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ORIGINAL ARTICLE

Religious beliefs and alcohol control policies: a Brazilian nationwide study

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Objective: The connection between lower alcohol use and religiousness has been extensively examined. Nevertheless, few studies have assessed how religion and religiousness influence public policies. The present study seeks to understand the influence of religious beliefs on attitudes toward alcohol use.
Methods: A door-to-door, nationwide, multistage population-based survey was carried out. Self-reported religiousness, religious attendance, and attitudes toward use of alcohol policies (such as approval of public health interventions, attitudes about drinking and driving, and attitudes toward other alcohol problems and their harmful effects) were examined. Multiple logistic regression was used to control for confounders and to assess explanatory variables.
Results: The sample was composed of 3,007 participants; 57.3% were female and mean age was 35.7 years. Religiousness was generally associated with more negative attitudes toward alcohol, such as limiting hours of sale ($p < 0.01$), not having alcohol available in corner shops ($p < 0.01$), prohibiting alcohol advertisements on TV ($p < 0.01$), raising the legal drinking age ($p < 0.01$), and raising taxes on alcohol ($p < 0.05$). Higher religious attendance was associated with less alcohol problems (OR: 0.61, 95%CI 0.40-0.91, p = 0.017), and self-reported religiousness was associated with less harmful effects of drinking (OR: 0.61, 95%CI 0.43-0.88, p = 0.009).
Conclusions: Those with high levels of religiousness support more restrictive alcohol policies. These findings corroborate previous studies showing that religious people consume less alcohol and have fewer alcohol-related problems.

Keywords: Religion and medicine; spirituality; substance-related disorders; alcoholism

Introduction

The connection between alcohol use and religiousness has been extensively studied during the past three decades.[1-4] Religious attendance, religious affiliation, and intrinsic religiousness have been associated with lower rates of alcohol use/abuse, binge drinking, and lifetime use of alcohol.[1,5-8]

Mullen et al.[9] found that Catholics are more permissive in their attitudes, while Protestants are more likely to endorse abstinence from alcohol. Religious affiliation could also serve as a reference group that influences behavior,[10] and conservative religious groups have higher negative expectations (expected negative consequences of alcohol consumption) and lower drinking motives.[11]

Social modeling,[12] negative beliefs about alcohol,[12] personal attitudes,[13] approval/disapproval of significant others/relatives/friends,[13,14] and alcohol use attitudes[15] are some proposed pathways for these associations.

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Despite investigating the individual-level mechanisms between alcohol use and religiousness, the goal of the present study is to investigate macro implications with respect to the way that religiousness shapes public support for government alcohol policies.

Indeed, religion and religiousness appear to influence attitudes toward many aspects of life, such as politics,[16] ethical/cultural issues,[17] and even attitudes toward health in general.[18,19] Nevertheless, few studies have assessed these attitudes as they pertain to alcohol policies.

If a religious person has a more supportive opinion toward alcohol policies, such as not drinking and driving, not only will he/she support such policies, but this may also impact other people's attitudes toward these issues. A better understanding of this relationship may assist in the development of strategies for preventing alcohol use and abuse. Likewise, such studies are relevant because public opinion has demonstrated the capacity to facilitate legislative change on alcohol policy issues[20] and to indicate areas in need of potential education efforts.[21]

Therefore, the present study aims to examine the influence of religiousness on attitudes toward alcohol policies (such as approval of public health interventions,

drinking and driving) and concerns about the problems associated with and harmful effects of alcohol.

Methods

Sample selection

The sample studied was the 1st Brazilian Nationwide Survey (BNAS) on alcohol consumption patterns, which was conducted from November 2005 to April 2006. This door-to-door, multistage, population-based survey included 143 Brazilian cities. The design, selection, and study population has been previously described elsewhere.[22-24] The study was approved by the Ethics Committee (institutional review board-equivalent) of Universidade Federal de São Paulo (code: CEP 1672/04). All respondents signed an informed consent form and were assured of the confidential nature of the study before the interview.

Brazilian municipalities were divided into 25 strata according to their size and region. Within each stratum, a systematic selection was carried out whereby municipalities were initially sorted on the basis of income and selected with probability proportional to their size (PPS). Within each stratum, the municipalities were arranged by the average income and selected in probability proportional to their estimated population (both average income and population were based on the last national socio-demographic census conducted by the Brazilian Institute of Geography and Statistics, IBGE).

