

2021年中国18~64岁居民含糖饮料相关知识水平及影响因素

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摘要:

[背景] 过量摄入含糖饮料会对健康产生危害。近年来我国居民含糖饮料消费迅速增长,增加了国民死亡风险和疾病负担。

[目的] 了解2021年中国18~64岁居民含糖饮料相关知识水平及影响因素。

[方法] 于2021年采用多阶段整群随机抽样法,对全国302个调查点18~64岁居民进行问卷调查,获得有效问卷98567份。调查问卷包括5个维度,含糖饮料相关知识包括4道题目,答对3道题及以上判定为知晓。采用频数和加权构成比进行描述,以个体作为1水平,居(村)委会作为2水平,拟合两水平logistic回归模型分析影响因素,采用零模型拟合判断是否适合两水平logistic回归模型。

[结果] 2021年中国18~64岁居民含糖饮料相关知识知晓率为57.0%,正确率最低的题目是“每天吃添加糖最好不超过25g”(22.6%),正确率最高的是“喝过多的含糖饮料,可增加肥胖、糖尿病的发生风险”(81.1%)。零模型拟合结果显示,含糖饮料知识水平在居(村)委会水平上存在聚集性($t=25.00, P<0.0001$),适合进行多水平logistic回归,且两水平模型比单水平模型拟合效果更佳。两水平logistic回归结果显示:女性($OR=1.14, 95\%CI: 1.11\sim 1.18$)、从事医疗卫生($OR=1.36, 95\%CI: 1.27\sim 1.45$)和教育相关工作($OR=1.16, 95\%CI: 1.07\sim 1.24$)调查对象含糖饮料相关知识水平高于男性、一般职业的居民;中部($OR=0.87, 95\%CI: 0.77\sim 0.97$)和西部($OR=0.85, 95\%CI: 0.75\sim 0.94$)地区、患慢性病($OR=0.81, 95\%CI: 0.78\sim 0.84$)和不知道患慢性病情况($OR=0.75, 95\%CI: 0.72\sim 0.78$)的居民相关知识水平低于东部地区、未患慢性病居民。以18~24岁年龄组为参照,35~44岁组($OR=1.07, 95\%CI: 1.02\sim 1.12$)知识水平较高,55~64岁组($OR=0.92, 95\%CI: 0.86\sim 0.97$)较低,25~34岁组、45~54岁组与参照组差异无统计学意义;知识水平随文化程度升高而升高,趋势有统计学意义($P<0.001$)。

[结论] 2021年中国18~64岁居民含糖饮料相关知识知晓率仅过半数,尤其是添加糖摄入量知晓率低;男性、中部和西部地区、文化程度较低的人群相关知识水平更低。居民对含糖饮料负面健康结果的认识较高。

关键词: 含糖饮料;知晓率;影响因素;两水平模型

Knowledge level and influencing factors of sugar-sweetened beverages among Chinese adults aged 18-64 years in 2021 DING Caicui, QIU Yujie, YUAN Fan, FENG Jingwen, HAO Lixin, CHEN Zheng, LIU Ailing (National Institute for Nutrition and Health, Chinese Center for Disease Control and Prevention, Beijing 100050, China)

Abstract:

[Background] Excessive intake of sugar-sweetened beverages (SSBs) is harmful to health. In recent decades, the consumption of SSBs by Chinese residents has increased rapidly, increasing the risk of death and burden of disease.

[Objective] To analyze the knowledge level and influencing factors of SSBs for Chinese residents aged 18-64 years in 2021.

[Methods] A multi-stage cluster random sampling approach was used to conduct a questionnaire survey among residents aged 18-64 years in 302 survey sites across the country in 2021, and 98567 valid questionnaires were obtained. Four questions are about SSBs among the questionnaire's 5 dimensions. Respondents who answered 3 or more questions correctly were considered to have a basic understanding of SSBs. Frequency and weighted proportion were used for description.

