

The Relation between the Number of Hours That Authorize the Sale of Alcoholic Beverages and Violence

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(Received: 12 Feb 2012/ Accepted: 08 May 2012)

ABSTRACT

Background: La Victoria was considered, the most violent area in Lima City, the local government enforced a public policy regarding number of hours for selling of alcoholic beverages in January 2007. The study was designed to compare its results in Violence between one district with the law and other without the law.

Methods: This retrospective cross-sectional was an ecological study with a chronological and geographical comparison between La Victoria, with the restriction and Cercado de Lima without the ban. The participants in the study were patients from a local National Hospital, with aggressions from fighting, or were wounded in traffic accidents, and violent death bodies at National Institute of Legal Medicine. Data were analyzed, using clinical histories (2006 vs. 2007-8) and necropsies (2005-6 vs. 2007-8)

Results: The reduction of aggression rates at La Victoria in 2007 and 2008 in comparison to 2006, were 40.7% and 36.4% respectively ($P < 0.05$). It was related to the number of hours of liquor authorized selling $Y = -11.25 + 27.32 X$ ($P < 0.05$). There was a reduction of 44% in homicide ($P < 0.05$) and 35% in suicide rates between biennia's. The female/ male ratio of homicides changed from 1/7.3 to 1/4.6. A significant increase in the rate of alcohol positive dead bodies was observed (20.3% to 41.5%), (Relative Risk (RR) = 2.03, (95% Confidence Interval (CI) = (1.09-3.8), $\chi^2_{(1)} = 5.24$, ($P < 0.05$).

Conclusions: The reduction of violence was probably due to the ban, indicating the importance of programs to control alcohol consumption which lead to decrease the rate of violence and its' consequences like homicides, impulsive violence.

Keywords: Healthy Public Polices, Alcohol, Aggressions, Homicides, Suicides, traffic accidents, Peru

Citation: Malaga H, Gonzalez M, Huaco C, Sotelo M. The Relation between the Number of Hours That Authorize the Sale of Alcoholic Beverages and Violence. *Health Promot Perspect* 2012; 2 (1): 60-71.

Introduction

In 1996, the World Health Assembly, considered violence as a Public Health Problem growing through the entire world. In the year 2000, there were 1.160.000 violent

deaths, 830.000 homicides and for deaths attributed to war and conflicts, the crude rate was 14 per 100 000 people [1]. WHO report estimated 1.160.000 deaths for the

year 2002 with a mortality ratio from 15.7 to 16.2 per 100.000 people for the region [2].

The morbidity rate attributed to violence is 12.2% of 201.8 DALYs (Disability-Adjusted Life Years) per 1000 population in Peru [3]. In 2007, 76 928 wounded people in traffic accidents were registered in a population of 271 481 01 inhabitants [4] with 3510 fatal victims (12.9 per 100 000), 78% of them were male [5] an index of 25 deaths per 10.000 vehicles [6], Mortality rate: 21.5 per 100 000 inhabitants [7]. The homicide numbers or cases, in 2005, had a rate of 10 per 100 000 inhabitants [8], Metropolitan Lima had a rate of 6.6 per 100 000 inhabitants [9]. In 2006 the rate of suicides in Peru, was 1.3 per 100 000 inhabitants [10]. Globally between 15 to 66% of homicides and serious assaults, show alcohol in blood of the raider, victim, or both. In Brazil, this occurs in 13 to 50% of the cases of statutory rape and attacks to the modesty, and in 52% of the cases of domestic violence [11]. Studies in low-and middle-income countries have shown that 33 to 69% of fatally injured drivers and 8 to 29% of nonfatally injured drivers had consumed alcohol before their crash [12].

To reduce the burden of disease caused by alcohol, there are at least 10 evidence-based public health measures including: reduction in hours for alcoholic beverages authorized selling, reduction in the days for alcoholic beverages authorized selling, limitation in the number of alcoholic beverages selling stores, legal responsibility for the alcoholic beverages seller, supervising the firm control of the already established law, brief interventions in alcohol-positive traffic casualties, restriction in advertising and patrician of alcohol and measures to control traffic accidents [13].

