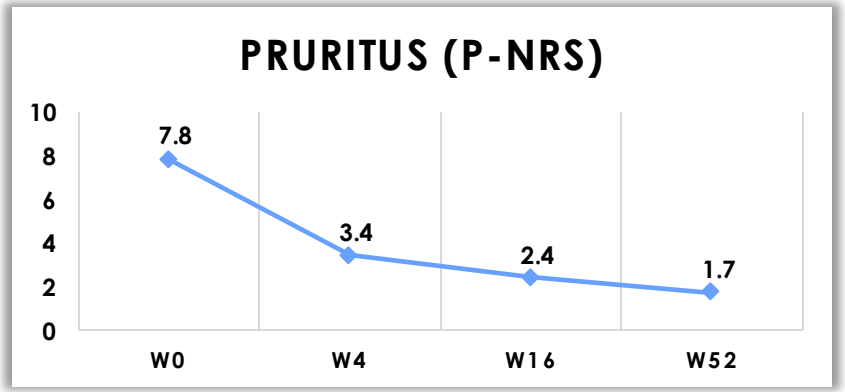
PEDIATRIC POPULATION



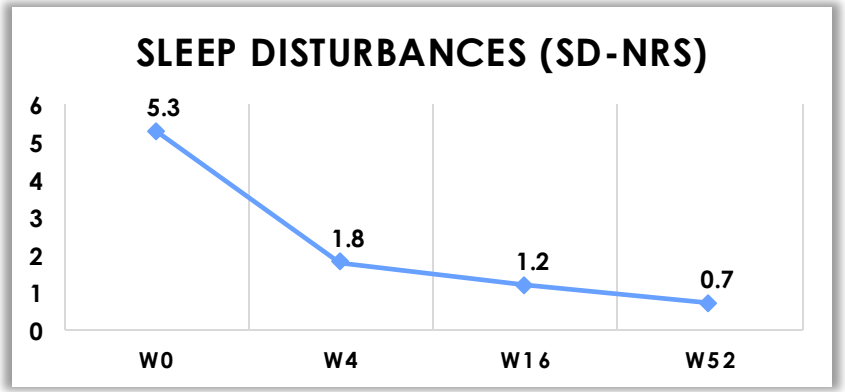
	W0	W4	W16	W52
EASI-75, *n*	0/0	43/91	142/187	92/104



