

Soda industry influence on obesity science and policy in China

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Abstract Soda industry efforts to manipulate obesity science and policy in the US are well documented, yet little is known about whether the industry has pursued similar efforts abroad. In-depth research in China—analyses of interviews with prominent Chinese obesity experts, and of trends in obesity-related activities documented in newsletters of China’s lead organization on obesity, a branch of the International Life Sciences Institute (ILSI), a US-based, corporate-funded, global non-profit strongly influenced by the Coca-Cola Company—showed that from 1999 to 2015, China’s obesity science and policy shifted markedly toward physical activity as Coca-Cola’s influence in China increased. This shift aligned with Coca-Cola’s message that it is activity, not diet, that matters—a claim few public health scholars accept. These changes correlated with the growing importance of Coca-Cola’s funding, ideas, and affiliated researchers via ILSI-China. In putting its massive resources behind only one side of the science, and with no other parties sufficiently resourced to champion more balanced solutions that included regulation of the food industry, the company, working through ILSI, re-directed China’s chronic disease science, potentially compromising the public’s health.

Keywords Obesity · China · Coca-Cola · International Life Sciences Institute (ILSI) · Soda Industry

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The soda industry and anti-obesity policy

Policies limiting sugary-beverage consumption are central to efforts to combat the global obesity epidemic [1]. Using tobacco industry tactics that include funding of industry-friendly science, soda companies have fought efforts to tax sweetened sodas and regulate soda marketing [2–6]. During 2011–2015, Coca-Cola and PepsiCo lobbied against United States (US) legislation aimed at reducing soda intake, simultaneously paying millions of dollars to health organizations, some of which reversed their opposition to soda bans [6]. In 2015, the *New York Times* reported that Coca-Cola paid leading exercise-focused scientists to establish a Global Energy Balance Network (GEBN) to promote the notion that inactivity, not poor diet, is the root cause of obesity—a claim few obesity specialists accept [7]. Coca-Cola’s chief science officer lost her job, and the company, seeking to demonstrate transparency, began an online list of the well over \$100 million in grants made to research and community groups since 2010 [8, 9].

With plummeting US sales, soda companies are now focusing on the vast underexploited markets of the Global South, particularly in rapidly developing countries such as China, where the global industry leader, Coca-Cola, holds the largest market share [10]. China has for decades been undergoing the Westernization of diet and sharp declines in activity that have fostered crisis levels of obesity around the world [11, 12]. Although adult overweight and obesity remain well below levels in the US (42% in 2011 vs. 69% in 2011–2012), obesity is rapidly increasing, such that China now has more people with obesity than any other country [13, 14]. Yet Chinese policies tackling obesity and related chronic diseases fall far short of best-practice [15, 16]. Dietary policies advocated by the World Health Organization (WHO) and leading US experts—taxing sugary drinks, restricting food advertising to children—[17, 18] are missing. In recent years, China has introduced a host of national plans and programs stipulating improved diets and exercise, yet these emphasize physical fitness. In health targets and indicators, for example, nutritional targets are generally limited to restricting salt intake [19–24]. Concrete policies are few and weakly enforced, with emphasis on healthy-lifestyle education rather than industry regulation [15, 16]. While it is increasingly clear that the soda industry has manipulated obesity science and policy in the US, it is not known whether it has pursued similar efforts in China.

One vehicle the soda companies appear to have used to influence obesity science in the US is the International Life Sciences Institute (ILSI), a Washington-based, mainly corporate-funded nonprofit designed to bring together academic, government, and industry scientists to (according to ILSI), “provide science that improves human health and well-being.” [2, 25] Founded in 1978 by Coca-Cola Vice President Alex Malaspina (1931–) “to unite the food industry,” ILSI now has 17 branches around the world [26]. ILSI’s China branch has been the leading sponsor of obesity research and policymaking in China; its role in addressing obesity has been greater than that of China’s Ministry of Health (MOH). Critics describe ILSI as a powerful front for the food industry [27]. However, little is known about how it operates and wields influence on behalf of member



companies or whether it has been able to manipulate obesity science and policy—in China or anywhere else.