Bogota, Cali and Medellin in Colombia, Asunción in Paraguay, and Diadema in Brazil [14-17], have applied successfully, restrictions of schedules for alcoholic beverages authorized selling, in order to reduce violence. In the district of La Victoria, due to the serious violence problems, , a local restriction was established in January 2007.

Alcohol beverage is sold until midnight on Sundays, Mondays, Tuesdays and Wednesdays, and until 3:00 am on Thursdays, Fridays, and Saturdays [18, 19].

Based on the above-mentioned background this study was designed to evaluate the effects of this restriction in the intervened district and to compare with a neighbor district where the restriction was not established.

Materials and Methods

This study was an ecological study [20] with a chronological and geographical comparison between two districts: La Victoria, with the restriction and Cercado de Lima without the ban. The wounded were studied in 2006 without the restriction in comparison to 2007/8 with the restriction and the violent deaths were studied during 2005/6 without the restriction in comparison to 2007/8 with it.

The participants in this study were all patients from a local National Hospital, who were admitted because of conditions, which were related to aggression, fighting, and traffic accidents. There were other hospitals that could admit patients from the mentioned districts, but a previous study showed that an important quantity of those lesions had referred to the local National Hospital [21]. For the violent related deaths including homicides, suicides and deaths in traffic accidents that occurred in both districts, the authors used data from the Institute of Forensic Medicine, as numerator. This study had all the necessary approvals from The Ethics Committee of the Cayetano Heredia University, and from the two Institutions, which this study was conducted.

Statistical Analysis

Analyses were performed using STATA 8.0 for Windows (College Station, USA, TX: Stata Corporation, 2003). For figures, the MS Excel 2007 was also used. The data were summarized using Frequency (percent) for quantitative variables. The analysis was done

for both sources: a) In relation to aggression, and lesions caused by traffic accidents from the morbidity data from the Hospital and b) with Homicides, suicides and deaths caused by traffic injuries from the mortality data of the Institute. Then, the research team studied violence before the local restriction based on the District's information before and after implementing the restriction together with the information of the District, which was not intervened. To transform the data to ratios, the denominator used was the data of the most recently census available [4].

Even if the number of lesions of external causes that were registered at the Hospital as numerator were not all the issues that occur in both districts, we speculate that it could be a good approximation of them. Therefore, our morbidity rates are underestimates of the true number, but they could show very well the tendency of the problem for both Districts. Regarding aggression and injuries by traffic accidents, the rates of age and sex per 10.000 inhabitants were used.

For homicides, suicides, and deaths in traffic accidents, rates of age and sex per 100.000 inhabitants were compared by trend Chi squared test, and the strength of associations were evaluated and summarized by Odds Ratios (OR's) (and their 95% confidence intervals (CIs)) for wounded outcome and by Relative Risks (RR) (and their 95% CIs) for the dead outcome. In different times, the relationships between corpses with positive blood alcohol ($\geq 50\text{mg/dl}$) and its cause (mortality by traffic accidents, homicides and suicides) were evaluated by adjusting for sex, marital status, place of occurrence, residence, and year, using logistic regressions.

For deaths in traffic accidents, the research team compared individuals who lived and died in La Victoria, with those who lived elsewhere but died in La Victoria. It was not applied for homicides and aggressions, since these occurred with greater probability in the nearby's where liqueur consumption occurred [22, 23]. The number of hours of liqueur sale by weekday was ex-

pressed in relative frequency of hours of sale/day, for the 7 days of the week during 2005-6 a value of one (24 hours), and for 2007 and 2008, a value of 0.88 (21 hours) for Thursdays, Fridays and Saturdays, a value of 0.75 (18 Hours) from Sunday to Wednesday and was correlated with the frequency of aggressions, homicides and suicides.

