

Factors associated with delinquent behaviour of inmates at Naara jail Hyderabad, Pakistan

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Objective: To explore the risk factors associated with committing crime in the inmates.

Methodology: Questionnaires were administered from 300 inmates (150 murderers & 150 thieves) of Nara Jail, Hyderabad, Sindh, Pakistan and 160 controls (age and gender matched, eye individuals having no personal or crime related family history) from November 2014 to February 2015. Socio demographic profile, eating and addictive habits, stress level, lifestyle, diseases, height and weight were recorded. SAS statistical software was used to investigate the association of crime with dietary and environmental factors.

Results: Among total 300 inmates, murderers' age ranged between 25-43 years (mean=33.46) and thieves' age ranged between 23-35years (mean=29.1). A significant negative association

was found with >2cups/day tea consumption (OR=0.452, 95% CI=0.047 3.818, p=0.04, whereas reverse was true for smoking the >10 cigarettes/day (OR=14.286, 95% CI=3.724 59.987, p=0.001) as well as for Hashish and alcohol abuse. Further, a significant negative association of >7hr/day sleep (OR=0.275, 95% CI=0.036 1.616, p=0.01) with crime was also found.

Conclusion: It may be concluded that more tea intake and excess sleep may lessen one's attitude/behavior towards criminality whereas cigarette smoking, hashish, alcohol abuse, stress and high blood pressure are positively associated with criminal behavior. (Rawal Med J 201;41:441-445)

Key words: Criminality, inmates, behavior, tea, sleep, stress, smoking.

INTRODUCTION

Some nutritional aspects such as food intolerance, additives, sugar intake, a low micro-nutrient intake, fatty acid deficiency and a tendency to develop hypoglycemia predispose to violence, anti-social behavior and crime.¹ Some controlled trials have shown that sugar is not the cause of behavioral problems.²⁻⁴ Some studies have also shown associations between overaggressive behavior and vitamin and mineral deficiency.^{5,6} In addition to influencing mood, aggression, and symptoms of hyperactivity, diet appears to significantly improve the IQs of some children.⁷ Since hyperactivity, hyper aggressiveness, depression, and IQ all are associated with criminality, some researchers are investigating whether or not diet may be useful in treating criminals (and, in particular, young

delinquents).⁸

Various theories explain the relationship between those risk factors and criminal behavior. Such theories include the study of biological, developmental life-course, psychological, sociological, geographic and economic.⁹ We could not find any study from Pakistan addressing association of crime to some dietary and environmental factors in the inmates. Hence, we undertook the present study to explore the association of crime to some dietary and environmental factors in the inmates at Naara Jail, Hyderabad, Pakistan.

METHODOLOGY

This Epidemiological study was conducted at Nara Jail, Hyderabad Sind, Pakistan from November

2014 to February 2015. After obtaining approval from Naara jail authorities, three hundred inmates were selected randomly from different barracks of jail for which informed consent from the inmates was obtained. In Group A, 150 murderers were selected whereas, Group B included 150 thieves. Third group (placed as group C) was control, in which 160 people having age, gender and district matched with no personal or family criminal record were selected for comparison.

The standard questionnaires were filled in through interview from inmates and controls to get information regarding their socio demographic profile, eating & addictive habits, stress level, lifestyle, diseases, etc. The height & weight of all participants were recorded.

The values are expressed as odd ratios (OR) for the association between the two groups. Chi square test was used with conditional logistic-regression analysis using the SAS statistical software (version 9.1; SAS Institute, Inc, Cary, North Carolina). Odds ratios and 95% confidence intervals (CI) were calculated to estimate the association of crime with dietary and environmental factors. $p < 0.05$ was considered statistically significant.

RESULTS

Demographic characteristics and Body Mass Index (BMI) of inmates are shown in Table 1. The vast majority of inmates were of mid age. Randomly selected murderers' age was ranging between 25-43 years (mean=33.46) whereas thieves' age range was 23-35 years (mean=29.1). Majority of the criminals (i.e. murderer=80%, thieves=70%) were married whereas 44% were resident of Hyderabad followed by Tando Mohammad Khan (42%). Since the Nara Jail is situated in Sindh province hence we found majority inmates were Sindhi, Balochi & Muhajir in which thieves were about 27%, 26% & 31%, respectively whereas murderers were 30%, 27% and 32%, respectively. About 84% inmates were labors by profession including but not limited to labors on daily wage, farmers, drivers etc. Majority had normal BMI.

Table 1. Demographic characteristics of study population.

