

Alcohol Policy Compliance among retailers in Bhutan: A multisite community intervention study

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Abstract

Alcohol use is a major public health problem in Bhutan. Compliance with regulations at point of sales is an important strategy in alcohol control. Retail outlets were briefed on sales regulations and provided notification with rules and directed to display in the premises. The extent to which licensed alcohol outlets responded to possible alcohol purchase was assessed through the use of young proxy-purchasers, adults feigning alcohol intoxicated and sober adults. A total of 854 visits (pre versus post visits) were made across four district towns. Two towns (Damphu town in Tsirang district and Pema Gatshel town in Pema Gatshel district) received pre- and post-intervention purchase surveys while other two neighboring towns (Khuruthang town in Punakha and Bajo town in Wangdue) were administered only baseline surveys.

Results: Retailers rarely checked the age and/or identification (ID) of the proxy-purchasers before the intervention. There was 22.7% (8.6, 37) percent increase in compliance with laws after the intervention. While some strategies are suggested, the strongest and most effective measure to prevent under-age drinking and over service to intoxicated, more rigorous enforcement of existing liquor laws are required.

Conclusion: Alcohol control requires ongoing government enforcements supplemented by public awareness and knowledge.

Background

Alcohol use is a major public health problem globally. In Bhutan, alcohol-related liver disease is the number one cause of mortality accounting for 11% of the total deaths that occurred in health facilities in 2019¹. Mortality is even higher after accounting for alcohol-related deaths due to heart disease, stroke, injuries, road traffic deaths, suicides and road traffic crashes.

Drinking is pervasive in Bhutanese society, and most drinkers start at an early age. One third (33.1%) of adult Bhutanese are current drinkers (last 30 days)² which is higher compared to figures in neighbouring countries (Nepal 18%, Myanmar 20% and Sri Lanka 18% and India 11%). Alcohol consumption is also highly prevalent among young people. A Bhutan school-based survey conducted in 2016 found that 24% of Bhutanese students below 18 years of age were current drinkers compared to their counterparts in Nepal (5.5%); Myanmar (4.7%) and Sri Lanka (3.2%)³. Among underage students, 16.2% of females were current users in Bhutan contrary to other countries in South -East Asia where consumption among females is negligible⁴. Nearly 17% of the Bhutanese population (half of all current drinkers) are heavy episodic drinkers⁵. Four percent of the population reported needing their first drink in the morning indicating alcohol dependance⁵. Addition to ill health, excessive drinking has significant social and economic consequences⁶.

Bhutan has a comprehensive set of alcohol laws which include restriction of sales and supply to those under the age of 18; restriction of sales to alcohol-intoxicated individuals; prohibition of alcohol sales before 1 p.m. and after 10 p.m. Alcohol sales is prohibited on Tuesday, and drink driving regulated at blood alcohol level of 0.8% and 0% for commercial drivers⁷. Aside from the drink driving laws, enforcement of alcohol sales regulations is perceived to be poorly enforced which allows alcohol to be easily accessible during non-legal hours/day, and for any customer irrespective of age and intoxication level. A study conducted in 2013 by Dorji et al. documented widespread breach of the practices in sales and supplies of alcohol in premises in the capital city of Thimphu⁸.

Educating alcohol retailers on the alcohol sales requirements and legal consequences of violations combined with presence of enforcement is known to improve retailer's compliance⁸.

This study aimed to: (1) assess current levels of compliance with alcohol sales regulation in four townships in Bhutan, (2) evaluate the effect of alcohol legal information education and enforcement intervention(3) assess factors associated with compliance of legal alcohol sales amongst licensed retailers.

Methodology

Evaluation design

We used a pre-and post-test community intervention design covering all alcohol retailers both on premise (bar, hotel, restaurant, karaoke bars) and off-premise (grocery shops). All establishments that had alcohol sales permits were selected from four district towns: Pema Gatshel town in Pema Gatshel district in the east, Damphu town in Tsirang district in the central and adjoining Khuruthang town in Punakha district and Bajo town in Wangdue district in the western region. The four districts were selected to represent the three geographical administrative regions commonly used as a reference in the country.