	W0	W4	W16	W52
DLQI, *n*	201	88	174	101



	W0	W4	W16	W52
pruritus, *n*	116	87	96	47

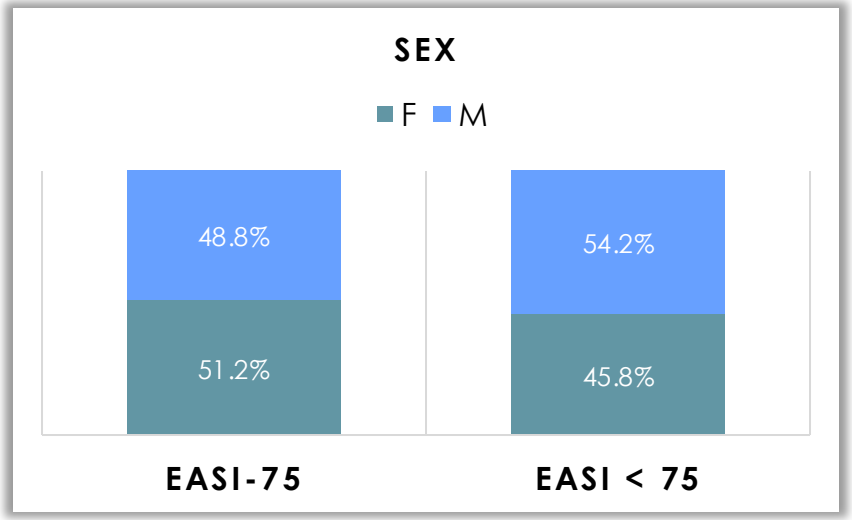


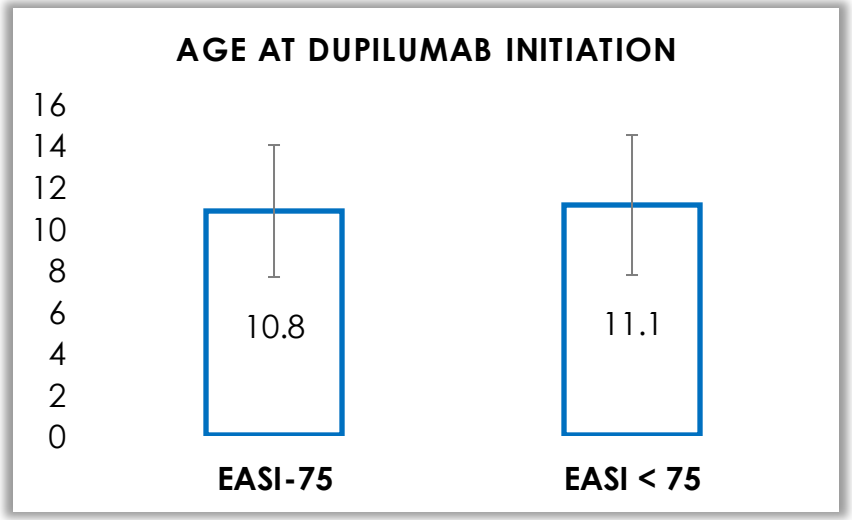
	W0	W4	W16	W52
sleep, *n*	95	87	83	47

Results

DEMOGRAPHIC

WEEK 4





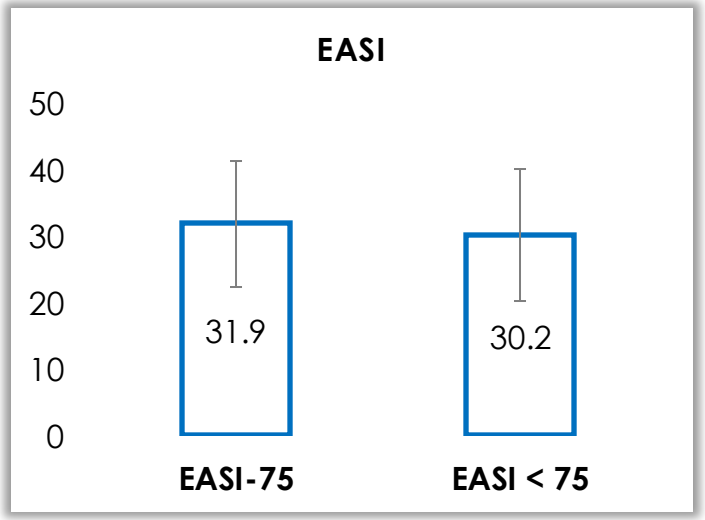
$p = 0.612$

$p = 0.761$

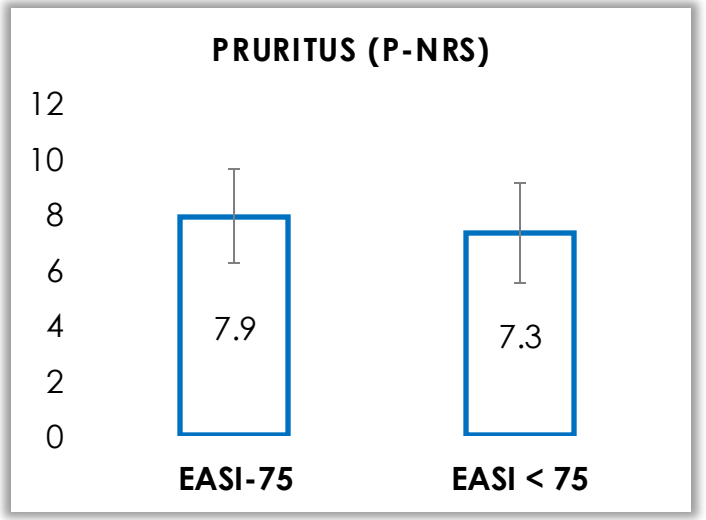
Results

DISEASE SEVERITY

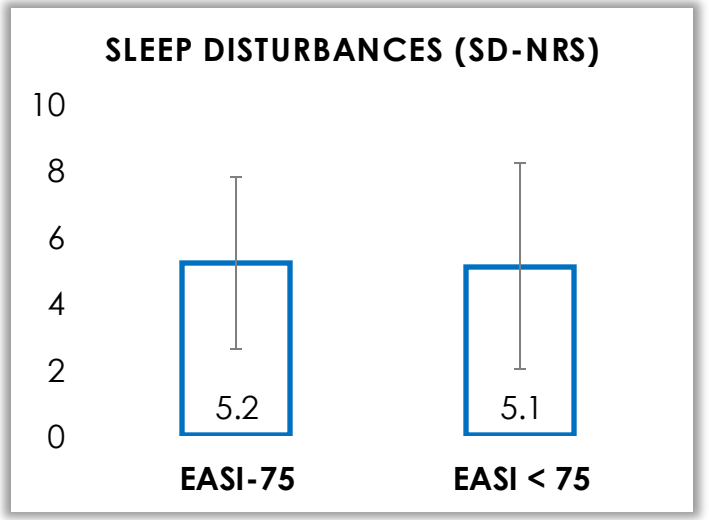
WEEK 4



$p = 0.303$



$p = 0.090$

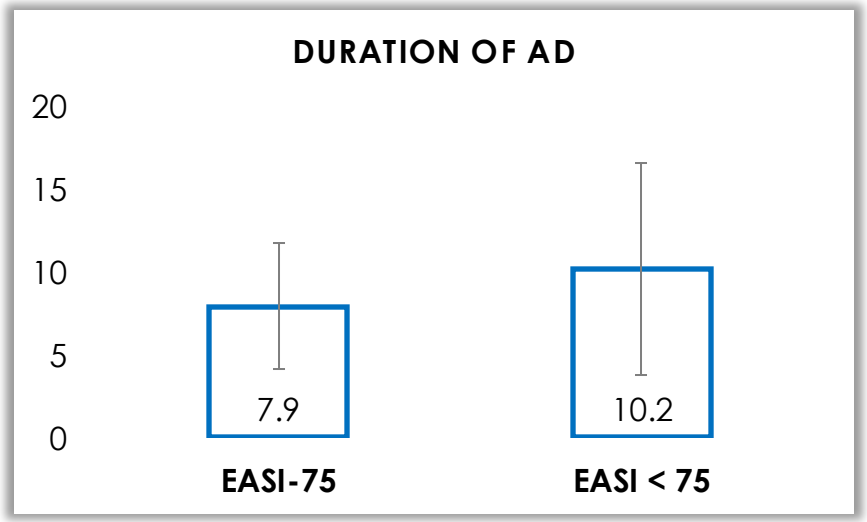


$p = 0.774$

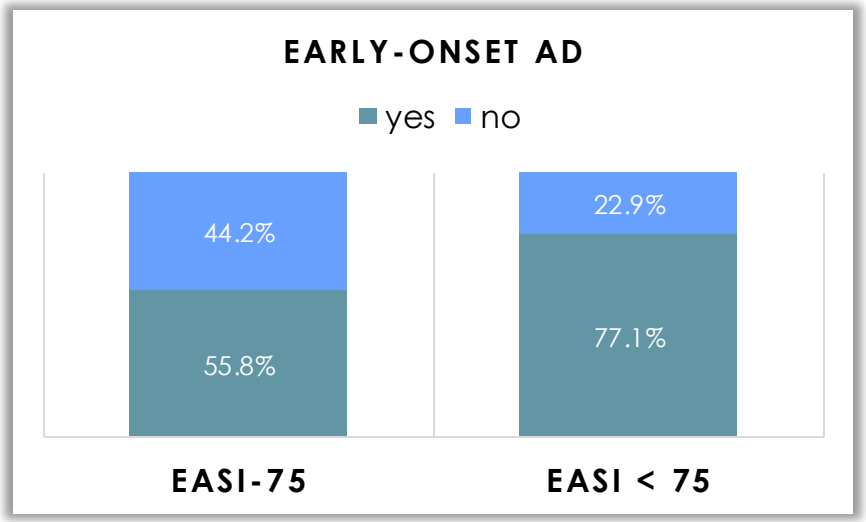
Results

DISEASE HISTORY

WEEK 4



$p = 0.045$

