



Sampling Bias in Some BYHEALTH (汤臣倍健) Funded Studies

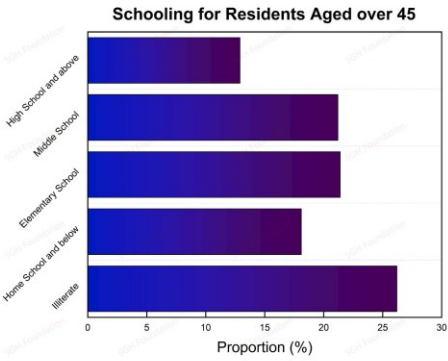
Concerns are raised regarding to sampling bias in some BYHEALTH-funded studies [1-2] and other studies [3] BYHEALTH took part in. The 5GH team, who investigated this matter, warns the scientific community and the public to pay more cautions in interpreting the outcomes of those studies.

10.3390/nu15122706, Sampling Bias



Table 1. Characteristics of participants by MCI status.

	Total	Non-MCI	MCI	p-Value *
N (n, %)	1006	845 (84.0)	161 (16.0)	
Age, years, mean (SD)	63.7 (5.1)	63.1 (4.9)	66.5 (5.2)	<0.001
Female (%)	855 (85.0)	718 (85.0)	137 (85.1)	0.968
Living alone, n (%)	71 (7.1)	57 (6.8)	14 (8.7)	0.747
Marital status, n (%)				
Married	870 (86.5)	734 (86.9)	136 (84.5)	0.416
Single/widowed/divorced	136 (13.5)	111 (13.1)	25 (15.5)	
Education level, n (%)				
Less than middle school	107 (10.6)	50 (5.9)	57 (35.4)	<0.001
Middle and high school	762 (75.8)	665 (78.7)	97 (60.3)	
College or higher	137 (13.6)	130 (15.4)	7 (4.4)	
Annual per capita income, n (%)				
<CNY 20,000	224 (22.3)	177 (21.0)	47 (29.2)	<0.001
CNY 20,000-40,000	491 (48.8)	403 (47.7)	88 (54.7)	
>CNY 40,000	291 (28.9)	265 (31.4)	26 (16.2)	
BMI, n (%)				
<18.5	13 (1.3)	9 (1.1)	4 (2.5)	0.056
18.5-23.9	454 (45.1)	392 (46.4)	62 (38.5)	
24.0-27.9	424 (42.2)	356 (42.1)	68 (42.2)	
>28.0	103 (10.2)	78 (9.2)	25 (15.5)	
Smoking (current), n (%)	59 (5.9)	51 (6.0)	8 (5.0)	0.859
Alcohol intake (current), n (%)	201 (20.0)	166 (19.6)	35 (21.7)	0.420
Meeting physical activity recommendation, n (%)	632 (62.8)	550 (65.1)	82 (50.9)	<0.001
Retired, n (%)	854 (84.9)	729 (86.3)	125 (77.6)	0.005
Hypertension, n (%)	548 (54.5)	447 (52.9)	101 (62.7)	0.022
Diabetes, n (%)	72 (7.2)	41 (7.2)	11 (6.8)	0.862
AVLT score, mean (SD)	26.8 (9.4)	28.1 (9.6)	18.9 (9.7)	<0.001
VFT score, mean (SD)	16.6 (4.3)	17.2 (4.1)	13.0 (3.8)	<0.001
DST-I score, mean (SD)	30.6 (8.4)	30.7 (8.4)	18.9 (7.9)	<0.001
TMT-B, seconds, mean (SD)	56.3 (29.1)	49.4 (19.4)	91.6 (42.8)	<0.001
Mg ²⁺ (mg/L), mean (SD)	36.4 (9.8)	36.7 (9.7)	34.7 (9.8)	0.017



10.1016/j.joea.2013.11.001

These studies recruited participants aged over 55 years old [1] or over 45 years old [2-3] in parts of Hubei province, China. Demographic information of these participants showed a high proportion (13.6% in [1], 12.7% in [2], and 15.6% in [3]) of the them received college or higher education. Meanwhile, over 75% of the participants received secondary school education, and less than 10% received primary and below education.

These results are contrary to those from other nationwide survey [4]. The baseline survey of the China Health and Retirement Longitudinal Study (CHARLS) showed that only 12.9% of the Chinese residents aged over 45 received high school (upper secondary school) and above, and only 21.2% received middle school (lower secondary school) education. Other rounds [5-6] of CHARLS showed similar results.

Several reasons may cause this bias. The participants in the studies [1-3] may be recruited from communities where the residents may have higher education. Or the participants gave wrong answers on the questionnaires. However, the authors of those studies [1-3] and the journals did not notice these abnormalities.

Those studies [1-3] tried to figure out factors influencing the health of the residents aged over 45 or 55, the sampling bias in them may raise questions about their outcomes. BYHEALTH is a leading dietary supplement manufacturer in China, and may benefit from those outcomes, their conflict of interest was not clearly disclosed on the articles [1-3].

[1] 10.3390/nu15122706

[2] 10.3390/antiox12122119

[3] 10.3233/JAD-240296

[4] 10.1016/j.jeoa.2013.11.001

[5] 10.1007/s12062-011-9033-9

[6] 10.3390/ijerph16020215

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