I used in-depth interviews with Chinese obesity experts and others, combined with content analysis of ILSI-China's newsletters and other online information, to determine (i) whether China's emphasis on exercise over diet bears the imprint of the biggest soda seller in China, Coca-Cola, and, if so, (ii) what institutional and other vehicles, including ILSI, enabled this influence.

Data sources and analyses

Two main data sources were used: (1) semi-structured, in-depth interviews with Chinese obesity specialists (analyzed to identify key themes); and (2) data extracted from the 1999–2015 issues of the newsletter of ILSI-China. (See online Supplemental Content, Appendix 1, for full methodological information on interviews, newsletters, online-sourced material, and statistical analyses, www...).

Interviews with 25 prominent Beijing-based obesity specialists and others, including the most highly regarded figures in the public health branch of the field, were conducted during 10 weeks of field research (October–December 2013) while the author was a visiting scholar at the Research Center for Public Health of Tsinghua University. The specialists were identified by reviewing the Chinese and English language literature and, while in China, using snowball-sampling methods. The interviews were conducted in Chinese, English, or both, and tape-recorded. The author is a fluent Chinese speaker, but to ensure accuracy, a Chinese research assistant occasionally served as interpreter. The project was deemed exempt from the rules for human subject research by Harvard and Tsinghua Universities. All informants gave oral informed consent to participate in this research. The interviews were transcribed and translated into English, then coded for key words and themes, to create a thematic document.

ILSI-China's role as the country's key organization concerned with obesity, as well as its practice of partnering with China's leading health organizations [especially the Ministry of Health (MOH), Chinese Center for Disease Control and Prevention (China CDC), and United Nations (UN) agencies operating in China (WHO, UNICEF)], means that its semi-annual newsletters covered almost all scientific and policy-related activities addressing obesity in China. Content analysis of the newsletters from 1999 (when obesity became a concern) to 2015 (the last year available) provided systematic data on trends in obesity science and policy.

News items describing activities concerning obesity or obesity and other chronic diseases were extracted and coded into 4 categories of emphasis: physical activity, dietary strategies, neither, or both. Of the 293 items published, 72 fit the topical criteria and were assigned to one of the above-mentioned categories based on the event's name. In 66 (92%) of the 72 news items included, the emphasis was unambiguously conveyed by the event name. The remaining 6 were further reviewed through content analysis of the description of the event in the full news item. News items were categorized as "both" if the event emphasized exercise and dietary strategies and "neither" if the focus was on measurement issues (rather than intervention



strategies). These data were grouped into 3 time periods (1999–2003, 2004–2009, 2010–2015), and changes in event emphasis were determined. A total of 38 news items emphasized physical activity, and these were then analyzed for data on featured speakers, key terms, and funding. All analyses used the Fisher test function in R software (R Core Team 2017), and the level of statistical significance was set at $p < 0.05$.

ILSI's origins and activities in China

In 1978, when Coca-Cola re-entered the China market after the death of Mao Zedong (Chairman of the Central Committee of the Communist Party of China from 1949 until his death in 1976), ILSI-Global president Malaspina identified an exceptional local collaborator, Chen Chunming (1925–2018). She was a savvy, powerful nutritionist reputed to have connections high up in the central government. In 1983, she became founding president of the Chinese Academy of Preventive Medicine (a technical unit under the MOH that in 2002 became the China CDC). Frustrated by bureaucratic inertia and a lack of research funding, she founded in 1993 ILSI-Focal Point in China (here, simply 'ILSI-China'), remaining its director until 2004, when her deputy director took over and she became a senior advisor. The ambiguity in Chen's status as a (now) *de facto* high official operating in a formally nongovernmental organization to help the MOH shape policy allowed her to wield substantial, mostly behind-the-scenes, policy influence (quotes 1g, 2a, b, d–f, online Supplemental Content, Table of Key Interview Quotations available at [www...](#); for longer excerpts from the interviews quoted in that table, see online Supplemental Content, Appendix 2, Excerpts from Interviews, available at [www...](#)).