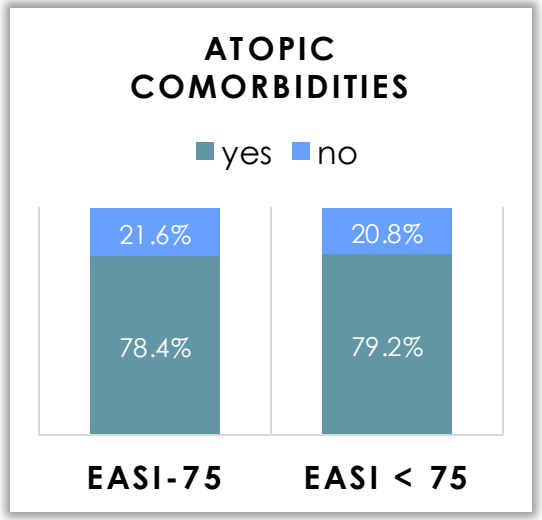


OR = 0.3755;
95%CI: 0.1522 - 0.9264;
$p = 0.034$

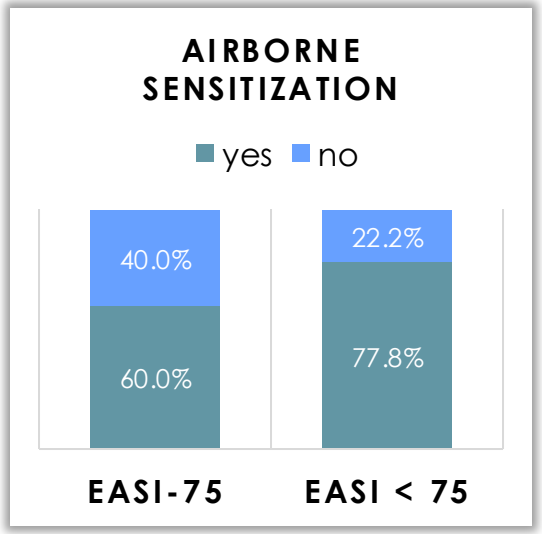
Results

ATOPIC COMORBIDITIES AND SENSITIZATIONS

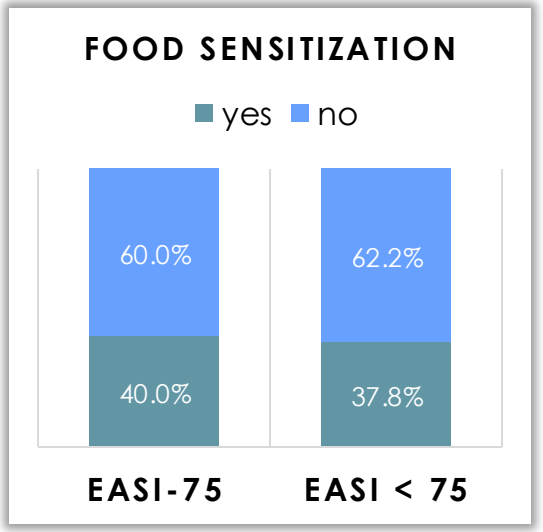
WEEK 4



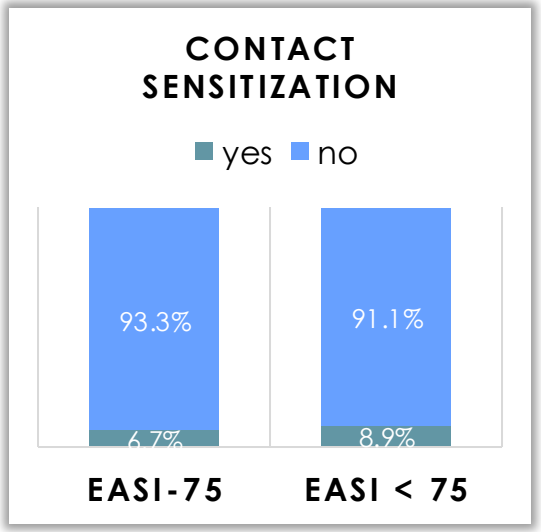
$p = 0.930$



$p = 0.098$



$p = 0.847$

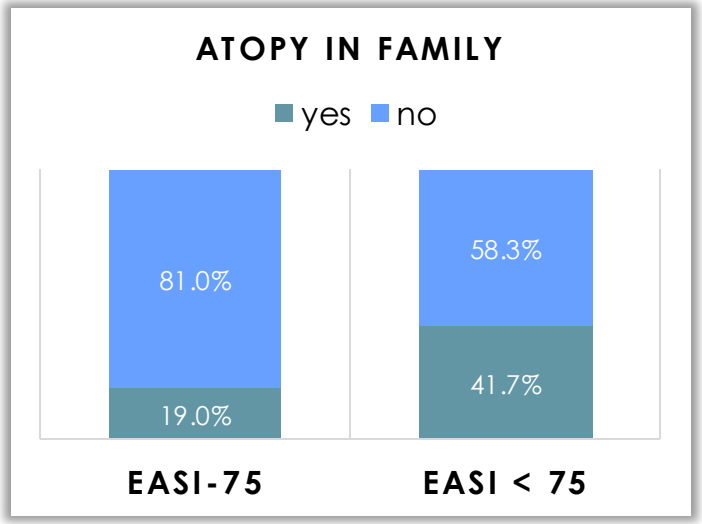


$p = 0.728$

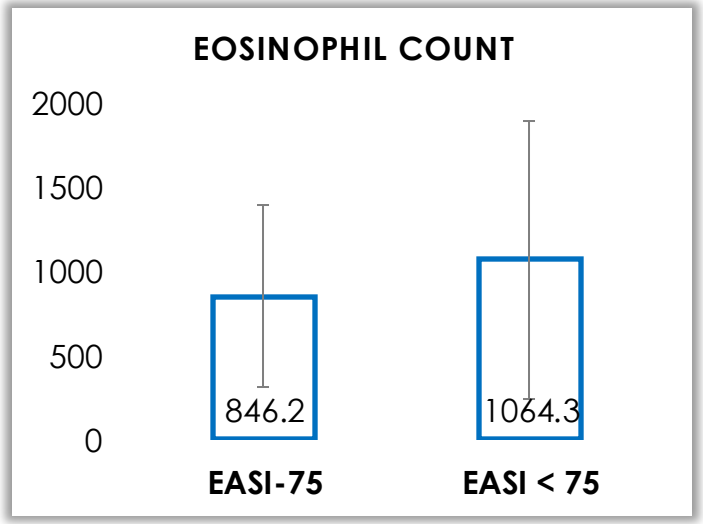
Results

OTHER FACTORS

WEEK 4



OR = 0.3294;
95%CI: 0.1261 - 0.8607;
p = 0.0234

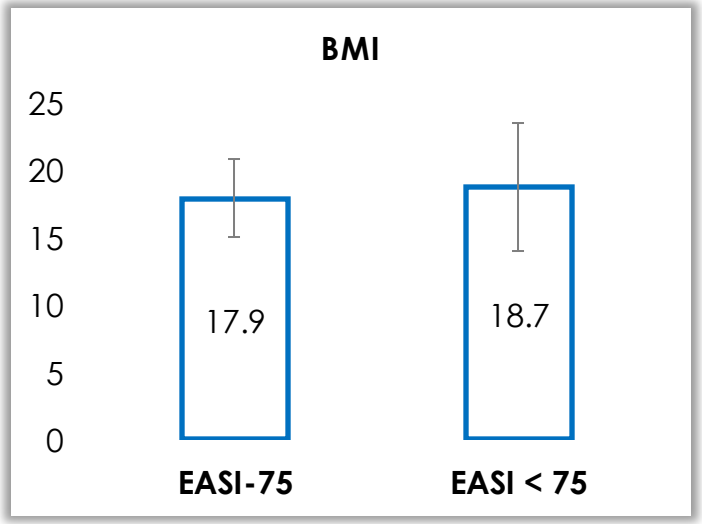


p = 0.282

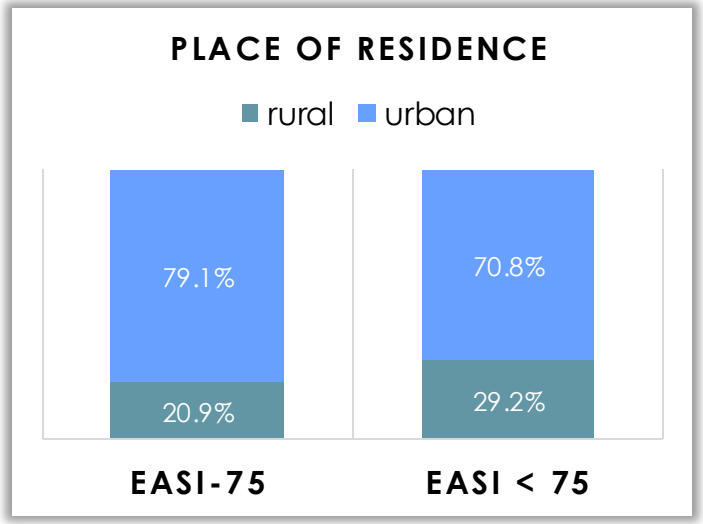
Results

OTHER FACTORS

WEEK 4



$p = 0.859$

