

#### **GAPC 2023**

# Who supports the alcohol control policies recommended by

# the World Health Organization in South Korea?

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- Background
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### **Alcohol Consumption of South Korea**

- Alcohol consumption among adults aged 15 years and older was 7.9 litres in 2020, which is lower than the average of OECD countries at 8.4 litres(OECD, 2022)
- However, heavy episodic drinking rate was 47.7% in 2016 which puts Korea at 10th among 38 OECD countries(WHO, 2018)
- As a result, alcohol consumption is currently third leading cause of death and disability in Korea causing approximately 13,200 deaths annually (GBD 2016 Alcohol Collaborators 2018)



\* Israel, Colombia, Greece, Chile, Italy, Belgium, Portugal, Germany, Poland, Luxembourg figures for 2019







### Alcohol Control Policies of South Korea

#### <Advertising>

- The expressions that cannot be used for alcohol advertisement and the media which alcohol advertising cannot be broadcast were expanded in 2020
- However, it is common for celebrities who can influence youth, such as idols, actors, and sports players to become models for alcohol advertisement



\* Source : Lotte chilsung beverage co.

https://company.lottechilsung.co.kr/ kor/company/news/view.do?detailsK ey=978&f=&q=



https://en.yna.co.kr/view/PY H20210415046400325







#### Alcohol Control Policies of South Korea

#### <Taxes and Pricing>

- The method of imposing taxes on alcoholic beverages has changed to mixed methods using both ad valorem and volumetric taxes in 2020
  - \* volumetric : beer, takju(Korean traditional alcoholic beverage), \* ad valorem : the others
- Despite the liquor tax, alcoholic beverages in Korea remain relatively cheap. While prices for carbonated drinks and coffee increased by 208% and 57% respectively between 2005 and 2018, the prices of alcoholic beverages increased between 4% and 36%, depending on the type of alcohol product(OECD, Tackling harmful alcohol use in OECD Reviews of Public Health: Korea, 2020)



#### Alcohol Control Policies of South Korea

#### <Availability >

- With the amendment of the National Health Promotion Act, local governments can designate alcohol-free zones in public places by ordinance from June 2021
- However, restrictions on the sale hours or places of alcoholic beverages are not being implemented. In other words, it is possible to buy alcohol beverages any supermarkets, restaurants, pubs, club, etc at any time of the day



◀ 24 hours open

▼ "Chicken and Beer" picnic at Han River Park



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#### Objective

• To examine the characteristics of those who support alcohol control policies

#### Data collection

- Data from the "National Survey on Alcohol Consumption" conducted by Korea Health Promotion Institute in December 2022
- Stratified sampling by age, gender, and region was used to select 3,000 adults aged 20 to under 70
- The survey was conducted online using a structured questionnaire

# Method



#### Variables

#### < Dependent variables : support for alcohol policies >

- Support for regulations on advertising and promotion of alcohol products
  - The participants were asked what are their thoughts on
    - 1) restricting alcohol advertisements featuring celebrities,
  - 2) limiting alcohol advertisements that can be appealing to children or teenagers through the use of
  - characters(figures), and 3) limiting promotional activities
  - such as discounted sales and giveaways of gifts, prizes, or
  - cash incentives when purchasing alcoholic beverages



Example of advertisement using charaters
 \* Source : Official.jinro(instragram)





#### Variables

#### < Dependent variables : support for alcohol policies (continued) >

- Support for taxes and pricing policy
  - The participants were asked what are their thoughts on 1) increasing selling price of alcoholic beverages and 2) paying taxes when purchasing alcoholic beverages as a means to address social issues caused by excessive drinking
- Support for alcohol availability
  - The participants were asked what are their thoughts on 1) limiting alcohol sales hour and 2) limiting places of sales

# Method



#### Variables

#### < Independent variables >

- Sociodemographic characteristics
  - Age, Gender, Education level , Family income level
- Health behaviours
  - Alcohol consumption were measured by Alcohol Used Disorders Identification Test (AUDIT) (World Health Organization 2001)
  - Smoking was measured by the question asking "Do you currently smoke (including cigarettes, E- cigarettes and etc)" with possible answers provided (never smoker, former smoker, occasional smoker, daily smoker)
  - Physical activity was measured using Global Physical activity questionnaire(GPAQ) developed by WHO (World Health Organization, 2021)
  - Diet was measured by Mini dietary assessment index (Kim et al., 2003)