The Relationship between the sales of liqueur measured on fraction of day and assaults in La Victoria was investigated using linear regression. In all analyses, $P < 0.05$ considered as statistically significant.

Results

Study on injuries of external cause admitted to a National Hospital

In La Victoria there was a reduction of 40.7% and 36.4% in aggressions respectively, in 2007 in 2008, compared to 2006, ($P < 0.05$). In Cercado, although aggressions declined by 16% in 2007, but increased by 7% in 2008, compared to 2006. The aggressions were more frequent in men than in women in 2006 (OR=1.2 (95% CI=(1.01-1.4)), ($X^2 = 4.43$, $P < 0.05$) (Table 1).

The male aggression rates diminish in all ages, especially in younger's. In Cercado, the behavior was similar in the 3 years (Fig. 1). Women had almost one fifth of aggressions less than men and had diminished at all ages after the restriction. No changes were observed in Cercado.

In La Victoria the frequency of aggressions diminished in all quarters of 2007 and 2008 compared to quarters of 2006, however in Cercado, there were not considerable changes (Fig. 2). Concerning the month of occurrence, the greatest frequency in January in 2006-7 was substituted with August in 2008. In La Victoria, the aggressions diminished with the number of hours of access to the sale of liqueurs: $Y = -11.25 + 27.32X$ ($P < 0.05$) (Fig. 3). These changes are consistent with the reduction of aggressions on weekends (Table 2).

Concerning the increase in traffic accidents in both districts ($P < 0.05$); the greatest

occurrence in the years 2006-2007 comes from pedestrians, 191 (75%) and 89 (65%) cases in La Victoria and Cercado respectively. Also, more men are injured compared to women, with the greatest difference in 2006 ($\chi^2_{(1)} = 2.35$ $P < 0.05$).

Study of violent deaths from Cercado and La Victoria, Institute of Forensic Medicine

In La Victoria, there was a 30% reduction in the rates of homicides (per 100 000), and the decline was 44% in comparison to the Biennium Base with a significant negative tendency ($P < 0.05$). The women/men ratio in homicides, step from 1/7.3 to 1/4.6. Cercado had a 3.3% increase in 2007-2008 and a change in woman/men ratio in homicides from 1/3.4 to 1/5.8, for the period 2005-2006, .

In La Victoria an increase in the percentage of murdered women was observed, but there was a decline in rate. The homicide rates decreased from 33.8 in 2005 to 20.0 in 2006 and to 13.7 per 100.000 in 2008, while in Cercado, an evident increase from 7.5 to 8.8 in the base years, in order to decline in 2007 to 5.5, and then rise again in 2008 to 10.3 per 100.000 inhabitants, just when it declines in La Victoria (Fig. 4). In La Victoria, for the 4 years, homicides showed the greatest incidence in 25 to 49 years age groups, the reduction in the rate by age was recorded in all age groups after restriction.

Considering the relationship between alcohol consumption and violent deaths from both districts, the occurrence in males was about 2.2 times more than women (RR=2.21 and 95% CI =(1.43-4.07), $\chi^2_{(1)}=12.48$, $P < 0.05$). (24.8% positive cases in men compared to 12.2% positives in women).

In La Victoria, upon diminishing the homicides, there was an increase in the bodies with positive alcohol test, passing from 20.3% to 41.5%, (RR= 2.03 (95% CI 1.09-3.80), $\chi^2_{(1)}=4.21$ ($P < 0.05$). Women's bodies with positive alcohol test were in 4 of 20 (20%), while men were in 8 of 58 (13.8%). In Cercado, homicides were not related to

Alcohol, in both periods (both $P > 0.05$). Concerning sex, in Cercado, the association of the homicides with Alcohol was kept (Table 3).