Proxy Purchasers

Outlets' willingness to sell alcohol was assessed using proxy purchasers comprising underage-looking purchasers (<18 years), sober adults and adults acting alcohol intoxicated. Four underage-looking young adults (2 females and 2 males) and 4 adults (2 females and 2 males) were recruited in Damphu town. In Pema Gatshel town, six purchasers – two underage-looking young adults (2 females and 2 males) and 4 adults (2 females and 2 males) were recruited. In Bajo and Khuruthang towns, eight underage-looking purchasers (2 females and 6 males) and eight adult purchasers were recruited. Purchasers were recruited based on the acting skills. Under-age looking young adults were identified as below 18 years by a group of judges. Proxy purchasers were trained on survey instruments using purchasing scenarios. The duration of training varied from two days in Damphu town to three hours training in Pema Gatshel, and one day for Bajo and Khuruthang towns. The same purchasers completed the purchase surveys in Bajo and Khuruthang. Separate group of purchasers were recruited in pre- and -post intervention purchase surveys in intervention districts of Pema Gatshel town and Damphu town.

The proxy clients attempted purchase at illegal hours (before 1 pm during non-dry days); during dry day (Tuesday) and during legal hours (1-10 pm on a non-dry day) for underage looking and pseudo intoxicated adults. Legal visits between 1-10 p.m. by sober adults were included for comparison too. Every purchase attempt was made by a pair of proxy clients. After leaving the establishment, the purchasers were required to report to an enumerator who waited at a distance. The enumerator filled the survey tool as reported by the purchasers in their presence. Pre-intervention purchases were conducted in August 2019 and post-intervention purchase surveys in March 2020. Only pre-intervention purchase surveys were completed in Bajo and Khuruthang for baseline data acquisition.

Intervention

The intervention consisted of a briefing of outlet owners and sellers explaining the alcohol sales rules, and warning of the legal consequences of breach of alcohol rules by the government officers. The briefing was led by the *Dzongdag* (district governor), police officer, trade officer and district health officer. One representative from each retail outlet was invited from the study sites. The briefing was conducted on 29 October 2019 in Damphu and 10 October, 2019 in Pema Gatshel town. Briefing included existing alcohol sales rules, penalties and possible charges for violators, and the negative health effects of alcohol. The alcohol regulation toolkit containing information on sales rules and a copy of the laminated A3-size alcohol rules notification was handed over by the governor and officials and sellers were asked to display the notification in a prominent location within the premise. Retailers were informed that surprise checks will be conducted, and violators penalized as per the regulations that involve court hearings if required.

Ethics approval

Ethics approval was obtained from the Research and Ethics Board of the Ministry of Health, Royal Government of Bhutan for purchase surveys in Damphu and Pema Gatshel towns and local administrative approvals were obtained for Tsirang and Pema Gatshel district administrations. Wangdue and Punakha purchase attempts were done as a part of the routine monitoring activity of the chief medical officer at Bajo hospital and no ethical approval were sought.

Sampling

All establishments with alcohol sales licenses (i.e. bars, hotels, restaurants, grocery, karaoke bars) in Damphu and Pema Gatshel towns and Bajo and Khuruthang were included for the study. A total of 60 outlets in Damphu and 12 outlets in Pema Gatshel town were provided with interventions while 55 outlets in Bajo and Khuruthang were included in the purchase survey(Table1.1)