#### Variables

- < Independent variables (continued) >
- Health states
  - Subjective health states were measured by the question asking "How is your health in general?" with possible answers provided (likert scale ranging from "very bad" to "very good")
  - Subjective stress was measured by the question asking "how much stress do you feel in general?" with possible answers provided (likert scale ranging from "not stressed at all" to "highly stressed")
  - Level of depression was measured by two shorter form of the Center for Epidemiologic Studies Depression Scale (CES-D-10)





#### Statistical analysis

- Means and standard deviations were calculated for continuous variables, while frequencies and proportions were calculated for categorical variables
- Binary logistic regression was conducted to evaluate association between support for alcohol regulation policies and sociodemographic characteristics, health behaviors, and health states
- All statistical analyses were performed with SPSS Statistics Premium GradPack 28 for Windows and Mac (IBM SPSS, Armonk, NY, USA) and the significance level of p<0.05 was considered

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## Results

# Sociodemographic charateristics

- Participants average age was 45.42, while 50.9% were male
- 67.8% had education level of below university, while 9.4% were postgraduate and above
- 28.4% had family income of 4 million KRW to 6 million KRW, while 27.8% were in 2 million KRW to 4 million KRW

<Table 1> Sociodemographic characteristics of participants

	/ariables	N (%)	$\text{Mean} \pm \text{SD}$
Sociodemographic characte	eristics		
Age	20-29	523(17.4%)	
	30-39	534(17.8%)	
	40-49	653(21.8%)	45.42±13.05
	50-59	701(23.4%)	
	60-69	589(19.6%)	
Gender	Male	1,526(50.9%)	
	Female	1,474(49.1%)	-
Education	Below middle school	14(0.5%)	
	Middle school	30(1.0%)	
	High school	638(21.3%)	-
	University	2,035(67.8%)	
	Postgraduate and above	283(9.4%)	
Family Income(monthly)	<₩2 million	262(8.7%)	
	₩ 2 ≤ income < ₩4 million	833(27.8%)	
	₩4≤income<₩6 million	853(28.4%)	
	₩6≤income<₩8 million	572(19.1%)	-
	₩ 8 ≤ income < ₩10 million	285(9.5%)	
	More than ₩ 10 million	195(6.5%)	





#### Health behaviours

- 2,480 out 3,000 had drinking experience in the past year and their average AUDIT score of 9.96
- 53.0% reported never smoked, 24.6% were former smoker, 7.9% were occasional smoker, and 14.4% were daily smoker
- The average amount of physical activity was 4,057.92 MET-minutes/week, while the average mini dietary assessment index score was 29.36

<Table 2> Health behavious, health states of participants

	Variables	N (%)	$\text{Mean}\pm\text{SD}$
Health behaviours			
Alcohol consumptio	n (AUDIT score, 0~40)	-	9.96±7.67
Smoking	Never smoker	1,590(53.0%)	
	Former smoker	739(24.6%)	
	Occasional smoker	238(7.9%)	-
	Daily smoker	433(14.4%)	
Physical Activity(Tot mir	al physical activity MET nutes/week)	-	4,057.92±5,824.10
Diet (mini dietary as	sessment index score, 10~50)	-	29.36±5.36
Health states			
Subjective health st	ates (1~5)		3.13±0.70
Subjective Stress (17	~5)		2.28±0.67
Depression (CES-D-2	10 score, 0~10)		2.92±2.77



#### Health states

- The average score for subjective health states was 3.13
- The average score for subjective stress was 2.28
- The average score for level of depression was 2.92

	Variables	N (%)	$\text{Mean}\pm\text{SD}$
Health behaviours			
Alcohol consumpt	ion (AUDIT score, 0~40)	-	9.96±7.67
Smoking	Never smoker	1,590(53.0%)	
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	Occasional smoker	238(7.9%)	-
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Physical Activity(To m	otal physical activity MET inutes/week)	-	4,057.92±5,824.10
Diet (mini dietary a	assessment index score, 10~50)	-	29.36±5.36
Health states			
Subjective health s	states (1~5)		3.13±0.70
Subjective Stress (	1~5)		2.28±0.67
Depression (CES-D	-10 score, 0~10)		2.92±2.77

