From the authors:

Our paper investigated airflow obstruction (AFO) in never-smokers in the China Kadoorie Biobank (CKB) [1]. We presented prevalence of AFO overall, by age and sex, and by region according to both fixed ratio (forced expiratory volume in 1 s (FEV_1)/forced vital capacity (FVC) <0.7) and lower limit of normal (LLN) criteria (FEV_1/FVC <fifth percentile). For overall prevalence and prevalence by region we also subdivided the prevalence defined by the fixed ratio according to FEV_1 ≥80% predicted. We calculated odds ratios for associations of all variables with both the fixed ratio definition of AFO and the LLN definition, but chose to present the former. We found that prevalence according to the LLN definition when compared with the fixed ratio was considerably higher (for the reasons given by P.H. Quanjer and co-authors). For women, the LLN definition resulted in a higher prevalence than the fixed ratio definition up to age 65–69 years, and the excess was greatest among those with a lower baseline age.

TABLE 1 Odds ratio for airflow obstruction (LLN definition) by certain baseline characteristics in female never-smokers

Variable	Subjects n	AFO %	Crude OR (95% CI)	Adjusted OR (95% CI)
Annual income yuan				
<4999	2858	10.5	2.29 (2.20–2.38)	1.68 (1.61–1.76)
5000–9999	3943	7.1	1.48 (1.44–1.53)	1.43 (1.38–1.49)
10 000–19 999	4586	5.4	1.11 (1.08–1.14)	1.26 (1.22–1.30)
20 000–34 999	3142	4.4	0.90 (0.87–0.93)	1.01 (0.97–1.05)
≥35 000	2377	4.9	1.00 (0.96–1.04)	1.00 (0.95–1.05)
Ever diagnosed with TB				
No	16 609	5.8	1.00	1.00
Yes	297	9.5	2.08 (1.82–2.37)	2.25 (1.98–2.55)
Current exposure to smoking from cooking[#]				
Gas/electricity only	6077	4.9	1.00 (0.97–1.03)	1.00 (0.95–1.05)
Coal	5016	6.4	1.34 (1.30–1.38)	1.06 (1.02–1.11)
Wood	4391	7.3	1.54 (1.49–1.59)	0.91 (0.88–0.94)
Other	60	2.8	0.56 (0.43–0.73)	0.64 (0.49–0.83)
History of exposure to smoke from cooking[¶]				
Gas/electricity only	646	3.4	1.00 (0.92–1.08)	1.00 (0.91–1.10)
Coal only	971	6.0	1.79 (1.67–1.91)	1.30 (1.17–1.44)
Coal and gas/electricity	991	3.7	1.10 (1.03–1.17)	1.10 (1.01–1.19)
Wood only	2059	8.4	2.57 (2.46–2.69)	0.97 (0.92–1.03)
Wood and gas/electricity	1929	8.2	2.52 (2.41–2.64)	0.96 (0.91–1.02)
Coal and wood	1227	9.1	2.81 (2.65–2.98)	1.02 (0.95–1.11)
Coal and wood and gas/electricity	182	5.3	1.59 (1.37–1.84)	0.88 (0.75–1.02)
Other fuel combinations	43	4.1	1.20 (0.88–1.62)	0.92 (0.67–1.26)
Current exposure to smoke from heating[+]				
Gas/electricity/central heating only	2365	4.2	1.00 (0.96–1.04)	1.00 (0.92–1.08)
Coal	2596	4.0	0.94 (0.90–0.98)	0.90 (0.85–0.94)
Wood	2464	6.0	1.45 (1.39–1.51)	1.06 (1.00–1.11)
Other	144	12.1	3.13 (2.63–3.72)	2.53 (2.11–3.04)
History of exposure to smoke from heating[§]				
Gas/electricity/central heating only	176	1.7	1.00 (0.86–1.16)	1.00 (0.81–1.23)
Coal only	1523	3.8	2.27 (2.16–2.39)	1.01 (0.89–1.14)
Coal and gas/electricity/central heating	549	2.1	1.21 (1.11–1.32)	1.13 (0.97–1.32)
Wood only	2146	5.8	3.52 (3.37–3.68)	1.00 (0.94–1.07)
Wood and gas/electricity/central heating	200	5.7	3.43 (2.97–3.95)	1.25 (1.07–1.47)
Coal and wood	928	4.1	2.4 (2.25–2.56)	0.81 (0.75–0.86)
Coal and wood and gas/electricity/central heating	41	4.2	2.5 (1.83–3.41)	1.36 (0.98–1.88)
Combinations involving other fuel types	153	12.4	8.03 (6.78–9.52)	2.98 (2.50–3.55)

Methods and variable descriptions are described in the original paper [1]. LLN: lower limit of normal; AFO: airflow obstruction; TB: tuberculosis. [#]: amongst those who cook regularly in their current home; [¶]: amongst those who have cooked regularly in all their homes; [+]: amongst those who heat their current house in winter; [§]: amongst those who have heated all their homes in winter.

M.R. Miller misquotes our paper. We calculated adjusted odds ratios for both definitions of AFO for both Tables 4 and 5 and found them to be similar (with the exception of age) [1]. For comparison with the original paper associations using AFO defined according to the LLN are shown for a subset of variables in Table 1. In a large study, such as the CKB, small effects may be statistically significant. After adjustment for confounding we found statistically significant heterogeneity in the odds ratios for AFO in women between the different fuel-types used, but we based our conclusion that there was very little evidence of an association between household air pollution and AFO on the magnitude of the adjusted odds ratios and the lack of any consistent pattern or dose–response effect. None of these were substantially affected by the choice of AFO definition. In hindsight M.R. Miller's criticism is partially correct, in that the odds ratio estimates using the LLN definition do have slightly narrower confidence intervals.

The Global Lung Function Initiative (GLI)-2012 equations are the first, that we know of, to estimate spirometric reference values for all of East Asia (including China) rather than for local populations. However, the estimates for East Asia are based on a limited number of studies, which were all based on urban populations [2]. There are very large geographical differences in anthropometry and other characteristics in China, and in particular between urban and rural regions [3]. Furthermore, secular trends may be stronger than in western populations. Some association studies of the Chinese population have used the LLN definition, for example [4], most of which were based on spirometric reference values derived from a population in Hong Kong [5]. It is unclear how similar these are to the GLI-2012 equations. The only previous nationwide survey of chronic obstructive pulmonary disease (COPD) prevalence among nonsmokers in China used the fixed ratio criterion [6].

We agree that there are advantages to using the GLI-2012 equations to define COPD according to the LLN. However, we do not know of any attempts, to date, to validate the GLI-2012 equations in China. Our choice to base our results primarily on the fixed ratio definition of AFO means that other researchers can easily duplicate our methods, which might not be the case for the LLN definition should the recommended spirometric reference values change. However, as we presented prevalences by age and region using both the LLN and fixed ratio definitions the differences in prevalence estimates as a result of using the different definitions are made clear. Our use of FEV_1 % predicted was restricted to overall and regional prevalences. It would have been consistent for us to have also subdivided the prevalence defined according to the LLN according to the bottom fifth percentile of FEV_1, as P.H. Quanjer and co-authors argue.

Subsequent to the baseline survey, the CKB project has collected further spirometric data that includes spirograms for a subset of participants. It is hoped that this can be used to validate the GLI-2012 equations.

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AFO definition affected prevalence estimates but had little effect on adjusted odds ratios for associations http://ow.ly/Fy002

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