In La Victoria, suicides of alcoholic women were 5 in 25 (20%) compared to men which were 10 of 30 (33%), proportionately, passing from 23.5% to 34.4%. Suicides showed a positive trend with the age, diminishing the rate in the adults and older persons after the restriction. Suicide rates ranged between 2 and 5 in Cercado and between 6.2 and 13 per 100.000 in La Victoria, and increased by 12% in Cercado and diminished by 38% in La Victoria comparing to the biennium's. Suicides decreased by 35% in La Victoria and increased by 13% in Cercado ($P > 0.05$), maintaining the ratio of women/men almost the same (1 in 5.3 to 1 in 6). Suicides in Cercado had a slight increase, with a greater proportion of alcoholic suicides in the biennium in 2007-2008. Although suicides declined in La Victoria, the suicidal bodies with alcohol increased proportionately.

Considering traffic accidents, the rates ranged between 7 and 17 per 100.000 in Cercado compared to 22.3 to 47.2 per 100 000 in La Victoria. They showed a 4.2% growth in Cercado and 12% in La Victoria. There was a reduction in both districts during 2007. The deaths by traffic accidents increased by 5.5% and 11.2% in Cercado and La Victoria, respectively. The ratio of women/men, in traffic accidents increased in La Victoria from 1/2.9 to 1/3.2, and it was the same as in Cercado where it passed from 1/3.4 to 1/5.8. Deaths in traffic accidents had higher rates in the > 50 years old groups, showing a trend to increase with the age.

For homicides and suicides, there was also a relationship between the hours authorized to sell liquors and the mortality ratios, these were not of statistical significance in the District of La Victoria. In La Victoria the hours of occurrence shows a homogeneous pattern, before and after the intervention, because deaths occurred mainly at daily hours (Table 4).

The alcohol detected in autopsy cases of traffic accidents, increased both in relative and absolute frequency, in the two districts, upon comparing the two periods (RR=3.1 and 95% CI= (1.42-6.76) , $\chi^2_{(1)}=9.74$, ($P< 0.05$) for Cercado, and RR=1.73 (95% CI=1.05-2.84) , $\chi^2_{(1)}= 4.96$, $P< 0.005$, for La Victoria).

There was an increase in the relative frequency of alcoholic nonresident corpses in La Victoria, remaining equal in the residents. In proportions the alcoholic corpses, were rising in residents and nonresidents in La Victoria, with a significant difference in the nonresidents, (RR=2.52 and 95% CI= (1.24-5.1), $\chi^2_{(1)}= 7.43$, ($P<0.005$) and in the residents (RR=1.80 and 95% CI= (0.74-4.38), $\chi^2_{(1)}=1.81$, ($P>0.05$). In La Victoria,

the association for the deaths in traffic accidents of the non residents, emphasizes 8.8 times more alcohol detected victims for the men in comparison to women (RR=8.8 and 95% CI=(1.26-61), $\chi^2_{(1)}= 8.8$, $P< 0.05$) (27.5% for men compared to 3.1% in women) . In the residents of La Victoria, there were 30.4% alcoholic men (7 of 23) in comparison with 21.4% alcoholic women (3 of 14) (Table 5).

Regarding the Marital Status, for the three types of events, there was a predominance of the bachelors. In the homicides and traffic accidents, the higher rates were registered in individuals with primary level of education. In suicides, the rates were distributed quiet similar among all levels.

Table 1: Agressions by sex 2006-2008 OR of agression between La Victoria and Cercado, National Hospital 2 de Mayo, 2009

Sex	Cercado						Total	La Victoria						Total
	2006		2007		2008			2006		2007		2008		
	N	%	N	%	N	%		N	%	N	%	N	%	
F	15	27.0	9	19.0	9	14.3	33	16	13.7	11	15.7	13	17.6	40
M	41	73.0	38	81.0	54	85.7	133	101	86.3	59	84.3	61	82.4	221
Total	56	100	47	100	63	100	166	117	100	70	100	74	100	261

