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Factors Affecting the Drug Addiction among Street Children of Dhaka City in Bangladesh: Approaching of Multivariate Technique

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ABSTRACT

Drug addiction of street children is an important issue for studying the social and health status of a country. The prevalence of drug addiction is mainly seen in the urban areas of Bangladesh like Dhaka City, the capital of Bangladesh than that of the rural areas. So, it is imperative to know the factors which are influencing the drug addiction among street children of Dhaka city in Bangladesh for the greater interest of the policy makers as well as planner of Government and Non-Government Organizations (NGOs). Data were collected from 1108 street children in different places of Dhaka City using a comprehensive questionnaire. χ^2-test was used to determine the association of drug addiction among the various background characteristics of the street children. In this study, logistic regression model was also used to identify the determinants of drug addiction among the street children. The analysis found that the street working children (OR=0.465, CI: 0.222-0.977) and children from street families (OR=0.352, CI: 0.105-1.179) were less likely drug addicted than street living children. The drug addiction of street children interviewed at railway station/bus stand/launch terminal (OR=0.044, CI: 0.018-0.111), kachabazar (OR=0.027, CI: 0.008-0.086) and park/institution (OR=0.046, CI: 0.014-0.156) respectively was less likely than the street children interviewed at mazar. The street children born in urban area (OR=1.663, CI: 0.942-2.934) were more likely drug addicted than the street children born in rural area. Smoker street children (OR=13.167, CI: 6.881-25.196) were more probable drug addicted than non-smoker street children. Government of Bangladesh and NGOs should take necessary steps to keep the street children away from the vulnerable places like mazar,

railway station/bus stand/launch terminal etc. and arrange institutional care for them especially those who born in urban areas. As almost all drug addicted street children are smoker, so the policy maker should take proper measures to reduce the smoking practices of street children.
Keywords: *Street Children, Drug Addiction, χ^2-test, Logistic Regression Model, Cross Validity Prediction Power, Dhaka City, Bangladesh.*

INTRODUCTION

Prevalence of drug addiction is a big social as well as moral problem for any country. This problem among the street children has been increasing alarmingly in Bangladesh. If the country is not able to control this problem, then they will be a big threat for the country. The exact number of street children is impossible to quantify, but the figure almost certainly runs into tens of millions through the world (UNICEF, 2005). Another published report estimated that the number of street children in Bangladesh was 4,45,226 of which 75% were in Dhaka city (UNDP, 2001). The number of street children is further going to be enlarged at an alarming rate by the year 2024 (Masud et al., 2018). A baseline survey of street children in Bangladesh observed that overwhelming majority of street children were living in Dhaka City (Ahmed et al., 2003). So, it is imperative to know the factors which are affecting the drug addiction among street children of Dhaka city in Bangladesh. Ikoh et al. (2019) found that the children who were not controlled by their parents were more likely to abuse drugs than the children who were controlled by their parents. It was also found that the children who were involved in cigarette and alcohol were more likely to abuse drugs. The findings of this study indicated that male respondents were more likely to abuse drugs than female respondents. Eshita (2018) revealed that 2.7% of the street children were taking drug regularly, 16.7% were taking sometimes and 80.7% never taken any drug. Hossain and Alam (2016) revealed that 37.5% of the respondents were habituated to taking drug. Moura et al. (2012) found that 47.7% of the respondents were using frequently or heavy drug. In addition, it was also identified that 37.9% of the respondents were using tobacco, 23.3% were using inhalants, 22% were using alcohol and 19.5% were using marijuana. Thapa et al. (2009) found that 87.5% were cigarette smoker, 50% had the habit of consuming alcohol and 72.9% were drug addicted. In order to investigate the factors affecting drug addiction of street children the following specific objectives were taken under consideration.

i) To identify the associated factors for drug addiction of the street children.

ii) To find out the effect of the associated factors on drug addiction of street children.

DATA AND METHODOLOGY

In this study, 1108 primary data were collected from street children in different places of Dhaka City in Bangladesh using interview method with structured questionnaire during May, 2014 to September, 2014. SPSS software (version 16) was used to analyze the data.Table 2 was prepared and various percentages were also calculated in this table. χ^2-test was used to identify the significance of the association between two attributes of the street children. Moreover, binary logistic regression model was also employed to find out the effect of determinants of dependent variable among the explanatory variables. Here, drug addiction of street children has been considered as dependent variable which is classified in the following way:

$$\text{Y= drug addiction} = \begin{cases} 1, \ yes \\ 0, \ no \end{cases}$$

On the other hand, types of street children, gender of street children, places of interview, types of work, working hours per day,working days per week, earnings per day, place of birth, parents' composition, food collection and smoking practice were considered as explanatory variables in logistic regression model.