#### <Table 2> Health behavious, health states of participants (continued)





#### Support for alcohol policies

- Support for restricting alcohol advertisements using characters and restricting alcohol advertisements using celebrities were high at 66.2% and 50.9%, respectively
- On the other hand, support for increasing alcohol prices was 34.3%, restricting the sale hours of alcohol was 42.9%, and increasing alcohol tax was 45.3% that the level of support were relatively low

	Advertising and Promotion			Taxes a	Taxes and Pricing		Availability	
	Restriction ads featuring celebrities	Restriction ads featuring characters	Restriction promotional activities (discount sale, free gift etc)	Increasing tax	Increasing price	Restriction hours of alcohol sale	Restriction places of alcohol sale	
Supporter N (%)	1,527 (50.9%)	1,985 (66.2%)	1,410 (47.0%)	1,360 (45.3%)	1,030 (34.3%)	1,286 (42.9%)	1,488 (49.6%)	
Not Supporter N (%)	1,473 (49.1%)	1,015 (33.8%)	1,590 (53.0%)	1,640 (54.7%)	1,970 (65.7%)	1,714 (57.1%)	1,512(50.4%)	

<Table 3> Percentage of participants who support policy options



<Table 4> Odds ratios(95% confidence Intervals) and P value of support for policy options

### Binary logistic regression analysis

- For regulations on advertising and promotion of alcohol products policies
  - Restricting alcohol advertisements featuring
    celebrities was associated with age, gender, family
    income, smoking, and subjective stress that people
    who are older (p< 0.001), female (p = 0.016), wealthy</li>
    (p = 0.048), never smoker (p = 0.038, p = 0.003), and
    having higher level of subjective stress (p < .001)</li>
    supported restricting celebrities advertisement

	<b>Restriction ads featuring celebrities</b>			
	OR	95% CI	P value	
Sociodemographic characteristics				
Age	1.017	1.009-1.024	< 0.001	
Gender (ref = male)	1.284	1.048-1.573	0.016	
Education (ref = below middle school)				
middle school	0.379	0.026-5.569	0.480	
High school	0.738	0.063-8.814	0.810	
University	0.843	0.071-10.052	0.892	
Postgraduate and above	1.127	0.093-13.677	0.925	
Family Income (ref = < $\mathbb{W}$ 2 million)				
₩ 2 ≤ income < ₩4 million	1.185	0.801-1.754	0.395	
₩ 4 ≤ income < ₩ 6 million	1.252	0.848-1.850	0.258	
₩ 6 ≤ income < ₩ 8 million	1.167	0.775-1.755	0.460	
₩8≤income<₩10 million	1.585	1.004-2.503	0.048	
More than ₩ 10 million	1.469	0.903-2.391	0.121	
Health behaviours				
Alcohol consumption (AUDIT score)	0.990	0.977-1.004	0.168	
Smoking (ref = Never smoker)				
Former smoker	0.775	0.609-0.987	0.038	
Occasional smoker	0.725	0.507-1.038	0.079	
Daily smoker	0.643	0.481-0.859	0.003	
Physical Activity (Total physical activity MET-minutes/week)	1.000	1.000-1.000	0.445	
Diet (mini dietary assessment index score)	1.013	0.996-1.031	0.131	
Health states				
Subjective health states	1.023	0.888-1.178	0.755	
Subjective stress	1.309	1.120-1.530	< 0.001	
Depression (CES-D-10 score)	0.982	0.944-1.021	0.351	



<Table 5> Odds ratios(95% confidence Intervals) and P value of support for policy options

### Binary logistic regression analysis

- For regulations on advertising and promotion of alcohol products policies (contined)
  - Limiting alcohol advertisements using characters was associated with age, alcohol consumption, smoking, stress, and depression that individuals who are older (p < .001), consuming less alcohol (p = .002), never smoker (p < .001), having high level of subjective stress (p = .002), and high level of depression (p = .005) supported such policy