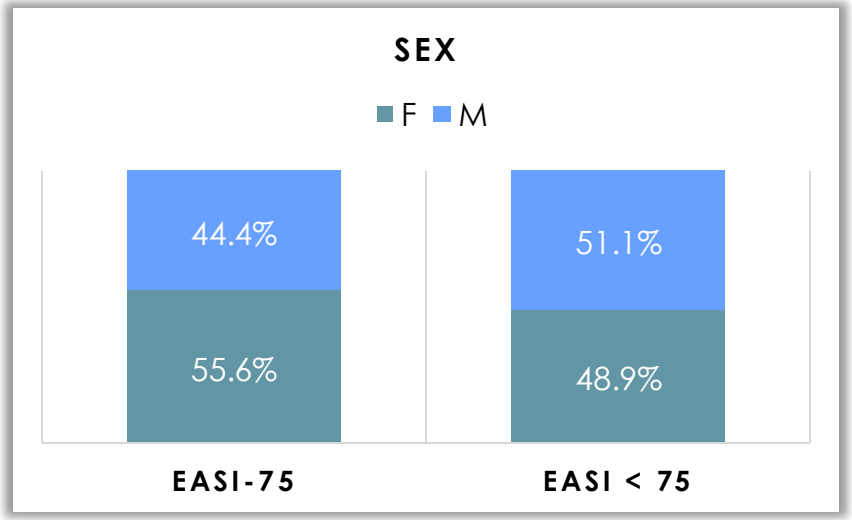


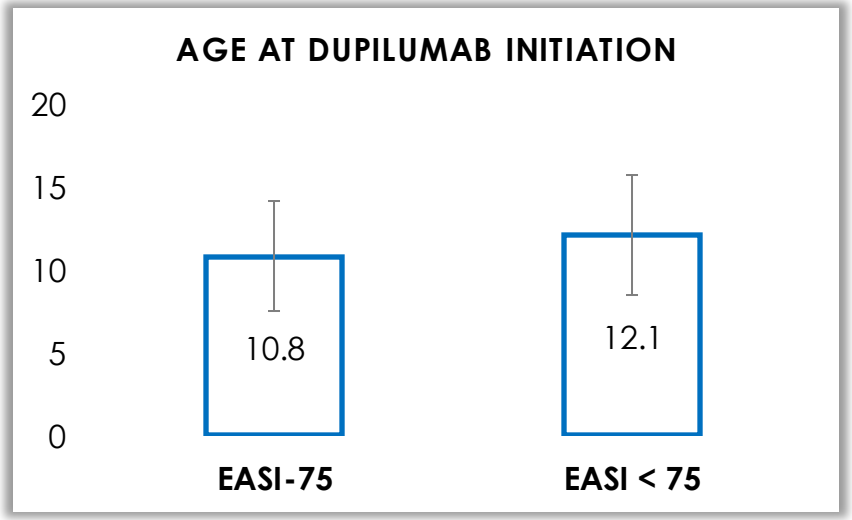
$p = 0.367$

Results

DEMOGRAPHIC

WEEK 16





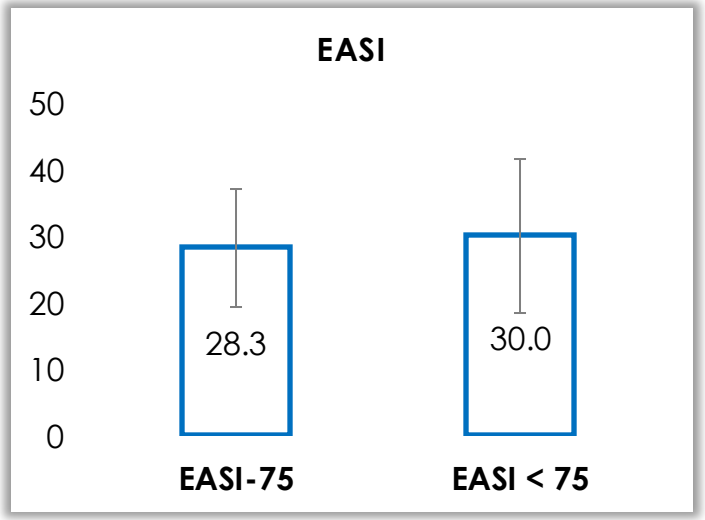
$p = 0.429$

$p = 0.036$

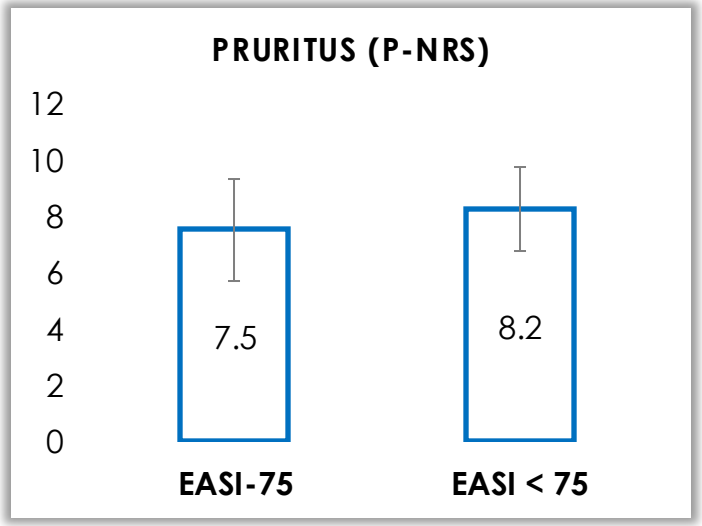
Results

DISEASE SEVERITY

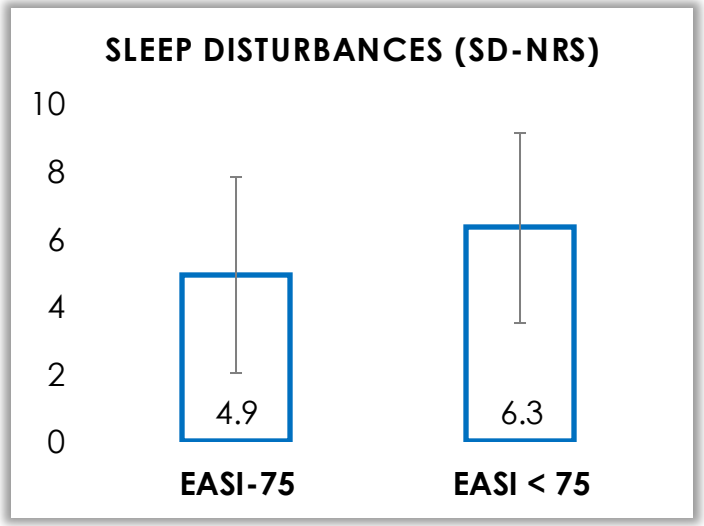
WEEK 16



$p = 0.789$



$p = 0.128$

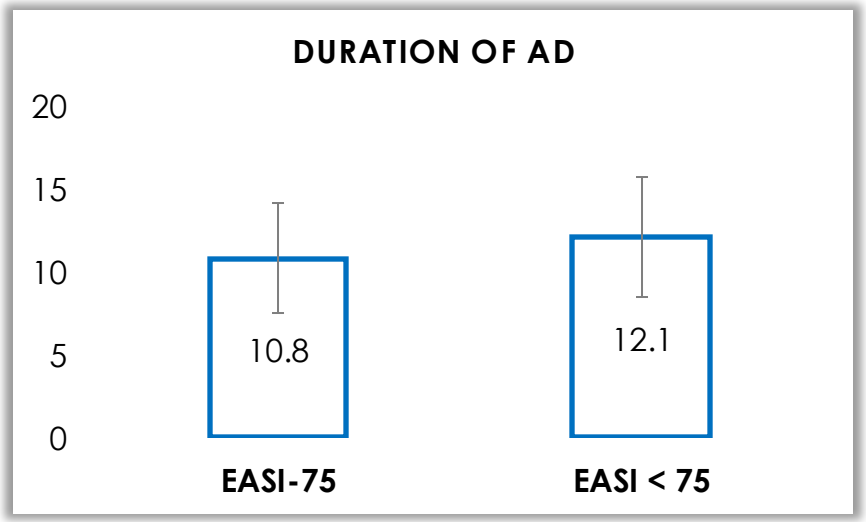


$p = 0.07$

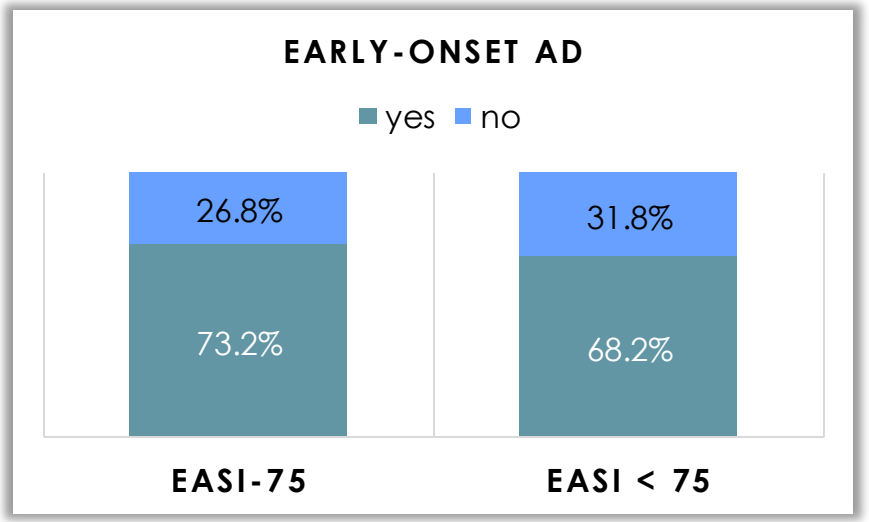
Results

DISEASE HISTORY

WEEK 16



$p = 0.036$

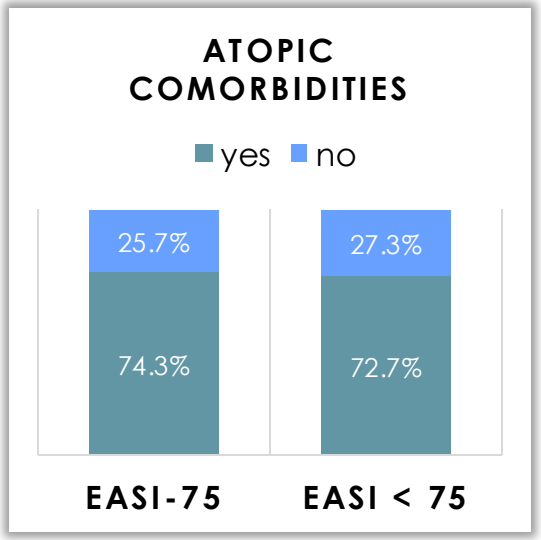


$p = 0.514$

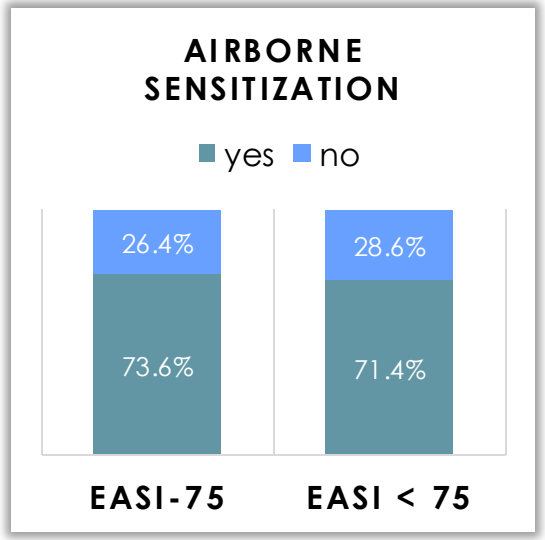
Results

ATOPIC COMORBIDITIES AND SENSITIZATIONS