In the second stage of sampling, census sectors were chosen within the cities selected in the first stage. All sectors were included, even rural ones. The sectors were also chosen proportionally to their size, after having been arranged by average income. Each allotted sector had its households counted and listed, and households were then selected according to a table of random numbers. The objective was to obtain eight interviews per census sector. Therefore, a greater number of households were chosen to adjust for nonresponse. This rate was calculated according to the Brazilian Social Survey (PESB), per region (http://www.uff.br/datauff/PESB.htm).

After selecting the household, the interviewer listed all its residents and the person whose birthday was nearest to the date of sampling (either the last birthday or the next) was chosen for the interview. To ensure a high response rate, rules were put in place for those cases where the interviewer was not able to find the selected person. The interviewer was required to revisit the household at least three times at three different times of day and on three different days of the week, including one day during the weekend.

The final sample was composed of 3,007 participants (2,346 adults aged 18 years or older and 661 adolescents aged between 14 and 17 years) and was representative of the Brazilian population, excluding native Brazilians who live in Indian reservations and the institutionalized population.

Procedures

Trained interviewers carried out face-to-face interviews with a mean duration of 53 minutes. The response rate was 66.4%. The survey instrument was an adapted version of the questionnaire used in the Hispanic Americans Baseline Alcohol Survey (HABLAS).[25] The questionnaire was translated by the survey's coordinators and adapted to the socio-cultural aspects of the Brazilian population.

Variables

For the present study, the following variables were used: 1) sociodemographic variables: gender, age, family income, years of education, and marital status; 2) alcohol use: use of alcoholic beverages (''how often do you generally drink any alcoholic beverage [including beer, wine, distilled beverages, ice drinks, or any other drink]?''); alcohol dependence: a positive answer to three or more of seven questions on alcohol dependence from the Composite International Diagnostic Interview (CIDI)[26]; alcohol abuse: a positive answer to one or more of six questions on alcohol abuse from the CIDI[26]; problems related to alcohol consumption: a 28-item questionnaire about possible lifetime problems including social, working, familial, legal, physical, and those related to violence. Questions included: ''drinking may have affected my chances of being promoted, being given a salary raise or work improvement,'' ''I had a violent argument while drinking,'' and ''a doctor suggested I should drink less'', with two possible answers, yes or no; harmful effects of alcohol: a 6-item questionnaire assessing effects on friendship/social life, family/marriage, future perspectives, finance, health, and employment; 3) alcohol attitudes: approval of public health policies regarding alcohol tax, legal drinking age, prevention programs, alcohol treatment, alcohol prohibition, alcohol promotion/advertising, alcohol policy, supervision of alcohol sales, and others; drinking and driving: assessed using statements such as: ''when others drink and drive it is a threat to my personal safety and the security of my family'' and ''most people who drive after drinking too much alcohol are alcoholics or problem drinkers''; 4) religiousness: religiousness was understood as the ''extent to which an individual believes, follows, and practices a religion, organizational (church or temple attendance) or non-organizational (praying, reading books, or watching religious programs on television).'' The following measures were used: religious attendance: ''how often do you attend religious services?'' was used to address organizational religiousness (once a week or more, once or twice a month, sometimes during a month, sometimes during a year, rarely, or never); importance of religion: ''how important is religion in your life?'' was used to address self-reported religiousness (very important, somewhat important, indifferent, not really important, or not a bit important); religious affiliation: ''I will now read a list of several religions and would like you to tell me when I say the name of your religion.'' (Umbanda, Candomblé, Kardecist Spiritism, Pentecostal Evangelical, other Evangelical, Protestant, Charismatic Catholic, Base Ecclesial Communities Catholic, Traditional Catholic, other, or no religion).

Statistical analysis

The data were weighted to take into account the method of sample selection and nonresponse rate. Post-stratification weights were calculated to adjust the sample to the known distributions of the population regarding gender, age, and region of the country.[22] All analyses were performed with the complex samples module of SPSS version 17.0.

