

Table S1 Study cohort characteristics at the start were stratified by hospitalization status

Characteristic	Hospitalizations (N=23)		No Hospitalizations (N=174)		P value
	N	Value	N	Value	
Female gender [^]	10	87.3%	69	12.7%	0.82
Comorbidities [^]	10	17.5%	47	82.5%	0.14
Allergy [^]	11	14.1%	67	85.9%	0.37
Allergic rhinitis [^]	17	19%	73	81%	0.37
FEV1 (%pred) *	23	60.7±16.5	174	72.1±19.9	<0.01
FVC (%pred) *	23	76.3±9.9	174	85.3±15.7	<0.01
Smoking Index [#]	23	26.3 (0~77)	174	0 (0~45)	<0.05
Duration of asthma [#]	23	23 (3~56.6)	174	21 (1~55)	0.10
Age [#] , years	23	60 (50~65)	174	50 (39~60)	<0.01
BMI [#] , kg/m ²	23	23.7 (21.6~26.4)	174	22.9 (21~26)	0.52
PEF (%pred) #	23	62.3 (47.1~80)	174	77.1 (54.7~92)	<0.05
FEV1 [#]	23	1.98 (1.04~3.1)	174	2.35 (1.4~3.7)	<0.05
PEF [#]	23	4 (2.6~5.4)	174	5.1 (3.6~6.5)	<0.05
MMEF75/25 [#]	23	0.6 (0.4~1.6)	174	1.1 (0.7~1.7)	<0.05
MMEF75/25 (%pred) #	23	18.5 (14.7~40.4)	174	32.9 (21.2~49.5)	<0.05
FVC [#]	23	2.3 (1.7~3.1)	174	2.7 (2.2~3.2)	<0.05
FEV1/FVC [#]	23	66.4 (55.6~76.2)	174	73.5 (63.1~81.8)	0.06
AQLQ [#]	23	5.0 (4.3~5.3)	174	5.5 (4.9~6)	<0.05
Symptoms [#]	23	5.7 (4.1~6.1)	174	5.9 (4.9~6.4)	0.06
Emotional function [#]	23	5.6 (4.4~6.6)	174	6.4 (5.6~6.8)	<0.05
Environmental stimuli [#]	23	5.8 (4.4~7)	174	6 (4.8~7)	0.49
Self-health concern [#]	23	4.8 (4~5.5)	174	6 (5~6.5)	<0.0001
Activity limitation*	23	4.3±1.1	174	4.9±1.1	<0.05
ACQ [#]	23	-	174	-	<0.05
HADS-A [#]	23	3 (1~7)	174	2 (0~5)	0.17
HADS-D [#]	23	3 (0~7)	174	1 (0~4)	0.08

Data are expressed as the *mean ± SD; #median; 25–75th percentile; ^ Data are expressed as %. P values: comparisons between groups were tested using Pearson's χ^2 or Fisher's Exact test (categorical variables) or independent *t*-test (normally distributed continuous variables) and Mann-Whitney U test (non-normally distributed variables or non-parametric data).

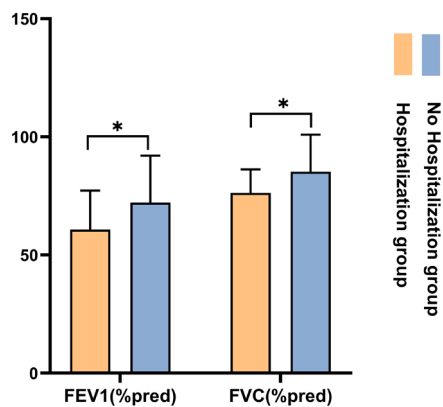


Figure S1 Histogram showing the FEV1 (%pred) and FVC (%pred) of the hospitalization and no hospitalization groups. Asthma patients were separated into the hospitalization and no hospitalization groups. Data are expressed as the median values with interquartile ranges. *, $P < 0.05$, independent t -test.