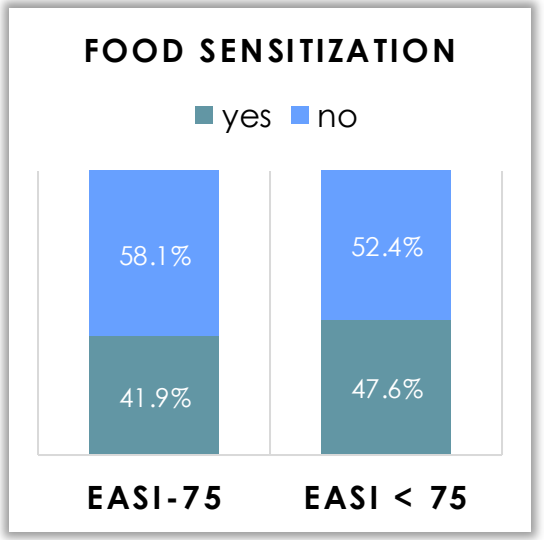
WEEK 16



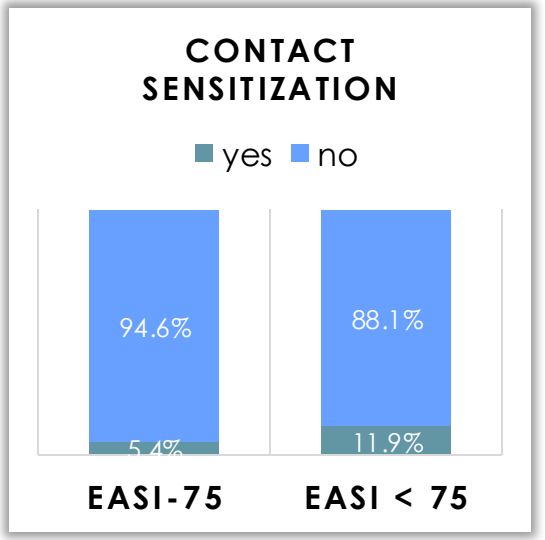
$p = 0.840$



$p = 0.779$



$p = 0.513$

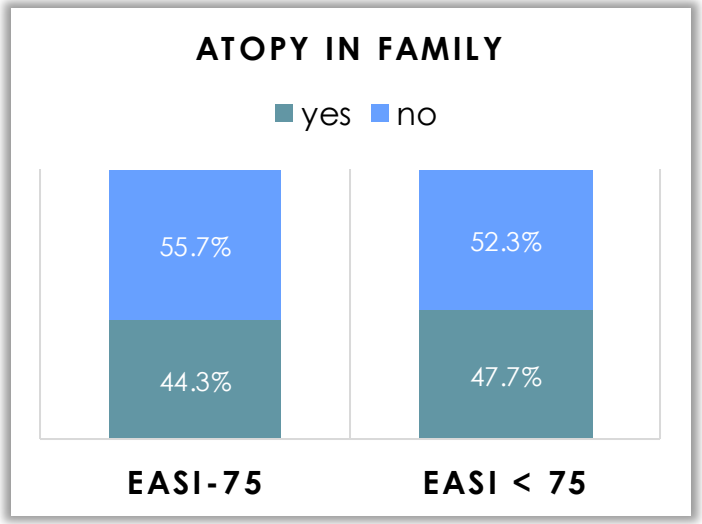


$p = 0.153$

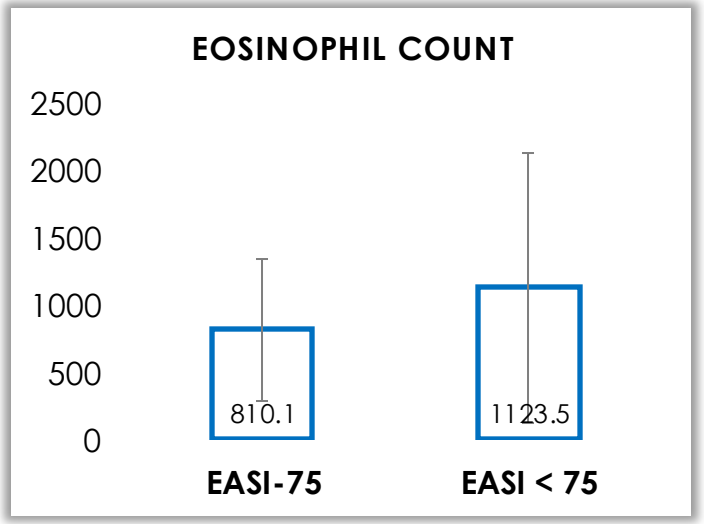
Results

OTHER FACTORS

WEEK 16



$p = 0.689$

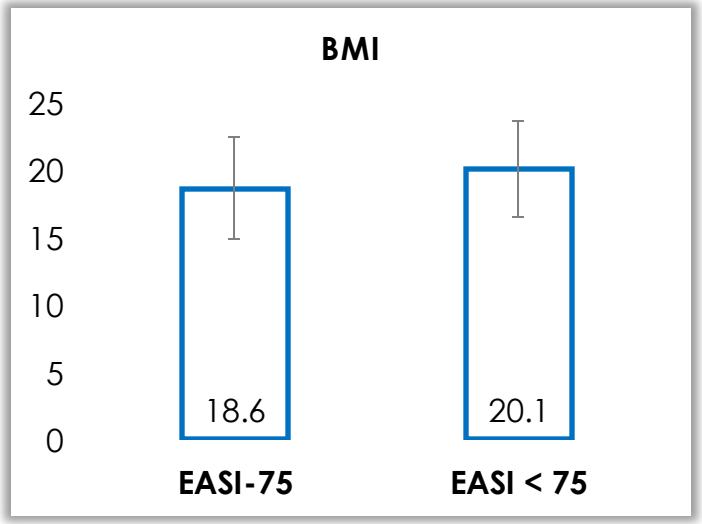


$p = 0.203$

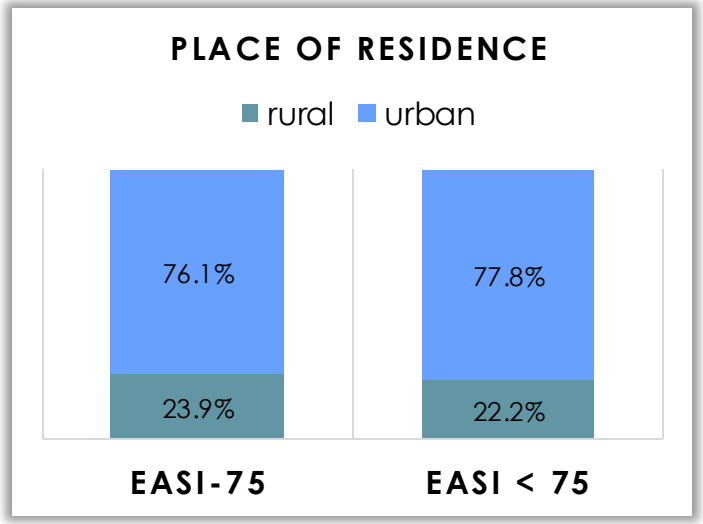
Results

OTHER FACTORS

WEEK 16



$p = 0.012$

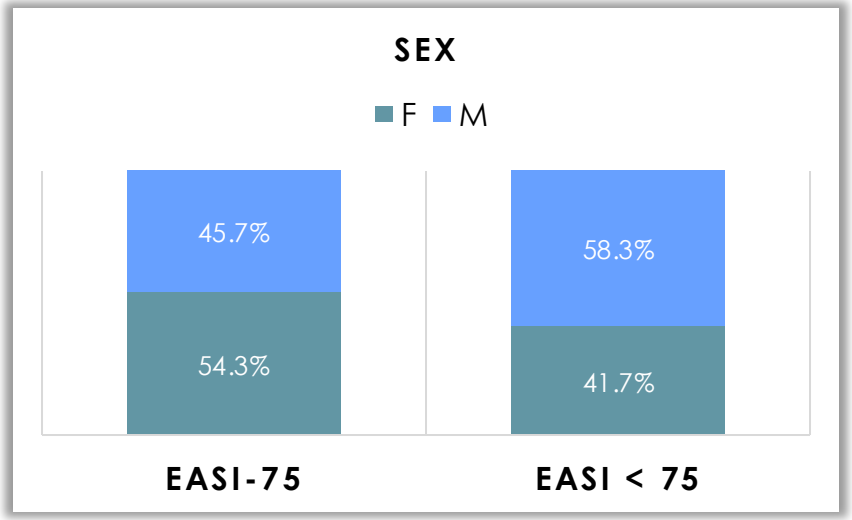


$p = 0.813$

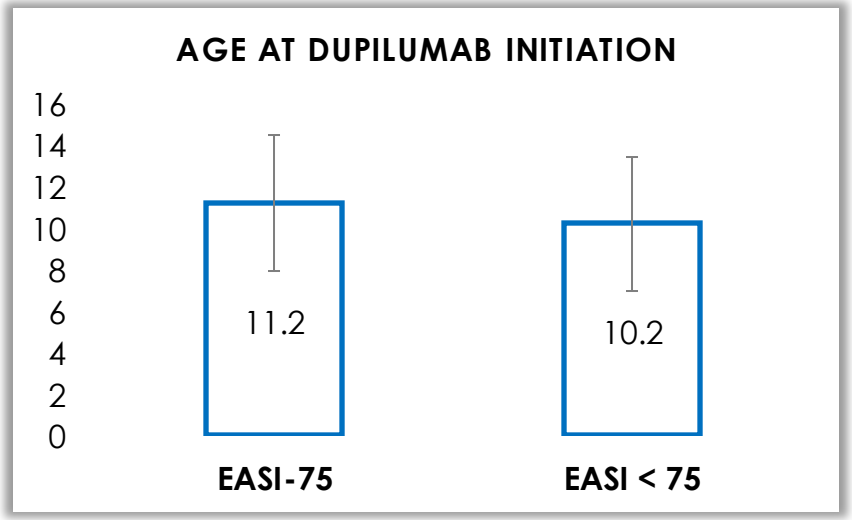
Results

DEMOGRAPHIC

WEEK 52



$p = 0.408$

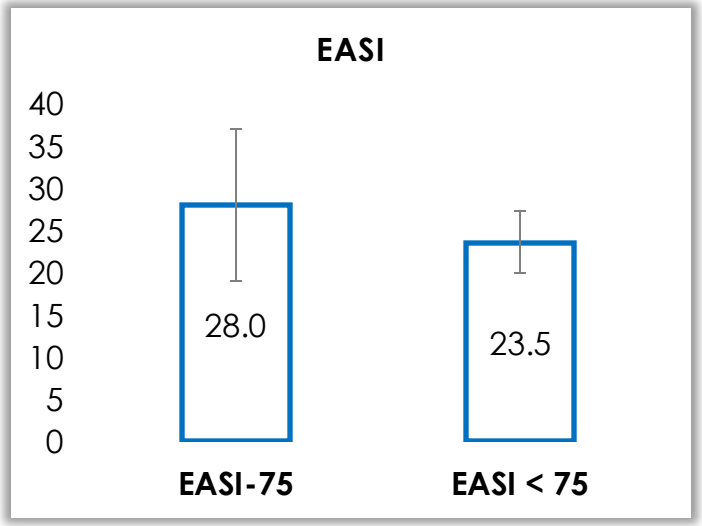