First, we conducted a bivariate analysis (chi-square test) associating religious attendance and self-reported religiousness with alcohol opinions (drinking and driving and approval of public health interventions). Then, for those statistically significant results, we conducted a multiple logistic regression (enter method) using: a) dependent variables: alcohol attitudes (binary). Since each specific policy represents a different concept, and these concepts do not fully overlap, we decided to include each separately in the analysis. For instance, respondents with strict opinions regarding alcohol advertising could have softer opinions regarding compulsory health clinics or warning messages. Therefore, we decided to separate all policies and describe them separately; b) independent variables: religious attendance (once a week or more vs. less than once a week) and self-reported religiousness (very important vs. somewhat important/not a bit important); and c) confounding variables: sex (male/female), age (years), educational attainment (years), marital status (married/not married), family income (continuous), alcohol use (yes/no), alcohol dependency (yes/no), and alcohol abuse (yes/no).

P-values < 0.05 were considered statistically significant and confidence intervals of 95% were used throughout.

We then conducted another logistic regression with alcohol problems (at least one/none) and harmful effects of drinking (at least one/none) as dependent binary variables. The independent variables were: religious attendance (once a week or more vs. less than once a week), self-reported religiousness (very important vs. somewhat important/not a bit important), religious affiliation (yes vs. no), and religious denomination (Protestant vs. others). All independent variables were included together in the multiple logistic regression (enter method). P-values < 0.05 were considered statistically significant and confidence intervals of 95% were used throughout. Goodness of fit was evaluated by the Hosmer–Lemeshow test.

Results

The final sample comprised 3,007 participants, 1,285 (42.7%) male and 1,722 (57.3%) female, with a mean age of 35.7 years (SD 17.9; range, 14–91 years). Overall, 48.1% of the participants were married and 78.2% had a mean monthly family income of less than R$ 900.00 (approximately US$400.00). Sociodemographic characteristics are presented in Table 1.

Concerning alcohol use, 47.1% of the participants reported they never drank alcoholic beverages, 208 (6.9%) were dependent on alcohol, and 217 (7.2%) met criteria for alcohol abuse (Table 1).

Table 1 Sociodemographic characteristics and alcohol patterns of the study population

Variable	
Age, mean (SD)	35.71 (17.91)
Sex, n (%)	
Male	1,285 (42.7)
Female	1,722 (57.3)
Race, n (%)	
White	1,466 (48.8)
Black	326 (10.8%)
Brown	1,132 (37.6%)
Other	83 (2.8)
Educational attainment, n (%)	
0-3 years	692 (23.0)
4-8 years	1,197 (39.8)
8-11 years	950 (31.6)
$>$ 11 years	168 (5.6)
Marital status, n (%)	
Single	1,156 (38.4)
Married	1,445 (48.1)
Widowed	200 (6.7)
Separated/divorced	206 (6.8)
Alcohol drinking frequency, n (%)	
Daily	77 (2.6)
$\geqslant$1x/week	513 (17.0)
$\geqslant$ 1x/month	493 (16.4)
$<$ 1x/month	507 (16.9)
Never	1,417 (47.1)
Alcohol dependence, n (%)	
Yes	208 (6.9)
No	2,799 (93.1)
Alcohol abuse, n (%)	
Yes	217 (7.2)
No	2,790 (92.8)

With regards to religious characteristics, 67.3% were Catholic, 23.3% Evangelical Protestant, 3.6% from other religions, and 5.8% had no religious affiliation. More than half of participants (50.3%) attended religious services to some degree but less than once a week, followed by those who attended once a week or more (36.7%) and those who had never attended (12.9%). Most participants believed their religion was very important in their lives (82.9%), followed by those who thought it somewhat important (29.0%) and those who indicated it was not important (2.6%).

Religiousness and attitudes toward alcohol

Approval of public health interventions

Higher religious attendance (once a week or more) was associated with more supportive attitudes toward higher taxes on alcoholic beverages ($p < 0.05$), restrictions on hours for the sale of alcoholic beverages ($p < 0.01$), avoidance of serving alcohol to customers who are already drunk ($p < 0.01$), prohibition on selling alcoholic beverages at bakeries, pastry shops, and grocery stores ($p < 0.01$), a ban on advertising alcoholic beverages on television, including wine, liquor, beer, whiskey, rum,

vodka, and other fermented and distilled beverages ($p < 0.05$), a ban on sponsorship of sporting and cultural events by alcoholic beverage manufacturers ($p < 0.001$), and setting aside a space on the labels of bottles or cans of alcoholic beverages for messages warning about the hazards and problems caused by alcohol ($p < 0.05$). In addition, these respondents believed that it is very easy for a person under the age of 18 to purchase alcohol in Brazil, even though this is prohibited by law ($p < 0.05$).