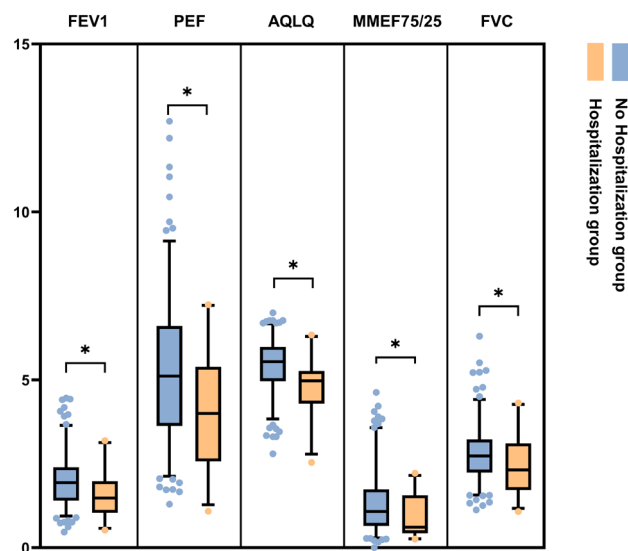


Figure S3 Box-and-whisker plots showing the median FEV, PEF, AQLQ, MMEF75/25, and FVC of the hospitalization and no hospitalization groups. Boxes denote the upper and lower quartiles. Whiskers represent minimum and maximum values, excluding values > 1.5 times the higher or lower quartile range (displayed as separate points). *, $P < 0.05$, Mann-Whitney U test.

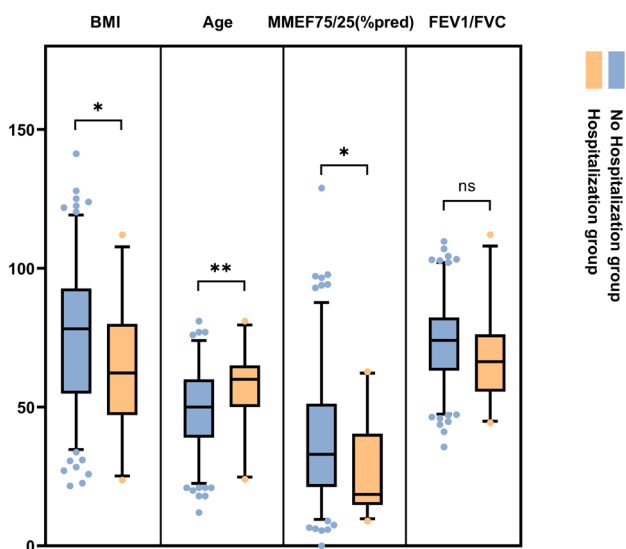


Figure S2 Box-and-whisker plots showing the BMI, age, MMEF75/25 (%pred), and FEV1/FVC of the hospitalization and no hospitalization groups. Boxes denote the upper and lower quartiles. Whiskers represent minimum and maximum values, excluding values > 1.5 times the higher or lower quartile range (displayed as separate points). *, $P < 0.05$, **, $P < 0.01$, and ns, no significant, Mann-Whitney U test.

Table S2 Multivariate analysis for hospitalization in asthma patients

Variables	B	P	OR	95% C.I. for OR	
				Min	Max
Smoking Index	0.004	0.79	1.004	0.98	1.03
Age	0.08	0.02	1.08	1.01	1.15
FEV1	6.66	0.23	776.6	0.02	36021562
FEV1 (%pred)	-0.08	0.51	0.92	0.71	1.18
PEF	-0.56	0.26	0.57	0.22	1.51
PEF (%pred)	0.02	0.60	1.02	0.95	1.096
MMEF75/25	-0.91	0.77	0.41	0.001	162.5
MMEF75/25 (%pred)	0.004	0.97	1.01	0.83	1.21
FVC	-2.51	0.42	0.08	0	38.1
FVC (%pred)	0.01	0.89	1.01	0.84	1.22
FEV1/FVC	-0.02	0.59	0.98	0.91	1.06
ACQ	-	0.19	-	-	-
ACQ (Well controlled)	0	-	1	-	-
ACQ (Partly controlled)	-1.17	0.33	0.31	0.03	3.23
ACQ (Uncontrolled)	-1.39	0.09	0.25	0.04	1.28
AQLQ	-0.51	0.13	0.61	0.32	1.15
HADS-D [#]	0.03	0.65	1.03	0.89	1.19
Constant	-0.31	0.94	0.73		

CI, confidence interval; Max, maximum; Min, minimum; OR, odds ratio. Binary logistic regression was used.