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With individual as level 1 and resident council (village council) as level 2, a two-level logistic regression model was applied to examine the influencing factors. A null model was used to determine whether the two-level logistic regression model was appropriate.

[Results] The knowledge awareness rate of SSBs was 57.0% among the Chinese residents aged 18-64 years in 2021. The knowledge point with the lowest correct rate was "It is best to consume no more than 25 grams of added sugar per day" (22.6%), while the one with the highest correct rate was "Excessive intake of SSBs can increase the risk of obesity and diabetes" (81.1%). The results of the null model showed that SSBs knowledge level had a clustering effect at resident council (village council) level ($t=25.00, P<0.0001$), so a two-level model fit better than a one-level model. The results of the two-level logistic model revealed that residents who were female (OR=1.14, 95%CI: 1.11, 1.18) or working in medical and health (OR=1.36, 95%CI: 1.27, 1.45) and education institutions (OR=1.16, 95%CI: 1.07, 1.24) had a higher knowledge level compared to males or residents of other occupations. The knowledge level was lower among residents in central (OR=0.87, 95%CI: 0.77, 0.97) and western (OR=0.85, 95%CI: 0.75, 0.94) areas than in eastern areas. Those with chronic diseases (OR=0.81, 95%CI: 0.78, 0.84) and who did not know if they had a chronic disease (OR=0.75, 95%CI: 0.72, 0.78) had a lower knowledge level than those without chronic diseases. Compared with 18-24 years, the knowledge level was higher in ages 35-44 years (OR=1.07, 95%CI: 1.02, 1.12) and lower in ages 55-64 years (OR=0.92, 95%CI: 0.86, 0.97), and not different from the ages 25-34 years and 45-54 years. The knowledge level increased with the level of education, the trend was statistically significant ($P<0.001$).

[Conclusion] Only about half of Chinese adults aged 18-64 years had a basic understanding of SSBs in 2021. The awareness rate of added sugar intake was low in particular. The knowledge levels of male, central and western, or less educated populations were even lower. Awareness of the negative health outcomes of SSBs was high among the population.

Keywords: sugar-sweetened beverages; awareness rate; influencing factor; two-level model

过量摄入含糖饮料会对健康产生危害^[1]。近年来我国居民含糖饮料消费迅速增长^[2-3],增加了国民死亡风险和疾病负担^[4-5]。掌握正确的知识,才可能形成健康的信念,最终产生健康的行为^[6]。居民营养知识缺乏可能是不合理饮食行为的重要因素之一。在含糖饮料消费很普遍的国家,居民对含糖饮料的健康风险和含糖量的认识水平均很低^[7]。但也有研究表明含糖饮料知识水平与含糖饮料的高摄入并无关联^[8-9]。我国目前含糖饮料消费的增长是否由于相关知识缺乏,居民含糖饮料相关知识水平、认知短板和影响因素都有待了解。国外有研究发现大众对含糖饮料健康危害的认识较好,但对含糖饮料中含有多少能量或者营养成分认识较差^[7,10]。目前我国缺乏全国范围内的调查,本研究利用2021年中国18~64岁居民营养健康知识知晓率调查,分析含糖饮料相关知识水平及相关因素,为科学研究和制定策略提供依据。

1 对象与方法

1.1 研究对象

研究数据来自2021年中国18~64岁居民营养健康知识知晓率调查,调查抽样设计同中国成人慢性病与营养监测(2015)^[11],在全国31个省(自治区、直辖市)和新疆生产建设兵团抽取302个调查点,每个调查点抽取330户,每户调查1名18~64岁常住居民。实际共调查102398人,有效问卷98567份(96.3%)。其中,男性占49.4%,城市人口占41.9%,平均年龄为(38.5±12.2)岁^[12]。本研究经中国疾病预防控制中心营