Higher self-reported religiousness (very important vs. somewhat important/not a bit important) was associated with attitudes toward increasing the legal age for purchasing of alcoholic beverages ($p < 0.01$), restrictions on hours for the sale of alcoholic beverages ($p < 0.01$), prohibition on selling alcoholic beverages at bakeries, pastry shops, and grocery stores ($p < 0.01$), and a ban of advertising alcoholic beverages on television, including wine, liquor, beer, whiskey, rum, vodka, and other fermented and distilled beverages ($p < 0.05$).

Religious affiliation (yes vs. no) was associated with support for restrictions on hours for the sale of alcoholic beverages ($p < 0.05$), and religious denomination (Protestant vs. others) was associated with more supportive attitudes toward higher taxes on alcoholic beverages ($p < 0.05$) (Tables 2 and 3).

Drinking and driving

Higher self-reported religiousness (very important) and higher religious attendance (once a week or more) were associated with the attitude that "most people who drive after drinking too much alcohol are alcoholics or problem drinkers" ($p < 0.05$). Religious affiliation and denomination were not associated with these opinions (Table 4).

Attitudes toward alcohol problems

Higher religious attendance was associated with fewer self-reported alcohol problems (OR: 0.62, 95%CI 0.41-0.93, $p = 0.023$). Self-reported religiousness (OR: 0.68, 95%CI 0.49-0.94, $p = 0.021$) and religious denomination (Protestant) (OR: 0.60, 95%CI 0.40-0.91, $p = 0.017$) were associated with fewer harmful effects of drinking (Table 5).

Discussion

This report investigates the relationship between religiousness and attitudes toward alcohol policies. Participants with higher religious attendance or higher self-reported religiousness were found to be more supportive of policies regarding public health interventions against the use of alcohol, including drunk-driving prevention policies. Additionally, since these participants consumed less alcohol, they had fewer alcohol-related problems.

In the last decades, research interest in public opinion relating to alcohol policies has grown.[27-29] The objectives of such studies are diverse, and have included rank ordering of support across alcohol policy topics, plotting changes in public opinions, exploring the association between public opinion and actual policy, and identifying demographic groups that tend to support or oppose certain policies.[28]

Some studies have found that the level of alcohol consumption influences individuals' support for alcohol control policies.[24] Others[30,31] have found that lighter drinkers and older persons were more likely to support restrictive policies and to support policies that restricted alcohol use in public places.

Within this context, opinions regarding alcohol policies are a driving force in policy planning and implementation[24] and warrant further attention.

Several studies have investigated the impact of religion and religiousness, on public policies. Baumgartner et al.[16] evaluated the role of religious beliefs in predicting U.S. public opinion on foreign policy issues in the Middle East.

Table 2 Association between religiousness and alcohol control policies (public health interventions), n (%)

	Self-reported religiousness		Religious attendance		Religious affiliation		Religious denomination	
Question	Very important	Somewhat, not important	1x week or more	Less than 1x week	Yes	No	Protestant	Others
Do you think taxes on alcoholic beverages should be increased, decreased, or remain the same?								
Increase	1,409 (59.4)	232 (47.3)	992 (62.7)	649 (50.6)	1,579 (58.5)	62 (37.6)	468 (70.0)	1,111 (54.7)
Decrease/Same	965 (40.6)	259 (52.7)	590 (37.3)	634 (49.4)*	1,121 (41.5)	103 (62.4)	201 (30.0)	920 (45.3)*
Do you think the minimum legal age for sale of alcoholic beverages should be increased, decreased, or remain the same?								
Increase	1,405 (87.3)	1,051 (77.6)	960 (58.4)	649 (49.2)	1,541 (55.2)	68 (39.8)	418 (60.6)	1,123 (53.4)
Decrease/Same	204 (12.7)	303(22.4)†	684 (41.6)	670 (50.8)	1,251 (44.8)	103 (60.2)	272 (39.4)	979 (46.6)
Do you think government advertising campaigns should be increased, decreased, or remain the same?								
Increase	331 (50.8)	65 (43.3)	209 (49.6)	187 (49.1)	377 (50.3)	19 (36.5)	87 (55.8)	290 (48.8)
Decrease/Same	321 (49.2)	85 (56.7)	212 (50.4)	194 (50.9)	373 (49.7)	33 (63.5)	69 (44.2)	304 (51.2)
Do you think that programs for prevention of alcohol use in schools should be increased, decreased, or remain the same?								
Increase	1,151 (65.0)	204 (63.8)	757 (64.3)	598 (65.6)	1,293 (65.1)	62 (60.2)	312 (63.2)	981 (65.7)
Decrease/Same	619 (35.0)	116 (36.2)	421 (35.7)	314 (34.4)	694 (34.9)	41 (39.8)	182 (36.8)	512 (34.3)
Do you think alcoholism treatment programs should be increased, decreased, or remain the same?								
Increase	2,135 (85.8)	446 (86.9)	1,425 (85.4)	1,156 (86.3)	2,431 (85.8)	150 (86.2)	611 (87.0)	1,820 (85.4)
Decrease/Same	359 (14.4)	67 (13.1)	243 (14.6)	183 (13.7)	402 (14.2)	24 (13.8)	91 (13.0)	311 (14.6)