Model validation technique

In this study, the cross validity prediction power (CVPP) is employed to find out the stability of the model. The mathematical form of CVPP is

$\rho_{cv}^2 = 1 - \frac{(n-1)(n-2)(n+1)}{n(n-k-1)(n-k-2)}(1-R^2)$; where, n is the number of cases, k is the number of explanatory variables of the model and the cross validated R is the correlation coefficient between observed and predicted values of the dependent variable (Stevens, 1996). The shrinkage coefficient of the model is the absolute value of (ρ_{cv}^2 -R^2); where ρ_{cv}^2 is CVPP and R^2 is the coefficient of determination of the model. 1-shrinkage is the stability of R^2 of the model. The information on model fittings and estimated CVPP have been demonstrated in Table 2. Some authors used this technique as model validation technique (Islamand Ali, 2004; Islam, 2006; Islam, 2007a; 2007b; 2008; 2009;2011; 2012a; 2012b; 2013; Islam & Hossain, 2013a; 2013b; 2014a; 2014b; 2015; Hossain & Islam, 2013; Islam et al., 2013; 2014; Islam and Hoque, 2015; Shahiduzzaman et al., 2017; Islam & Shitan, 2022).

RESULTS AND DISCUSSION

The results of bivariate distribution of drug addiction by background characteristics

The bivariate distributions of drug addiction of street children with their background characteristics have been presented in Table 1. It was found that 20.7%, 4.0%, 5.5% and 2.6% of "street living children", "street working children", "children from street families" and "Children who are in institutional care" respectively were drug addicted. Drug addiction among male street children was higher (8.7%) than female street children (3.6%). Drug addiction among the street children at mazar was the highest (37.7%) which is the closer estimate of Hossain and Alam (2016), at railway station/bus stand/launch terminal it was the second highest (13.0%), at kachabazar and park/institution it was 3.2% and 2.4% respectively. The percentage of drug addiction of the children who became street children for step parents/none for caring was poverty was higher (11.5%) than the children who became street children for poverty (7.5%). In this study, it was revealed that 2.8%, 7.8%, 12.2%, 8.6% and 11.5% of the street children who were engaged in small business, tokai, coolie/minti, labour and begging respectively were drug addicted. It indicates that the drug addiction among the street children who were coolie/minti was the highest and the beggar was the second highest. The drug addiction of the street children whose working hours per day were < 5, 5-7 and 8+ hours was 4.3%, 5.3% and 12.3% respectively. The drug addiction among the street children whose working days per week were <7 and 7 days was 4.7% and 9.7% respectively. The percentage of drug addiction among the street children who spent more time on street was higher. It was revealed that 5.7% and 12.5% of the street children whose earnings per day were < BDT 100 and BDT 100+ respectively were drug addicted. Street children have to stay more time on street for more earnings which also indicates that the drug addiction among the street children who spent more time on street was higher. Drug addiction of the street children born in urban area was more (12.2%) than who born in rural area (6.5%). It was seen that 6.9% and 8.7% of the street children who were attending and were not attending school respectively were drug addicted. It was also seen that 7.9% and 8.1% of the street children who went to school at least once in their lives and never went to school respectively were drug addicted. It was found that 8.3%, 7.9% and 6.7% of the street children whose fathers' education levels were illiterate, primary and secondary+ respectively were drug addicted. It was also found that 6.7%, 9.7% and 9.2% of the street children whose mothers' education levels were illiterate, primary and secondary+ respectively were drug addicted. It was seen that 5.4%, 20.3% and 11.1% of the street children whose parents' compositions were both father and mother, step parents and only father or mother/ none respectively were drug addicted. Drug addiction among the street children who had

step parents was highest. It may happen due to lack of caring of the children. It was observed that 6.5% and 6.9% of the street children whose fathers' income per day was < BDT 300 and BDT 300+ respectively were drug addicted. It was revealed that 7.9% and 9.6% of the street children whose mothers' income per day was < BDT 200 and BDT 200+ respectively were drug addicted. Drug addiction was higher for the street children whose parent's income was more. It may happen due to the lack of parents caring of their children. Since the parents are busy for earnings more money so, they spend more time for that and they cannot take care of their children more time for more earnings. It was also revealed that 14.8%, 17.8%, 2.7% and 5.3% of the street children who collected their food from street shop, begging, home and institution respectively were drug addicted. Drug addiction of street children who collected their food from begging was the highest. It may also happen due to lack of caring of their guardians. Smoker street children's drug addiction percentage was higher (33.9%) than non-smoker street children's drug addiction percentage (1.6%).