$p = 0.285$

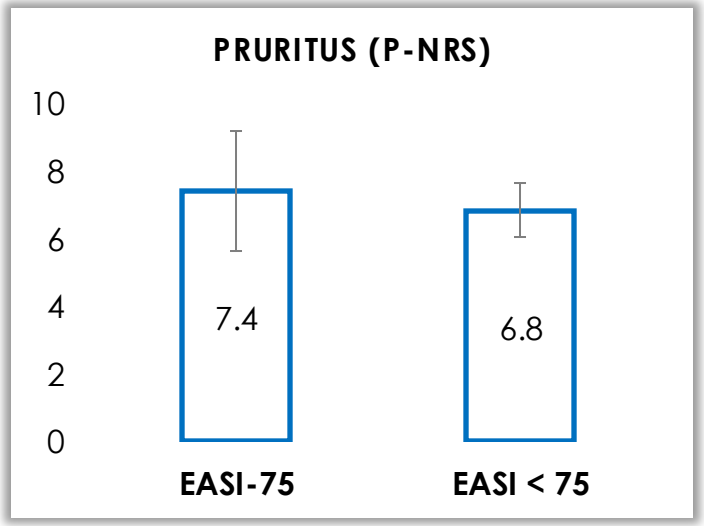
Results

DISEASE SEVERITY

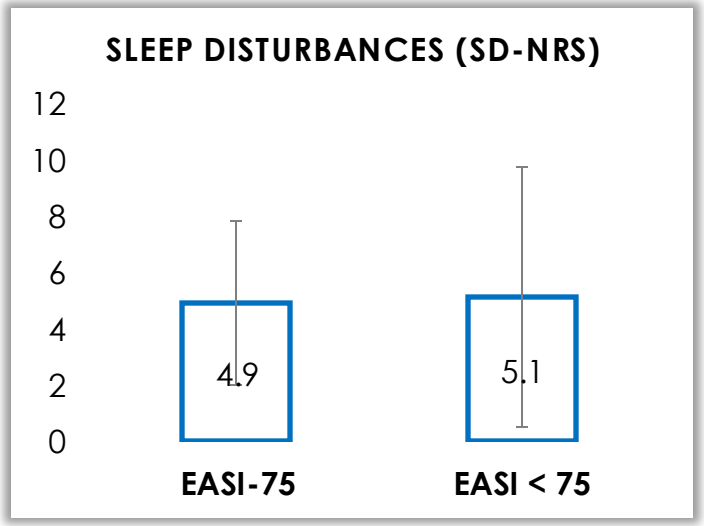
WEEK 52



$p = 0.142$



$p = 0.547$

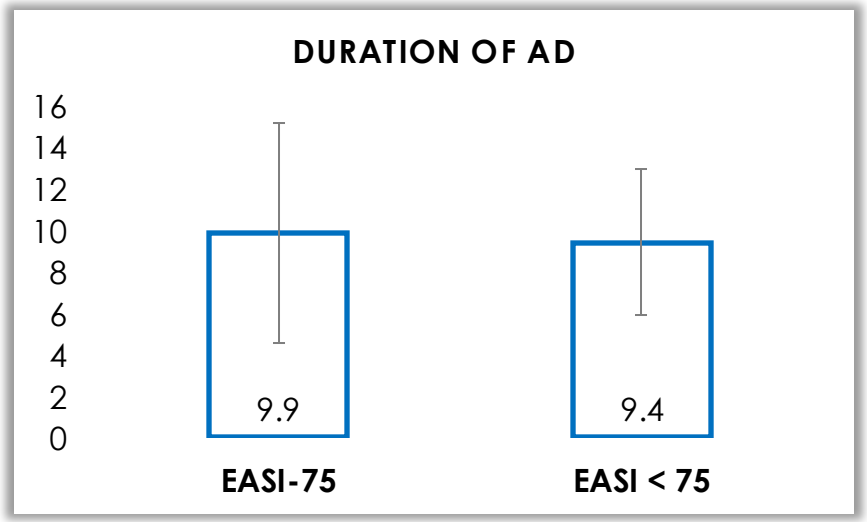


$p = 0.918$

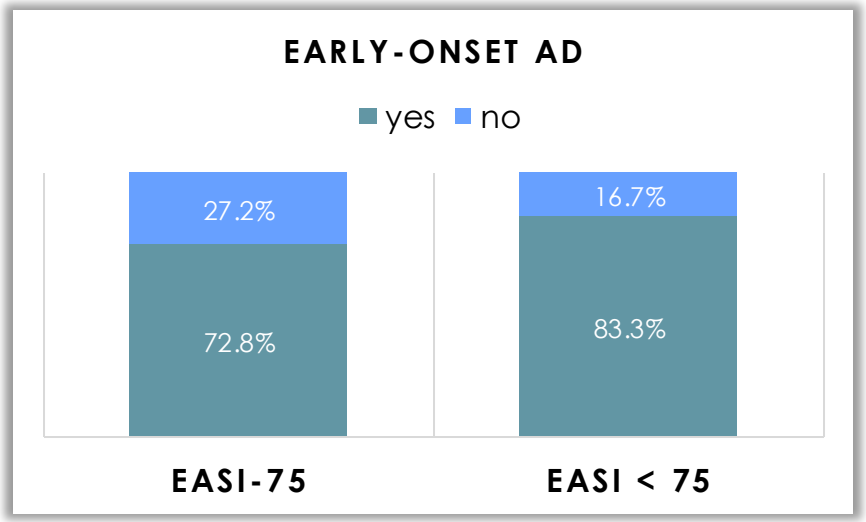
Results

DISEASE HISTORY

WEEK 52



$p = 0.726$

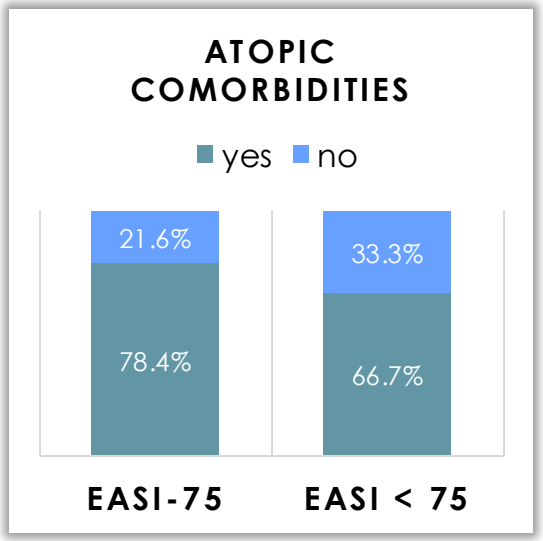


$p = 0.727$

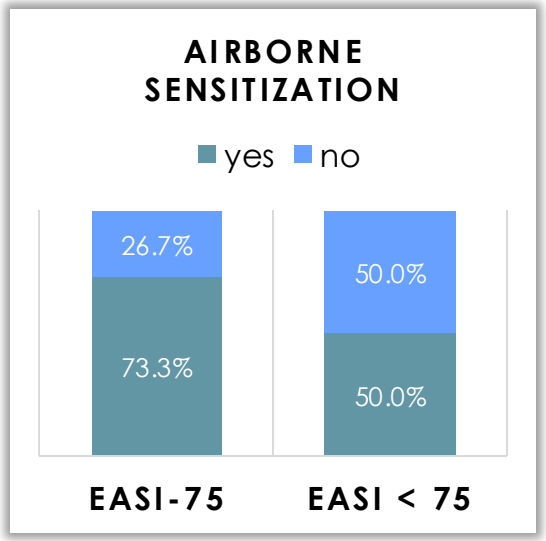
Results

ATOPIC COMORBIDITIES AND SENSITIZATIONS

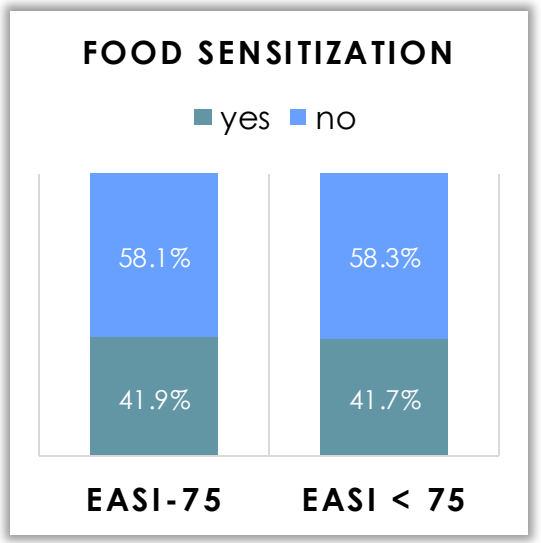
WEEK 52



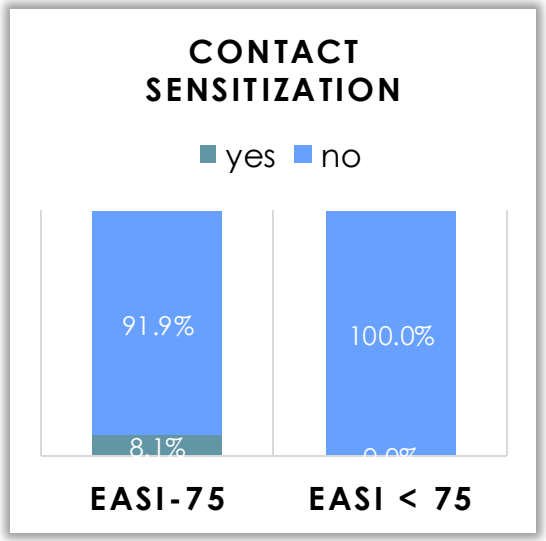
$p = 0.365$



$p = 0.346$



$p = 0.989$

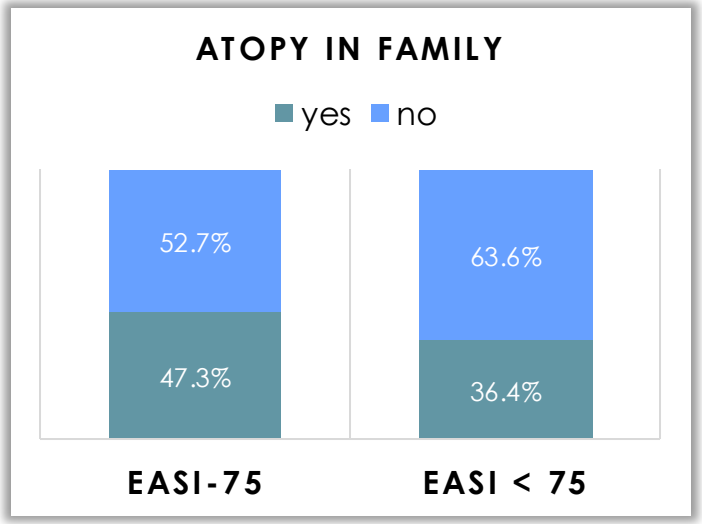