2006 Cercado versus La Victoria: (OR =1.2, 95% CI =(1.01-1.4), $\chi^2_{(1)}=4.43$, $P = 0.035$)

2007 Cercado versus La Victoria: (OR =1.0, 95% CI =(0.9-1.2), $\chi^2_{(1)}=0.23$, $P = 0.629$)

2008 Cercado versus La Victoria: (OR =1.0, 95% CI =(0.8-1.1), $\chi^2_{(1)}=0.27$, $P = 0.602$)

Table 2: Agressions by day of the week Cercado – La Victoria 2006–2008

Day	Cercado						Total	La Victoria						Total
	2006		2007		2008			2006		2007		2008		
	N	%	N	%	N	%		N	%	N	%	N	%	
Sunday	6	10.7	10	21.3	11	17.5	27	31	26.3	16	22.9	15	20	62
Monday	6	10.7	6	12.8	13	20.6	25	21	17.8	9	12.9	13	17.3	43
Tuesday	7	12.5	6	12.8	7	11.1	20	12	10.2	5	7.1	14	18.7	31
Wednesday	10	17.9	9	19.1	10	15.9	29	14	11.9	13	18.6	9	12	36
Thursday	11	19.6	6	12.8	7	11.1	24	11	9.3	5	7.1	11	14.7	27
Friday	8	14.3	3	6.4	6	9.5	17	9	7.6	11	15.7	8	10.7	28
Saturday	8	14.3	7	14.9	9	14.3	24	20	17	11	15.7	5	6.7	36
Total	56	100	47	100	63	100	166	118	100	70	100	75	100	263

Cercado: $\chi^2_{(12)}= 7.50$, $P = 0.823$

La Victoria: $\chi^2_{(12)}= 16.43$, $P = 0.172$

Table 3: RR of Alcohol in Blood of homicides and male homicides in Cercado and La Victoria, Institute of Forensic Medicine 2005-2008

Class	Before	After	RR	95%CI	$\chi^2_{(d)}$ (P-Value)
Homicides (Cercado)	10 (33.3)	10 (32.3)	0.97	(0.47-1.99)	0.04 (P=0.8463)
Homicides (La Victoria)	12 (20.3)	17 (41.5)	2.03	(1.09-3.8)	4.21 (P=0.040)
Male Homicides (Cercado)	9 (37.5)	8 (34.8)	0.93	(0.43-1.99)	0.04 (P=0.8463)
Male Homicides (Cercado)	12 (23.5)	11 (34.4)	1.46	(0.73-2.91)	1.15 (P=0.2826)

The data were summarized using N (%) for before and after restriction.

Table 4: Frequency distribution of deaths, on traffic accidents for the periods 2005-06 and 2007-08, by hour of occurrence, in La Victoria District. Institute of Forensic Medicine, 2009

Hour of Occurrence	2005-06	2007-08
0-2	8(7.1)	8(6.5)
3-5	11(9.7)	11(8.9)
6-8	16(4.2)	28(22.6)
9-11	10(8.8)	21(16.9)
12-14	15(13.3)	14(11.3)
15-17	18(15.9)	16(12.9)
18-20	23(20.4)	14(11.3)
21-23	12(10.6)	12(9,7)
Total	115(100)	127(100)

The data were summarized using N (%)

Table 5: RR of Alcohol in Blood of deaths in traffic accidents in Cercado and La Victoria Residents and none residents, Institute of Forensic Medicine 2005-2008

Class	Before	After	RR	95%CI	X ² 1gl(ProbX ²)
Alcoholized bodies (Cercado)	7(10,23)	23(31,9)	3,1	(1,42-1,76)	9,74 (P=0,0018)
Alcoholized bodies (La Victoria)	19(16)	37(27,6)	1,74	(1,05-2,84)	4,96 (P=0,025)
Alcoholized bodies (non residents La Victoria)	9(10,2)	25(25,8)	2,52	(1,24-5,10)	7,43 (P=0,0064)
Alcoholized bodies (in residents La Victoria)	5(26,3)	9(47,4)	1,8	(0,74-4,38)	1,81 (P=0,1786)
Alcoholized bodies residents male and female after ban in la Victoria	Varones 7(30,4)	Mujeres 14(21,4)	1,42	(0,44-4,61)	0,36 (P=0,5497)