	Restriction ads featuring characters			
	OR	95% CI	P value	
Sociodemographic characteristics				
Age	1.034	1.026-1.043	< 0.001	
Gender (ref = male)	1.145	0.919-1.427	0.226	
Education (ref = below middle school)				
middle school	0.000	0.000-	0.999	
High school	0.000	0.000-	0.999	
University	0.000	0.000-	0.999	
Postgraduate and above	0.000	0.000-	0.999	
Family Income (ref = < $orall 2$ million)				
₩ 2 ≤ income < ₩4 million	1.011	0.662-1.545	0.958	
₩ 4 ≤ income < ₩ 6 million	0.972	0.638-1.482	0.896	
₩ 6 ≤ income < ₩ 8 million	1.393	0.890-2.180	0.147	
₩ 8 ≤ income < ₩10 million	0.848	0.520-1.384	0.510	
More than ₩ 10 million	1.599	0.930-2.752	0.090	
Health behaviours				
Alcohol consumption (AUDIT score)	0.977	0.963-0.992	0.002	
Smoking (ref = Never smoker)				
Former smoker	0.539	0.416-0.698	< 0.001	
Occasional smoker	0.694	0.474-1.014	0.059	
Daily smoker	0.739	0.541-1.010	0.057	
Physical Activity (Total physical	1.000	1.000-1.000	0.445	
Diot (mini diotony assossment index				
scoro)	0.989	0.971-1.008	0.258	
Health states				
Subjective health states	1 043	0 896-1 216	0 585	
Subjective stress	1 317	1 110-1 562	0.002	
Depression (CES-D-10 score)	0.942	0 904-0 982	0.002	
	0.342	0.00+0.002	0.005	



### Binary logistic regression analysis

- For regulations on advertising and promotion of alcohol products policies (contined)
  - Limiting promotional activities was associated with age, gender, alcohol consumption, smoking that individuals who are older (p < .001), female (p = .007), consuming less alcohol (p = .009), and never smoker (p = .0045) supported such policy</li>

	Restri	ction promotional ac	tivities
-	OR	95% CI	P value
Sociodemographic characteristics			
Age	1.014	1.007-1.022	< 0.001
Gender (ref = male)	1.323	1.080-1.620	0.007
Education (ref = below middle school)			
middle school	0.487	0.034-6.871	0.594
High school	0.484	0.042-5.561	0.560
University	0.655	0.057-7.521	0.734
Postgraduate and above	0.576	0.049-6.729	0.660
Family Income (ref = < ₩2 million)			
₩ 2 ≤ income < ₩4 million	1.220	0.822-1.811	0.322
₩ 4 ≤ income < ₩ 6 million	1.285	0.868-1.903	0.210
₩ 6 ≤ income < ₩ 8 million	1.131	0.750-1.705	0.558
₩ 8 ≤ income < ₩10 million	1.116	0.707-1.762	0.638
More than ₩ 10 million	1.391	0.855-2.261	0.184
Health behaviours			
Alcohol consumption (AUDIT score)	0.982	0.968-0.995	0.009
Smoking (ref = Never smoker)			
Former smoker	0.873	0.685-1.111	0.270
Occasional smoker	0.895	0.625-1.281	0.545
Daily smoker	0.741	0.553-0.993	0.045
Physical Activity (Total physical activity MET-minutes/week)	1.000	1.000-1.000	0.710
Diet (mini dietary assessment index score)	1.009	0.991-1.026	0.333
Health states			
Subjective health states	1.065	0.925-1.226	0.384
Subjective stress	1.091	0.934-1.274	0.270
Depression (CES-D-10 score)	1.028	0.989-1.069	0.165

<Table 6> Odds ratios(95% confidence Intervals) and P value of support for policy options



#### Binary logistic regression analysis

- For pricing and taxation policy
  - Support for increasing alcohol price was associated with gender, alcohol consumption, smoking, subjective stress, and depression that people who are female (p = .044), consuming less alcohol (p = .017), never smoker (p = .001), having higher level of subjective stress (p = .028), and having higher level of depression (p < .001) supported pricing policy