Table 1.1 Study design - Number of purchases made by shopper type and time/day of purchase

tion	Shopper type	Damphu town, Tsirang				Pemagatshel town, Pema				Wangdue (Bajo) & Punakha (Khuruthang)			
		Time/day of purchase attempt				Time/day of purchase attempt				Time/day of purchase attempt			
		1-	before 1 p.m.	10 p.m.	Tuesday	1-	before 1 p.m.	10 p.m.	Tuesday	1-	before 1 p.m.	10 p.m.	Tuesday
<i>Sober adults</i>		53	0	40	93	5	7	10	22	-	3	103	106
<i>Intoxicated adults</i>		4	54	0	58	0	12	0	12	-	36	-	36
<i>Underage</i>		7	51	0	58	0	11	0	11	-	49	29	78
Total		64	105	0	209	5	30	0	45	-	88	132	220
<i>Sober adults</i>		24	24	49	97	24	24	49	97	-	-	-	-
<i>intoxicated adults</i>		1	52	1	54	1	52	1	54	-	-	-	-
<i>Underage</i>		0	24	15	39	0	24	15	39	-	-	-	-
Total		25	100	65	190	25	100	65	190	-	-	-	-

Analysis

The data was entered and managed using Epidata Entry Software version 3.1. A double entry was made and validated. Data analysis was carried out using Stata 15 IC (StataCorp. 2017. *Stata Statistical Software: Release 15*. College Station, TX: StataCorp LLC). Analysis included all completed purchase attempts which included illegal purchasing of alcohol of 4 different scenarios: (1) before 1 p.m., (2) on Tuesdays, (3) to underage-appearing patrons (i.e. younger than 18 years old), (4) to patrons who appeared to be intoxicated. While alcohol purchasing after 11 p.m. would be illegal, these purchasing attempts were not carried out as none of the outlets were open till 11 p.m. Few purchase attempts of sober adults during legal hours were completed too for comparison.

Information on main characteristics of sampled establishments were summarized. Primary outcome was compliance defined as failed purchase of illegal alcohol sales. Effect of the intervention on the difference of compliance rate to legal restriction was estimated using linear probability regression model. Both crude effect and adjusted effect were estimated for the full sample in Tsirang and Pema Gatshel. Effects were estimated for each purchaser scenario and two-way cluster was accounted for in the standard error at the level of the shopper and the establishment using Stata command ivreg2. To account for overlapping subgroups, (i.e. underaged shopper on Tuesday), each shopper type and time/day of attempt were included as covariates for each sub-group analysis. Finally, we identified predictors of compliance with alcohol service laws

using a multi-variable logistic model. Multiple models with various predictors were tested and the final model was selected based on the lowest AIC score.

Results

When compared between pre- and post-interventions, there was increase in establishments that displayed signage of alcohol regulations, and those that displayed in prominent placement and even increase in display of smoking prohibition signage (Table 2) Characteristics in customer volume, servers', type, age and gender remained comparable the two purchase surveys.

Table 2 Characteristics of completed mystery shopper purchase attempts (Damphu and Pema Gatshel only)

	Pre-intervention (%)		Post-intervention (%)	
	n	%	N	%
Total	254	-	234	-
Outlet type				
Bar/ Karaoke Bars	81	31.9	91	38.9
Hotel/ Lodge	30	11.8	13	5.6
Restaurant	79	31.1	59	25.2
Grocery	48	18.9	52	22.2
Others	16	6.3	19	8.1
Overall condition of establishment				
Good	8	31.5	51	21.8
Fair	149	58.7	179	76.5
Poor	25	9.8	4	1.7
Lighting of establishment				
Poorly lit	22	8.7	8	3.4
Fairly Lit	163	64.2	190	81.2
Well Lit	69	27.2	36	15.4
Server type				
Manager/owner	235	95.1	188	91.3
Waiter	12	4.9	18	8.7
Customer flow of establishment				
Idle	128	50.4	124	53.0
Engaged but not busy	100	39.3	83	35.5
Very busy	26	10.2	27	11.5
Server position				
Manager/Owner	242	95.3	214	91.5
Waiter	12	4.7	20	8.6
Server gender				
Male	74	29.1	55	23.5
Female	180	70.9	179	76.5
Approximate server age				
Above 30 years	200	78.7	182	77.8
Less than 30 years	54	21.3	52	22.2
Alcohol beverage asked for				
Beer	145	57.1	151	64.5
Hard Drinks	7	31.1	40	17.1
Other	30	11.8	43	18.4
Signage/Information on alcohol regulations				
No	232	91.3	102	43.6
Yes	22	8.7	132	56.4
Signage information displayed prominently				
No	50	27.8	9	4.6
Yes	130	72.2	189	95.5
Placement of signage was prominent				