The data were summarized using N (%) for before and after restriction

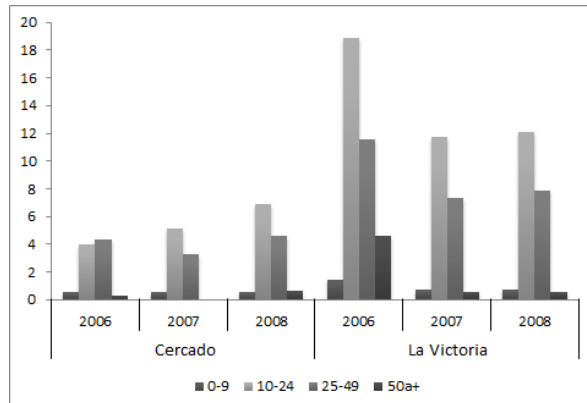


Fig. 1: Rate of men aggressions x 10.000 according to age groups. Cercado – La Victoria 2006–2008

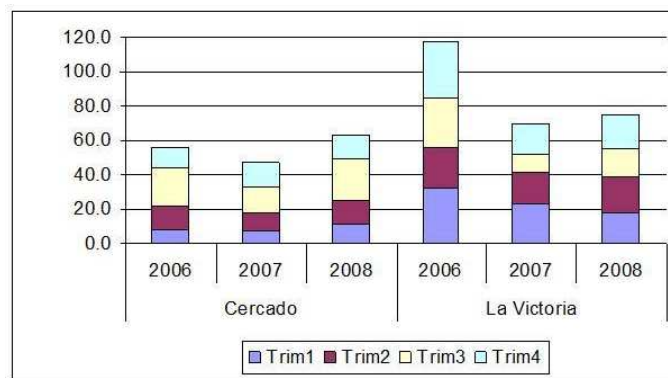


Fig. 2: Aggressions by Trimester of the year (2006-8) in La Victoria and Cercado de Lima. National Hospital 2 de mayo, 2009

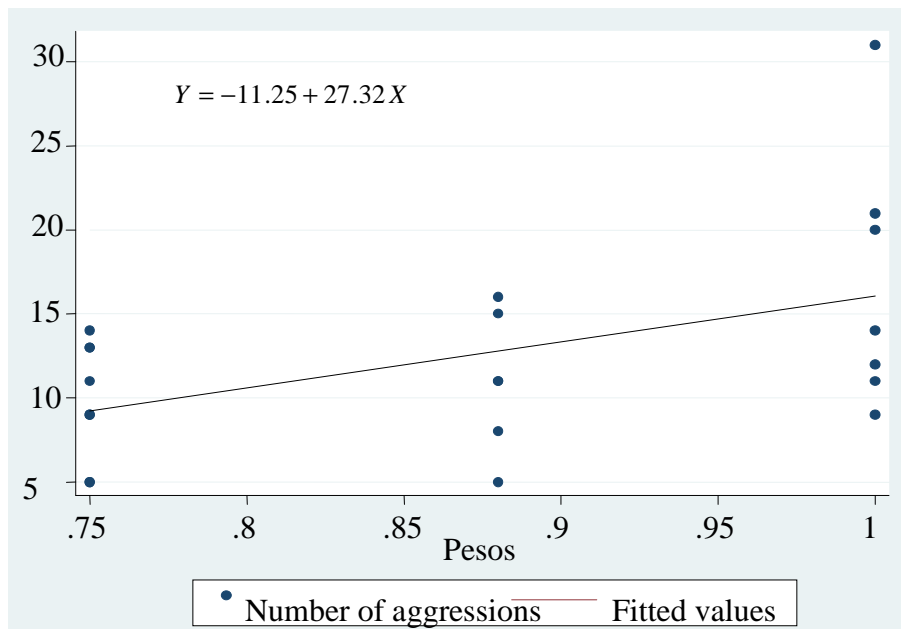


Fig. 3: Relationship between the sales of liqueur measured on fraction of day and assaults in La Victoria. Model: Aggression= -11.25+27.32 (sales of liqueur). There was significant relationship between Aggression and sales of liqueur ($P=0.024$)