养与健康所伦理委员会审查通过(伦理号:2022-037)。

1.2 含糖饮料相关知识水平评价方法

通过入户、面对面询问方式进行调查。问卷采用经专家认证的标准化问卷^[13],经过预调查评价信效度(Cronbach's α 系数0.847,分半信度0.860,各知识维度与总分相关系数在0.542~0.839之间)。调查内容包括调查对象人口学信息以及营养健康知识,知识包括膳食推荐、食物特点、营养与疾病、食物选择、食品安全5个维度,满分100分。含糖饮料相关知识包括4道题目:①加了糖的食物或者饮料应该(少吃/适量/多吃/无所谓/不知道);②每天吃添加糖最好不超过多少克(15/25/35/45/不知道);③喝过多的含糖饮料,可增加龋齿的发生风险(判断是否正确);④喝过多的含糖饮料,可增加肥胖、糖尿病的发生风险(判断是否正确)。参考2021年中国18~64岁居民营养健康知识知晓率的判定方法^[14],答对3道题及以上(75%)判定为“具备含糖饮料相关知识”。

1.3 统计学分析

采用频数和加权^[11]构成比进行描述,使用 Rao-Scott χ^2 检验进行数据单因素组间比较,组间两两比较采用 Bonferroni 法,趋势性检验采用 Cochran-Armitage 法。本研究为复杂抽样数据,具有省-县(区)-乡镇(街道)-居(村)委会的层次结构,数据具有嵌套性,同一地区调查对象的营养健康知识水平可能因为相似的饮食习惯、经济水平等因素存在关联性,因此不满足数据“独立性”,适合使用多水平 logistic 回归模型^[15]。以是否具备含糖饮料相关知识为应变量,以性别、年

龄、城乡、地区、文化程度、职业、患慢性病情况为自变量,将个体作为 1 水平单位,居(村)委会作为 2 水平单位进行两水平混合效应随机截距模型分析,分析前通过拟合零模型对截距项的随机效应进行检验来评估数据是否适合两水平模型,即对随机参数的估计值 $\sigma_{\mu_0}^2$ 做统计检验,若差异具有统计学意义,则应采用多水平模型,若差异无统计学意义,则说明水平 2 单位间无变异,可以选用常规分析方法^[16]。多水平二分类 logistic 回归模型变量赋值见表 1。应用 SAS 9.2 统计软件进行数据整理和分析。以 $P < 0.05$ 为差异有统计学意义。

表 1 logistic 回归变量赋值
Table 1 Logistic regression variable assignment

变量(Variable)	定义及赋值(Definition and assignment)
含糖饮料相关知识(Knowledge level of sugar-sweetened beverages)	0=不具备(No), 1=具备(Yes)
性别(Gender)	0=男性(Male), 1=女性(Female)
年龄/岁(Age/years)	0=18~24, 1=25~34, 2=35~44, 3=45~54, 4=55~64
城乡(Residence)	0=城市(Urban), 1=农村(Rural)
地区(Region)	0=东部(Eastern), 1=中部(Central), 2=西部(Western)
文化程度(Education)	0=小学及以下(Primary school or below), 1=初中(Middle school), 2=高中/中专/技校(High school/specialized secondary school/technical school), 3=大专/职大(Junior college/vocational university), 4=本科(Bachelor), 5=硕士研究生及以上(Master degree or above)
职业(Occupation)	0=一般职业(Others), 1=医疗卫生(Medical and health institutions), 2=食品、餐饮(Food and restaurant industries), 3=教育(Education institutions)
患慢性病情况(Chronic diseases)	0=未患(No), 1=患(Yes), 2=不知道(Unclear)

2 结果

2.1 含糖饮料相关知识水平总体情况

2021 年我国 18~64 岁居民含糖饮料相关知识知晓率为 57.0%, 女性高于男性($P < 0.001$), 城市高于农村($P < 0.001$), 东部高于中部和西部($P_{\text{两两比较}} < 0.05$), 未患慢性病居民高于患慢性病和不知道者($P_{\text{两两比较}} < 0.05$)(表 2)。知晓率随年龄增加而降低, 随文化程度升高而升高, 趋势均有统计学意义($P_{\text{趋势}} < 0.001$), 从事医疗卫生和教育相关工作的居民知晓率高于其他职业居民($P_{\text{两两比较}} < 0.05$)。