Controlled for sex, marital status, age, education, family income, alcohol use, alcohol dependency, and alcohol abuse.
* $p < 0.05$; † $p < 0.01$.

Table 3 Association between religiousness and alcohol control policies, n (%)

	Self-reported religiousness		Religious attendance		Religious affiliation		Religious denomination	
Question	Very important	Somewhat, not important	1x week or more	Less than 1x week	Yes	No	Protestant	Others
Do you think there should be restrictions on hours for the sale of alcoholic beverages?								
Yes	2,008 (81.5)	347 (68.0)†	1,369 (83.1)	986 (74.4)†	2,250 (80.3)	105 (61.8)	587 (84.8)	1,663 (78.8)
No	455 (18.5)	163 (32.0)†	279 (16.9)	339 (25.6)†	553 (19.7)	65 (38.2)*	105 (15.2)	448 (21.2)
Do you think there should be more efforts by businesses to refrain from continuing to serve alcohol to customers who are already drunk?								
Yes	2,273 (91.8)	440 (87.0)	1,538 (93.0)	1,175 (88.5)	2,564 (94.5)	149 (86.6)	652 (93.9)	1,912 (90.4)
No	203 (8.2)	66 (13.0)	116 (7.0)	153 (11.5)†	246 (8.8)	(13.4)	42 (6.1)	204 (9.6)
Do you think the sale of alcoholic beverages at bakeries, pastry shops, and grocery stores should be banned?								
Yes	1,940 (78.6)	323 (63.8)	1,332 (80.6)	931 (70.4)†	2,158 (77.0)	105 (61.8)	577 (83.1)	1,581 (74.9)
No	528 (21.4)	183 (36.2)†	320 (19.4)	391 (29.6)†	646 (23.0)	65 (38.2)	117 (16.9)	529 (25.1)
Do you think the labels of bottles or cans should bear warning messages about the hazards and problems caused by alcohol, in addition to the existing "drink responsibly" wording?								
Yes	2,362 (95.5)	471 (92.7)	1,589 (95.9)	1,244 (93.9)	2,683 (95.4)	150 (88.2)	680 (97.6)	2,003 (94.7)
No	112 (4.5)	37 (7.3)	68 (4.1)	81 (6.1)	129 (4.6)	20 (11.8)	17 (2.4)	112 (5.3)
Do you think advertising of alcoholic beverages on television, including wine, liquor, beer, whiskey, rum, vodka, and other fermented and distilled beverages, should be banned?								
Yes	1,705 (69.1)	761 (55.1)	1,177 (71.5)	808 (60.6)	1,888 (67.4)	97 (56.7)	516 (74.0)	1,372 (65.1)
No	280 (30.9)	228 (44.9)*	469 (28.5)	520 (39.2)*	915 (32.6)	74 (43.3)	181 (26.0)	734 (34.9)
Do you think manufacturers of alcoholic beverages should be banned from sponsoring sporting and cultural events?								
Yes	1,397 (57.8)	1,019 (45.2)	981 (60.9)	642 (49.2)‡	1,549 (56.4)	74 (43.3)	439 (64.1)	1,110 (53.9)
No	226 (42.2)	274 (54.8)	630 (39.1)	663 (50.8)‡	1,196 (43.6)	97 (56.7)	246 (35.9)	950 (46.1)
Do you think that alcohol advertisements should reserve a space for messages warning about the hazards and problems caused by alcohol?								
Yes	2,340 (94.9)	479 (93.6)	1,579 (95.6)	1,240 (93.5)	2,660 (94.8)	159 (92.4)	673 (96.6)	1,987 (94.2)
No	126 (5.1)	33 (6.4)	73 (4.4)	86 (6.5)*	146 (5.2)	13 (7.6)	24 (3.4)	122 (5.8)
Do you think treatment programs for alcoholism should be free and compulsory at health centers, clinics, and general public hospitals?								
Yes	2,405 (97.0)	487 (95.7)	1,613 (97.4)	1,279 (95.9)	2,728 (94.3)	164 (94.8)	687 (98.3)	2,041 (96.4)
No	75 (3.0)	22 (4.3)	43 (2.6)	54 (4.1)	88 (3.1)	9 (5.2)	12 (1.7)	76 (3.6)
Please note whether you agree with this statement: "In Brazil, it is very easy for persons under the age of 18 to purchase alcohol, even though sale is prohibited by law."								
Yes	2,338 (94.5)	469 (92.3)	1,574 (95.3)	1,233 (92.6)	2,646 (94.1)	161 (93.6)	663 (95.0)	1,983 (93.8)
No	137 (5.5)	39 (7.7)	78 (4.7)	98 (7.4)	165 (5.9)	11 (6.4)	35 (5.0)	130 (6.2)
Do you think there should be an increase in the supervision of businesses that sell alcohol to prevent sale of alcohol to minors?								
Yes	2,382 (96.3)	475 (93.5)	1,608 (97.3)	1,249 (94.1)	2,703 (96.2)	154 (90.6)	681 (97.6)	2,022 (95.7)
No	91 (3.7)	33 (6.5)	45 (2.7)	79 (5.9)	108 (3.8)	16 (9.4)	17 (2.4)	91 (4.3)