Description	Murderer	Thieves	Control
	(n=150)	(n=150)	(n=160)
Mean Age Range (Years)	25.24 - 42.68	22.84 - 35.36	24.25- 40.65
	%	%	%
Home Districts			
Hyderabad	28	44	12.5
Jamshoro	10	20	12.5
Dadu	4	8	40
Tando Mohammad Khan	42	6	5
Nawabshah	16	12	7.5
Larkana	-	10	22.5
Ethnic Group			
Sindhi	30	27	38.5
Baloachi	27	26	25
Muhajir	32	31	28
Pathan	6	9	6.5
Non-Muslim	5	7	2
Marital Status			
Married	80	70	57.5
Un Married	20	28	37.5
Widower	-	2	5
Profession			
Labour	84	84	40
Govt Servant	2	12	12.5
Businessman	12	-	17.5
Student/ unemployed	2	4	30
Body Mass Index (BMI)			
Underweight (<18.5)	18	20	35
Normal (18.5-24.9)	72	52	37.5
overweight (25-29.9)	4	22	12.5
Obese (≥ 30)	6	6	15
Reason main stress			
Financial	46	70	7.5
Job related	2	12	7.5
Marriage	2	-	2.5
Health	6	2	2.5
Unfulfilled Expectation	34	16	22.5
No reason	10	-	57.5

A significant negative association of >2 cups/day tea consumption (OR=0.452, 95% CI=0.047 3.818, $p=0.04$) was found with criminal behavior whereas reverse was true for smoking >10 cigarettes/day

(OR=14.286, 95% CI=3.72459.987, p=0.001), hashish and alcohol abuse (Table 2). We also found significant negative association with sleeping disorder. There is a significant negative association of >7hr/day sleep (OR=0.275, 95% CI=0.0361.616, p=0.01) with criminal behavior whereas <7hour/day sleep was found positively associated,

when taking 7 hour/ day sleep as reference (OR=1). There is significant positive association of current or previous stress with criminal behavior when No Stress was kept as reference (OR=1) and the main reason was found as financial stress in inmates (Table-1).

Table 2. Addictive habits and life style issues.

Description	Control	Murderers	Thieves	OR(95% CI)	p	OR(95% CI)	p
	n=160 (%)	n=150 (%)	n=150 (%)	Murderers		Thieves	
A. Addictive Habits							
Tea Consumption							
≤ 2 Cups/day	25	56	46	1.87 (0.18 - 17.24)	0.52	1.15 (0.12 - 9.46)	0.88
> 2 Cups/day	70	38	46	0.45 (0.05 - 3.82)	0.04	0.41 (0.05 - 2.98)	0.03
Nil	5	6	8	1.00 (reference)		1.00 (reference)	
Smoking							
Smoker	20	52	72	4.33 (1.53 - 12.63)	0.002	1.29 (3.47 - 31.69)	0.00
Non-Smoker	80	48	28	1.00 (reference)		1.00 (reference)	
Number of Cigarettes							
≤ 10 Cig./Day	10	14	22	2.33 (0.53 - 10.92)	0.21	6.29 (1.48 - 28.83)	0.003
> 10 Cig./Day	10	38	50	6.33 (1.71 - 25.50)	0.001	14.29 (3.72 - 59.99)	0.00
Addictive Substance							
Hashish	2.5	14	16	8.35 (0.93 - 190.73)	0.025	11.38 (1.29-257.67)	0.007
Cannabis	2.5	2	4	1.23 (0.03 - 47.52)	0.88	2.85 (0.19 - 84.04)	0.38
Alcohol	2.5	24	28	14.32(1.75-311.38)	0.002	19.92(2.45-431.30)	0.000
Nil	92.5	60	52	1.00 (reference)		1.0 (reference)	
B. Sleeping Pattern							
< 7 Hours/day	12.5	54	44	6.69 (1.98-23.99)	0.00	4.24 (1.26-15.08)	0.008
>7 Hours/day	22.5	4	2	0.27 (0.04- 1.62)	0.01	0.11 (0.05 - 0.94)	0.02
7 Hours/day	65.0	42	54	1.00 (reference)		1.00 (reference)	
C. Stress							
Current	35	44	44	6.91 (1.87-27.05)	0.001	34.57 (4.05- 767.51)	0.00
Previous	10	50	50	25.30(5.05-146.49)	0.00	47.66 (7.96-356.67)	0.00
Nil	55	6	6	1.00 (reference)		1.00 (reference)	

Blood group O was higher followed by AB in inmates as compared to control. Only few had

diabetes, HCV and blood pressure in inmates.