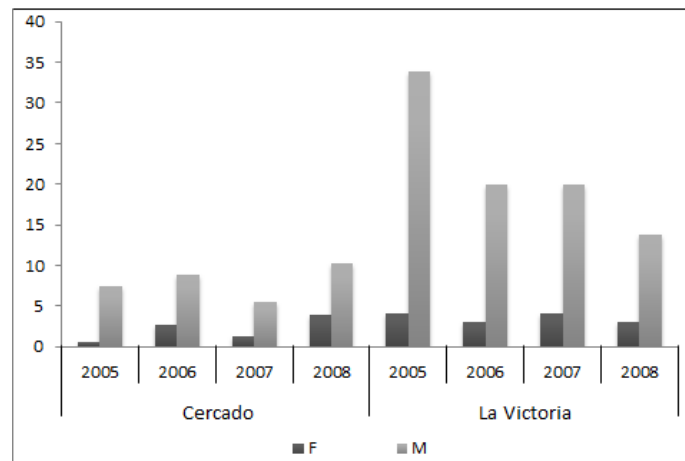


Fig. 4: Homicides, rates by 100 000, according to sex, per year: 2005-2008, of Cercado and La Victoria, Institute of Forensic Medicine, 2009

Discussion

Characterization of non-intervened violence

Even though our morbidity rates are underestimates of the exact number of aggressions, they could show tendency of the problem for both districts. The characteristics of the aggressions presented in La Victoria before the intervention and Cercado during the whole analyzed period resemble Sao Paulo, Brazil (2005-7), 44.1% of men and 27.3% of women had positive alcohol test [24], and individuals who are intoxicated, would be easy targets for thefts and other crimes [25].

Considering homicides, the low socioeconomic strata predominates [26] most frequently in weekends with a higher proportion under alcoholic influence [27] up to of 65% [17] and in summertime [28], in people of primary level of education, in all socioeconomic strata [29]. Regarding homicides, the difference of woman/man ratio between both districts could reflect differences of socioeconomic strata, where stratum A (better living conditions) shows a ratio of 5 to 1, while in stratum E (worse living conditions) of 1 in 32 [29]. In Los Angeles the most affected were men with 27 per 100.000 and in the age group of 25-34 years with 26.9 per 100.000 with greater incidence in weekends [25].

In suicides, our study characterized the weekends, with a ratio of 1/3.6 man/woman in Cercado and 1/7.3 in La Victoria, and residing mainly in the district were different in some aspects to another district of Lima, with 32 consummate suicides, 65.6% men, aged between 20 to 29 years (27.8%) on Mondays and not residing in the district, since they were evaluated in a specific place [30]. In Mexico, suicides and attempts of suicides for teenagers between 10-19 years show an association with alcohol. 0.7% of attempted suicides had not ever drunk alcohol, while 3% of whom attempted suicide had consumed it [31]. For men, in Peru and Venezuela, the most frequent cause was economic problems [32, 33]. In Brazil, a study from 1980 to 2000 showed that the number of suicide commitments among men was 2.3 to 4.0 times greater than women were, and the higher rate occurred in the group above 65 years [34]. In Bogota in 2001, there recorded ratio for man/woman was 3.5 to 1 [35].