2.2 含糖饮料相关知识各题目正确率情况

含糖饮料相关知识的 4 道题目中, 正确率最低的

是“每天吃添加糖最好不超过 25 g”(22.6%), 正确率最高的是“喝过多的含糖饮料, 可增加肥胖、糖尿病的发生风险”(81.1%)。城乡方面, 城市居民含糖饮料相关知识各题目正确率均高于农村; 在性别方面, 女性正确率(除外“每天吃添加糖最好不超过 25 g”)均高于男性(表 3)。

表 2 2021 年中国 18~64 岁居民含糖饮料相关知识知晓情况

Table 2 Knowledge awareness level of sugar-sweetened beverages among Chinese adults aged 18-64 years in 2021

类别(Characteristic)	样本人口数(Sample)	构成比(Proportion)/%	加权后构成比(Weighted proportion)/%	知晓率(Awareness rate)(95%CI)/%	P
性别(Gender)					<0.001
男(Male)	48709	49.4	50.8	56.2(55.1~57.2)	
女(Female)	49858	50.6	49.2	57.8(56.7~58.9)	
城乡(Residence)*					<0.001
城市(Urban)	40783	41.9	55.2	60.3(59.4~61.3)	
农村(Rural)	56441	58.1	44.8	52.9(51.8~54.0)	
年龄/岁(Age/years)					<0.001#
18~24	17596	17.9	18.3	60.2(58.6~61.7)	
25~34	21259	21.6	21.1	59.4(57.7~61.1)	
35~44	27487	27.9	25.9	59.0(57.5~60.5)	
45~54	20798	21.1	19.7	53.6(51.7~55.3)	
55~64	11427	11.6	15.0	50.8(49.0~52.7)	
文化程度(Education)					<0.001#
小学及以下(Primary school or below)	17552	17.8	14.1	46.1(44.5~47.7)	
初中(Middle school)	35444	36.0	32.0	52.1(51.0~53.4)	
高中/中专/技校(High school/specialized secondary school/technical school)	19407	19.7	20.7	59.0(57.7~60.2)	
大专/职大(Junior college/vocational university)	14511	14.7	17.5	62.1(60.6~63.5)	
本科(Bachelor)	11039	11.2	14.8	67.9(66.6~69.6)	
硕士及以上(Master degree or above)	614	0.6	0.9	73.4(67.5~78.2)	

续表 2

类别 (Characteristic)	样本 人口数 (Sample)	构成比 (Proportion)/ %	加权后构成 比(Weighted proportion)/%	知晓率 (Awareness rate) (95%CI)/%	P
地区(Region)					<0.001
东部(Eastern)	36 631	37.2	43.8	60.4 (59.4~61.3)†	
中部(Central)	27 248	27.6	28.4	53.9 (52.4~55.3)	
西部(Western)	34 688	35.2	27.8	54.8 (53.1~56.4)	
患慢性病状况 (Chronic diseases)					<0.001
未患慢性病(No)	56 276	57.1	56.8	60.3 (59.3~61.3) †	
患慢性病(Yes)	16 844	17.1	18.3	52.7 (51.3~54.1)	
不知道(Unclear)	25 447	25.8	25.0	52.6 (51.2~54.0)	
职业(Occupation)					<0.001
一般职业(Others)	82 320	83.5	80.7	55.5 (54.7~56.3)	
医疗卫生(Medical and health institutions)	5 983	6.1	7.4	68.8 (66.4~71.0) †	
食品、餐饮(Food and restaurant industries)	6 075	6.2	6.8	54.7 (52.3~57.0)	
教育相关 (Education institutions)	4 189	4.2	5.0	67.3 (64.6~69.9) †	
合计(Total)	98 567	100.0	100.0	57.0 (56.2~57.7)	-

[注]*: 城乡分类缺失 1343 人(新疆生产建设兵团调查点未分城乡); #: 趋势检验, $P<0.001$; †: 两两比较, $P<0.05$ 。

[Note]*: 1343 participants missing in residence classification (the variable is not available in Xinjiang Production and Construction Corps survey points); #: Trend test, $P<0.001$; †: Pair-wise comparison, $P<0.05$.