ILSI-China describes itself as a nongovernmental academic institution that bridges government, academia, and industry, providing the latest scientific information for policymaking in nutrition, especially obesity, and food safety [28]. Unlike ILSI-Global and most nonprofits, ILSI-China has no board of directors.

In 1999, 17 companies supported ILSI-China; by 2015, this number had grown to 38, comprised mostly of prominent food industry multinationals with financial interests in the obesity problem (see online Supplemental Content, Appendix 1, available at [www...](#)). What distinguished the Coca-Cola Company was its dominant role in ILSI-Global—as founder, major funder, and the corporate home of the president—plus its quiet yet tenacious promotion of a science-based strategy to counter the obesity threat.

Based on the priorities of supporting companies, ILSI-China organized conferences and other activities, involving Chinese experts from China CDC and local universities, and a small number of foreign experts. The results were then presented to the MOH. Chen Chunming, ILSI-China's powerful director, promised corporate supporters that ILSI would translate science into public policy (quote 1a, online Supplemental Content, Table of Key Quotations).

Fundamental to ILSI-China's mission and legitimacy was what it considered quality science untainted by commercial bias. Bias was minimized, its leaders told me, by rigorous enforcement of the ILSI-Global rule against advertising or product



endorsement (quotes 5a,d, online Supplemental Content, Table of Key Quotations). ILSI leaders and experts expressed confidence that their adherence to this rule fully protected ILSI science (quotes 5a–e, j, online Supplemental Content, Table of Key Quotations). Reflecting China’s pro-business culture and government comfort with ILSI, few interviewees seemed to consider that the ILSI mechanism itself—in which industry funded the work and largely set the agenda, unfunded work was not done, and industry researchers had a seat at the scientific table—could affect the science.

Making obesity science and policy: from nutrition to physical activity

In 1999, ILSI-Global asked its branches to put obesity on their agendas. By 2003, ILSI-China had defined body mass index cutoffs for obesity and created guidelines for obesity prevention and management that were issued in the name of the MOH, firmly establishing it as China’s primary obesity-related science and policymaking organization (quotes 2c–e, online Supplemental Content, Table of Key Quotations).

Around the same time, the Coca-Cola Company began exhibiting strong interest in obesity. Within 2 years of the 2001 release of the US Surgeon General’s Call to Action to fight the obesity epidemic, Coca-Cola realized that the newly articulated public health focus on obesity seriously threatened its profitability [2]. Obesity became a major concern of Alex Malaspina, then operating from the ILSI Center for Health Promotion. In the US, Coca-Cola established an aggressive, multi-pronged science-based strategy to protect profits and shift the blame for weight gain to inactivity [2]. Positioning itself as a “healthy active lifestyles” advocate, Coca-Cola promoted the message that all foods and drinks can be part of a healthy diet: the key to avoiding obesity is activity [29]. This exercise-first campaign was very successful in China.

Between 1999 and 2015, the focus of anti-obesity efforts sponsored or co-sponsored by ILSI-China shifted notably toward exercise (Table 1). From 1999 to 2003, when obesity was officially recognized as epidemic in China, 42% (5/12) of obesity

Table 1 ILSI-China–sponsored obesity activities, by emphasis (1999–2015)

	Number of activities	Nutrition No. (%)	Physical activity no. (%)	Both no. (%)	Neither no. (%)
1999–2003	12	5 (41.7)	0 (0)	0 (0)	7 (58.3)
2004–2009	30	12 (40)	11 (36.7)	5 (16.7)	2 (6.7)
2010–2015	30	7 (23.3)	18 (60)	4 (13.3)	1 (3.3)

Includes all activities on obesity, or obesity and other chronic diseases, sponsored or co-sponsored by ILSI-China. For the handful of activities that are the focus of more than one newsletter item, the table counts the activity, not the news item(s). Activities dealing with neither nutrition nor physical activity generally focused on the definition of obesity and other measurement issues. The trend of increase in physical activity is statistically significant ($p < 0.0001$). The trend of decline in nutrition (from 41.7 to 23.3%) is substantively meaningful but not statistically significant ($p = 0.34$). The statistical analyses are explained in the online Supplementary Content, Appendix 1, Methodology