Table 3. Clinical characteristics of study population.

Description	Control	Murderers	Thieves	OR (95% CI)	p	OR (95% CI)	p
	n=160 (%)	n=150 (%)	n=150 (%)	Murderers		Thieves	
HCV							
Yes	5.00	18.00	16.00	4.171 (0.762 - 29.993)	0.061	3.619 (0.646 - 26.446)	0.099
No	95.00	82.00	84.00	1.00 (reference)		1.00 (reference)	
Blood Pressure							
High BP	2.50	22.00	12.00	11 (1.347 - 238.901)	0.007	5.318(0.586 - 122.491)	0.094
Normal	97.50	78.00	88.00	1.00 (reference)		1.00 (reference)	
Diabetes							
Yes	2.50	8.00	2.00	3.391 (0.332 - 83.148)	0.258	0.796 (0.021 - 30.268)	0.837
No	97.50	92.00	98.00	1.00 (reference)		1.00 (reference)	
Blood Group							
A	12.5	2	8	0.08 (0.004-0.88)	0.010	0.42 (0.08-2.116)	0.227
B	17.5	6	4	0.189 (0.034-0.946)	0.016	0.151 (0.019-0.921)	0.014
AB	22.5	6	16	0.147 (0.028 - 0.694)	0.004	0.469 (0.135 – 1.609)	0.174
O	47.5	86	72	1.00 (reference)		1.00 (reference)	

On the other hand, significant positive association was seen for high blood pressure in murderers whereas reverse was true for A, B, and AB blood groups which remained negatively associated with criminal behavior (Table 3).

DISCUSSION

This epidemiological study showed an association of criminal behavior to some dietary and environmental factors in the inmates of Naara jail. Although early attempts by criminologists to link criminal propensities with physical attributes have been discredited, modern economic studies have linked such propensities with weight and attractiveness.^{10,11} Although Maddan et al in 2008¹² suggested that BMI was a poor predictor of criminality among Arkansas prisoners, BMI values are correlated with crime type. High BMI prisoners are less likely than normal BMI prisoners to have been imprisoned for violent acts,¹³ which is in line with present results.

The complex relationship between addictive substances use and criminal behavior is mediated by a number of common risk factors that link these two social issues. Research has found an association between addictive substances use and criminal

behavior but has not established a direct causal link between the two, despite the popular belief that such a link exists. Criminals do not always use alcohol or other drugs and substance use does not always lead to criminal behavior.¹⁴

Our study revealed the association of tea consumption with criminal behavior i.e. more tea consumption is significantly negatively associated with criminal behavior. Some effects on behavior of adult humans may occur when individuals consume moderate amounts of caffeine. It increases alertness and reduces fatigue, improves performance on vigilance tasks and simple tasks that require sustained response; effects on more complex tasks are difficult to assess and probably involve interactions between the caffeine and other variables which increase alertness (e.g. personality and time of day).¹⁵ These facts may trigger a criminal to think in a right direction and may restrict him to commit crime. Another significant positive association found in present study is related to restrictive sleeping (Table 2). Deficits in daytime performance due to sleep loss are experienced universally and associated with a significant social, financial, and human cost. Micro sleeps, sleep attacks, and lapses in cognition

increase with sleep loss as a function of state instability. Less sleep is a significant positive risk factor found in present study, which has variable (negative) impact on mood, cognitive performance, and motor function due to an increasing sleep propensity and destabilization of the wake state.¹⁶ Researchers reported that chronic loss of sleep causes several abnormal physiologic outcomes, including decreased glucose tolerance¹⁷ high blood pressure¹⁸ and higher inflammatory markers in healthy adults.¹⁹ Majority of the inmates reported day time sleep rather than the night time sleep, which is why we found negative association of more sleep with criminal behavior.

The significant positive association of stress (current as well as previous) with criminality was found in our study. Previous stress is significant risk factor for the criminal behavior, which compels them to commit a crime. Moreover, current stress is only due to the punishment in jail and rejection from society. The underlying relationship of stress and crime as well as psychological conditions, such as post-traumatic stress disorder, acute stress disorder are hypothesized by strain theories which elucidate the occurrence of stress due to criminal action. Some studies reveal that the various situations cause stress which results in crime.²⁰

CONCLUSION

It may be concluded that, more tea intake and excess sleep are negatively associated with the criminal behavior. Whereas, cigarette smoking, Hashish, alcohol abuse, current or previous stress (main reason was financial problems) and high blood pressure are positively associated with criminal behavior.

Author contributions:

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