2.3 居民含糖饮料相关知识水平的影响因素

零模型拟合结果显示, 含糖饮料相关知识在居(村)委会水平上存在聚集性($t=25.00$, $P<0.0001$), 适合进行多水平 logistic 回归, 且两水平模型 [Akaike's 信息准则(Akaike information criterion, AIC)=119 974] 比单水平模型(AIC=133 660) 拟合效果更佳。多水平 logistic 回归结果显示, 女性(OR=1.14, 95%CI: 1.11~1.18)、从事医疗卫生(OR=1.36, 95%CI: 1.27~1.45)和教育相关工作(OR=1.16, 95%CI: 1.07~1.24)的调查对象含糖饮料相关知识水平高于男性、一般职业的居民; 中部(OR=0.87, 95%CI: 0.77~0.97)和西部(OR=0.85, 95%CI: 0.75~0.94)地区、患慢性病(OR=0.81, 95%CI: 0.78~0.84)和不知道患慢性病情况(OR=0.75, 95%CI: 0.72~0.78)居民的知识水平低于东部地区、未患慢性病居民。

以 18~24 岁年龄组为参照, 35~44 岁组(OR=1.07, 95%CI: 1.02~1.12) 知识水平较高, 55~64 岁组(OR=0.92, 95%CI: 0.86~0.97) 较低, 25~34 岁组、45~54 岁组与参照组差异无统计学意义; 知识水平随文化程度升高而升高, 趋势有统计学意义($P<0.001$) (表 4)。

表 3 2021 年中国 18~64 岁居民含糖饮料相关知识各题目正确率

Table 3 Correct rate of sugar-sweetened beverages knowledge by topics among Chinese adults aged 18-64 years in 2021

题目(Topic)	合计 (Total)		城市(Urban)		农村(Rural)		合计 (Total)
	男 (Male)	女 (Female)	男 (Male)	女 (Female)	男 (Male)	女 (Female)	
1.加了糖的食物或者饮料应少吃(Food or drinks with added sugar should be eaten sparingly)	78.9	79.7	82.6**	81.1	74.7	77.5**	76.1#
2.每天吃添加糖最好不要超过 25 g(It is best to consume no more than 25 grams of added sugar per day)	22.6	24.9	23.0**	24.0	22.3	19.9**	21.1#
3.喝过多的含糖饮料, 可增加龋齿的发生风险(Excessive intake of sugar-sweetened beverages can increase the risk of dental caries)	69.0	69.9	70.6**	70.2	67.3	67.6**	67.4#
4.喝过多的含糖饮料, 可增加肥胖、糖尿病的发生风险(Excessive intake of sugar-sweetened beverages can increase the risk of obesity and diabetes)	81.1	82.8	84.3**	83.5	77.1	79.1**	78.1#

[注]**: 性别比较, $P<0.001$; #: 城乡比较, $P<0.001$ 。

[Note]**: Comparison of male and female, $P<0.001$; #: Comparison of urban and rural residents, $P<0.001$.

表 4 2021 年中国 18~64 岁居民含糖饮料相关知识多水平 logistic 回归模型

Table 4 Multilevel logistic regression model of knowledge related to sugar-sweetened beverages among Chinese residents aged 18-64 years in 2021

变量 (Variable)	含糖饮料 相关知识 (Knowledge level of sugar-sweetened beverages)			每天吃添加糖 最好不超过 25 g (Awareness of "It is best to consume no more than 25 grams of added sugar per day")		
	OR	95%CI	P	OR	95%CI	P
截距(Intercept)	—	—	0.280	—	—	<0.001
性别(Gender)						
男(Male)	1.00	—	—	1.00	—	—
女(Female)	1.14	1.11~1.18	<0.001	0.87	0.84~0.90	<0.001
城乡(Residence)						
城市(Urban)	1.00	—	—	1.00	—	—
农村(Rural)	0.95	0.86~1.04	0.342	0.94	0.84~1.05	0.283