		Increasing price	
	OR	95% CI	P value
Sociodemographic characteristics			
Age	1.005	0.997-1.013	0.246
Gender (ref = male)	1.248	1.006-1.549	0.044
Education (ref = below middle school)			
middle school	0.985	0.068-14.322	0.991
High school	0.717	0.061-8.371	0.791
University	1.046	0.090-12.181	0.971
Postgraduate and above	1.037	0.087-12.308	0.977
Family Income (ref = < ₩2 million)			
₩ 2 ≤ income < ₩4 million	1.221	0.792-1.884	0.366
₩ 4 ≤ income < ₩ 6 million	1.254	0.815-1.931	0.303
₩ 6 ≤ income < ₩ 8 million	1.150	0.732-1.806	0.545
₩8 ≤ income < ₩10 million	1.512	0.925-2.473	0.099
More than ₩ 10 million	1.168	0.685-1.990	0.569
Health behaviours			
Alcohol consumption (AUDIT score)	0.982	0.967-0.997	0.017
Smoking (ref = Never smokero			
Former smoker	0.921	0.711-1.192	0.532
Occasional smoker	0.900	0.613-1.321	0.590
Daily smoker	0.577	0.413-0.806	0.001
Physical Activity (Total physical activity MET- minutes/week)	1.000	1.000-1.000	0.575
Diet (mini dietary assessment index score)	1.015	0.996-1.034	0.118
Health states			
Subjective health states	1.077	0.926-1.253	0.335
Subjective stress	1.202	1.020-1.416	0.028
Depression (CES-D-10 score)	1.075	1.031-1.120	< 0.001

<Table 7> Odds ratios(95% confidence Intervals) and P value of support for policy options

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#### Results

		Increasing tax	
	OR	95% CI	P value
Sociodemographic characteristics			
Age	1.006	0.999-1.014	0.093
Gender (ref = male)	1.310	1.068-1.605	0.009
Education (ref = below middle school)			
middle school	1.817	0.125-26.322	0.662
High school	1.515	0.128-17.881	0.741
University	2.111	0.179-24.882	0.553
Postgraduate and above	2.363	0.197-28.311	0.497
Family Income (ref = < ₩2 million)			
₩ 2 ≤ income < ₩4 million	1.070	0.717-1.597	0.741
₩ 4 ≤ income < ₩ 6 million	1.347	0.905-2.005	0.142
₩ 6 ≤ income < ₩ 8 million	1.119	0.738-1.698	0.596
₩ 8 ≤ income < ₩10 million	1.275	0.804-2.023	0.302
More than ₩ 10 million	1.448	0.885-2.369	0.141
Health behaviours			
Alcohol consumption (AUDIT score)	0.984	0.971-0.998	0.029
Smoking (ref = Never smokero			
Former smoker	0.773	0.606-0.985	0.037
Occasional smoker	0.579	0.401-0.836	0.004
Daily smoker	0.511	0.378-0.691	< 0.001
Physical Activity (Total physical activity MET-	1 000	1 000-1 000	0 182
minutes/week)	1.000	1.000-1.000	0.102
Diet (mini dietary assessment index score)	1.008	0.991-1.026	0.355
Health states			
Subjective health states	1.133	0.983-1.307	0.086
Subjective stress	1.242	1.062-1.453	0.007
Depression (CES-D-10 score)	1.032	0.992-1.073	0.119

#### <Table 8> Odds ratios(95% confidence Intervals) and P value of support for policy options

# Binary logistic regression analysis

• For pricing and taxation policy (continued)

 Support for increasing alcohol tax was associated gender, alcohol consumption, smoking, and stress that people who are female (p = .009), drinking less alcohol (p = .029), never smoker (all ps < .005), and having higher level of stress (p = .007) supported such policy





	Binary	logistic	regression	analysis	
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- For availability policy
  - Support for limiting alcohol sales hours was associated with age, gender, family income, alcohol consumption, smoking, diet, and subjective stress meaning people who are older (p < .001), female (p = .013), wealthier (p = .011), consuming less alcohol (p = .021), never smoker (p = .010), having better diet (p = .001), and having higher level of subjective stress (p = .003) supported such policy