No	50	27.8	12	5.4
Yes	130	72.2	210	94.6
Establishment displayed smoking prohibition signage				
No	115	45.3	17	7.3
Yes	139	54.7	217	92.7

Failed purchase attempts (i.e. compliance with legal regulations) prior to intervention was poorest in Pema Gatshel town where all purchasing attempts were successful, and compliance was highest in Damphu town at 19.6%. Compliance with restrictions of sales on Tuesday was relatively higher as compared to other types of scenarios, and lowest compliance was seen with intoxicated patrons.

Table 3 Pre-intervention compliance rate or alcohol purchasing by region								
Region	Damphu, Tsirang		Pema Gatshel		Bajo/Khuruthang		Total	
	Purchase attempts	Proportion refused						
Type of purchase								
Before 1 p.m.	64	17.2%	5	0.0%	2	50.0%	71	16.9%
Tuesday	40	30.0%	10	0.0%	132	28.8%	182	27.5%
Underage-appearing patrons	58	32.8%	11	0.0%	78	2.6%	147	14.3%
Pseudo-intoxicated patrons	58	5.2%	12	0.0%	36	2.8%	106	3.8%
Full sample	209	19.6%	38	0.0%	217	18.9%	474	17.3%

There was a statistically significant increase in refusal of alcohol purchase attempts by 22.7% overall and in all purchasing scenarios except for illegal purchasing before 1 pm. When disaggregated by purchasing scenario, increase in refusal was highest in the underage-appearing patron scenario. The same relationship remains after adjusting for other purchasing scenarios (Table 4). The change in the compliance rate for each purchase category and the adjusted effect estimates with a 95% confidence interval are displayed in Figure 1 and Figure 2 respectively.

Compliance rate by type of purchase and effect estimates (Tsirang and Pema)								
	Pre-intervention		Post-intervention		Unadjusted effect estimates		Adjusted effect estimates	
Time	Purchase attempts	Proportion refused	Purchase attempts	Proportion refused	Difference	95% CI	Difference	95% CI
1 p.m.	69	16%	34	26%	10.5%	(-6.4%, 27.5%)	11.8%	(-3.0%, 26.6%)
2 p.m.	50	24%	76	45%	20.7%	(2.8%, 39.7%)	19.3%	(1.1%, 37.5%)
ge- ng	69	28%	50	54%	26.5%	(12.0%, 40.9%)	27.8%	(12.4%, 43.2%)
- .ted	70	4%	65	26%	21.9%	(10.8%, 33.0%)	21.9%	(10.1%, 33.7%)
nple	247	17%	206	38%	22.7%	(8.6%, 37.0%)	-	-

Table 5 shows the adjusted odds ratios of the predictors that are associated with refusal of purchase attempts in two models. Receipt of intervention was a statistically significant predictor for purchase refusal in model 1. However, this relationship became insignificant after adjusting for establishments that displayed signage of alcohol prohibition which was given out as part of the alcohol toolkit during the intervention. Establishments where any type of signage relating to alcohol prohibition was displayed were 3.0 times more likely to refuse alcohol sales (OR:3.01, 95% CI: 1.67-5.36). Restaurants were twice more likely to comply with alcohol sales restrictions compared to Bars/ Karaoke bars (OR: 2.22, 95% CI 1.23-3.99). Establishments that are very busy were significantly less likely to comply with prohibition than those that were idle (OR:0.15, 95% CI:0.05-0.46). Figures 3 and 4 are forest plots of the odds ratios with a 95% confidence interval for model 1 and 2, respectively.