Controlled for sex, marital status, age, education, family income, alcohol use, alcohol dependency, and alcohol abuse.
* $p < 0.05$; † $p < 0.01$; ‡ $p < 0.001$.

Table 4 Association between religiousness and drinking and drive, n (%)

	Self-reported religiousness		Religious attendance		Religious affiliation		Religious denomination	
Question	Very important	Somewhat, not important	1x week or more	Less than 1x week	Yes	No	Protestant	Others
Drinking and driving by others is a threat to my personal safety and to the security of my family.								
Agree	2,431 (97.8)	497 (96.9)	1,612 (97.0)	1,316 (98.4)	2,760 (97.7)	168 (96.6)	681 (97.4)	2,079 (97.8)
Disagree	55 (2.2)	16 (3.1)	50 (3.0)	21 (1.6)	65 (2.3)	6 (3.4)	18 (2.6)	47 (2.2)
Most people who drive after drinking too much alcohol are alcoholics or problem drinkers.								
Agree	2,135 (86.6)	398 (77.7)	1,437 (87.2)	1,096 (82.3)	2,397 (85.5)	136 (78.6)	622 (89.4)	1,775 (84.2)
Disagree	331 (13.4)	114 (22.3)*	210 (12.8)	235 (17.7)*	408 (14.5)	37 (21.4)	74 (10.6)	334 (15.8)
There is no problem in driving when you are just beginning to feel the effects of alcohol.								
Agree	569 (23.0)	1,905 (77.0)	361 (21.8)	336 (25.2)	651 (23.2)	46 (26.7)	139 (19.9)	512 (24.2)
Disagree	128 (25.1)	382 (74.9)	1,292 (78.2)	995 (74.8)	2,161 (76.8)	126 (73.3)	560 (80.1)	1,601 (75.8)
If a person drives after drinking too much, they will almost certainly be pulled over and detained by a police officer.								
Agree	1,583 (64.5)	289 (57.5)	1,047 (63.7)	825 (62.8)	1,781 (63.9)	91 (53.8)	450 (64.8)	1,331 (63.6)
Disagree	871 (35.5)	214 (42.5)	596 (36.3)	489 (37.2)	1,007 (36.1)	78 (46.2)	244 (24.2)	763 (36.4)

Controlled for sex, marital status, age, education, family income, alcohol use, alcohol dependency, and alcohol abuse
* $p < 0.05$.