Sources ILSI-Focal Point in China semi-annual newsletters, supplemented by interviews



control and prevention activities focused on diet/nutrition; none centered on physical activity. (Most activities addressed measurement issues, not prevention strategies.) The focus on physical activity increased significantly from 2004 to 2009, accounting for 37% of ILSI-China's obesity-countering initiatives. This was partly in response to the WHO Global Strategy on Diet, Physical Activity and Health (2004), which portrayed activity and diet as equally important risk factors for major chronic diseases [30]. In 2005-2006, in a series of meetings that brought together Chinese agencies (MOH, China CDC), UN agencies (UNICEF, WHO), ILSI-China, and food companies supporting ILSI-China, the companies were mobilized to partner in the fight against obesity and chronic disease more generally. This move was in line with the WHO Global Strategy that called for public-private collaborations and assigned private-sector companies important roles as "advocates for healthy lifestyles" and "responsible employers." [30] However, with ILSI's encouragement, China urged industry to take an unusually large role in its health affairs.

At roundtable meetings in 2005, ILSI-China director Chen offered technical support and assistance in developing the Global Strategy for China [31, 32]. All the major speakers, including a top ministry official, endorsed an industry role in chronic disease prevention. Chen was an unflagging promoter of industry participation. By repeatedly stressing this theme, and actively enabling the participation of food companies, she helped insert them directly into the nation's core strategy to combat obesity and chronic disease. Notably, in an environment in which the government had little interest in and few resources for chronic disease prevention and treatment, companies driven by profit maximization were able to exert outsized influence.

From 2010 to 2015, 60% of ILSI-China-sponsored obesity efforts focused primarily on exercise; only 23% dealt with diet (Table 1). As the food industry gained a substantial voice at the policy table, discussion of obesity and chronic disease prevention strategies shifted decisively toward promoting physical activity. Although nutritional approaches promoting healthy foods, dietary guidelines, and nutritional education remained on the books, they had had little (or only corporate) funding, visibility, or active support.

Scientific conferences emphasizing physical activity

A closer look at the exercise-related activities that ILSI-China undertook indicates that the shift mirrored the growing importance of the food industry and, in particular, the Coca-Cola Company (Table 2). Between 2004 and 2015, ILSI-China sponsored 9 conferences and workshops on obesity and/or chronic diseases that chiefly emphasized physical activity. These events were explicitly structured as opportunities for Chinese researchers to learn scientifically advanced best practices from Western countries.

Most of the foreign experts invited to the 6 international conferences (13/18, 72%) were US-based, and half were exercise scientists or emphasized physical activity in their obesity research. Two prominent specialists were invited most frequently: Steven N. Blair (University of South Carolina, 3 conferences), and



Table 2 ILSI-China–sponsored obesity activities with physical activity focus (2004–2015)*Conferences and Workshops*

1. Dec. 2004 International Conference on the Health Benefits of Physical Activity
2. Mar. 2006 Joint Meeting of the Working Groups on Obesity and Physical Activity in China
3. Nov. 2006 Conference on the Control of Obesity and Related Diseases in China: Maintaining Healthy Weight—A Priority in Chronic Disease Control and Prevention
4. June 2007 2007 International Beverage Forum on Sport and Health
5. June 2009 Working Groups on Obesity and Physical Activity in China Symposium
6. Nov. 2010 Conference on Physical Activity and Health: Exercise is Medicine
7. Dec. 2011 2011 Conference on Obesity Control and Prevention in China: Energy Balance and Active Lifestyles
8. Dec. 2013 2013 Conference on Obesity Control and Prevention: Appropriate Technologies and Tools in Weight Control
9. Nov. 2014 2014 Conference on Physical Activity and Health: Exercise is Medicine