Table 5 Predictors for compliance with alcohol purchasing regulations

	Model 1				Model 2			
	OR	SE	p-value	95% CI	OR	SE	p-value	95% CI
Post intervention (compared to pre)	3.98	1.00	0.00	2.44 - 6.51	1.66	0.54	0.12	0.87 - 3.13
Legal purchase	1.49	0.64	0.36	0.64 - 3.48	2.10	1.08	0.15	0.77 - 5.73
Outlet type								
Bars/Karaoke	1.00	-	-	- -	1.00	-	-	- -
Hotel/lodge	1.99	0.85	0.11	0.86 - 4.62	1.76	0.82	0.23	0.70 - 4.38
Restaurant	2.12	0.59	0.01	1.22 - 3.66	2.22	0.66	0.01	1.23 - 3.99
Grocery	0.81	0.27	0.53	0.42 - 1.56	0.55	0.21	0.13	0.26 - 1.18
Other	1.12	0.53	0.81	0.44 - 2.82	1.44	0.80	0.52	0.48 - 4.26
Server position								
Manager/Owner	1.00	-	-	- -	1.00	-	-	- -
Waiter	1.07	0.52	0.90	0.41 - 2.79	0.94	0.49	0.91	0.34 - 2.62
Sex of server								
Male	1.00	-	-	- -	1.00	-	-	- -
Female	1.80	0.49	0.03	1.05 - 3.08	1.69	0.51	0.08	0.94 - 3.05
Suspected age of server								
30 and over	1.00	-	-	- -	1.00	-	-	- -
Less than 30	1.08	0.33	0.81	0.59 - 1.98	0.92	0.31	0.79	0.48 - 1.76
Alcohol beverage asked for								
Beer	1.00	-	-	- -	1.00	-	-	- -
Hard Drinks	1.91	0.51	0.02	1.13 - 3.23	1.72	0.50	0.06	0.97 - 3.04
Other	1.10	0.36	0.77	0.58 - 2.09	1.04	0.35	0.90	0.54 - 2.03
Customer flow of establishment								
Idle	1.00	-	-	- -	1.00	-	-	- -
Engaged but not busy	0.57	0.14	0.02	0.36 - 0.91	0.68	0.18	0.13	0.40 - 1.13
Very busy	0.12	0.07	0.00	0.04 - 0.36	0.15	0.09	0.00	0.05 - 0.46
General condition of establishment								
Good	1.00	-	-	- -	1.00			
Fair	1.39	0.46	0.32	0.73 - 2.65	1.63	0.60	0.19	0.79 - 3.36
Poor	0.87	0.57	0.84	0.24 - 3.17	1.52	1.11	0.57	0.36 - 6.37
Lighting of establishment								
Poorly lit	1.00	-	-	- -	1.00	-	-	- -
Fairly Lit	1.03	0.54	0.95	0.37 - 2.90	2.41	1.70	0.21	0.61 - 9.60
Well Lit	1.35	0.81	0.62	0.42 - 4.35	2.74	2.12	0.20	0.60 - 12.52
Establishment displayed any type of alcohol prohibition signage								
No	-	-	-	- -	1.00	-	-	- -
Yes	-	-	-	- -	3.01	0.89	0.00	1.69 - 5.36
Placement of signage was prominent								
No	-	-	-	- -	1.00	-	-	- -
Yes	-	-	-	- -	0.75	0.44	0.63	0.24 - 2.38
Establishment displayed smoking prohibition signage								

No	-	-	-	-	1.00	-	-	-		
Yes	-	-	-	-	-	1.08	0.73	0.91	0.29	4.09

Discussions

This is the first multisite study to date conducted in Bhutan to assess alcohol retail establishments' compliance to alcohol sales regulation along with applying educational interventions to improve policy knowledge amongst retailers through organized training sessions. The baseline refusal rate in the four districts was very low (17.3%) which indicates poor compliance to alcohol sales rules and regulations at the point of sales. The compliance of Tuesdays (27.5%) as dry days was most noticeable while sales to intoxicated adults (3.8%) were least compliant suggesting possible lack of knowledge on alcohol regulations. This gap was largely improved post intervention which suggests that educational intervention and enforcement portrayal were effective. More concerning, compliance to denying sales to under-aged purchasers was only 14.3% at baseline. This would probably explain the high prevalence of alcohol use in Bhutan amongst those under 18 years of age³.