续表 4

变量 (Variable)	含糖饮料 相关知识 (Knowledge level of sugar-sweetened beverages)			每天吃添加糖 最好不超过25 g (Awareness of "It is best to consume no more than 25 grams of added sugar per day")		
	OR	95%CI	P	OR	95%CI	P
年龄/岁(Age/ years)						<0.001[#]
18~24	1.00	—	—	1.00	—	—
25~34	1.05	1.00~1.09	0.055	0.86	0.82~0.91	<0.001
35~44	1.07	1.02~1.12	0.003	0.83	0.78~0.87	<0.001
45~54	0.96	0.91~1.01	0.145	0.78	0.73~0.82	<0.001
55~64	0.92	0.86~0.97	0.007	0.74	0.68~0.79	<0.001
文化程度(Education)			<0.001[#]			<0.001[#]
小学及以下 (Primary school or below)	1.00	—	—	1.00	—	—
初中 (Middle school)	1.21	1.15~1.26	<0.001	1.10	1.04~1.16	<0.001
高中/中专/技校 (High school/ specialized secondary school/ technical school)	1.57	1.48~1.65	<0.001	1.17	1.10~1.25	<0.001
大专/职大(Junior college/ vocational university)	1.76	1.65~1.86	<0.001	1.21	1.12~1.30	<0.001
本科(Bachelor)	2.14	1.99~2.29	<0.001	1.23	1.13~1.34	<0.001
硕士及以上 (Master degree or above)	2.68	2.14~3.23	<0.001	1.33	1.05~1.60	<0.001
地区(Region)						
东部(Eastern)	1.00	—	—	1.00	—	—
中部(Central)	0.87	0.77~0.97	0.021	0.93	0.80~1.05	0.277
西部(Western)	0.85	0.75~0.94	0.004	1.11	0.97~1.25	0.118
患慢性病状况 (Chronic diseases)						
未患慢性病(No)	1.00	—	—	1.00	—	—
患慢性病(Yes)	0.81	0.78~0.84	<0.001	0.90	0.85~0.94	<0.001
不知道(Unclear)	0.75	0.72~0.78	<0.001	0.96	0.91~1.00	0.064
职业(Occupation)						
一般职业(Others)	1.00	—	—	1.00	—	—
医疗卫生 (Medical and health institutions)	1.36	1.27~1.45	<0.001	1.18	1.09~1.27	<0.001
食品、餐饮 (Food and restaurant industries)	0.98	0.92~1.04	0.462	1.15	1.07~1.23	<0.001
教育相关 (Education institutions)	1.16	1.07~1.24	<0.001	1.07	0.98~1.16	0.105

[注]#: 趋势检验, $P < 0.001$ 。

[Note]#: Trend test, $P < 0.001$.

对正确回答 4 道题的影响因素分别进行分析, 发现正确回答“每天吃添加糖最好不超过 25 g”的影响因素中, 女性 (OR=0.87, 95%CI: 0.84~0.90) 和随着年龄增

加会导致正确回答此道题的可能性更低(趋势 $P < 0.001$) (表 4)。正确回答其余 3 道题与含糖饮料相关知识总体水平影响因素基本一致, 结果未列出。

3 讨论

近几十年来, 全球含糖饮料生产和消费呈增长趋势, 其中亚太地区虽然销售总量低, 但逐年上升趋势明显^[17]。2000—2021 年我国饮料产量从 1490 万 t 上涨到 18334 万 t, 其中含糖饮料占 95% 以上的市场份额^[18-19], 21 世纪以来的高增长速度不容忽视。