The number of deaths in traffic accidents had the same characteristics as those of other studies in Lima, where traffic accidents and aggressions had a greater occurrence in men (67%-75%), bachelors (74%) aged between 25-49 years (42,64%) on Saturdays, Sundays, Mondays and holidays, at

00:01 to 05:59, raising the hypothesis of a possible association of these events with alcohol [36, 37], and in autopsies of Lima, 318 death cases (78%) were pedestrians [38]. Additionally, in Venezuela and Mexico, alcohol consumption [39, 40] was found as causality factor in severe accidents.

Probable and possible related changes due to the restriction

Aggressions and Homicides

In Asuncion, Paraguay, a similar restriction, caused a 6% decline in aggression rates in one year [16], in the first two months, a reduction of 26.9% of punishable facts, 37.7% of guilty injuries and 20.7%, of severe injuries, every day, but persisting the greatest incidence in Saturdays and Sundays. The punishable facts diminished from 310 to 232 (25.2%) and the total of denounced punishable facts lowered from 2767 to 2143 (22.6%) [41]. The experience of Bogotá, Colombia, sustained between 1996-2001, resulted in a reduction in homicides from 58.9 to 47.1 in two years, to arrive at 28.1 in 2001 [42,43]. The relationship between the number of hours and authorized liqueur sale and homicides, was similar to the one obtained in Diadema, Brasil [17] and Cali, Colombia, where three different polices of a restriction of sales were evaluated. The first between 2am and 10am, the second from 3am to 10 am and the third from 4 to 10 , after adjusting for age, weekends, holidays, soccer game days, they found lower mortality rates during 2 to 10 , and the highest between 4 to 10 [44]. In Colombia it was estimated that the restriction of carrying weapons would be capable for 14% reduction in homicides and restriction of hours for authorized liqueurs sale , resulted in a 35% reduction in homicide rates [27].

It should be stand out that the criminal acts between people who know each other and are together over a relative long time period, occurred in places close to the sites where liqueur was consumed [22,23], speculating that the majority of the homicides were induced by alcohol [45]. This is known as guilty violence, differing from the instru-

mental, that hold-ups adjustments of accounts [46]. In Lima, the attacking juvenile and vandalistic gangs would be linked to alcohol consumption and drugs, mainly on weekends [47].

The reduction of the prevalence of aggressions in men in comparison to women was observed in Medellin, upon passing this ratio from 18 to 1 in the 1980s, to 13 to 1 in 1994 [48]. The homicides rate, showed a decline in La Victoria, while in Cercado it increased, which could show a transfer of violence, as observed in Asunción [16]. The reduction of homicides in 25-49 age group and remaining equal in the older persons, agrees with the reduction of the incidence and higher age of the aggrieved, in accordance with the association of living conditions, being in younger people where the living conditions are worse [24]. The increase of the alcoholized murdered, as well as the reduction of the aggression rates in young people, could be attributed to the fact that the restriction would diminish the unpremeditated violent facts.

Suicides

The reduction of suicide in young people, also happened in Bogota, while, there was an increase in the rate of suicide in older persons [43].

Traffic accidents

In contrast to Bogota, and Asunción [16, 41, 42], no decline in mortality rate caused by traffic accidents, could be related to the time of occurrence, since in Asuncion, where they declined [16], it was probably because the deaths in La Victoria, mainly occurred on day times and that the majority of the dead people were not residents of the district, and also the increase of alcoholic corpses, who were drunk outside the district, means that the restriction should be applied in a greater geographical area.

Acknowledgements

To Drs. Celso Bambaren, Diego González, César Cárcamo, Jesús Chirinos,

Esperanza Reyes, Consultant and Jury of my Doctoral Thesis in Public Health at The Peruvian University Cayetano Heredia. The authors declare that there is no conflict of interests.

Key Messages

The reduction on the hours of expenditure of liquors could be related with the reduction in: aggression, homicide, and suicide rates. This reduction occurs fundamentally in young male bachelors of low level of education. This measure reduces only the impulsive violence.

To have influence in the reduction of traffic injuries, this measure should be applied in a larger ambit and in places where the most dangerous accidents occur during nighttime.

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