Of the four districts with baseline comparison, Pema Gatshel performed worst in baseline refusal rate (0.0%) although due low number of purchase attempts, it is difficult to be conclusive. Damphu performed well in refusal to under aged patrons compared to other regions (32.8%). The intervention was effective in improving overall refusal rate with the most prominent improvements for underage patrons (53.9%). No effects of the interventions were seen for restrictions of alcohol sales before 1 p.m. which may reflect implementation and pragmatic challenges for establishments to comply with. We speculate it is simply easier to refuse customers on an entire day such as Tuesday rather than restricting to specific hours in a day. Further qualitative data may be helpful to better understand how such policies influence sellers' behaviors.

Our analysis shows that displaying signage of alcohol prohibition in the store was predictive of compliance. There may be two explanations to this finding. First this could suggest that requiring signage placement is an effective policy tool to ensure legal compliance with alcohol restrictions and should be made mandatory with sufficient enforcement. Second, the association noted here maybe a proxy to the diligence and compliance of the establishment of itself rather than due to the visible signaling of a signage. We are unable to draw conclusions here as we cannot draw causation from display of signage based on our analysis.

In finding that busier establishments are less likely to comply is concerning. This suggests underlying lack of diligence where the importance of complying with alcohol restriction is overlooked or not in the forefront of the minds of the server. Police enforcement and checks may resolve this concern. If owners are aware that random checks can be made and they would suffer repercussions such as paying a fine, then even amidst busy service times, legal compliance with the law comes to the forefront of one's mind. Police enforcement should also consider conducting checks at peak hours.

These findings are consistent with the earlier study done in Thimphu, the capital city of Bhutan⁹.

Compared to the previous study⁸, this study had a larger reduction in intervention effect. However, absolute compliance post-intervention remains low at 38% compared to 34% in the last study which also had an enforcement component. The post intervention change is lower than we anticipated. Part of the study interventions coincided with the early phase of the COVID-19 pandemic in 2020. The enforcement visits were not conducted per protocol as initially designed which may explain for lower effect. This indicates that legal education, training alone will not reach optimal levels of legal compliance. There may be gaps in educational training methods that could improve seller's awareness; room for increasing legal repercussion such as increasing fines and penalties.

Bhutan with abundant access to alcohol¹⁰ being freely available both off premise and on premise outlets needs strong law enforcements. The alcohol laws are being violated without regard as evidenced from our findings and previous findings.

Substantial gaps remain in improving legal compliance of alcohol laws in Bhutan.

Future research should focus on evaluating the effectiveness of different components of the education interventions in terms of its content as well as hand-out materials such as signages. Established perceptions of alcohol regulation should be better researched to understand potential drivers and barriers to compliance at point-of-sale.

Our study also has several limitations. The study is subjected to the concerns of the ecological fallacy. We did not have any control district to adjust for possible external factors that may explain the increase in compliance to alcohol regulations. Therefore, we cannot state that the increase of compliance solely caused by the education interventions itself. Second, the sample size is relatively small compared to other studies. However, Bhutan is not a densely populated country and thus, what is sampled is inclusive of all establishments within selected district towns. Finally, our study evaluated the effects 5-month post intervention. Without sustained enforcement and education, the effects may dissipate overtime.