根据知信行理论, 只有在掌握正确知识、客观证据的基础上, 才可能动摇或消除错误观念^[6], 最终转化为行为。本研究来自首次在全国范围内开展的营养健康知识知晓率调查, 将正确回答含糖饮料相关知识的 3 道题目及以上 (3/4, 75%) 作为判定知晓依据, 发现 18~64 岁居民含糖饮料相关知识知晓率为 57.0%, 高于同期使用同样判定方法的中国居民膳食推荐相关知识的知晓率水平 (14.7%)^[12], 与国内个别地区的含糖饮料单个问题正确回答率接近 (55.8%~69.7%)^[20-22], 而其他亚太地区以正确回答 50% 题目作为知晓依据其含糖饮料知识水平为 51.8% (共 10 道题, 正确回答 5 道及以上)^[23]。本研究涉及数值的量化题目“每天吃添加糖最好不超过几克”正确率最低, 不足四分之一; 正确率最高的是对含糖饮料增加肥胖和糖尿病风险的认识 (超过 80%), 高于对含糖饮料可引起龋齿的认识 (70%), 结果与美国的研究相似 (正确率分别为 75% 和 57%)^[9]。尽管居民对含糖饮料负面健康结果的认识较高, 但含糖饮料不合理摄入的行为却居高不下, 含糖饮料的知行不一致现象在马来西亚研究^[23]中也有发现, 推测仅凭健康教育工作不足以改变含糖饮料过量摄入的行为^[20], 因此可以考虑结合其他公共卫生措施, 例如商品包装的正面标签 (front-of-pack labels, FOP) 或销售点标牌 (point-of-sale signage, POS)^[24]。

本研究经多水平零模型对两水平——社区水平 [居(村)委会] 随机效应进行检验, 表明居民相关知识水平在社区水平上具有聚集性, 使用两水平模型更合适, 可降低传统 logistic 回归模型的偏倚和不能解释部分占总变异的比, 模拟效果更优^[25-26]。本研究发现含糖饮料相关知识水平女性比男性高, 与我国膳食推荐相关知识^[12]和健康素养水平^[27-28]以及国外含糖饮料相关知识^[9]性别特点相似, 可能因为女性更加关注健康和营养问题。去除其他影响因素后, 相关知识水平在年龄方面先上升后下降, 与健康素养研究^[28]相似,

说明低龄、高龄组较中年组更应受到关注。但其中量化题目“每天吃添加糖最好不超过 25 g”不同,女性和年龄增长更可能回答错误,可能原因是男性、年轻人对数字更敏感,而女性虽然很了解含糖饮料的健康危害和知道应该少喝含糖饮料,但对具体数量推荐并不清楚;在进行相关营养健康教育干预时,需要针对不同内容考虑重点人群。

本次发现东部居民含糖饮料相关知识水平高于中、西部,知识水平随文化程度升高而升高,与同期膳食推荐相关知识知晓率^[12]和中国居民健康素养^[27]研究中的特点一致,但研究显示液体饮料的消费同样是东部高于中、西部且随学历升高而升高^[29],可能因为即使东部居民具备了含糖饮料相关知识,但由于较高的购买力和商品可及性仍会使其易于选择和消费。说明不能仅仅依靠提高知识水平来达到改善行为的目的,国际范围内也出现了很多减少购买含糖饮料的公共卫生政策,包括征税^[30]、食品重新配方^[31]、监管营销和广告^[32]、规定包装的标签^[24]以及其他措施。

本研究来自全国范围开展的调查,具有较好的代表性,但也存在一定局限性:第一,横断面调查的研究方法本身存在局限性,不能进行因果判断,基于此的影响因素实际上为相关因素分析;第二,问卷填写的主观性可能导致信息偏倚;第三,对部分混杂因素如经济收入、居住环境等仍考虑欠缺。

综上,本研究显示 2021 年中国 18~64 岁居民含糖饮料相关知识水平低,尤其是添加糖摄入量,对含糖饮料负面健康结果的认识较高。居民对含糖饮料的知行出现了不一致,建议进一步开展研究,探讨改善含糖饮料消费行为的有效措施。

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