Table S3 Univariable Predictors of asthma exacerbation

Variables	Asthma Exacerbation	Unadjusted HR(95%CI)	P Value
Female gender	20(25)	1.051(0.576,1.920)	0.87
Comorbidities	15(26)	0.934(0.492,1.771)	0.83
Allergy	19(24)	0.892(0.483,1.648)	0.72
Allergic rhinitis	17(19)	1.211(0.638,2.298)	0.56
FEV ₁ (%pred)	43(21.8)	1.002(0.987,1.017)	0.78
PEF (%pred)	43(21.8)	1.002(0.991,1.012)	0.77
FVC (%pred)	43(21.8)	1.002(0.983,1.022)	0.83
Smoking Index	43(21.8)	1.000(0.988,1.013)	0.97
Duration of asthma	43(21.8)	0.995(0.976,1.015)	0.64
Age	43(21.8)	0.985(0.963,1.008)	0.19
BMI	43(21.8)	1.039(0.944,1.143)	0.44
FEV ₁	43(21.8)	1.250(0.840,1.861)	0.27
PEF	43(21.8)	1.056(0.929,1.202)	0.40
MMEF75/25	43(21.8)	1.166(0.838,1.624)	0.36
MMEF75/25 (%pred)	43(21.8)	1.004(0.991,1.017)	0.58
FVC	43(21.8)	1.252(0.860,1.823)	0.24
FEV ₁ /FVC	43(21.8)	1.004(0.982,1.027)	0.73
AQLQ	43(21.8)	0.937(0.640,1.372)	0.74
Symptoms	43(21.8)	0.974(0.790,1.201)	0.80
Emotional function	43(21.8)	1.020(0.798,1.303)	0.88
Environmental stimuli	43(21.8)	0.974(0.831,1.140)	0.74
Self-health concern	43(21.8)	0.926(0.736,1.165)	0.51
Activity limitation	43(21.8)	0.952(0.686,1.320)	0.77
ACQ(partial-controlled)	6(14.0)	0.591(0.116,2.998)	0.53
ACQ (uncontrolled)	35(81.4)	0.499(0.116,2.143)	0.35
HADS-A	43(21.8)	0.992(0.914,1.077)	0.86
HADS-D	43(21.8)	0.985(0.894,1.086)	0.76

Values are n (%) unless otherwise indicated, CI ¼ confidence interval.

Table S4 Univariable Predictors of hospitalization

Variables	Asthma Exacerbation	Unadjusted HR(95%CI)	P Value
Female gender	10(87.3)	1.300(0.488,3.464)	0.60
Comorbidities	10(17.5)	1.011(0.377,2.715)	0.98
Allergy	11(14.1)	0.667(0.237,1.873)	0.44
Allergic rhinitis	17(19)	0.800(0.285,2.248)	0.67
FEV ₁ (%pred)	23(11.7)	0.996(0.966,1.027)	0.79
PEF (%pred)	23(11.7)	1.000(0.978,1.023)	0.98
FVC (%pred)	23(11.7)	0.990(0.941,1.041)	0.70
Smoking Index	23(11.7)	1.004(0.983,1.025)	0.72
Duration of asthma	23(11.7)	1.003(0.978,1.028)	0.84
Age	23(11.7)	0.984(0.951,1.019)	0.38
BMI	23(11.7)	1.083(0.922,1.272)	0.33
FEV ₁	23(11.7)	1.051(0.516,2.139)	0.89
PEF	23(11.7)	1.089(0.818,1.450)	0.56
MMEF75/25	23(11.7)	1.061(0.480,2.347)	0.88
MMEF75/25 (%pred)	23(11.7)	0.999(0.969,1.030)	0.96
FVC	23(11.7)	1.086(0.601,1.965)	0.78
FEV ₁ /FVC	23(11.7)	0.994(0.963,1.026)	0.72
AQLQ	23(11.7)	0.826(0.472,1.448)	0.51
Symptoms	23(11.7)	0.896(0.588,1.363)	0.61
Emotional function	23(11.7)	0.851(0.600,1.208)	0.37
Environmental stimuli	23(11.7)	0.917(0.694,1.210)	0.54
Self-health concern	23(11.7)	0.925(0.674,1.270)	0.63
Activity limitation	23(11.7)	0.999(0.631,1.581)	0.99
ACQ(partial-controlled)	2(8.7)	0.500(0.031,7.994)	0.62
ACQ (uncontrolled)	20(87)	0.700(0.092,5.323)	0.73
HADS-A	23(11.7)	1.017(0.895,1.157)	0.79
HADS-D	23(11.7)	1.055(0.912,1.220)	0.47

Values are n (%) unless otherwise indicated, CI ¼ confidence interval.