Conclusion

Alcohol control requires ongoing government enforcements supplemented by public awareness and knowledge. Our study demonstrated despite long-standing alcohol sales regulation in Bhutan, the compliance at point-of-sale was low across all districts. The effectiveness of the policy of alcohol sales restriction before 1p.m. is low and warrants further review or replacement of more effective alternatives. Moreover, education activities should be conducted periodically and possibly should be included as part of alcohol sales permit renewal requirements to ensure establishment awareness over time and sustained effects of the intervention. Furthermore, if local law enforcement wants to conduct random compliance checks, surveillance during peak alcohol sales hours would be appropriate. Current poor compliance not only results in large socio-economic costs, it also at the cost of the future of the most vulnerable portion of the population – children and adolescents.

Declarations

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Ethics Approval and Consent to participate

Ethics approval has been approved by the Research Ethics Board of Health (REBH), Ministry of Health, Royal Government of Bhutan vide approval number **Ref. No. REBH/Approval/2019/004**.

Consent for Publication: All authors have read the manuscript and consented to publication.

Availability of Data and Materials

Data and materials available with the corresponding author upon request.

Competing Interest: None

Funding: Not Applicable

Authors Contribution

TG: Principal Investigator and corresponding author, conception / design of the protocol, acquisition of data, data analysis / interpretation, manuscript drafting / critically reviewing the paper, giving approval for the final version to be published.

GD: Conception / design of the protocol, data analysis / interpretation, manuscript drafting/critically reviewing the paper and giving approval for the final version to be published.

YX: Data analysis / interpretation, critically reviewing the paper and giving approval for the final version to be published.

GG: Data analysis / interpretation, critically reviewing the paper and giving approval for the final version to be published.

LD, TP, LT, K, KD, BNS, DT & DK: Acquisition of data, critically reviewing the paper and giving approval for the final version to be published.

All Authors have reviewed the manuscript.