	Restriction hours of alcohol sale		
	OR	95% CI	P value
Sociodemographic characteristics			
Age	1.017	1.009-1.024	< 0.001
Gender (ref = male)	1.302	1.058-1.602	0.013
Education(ref=below middle school)			
middle school	1.616	0.111-23.454	0.725
High school	1.663	0.141-19.599	0.686
University	2.359	0.200-27.765	0.495
Postgraduate and above	2.326	0.194-27.838	0.505
Familiy income(ref = < ₩2 million)			
₩ 2 ≤ income < ₩4 million	1.506	0.994-2.283	0.054
₩ 4 ≤ income < ₩ 6 million	1.433	0.947-2.168	0.089
₩ 6 ≤ income < ₩ 8 million	1.407	0.913-2.166	0.121
₩8 ≤ income < ₩10 million	1.537	0.955-2.473	0.077
More than ₩ 10 million	1.923	1.162-3.184	0.011
Health behaviours			
Alcohol consumption (AUDIT score)	0.983	0.969-0.997	0.021
Smoking(ref=never smoker)			
Former smoker	0.721	0.562-0.925	0.010
Occasional smoker	0.782	0.541-1.131	0.192
Daily smoker	0.773	0.573-1.044	0.093
Physical Activity (Total physical activity MET- minutes/week)	1.000	1.000-1.000	0.944
Diet (mini dietary assessment index score)	1.029	1.011-1.048	0.001
Health states			
Subjective health states	1.087	0.942-1.256	0.254
Subjective stress	1.269	1.083-1.488	0.003
Depression (CES-D-10 score)	1.015	0.976-1.056	0.459

<Table 9> Odds ratios(95% confidence Intervals) and P value of support for policy options



	Restriction places of alcohol sale		
	OR	95% CI	P value
Sociodemographic characteristics			
Age	1.014	1.007-1.022	< 0.001
Gender (ref = male)	1.101	0.899-1.350	0.352
Education(ref=below middle school)			
middle school	3.007	0.210-43.033	0.417
High school	2.395	0.206-27.831	0.485
University	3.282	0.283-38.110	0.342
Postgraduate and above	3.105	0.263-36.637	0.368
Familiy income(ref = < ₩2 million)			
₩ 2 ≤ income < ₩4 million	1.398	0.943-2.074	0.096
₩4 ≤ income < ₩6 million	1.338	0.903-1.981	0.146
₩ 6 ≤ income < ₩ 8 million	1.141	0.757-1.721	0.528
₩ 8 ≤ income < ₩10 million	1.265	0.801-1.997	0.314
More than ₩ 10 million	1.510	0.927-2.459	0.098
Health behaviours			
Alcohol consumption (AUDIT score)	0.970	0.957-0.984	< 0.001
Smoking(ref=never smoker)			
Former smoker	0.790	0.620-1.016	0.056
Occasional smoker	0.795	0.555-1.139	0.212
Daily smoker	0.810	0.606-1.083	0.155
Physical Activity (Total physical activity MET- minutes/week)	1.000	1.000-1.000	0.554
Diet (mini dietary assessment index score)	1.014	0.997-1.032	0.107
Health states			
Subjective health states	1.111	0.965-1.279	0.144
Subjective stress	1.317	1.126-1.540	0.001
Depression (CES-D-10 score)	1.025	0.986-1.065	0.219

#### <Table 10> Odds ratios(95% confidence Intervals) and P value of support for policy options

#### Binary logistic regression analysis

- For availability policy (continued)
  - Support for limiting sales places policy was associated with age, alcohol consumption, and subjective stress that people who are older (p <.001), consuming less alcohol (p <.001), and having higher level of stress (p =.001) supported such policy

# Conclusions



#### Conclusions

- Individuals tend to support policies (such as restrictions on alcohol advertising) that do not directly impact their own alcohol consumption. On the other hand, policies (such as limitations on alcohol sales hours, increases in alcohol prices, and alcohol tax hikes) that directly affect their own alcohol consumption received less support
- Factors influencing support for alcohol regulation policies included higher age, being female, lower levels of alcohol consumption, absence of smoking experience, and higher levels of stress

# Conclusions



#### Discussion

- Despite receiving the lowest support, increase of alcohol price and restriction of sale hours are the most effective potent measures in preventing and reducing harmful use of alcohol (WHO, 2018). Therefore, it is imperative to enhance the general public's support in order to successfully introduce such policies
  - According to previous studies, beliefs regarding the harms caused by alcohol consumption are significant predictors of support (Storvoll et al, 2014, 2015; Buykx et al, 2015)
  - Applying these findings to the Korean context, considering that 66.4% of the Korean population is unaware of the fact that alcohol is a Group 1 carcinogen(National Cancer Center, 2023), raising awareness about the strong association between alcohol consumption and cancer risk could potentially enhance support for alcohol regulation policies



# Thank you for your attention

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