Other Scientific Activities

10. Apr. 2005 ILSI-China Forms Working Group on Physical Activity
11. July 2011 MOH Issues PA Guidelines for Chinese Adults (Trial), with Advocacy Conference in Sept.
12. June 2012 Launch of Exercise Is Medicine (EIM) in China, numerous training courses 2012–2015
13. 2011–2013 Training Fellowship Program, Coca-Cola Beverages (China) and ILSI-China Scholarship Program
14. Apr. 2014 ILSI-China Forms EIM China Working Group

Public Health Interventions

15. 2004–2015 Happy 10 Minutes, school exercise program, from trial to inclusion in national campaign
16. 2007–2009 Community-based Physical Activity Promotion Project
17. 2007–2015 Healthy Lifestyles for All Action, develops into a national campaign

Includes all activities on obesity, or chronic diseases more generally, with a priority focus on physical activity, sponsored or co-sponsored by ILSI-China. Does not include activities with both nutrition and physical activity emphases. Each activity is listed only once, even though it may have been the subject of more than one newsletter item

Sources ILSI-Focal Point in China semi-annual newsletters, supplemented by interviews

James O. Hill (University of Colorado, 2 conferences). Others were invited once; a Chinese economist at the US CDC participated 3 times. The ideas of Blair and Hill about energy balance, the neglected importance of physical activity, and of inactivity not obesity being the critical health problem were presented more often than those of other scientists [33].

At a major conference in 2013 (attended by the author), Rhona Applebaum, Coca-Cola’s Chief Science and Health Officer in charge of global health strategy (and future ILSI-Global president), was given a prominent place on the program [33]. (Coca-Cola co-funded the event.) Applebaum highlighted Coca-Cola’s contributions to fighting obesity and articulated many of the themes stressed by Blair and Hill, claiming her points were backed by objective science: “We collaborate with folks who are fact-based and credible. It’s not our science, it’s theirs” (author field notes, Dec 12, 2013). Left unsaid was that the company funded scientists who already prioritized exercise and sometimes dismissed the links between soda consumption and obesity [34, 35].

Given the consistent message conveyed by these prominently placed speakers and the dearth of alternative perspectives, Chinese researchers attending the conference could well have concluded that the US consensus is that promoting



physical activity is the most important strategy for combating obesity. Fitness is of course crucial for preventing obesity (but plays a smaller role in treatment, a distinction not always made). Despite the neutral-sounding language of “energy balance,” the emphasis was largely on exercise. The latest thinking on dietary strategies, including efforts to address the global food system and rein in the food industry, was not presented [33].

The data indicate that most, if not all, of the speakers at the 6 conferences were invited because of their ties to ILSI and/or the Coca-Cola Company. Blair has received funding from Coca-Cola for energy balance research since at least 2008, and he has been a leader in the Exercise is Medicine (EIM) initiative, of which Coca-Cola was founding corporate power. Hill has served on the boards of ILSI and ILSI-North America for many years and has received financial support from Coca-Cola since at least 2010. Of the 10 other individuals (excluding the Chinese economist), 5 had funding or institutional ties to Coca-Cola, ILSI, or both, and 2 more were employees of Coca-Cola or its (now-terminated) Beverage Institute. Of the remaining 3 speakers, one had connections to the Coca-Cola-funded EIM program. All the speakers were well-known specialists with important ideas that deserved airing. Yet virtually the only perspective the Chinese were getting was that of people who were connected to Coca-Cola and/or ILSI. Even if these speakers did not actively promote the interests of Coca-Cola or ILSI, it is unlikely they would have presented ideas that ran counter to those interests.

Other scientific activities and public health interventions emphasizing physical activity

Coca-Cola also co-funded other scientific activities promoting physical activity (Table 2): a fellowship program in exercise science (Blair’s university was a training center [36]); the EIM China Program; and an EIM working group [37]. Public health interventions promoting exercise also bore Coca-Cola’s imprint. The much-acclaimed school exercise program Happy 10 Minutes is an adaptation of Alex Malaspina’s favored project Take10! (a creation of ILSI’s Center for Health Promotion, on whose board Chen Chunming served), while Coca-Cola (and other companies) used the Chinese government’s nationwide Healthy Lifestyles For All campaign to showcase their anti-obesity programs [38, 39]. My informants spontaneously mentioned Coca-Cola’s projects as the most effective components of this campaign (quotes 4a,b, online Supplemental Content, Table of Key Quotations).