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Figures

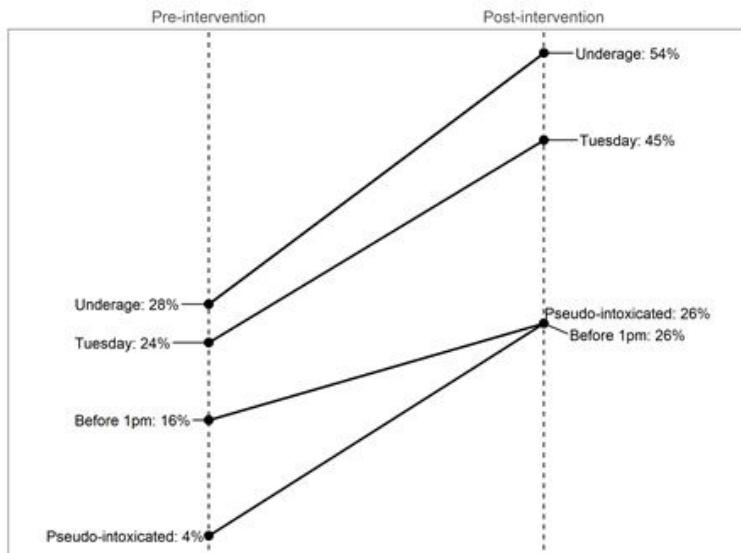


Figure 1

Impact of intervention on the compliance rate by purchase type

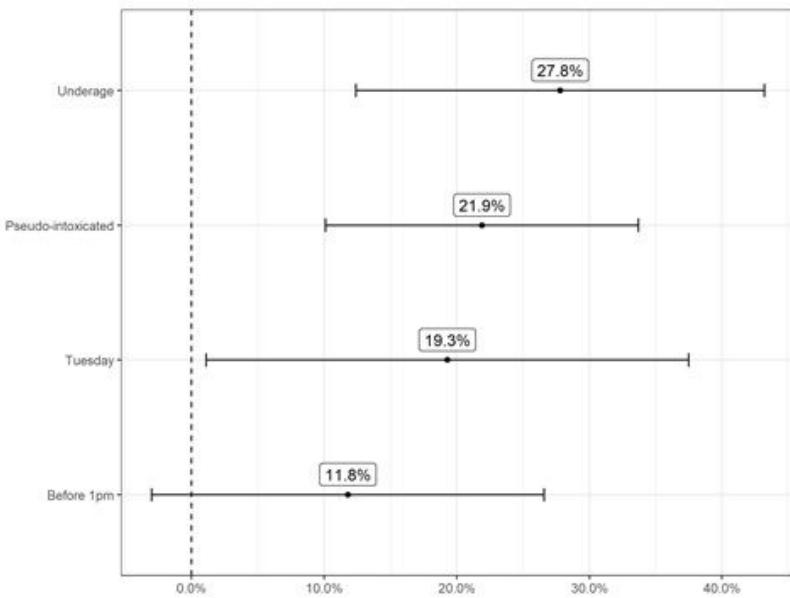


Figure 2

Adjusted effect estimates and 95% CI of intervention on the compliance rate by purchase type

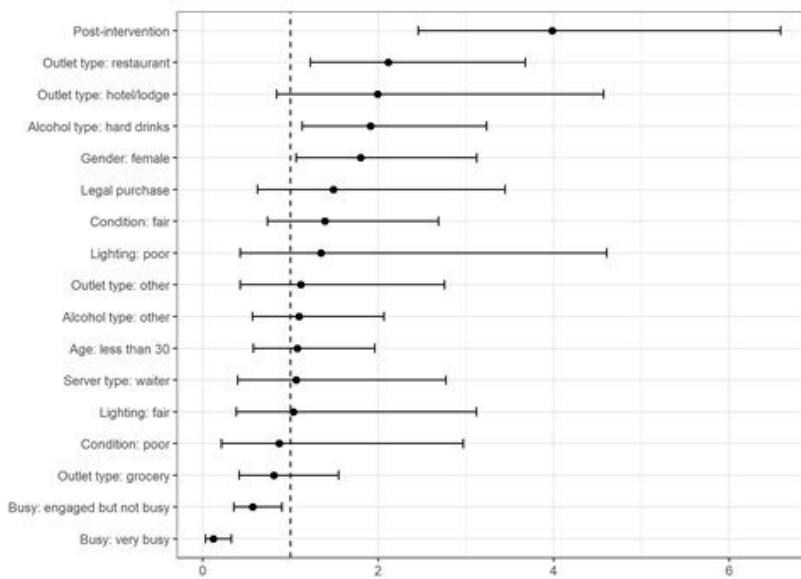


Figure 3

Model 1 odd ratios estimates and 95% confidence interval

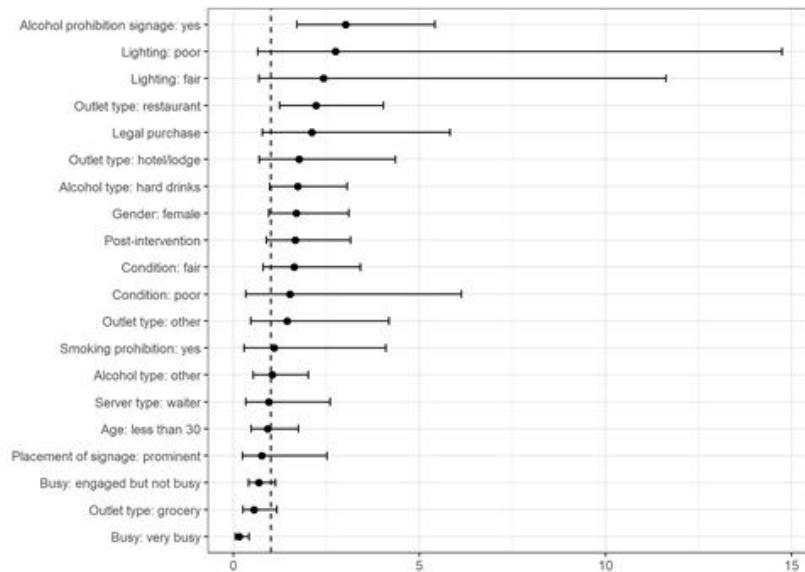


Figure 4

Model 2 odd ratios estimates and 95% confidence interval