$p = 0.592$

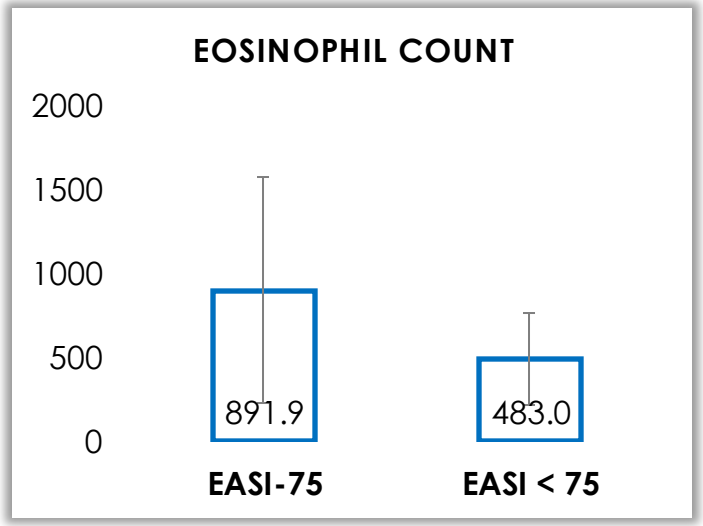
Results

OTHER FACTORS

WEEK 52



$p = 0.494$

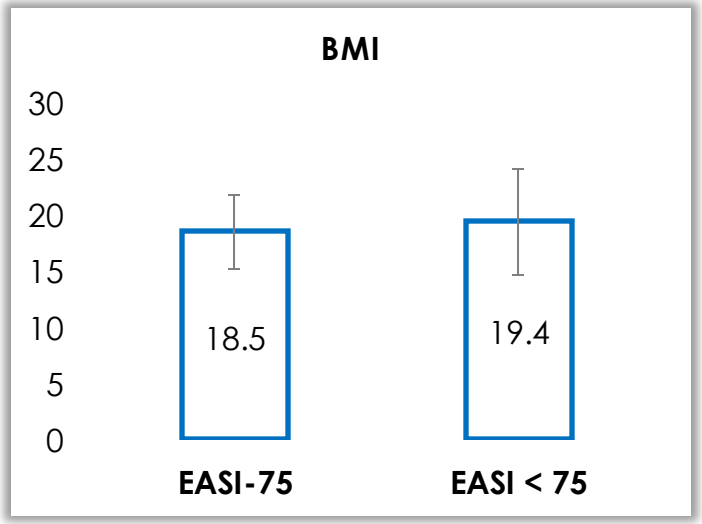


$p = 0.039$

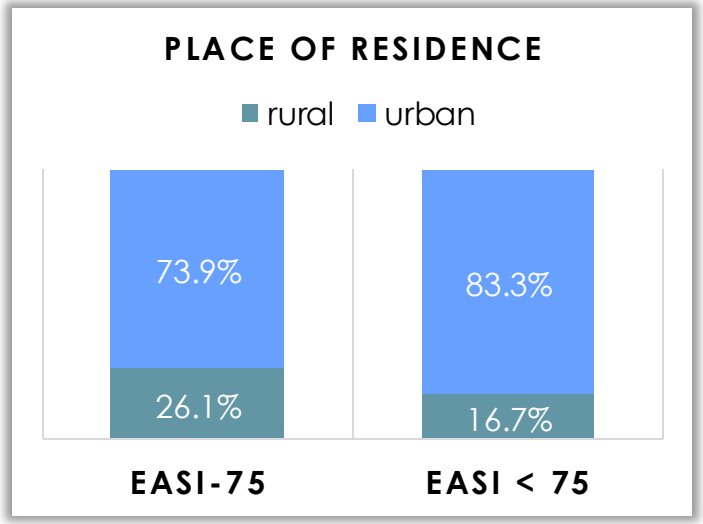
Results

OTHER FACTORS

WEEK 52



$p = 0.691$



$p = 0.726$

Results

Potential factors predicting dupilumab treatment outcomes in children and adolescents

nonresponse was linked to:

→ At W4:

- early-onset AD
- longer duration of AD
- first-degree family history of atopy

→ At W16:

- older age at dupilumab initiation
- longer duration of AD
- higher BMI

→ At W52:

- baseline lower eosinophil count

CONCLUSIONS

- **Dupilumab demonstrated high and sustained efficacy** in both adult and pediatric patients, with the majority achieving EASI-75 by week 16 and further improvement through week 52.

- **Patient-specific characteristics should be considered when initiating dupilumab therapy**, as they may help identify individuals who require closer follow-up or adjunctive interventions.

- **It appears that simple lifestyle interventions can help achieve faster and better treatment outcomes with dupilumab.**

Thank you for your attention

Acknowledgement

We would like to express our gratitude to everyone involved in the study.