Table 5 Association between religiousness, alcohol problems, and harmful effects of drinking

Logistic regression 1*: dependent variable – alcohol problems (at least one/none)			
Variable	OR	95%CI	p-value
Sex (female)	0.20	0.12-0.31	< 0.001
Age	0.98	0.96-0.99	0.010
Religious attendance	0.62	0.41-0.93	0.023
Logistic regression 2†: dependent variable – harmful effects of drinking (at least one/none)			
Variable	OR	95%CI	p-value
Sex (female)	0.37	0.27-0.50	< 0.001
Self-reported religiousness	0.68	0.49-0.94	0.021
Age	0.98	0.97-0.99	0.010
Religious denomination (Protestant)	0.60	0.40-0.91	0.017

* Logistic regression 1: all independent variables were included together in the multiple logistic regression model (enter method), and only those independently and significantly associated with the dependent variable were reported in the table. Education, marital status, family income, self-reported religiousness, religious denomination (Protestants vs. others), and religious affiliation (no affiliation vs. religious affiliation) did not reach statistical significance ($p < 0.05$). Independent variables: sex, age, education, marital status, family income, religious attendance, self-reported religiousness, religious denomination (Protestants vs. others), and religious affiliation (no affiliation vs. religious affiliation). Hosmer–Lemeshow test: 0.395.

† Logistic regression 2: all independent variables were included together in the multiple logistic regression model (enter method), and only those independently and significantly associated with the dependent variable were reported in the table. Education, marital status, family income, religious attendance, and religious affiliation (no affiliation vs. religious affiliation) did not reach statistical significance ($p < 0.05$). Independent variables: sex, age, education, marital status, family income, religious attendance, self-reported religiousness, religious denomination (Protestants vs. others), and religious affiliation (no affiliation vs. religious affiliation). Hosmer–Lemeshow test: 0.180.

They found that Evangelicals were more supportive of U.S. foreign policy than other religious groups.

Another study[32] found that the most restrictive abortion policies are found in Catholic countries with high levels of religiosity, pointing to the impact of religiousness on government policy. In addition, Zou et al.[18] found that religious beliefs strongly influence the way Tanzanians think about HIV/AIDS and government policies.

However, few studies have assessed the influence of religiousness on support for alcohol control policies. Since there is already strong evidence of the association between higher religiousness and lower alcohol use and abuse in different countries, groups, and settings,[1,5,7-8] the influence of religious beliefs on these alcohol policies warrants investigation.

In a previous BNAS analysis, Pinski et al.[24] evaluated 2,346 adults and found that sex, intensity of alcohol consumption, age, marital status, educational attainment, and religious affiliation were associated with approval for alcohol policies. In that analysis, Evangelical Protestants were more supportive of limiting alcohol availability in corner stores and raising taxes on alcohol, whereas Catholics were more supportive of limiting hours of sale than were those with no religious affiliation. These results are in line with the present analysis, which found that religiousness (not only religious affiliation) was associated with a greater likelihood of approving restrictive alcohol policies.

In another study, Frendeis et al.[33] evaluated why certain counties within the U.S restrict the sale of alcohol and others do not. The authors analyzed data from over 3,000 U.S. counties and found that the strongest factor associated with the restriction status of a county was religious composition, specifically the presence of Evangelical Protestants.

Finally, Herd[34] explored how different types of activists (politicians, professionals, or clergy) defined alcohol problems. She found that religious leaders were significantly more likely to define alcohol problems in terms of alcohol sales and marketing – alcohol policies in general ($p = 0.021$) than were other informants, supporting the role of religiousness on opinions toward alcohol policies.

Within this context, the present study raises some questions for future research: Can acceptance of more restrictive alcohol policies be predicted on the basis of religious beliefs? Can alcohol consumption patterns be predicted on the basis of attitudes toward alcohol? Can we use this kind of information for the development of alcohol policies, alcohol restrictions, and health promotion? Could these attitudes be mediators of this relationship or are they merely consequences?

The present study has both strengths and limitations. Particular strengths include the novelty of investigating the association between religiousness and attitudes toward the support of alcohol policies, the nature of the sample (nationwide), and the method of sample selection (population-based).

Limitations include the cross-sectional nature of the study, which precludes inferences on causal association, and measurement of religiousness. Since religiousness is a very complex and multifaceted dimension, self-reported religiousness and religious attendance may not explore all aspects needed.

In summary, we found that individuals with high levels of religiousness are more supportive of restrictive alcohol policies, such as approval of public health interventions and not drinking and driving. Our results also support the finding from previous studies that religious people

consume less alcohol, and, therefore, have fewer alcohol-related problems.

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Disclosure

The authors report no conflicts of interest.

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