Coca-Cola’s push to advance the exercise solution in China peaked in 2014. After 2015, when the *New York Times* exposed Coca-Cola’s role in establishing the GEBN, the 3 primary spokespersons who dominated discussion in 2013 (Hill, Blair, and Applebaum, all named in the *Times*) were no longer mentioned in ILSI-China’s newsletters [7, 8]. Although Coca-Cola has rolled back its aggressive promotion of the science of physical activity, its influence continues to be felt in China, for the ILSI structure remains in place. Though Chen Chunming has died and her long-time co-director is reaching advanced age, the programs the company has supported (e.g., EIM, Happy Ten Minutes) are now well established, and ILSI-promoted language



(“energy balance,” “eating and moving in balance,” and “integrating exercise with medical care”) is embedded in national plans and programs [21, 23, 40].

Coca-Cola’s success in China

In the decade after Coca-Cola launched its obesity campaign, the focus of China’s obesity science and interventions shifted markedly from diet to physical activity, aligning them with the company’s message. In putting its massive resources behind only one side of the science, and with no other parties sufficiently resourced to champion more balanced solutions that included regulation of the food industry, the company, working through ILSI, re-directed China’s chronic disease science, potentially compromising the public’s health. According to global nutrition expert Barry Popkin, who has worked in China for decades:

“There is now no immediate possibility the government will regulate food, beverage, or sugar in the way countries globally are beginning to work to create healthy diets and address not only obesity but all diet-related noncommunicable diseases. I believe ILSI’s influence in promoting the physical activity agenda was extremely detrimental and put China decades behind in efforts to create a healthier diet for its citizens.” (email to author, 23 October 2018).

By contrast, although a few older-generation Chinese scientists privately decried industry’s corrupting influence, most saw no conflict of interest (quotes 3a, b, e, 5f, online Supplemental Content, Table of Key Quotations, same below). Reflecting China’s pro-business political culture, they maintained that corporate funding of research is normal, neither criticized nor regulated (quotes 3c, 3d, 3f, 5g–m). Though few if any affiliated experts fully understood ILSI’s funding arrangements (quote 1i), they shared the widespread conviction that wealthy, scientifically/technologically advanced Western firms have positively impacted China’s development (quotes 4a–e), and many spoke admiringly of Coca-Cola’s generosity and knowhow (quotes 3c, 4a, b). ILSI-China’s founder presented herself as a patriot who strategically exploited global resources and overcame the state’s inertia on chronic disease to bring China in line with the best thinking globally. Though ILSI-China has accomplished important work, getting obesity on the agenda and > 10 years of obesity policymaking, it has not represented best thinking.

Conclusion

Before the global obesity epidemic can be effectively addressed, we need to comprehend how dietary solutions preferred by the public health community are being covertly undermined by powerful food and soda corporations operating through organizations such as ILSI in major markets around the world. Support for limiting sugary-beverage consumption in China’s 2016 dietary guidelines is encouraging, but PepsiCo’s sponsorship of the associated public education campaign raises questions about the message conveyed [40, 41]. I hope that this research will help China and



other countries create more effective policies that address diet as well as activity and inspire researchers to undertake similar investigations elsewhere.

A growing body of research has documented the prodigious efforts of the soda industry to influence obesity science and policy, especially in Euro-American countries [2–6]. This is the first study to empirically substantiate not just the efforts, but also the impact of the soda industry on the obesity science and policy of any nation. Though that impact cannot be measured with quantitative precision, China's policies aligned well with Coke's position as transmitted through ILSI-China. It is also the first to detail the concrete means by which ILSI branches facilitate industry influence. Due to the topic's sensitivity, it was difficult to interview some key informants, and MOH officials were unresponsive. Nevertheless, the evidence strongly indicates industry involvement in re-directing China's obesity policy.

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