The χ^2- test demonstrated that the association between drug addiction of street children and types of street children ($p<0.01$), gender of street children ($p<0.05$), places of interview ($p<0.01$), types of work ($p<0.05$), working hours per day ($p<0.01$), working days per week ($p<0.05$), earnings per day ($p<0.01$), place of birth ($p<0.01$), parents' compositions ($p<0.01$), food collection ($p<0.01$), smoking practice ($p<0.01$), were statistically significant. On the other hand, reasons of becoming street children, currently attending school, ever attending school, fathers' education levels, mothers' education levels, fathers' income per day, mothers' income per day, were not statistically significant with drug addiction of street children.

Table 1 Bivariate distribution of drug addiction of the street children by their socio-demographic and health related characteristics

Background characteristics	**Drug addiction**		**χ^2 – values (p values)**
	Yes	No	
Types of street children			80.304
Street living children	56 (20.7)	215 (79.3)	(0.000)
Street working children	20 (4.0)	477 (96.0)	
Children from street families	6 (5.5)	104 (94.5)	
Children who were in institutional care	6 (2.6)	224 (97.4)	
Gender of street children			5.088
Male	82 (8.7)	859 (91.3)	(0.024)
Female	6 (3.6)	161 (96.4)	
Places of interview			103.186
Mazar	20 (37.7)	33 (62.3)	(0.000)

Rail station/bus stand/launch terminal	50 (13.0)	335 (87.0)	
Kachabazar	7 (3.2)	210 (96.8)	
Park/institution	11 (2.4)	442 (97.6)	
Reasons of becoming street children			2.184
Poverty	75 (7.5)	920 (92.5)	(0.139)
Step parents/none for caring	13 (11.5)	100 (88.5)	
Types of work			12.013
Small business	5 (2.8)	173 (97.2)	(0.017)
Tokai	27 9 (7.8)	317 (92.2)	
Coolie/minti	24 (12.2)	172 (87.8)	
Labour	26 (8.6)	275 (91.4)	
Begging	6 (11.5)	46 (88.5)	
Working hours per day			19.675
< 5	10 (4.3)	223 (95.7)	(0.000)
5-7	19 (5.3)	341 (94.7)	
8+	59 (12.3)	419 (87.7)	
Working days per week			7.633
< 7	15 (4.7)	306 (95.3)	(0.006)
7	73 (9.7)	677 (90.3)	
Earnings per day			15.698
< BDT 100	38 (5.7)	634 (94.3)	(0.000)
BDT 100+	50 (12.5)	349 (87.5)	
Place of birth			9.436
Rural	53 (6.5)	767 (93.5)	(0.002)
Urban	35 (12.2)	253 (87.8)	
Currently attending school			1.156
Yes	32 (6.9)	431 (93.1)	(0.282)
No	56 (8.7)	589 (91.3)	
Ever attending school			0.007
Yes	66 (7.9)	769 (92.1)	(0.935)
No	22 (8.1)	251 (91.9)	
Fathers' education levels			0.367
Illiterate	48 (8.3)	532 (91.7)	(0.832)
Primary	31 (7.9)	363 (92.1)	
Secondary+	9 (6.7)	125 (93.3)	
Mothers' education levels			3.203
Illiterate	42 (6.7)	587 (93.3)	(0.202)
Primary	39 (9.7)	364 (90.3)	
Secondary+	7 (9.2)	69 (90.8)	
Parents' compositions			36.365
Father and mother	44 (5.4)	774 (94.6)	(0.000)
Step parents	26 (20.3)	102 (79.7)	
Only father or mother/ none	18 (11.1)	144 (88.9)	
Fathers' income per day			0.034
< BDT 300	23 (6.5)	329 (93.5)	(0.853)
BDT 300+	37 (6.9)	503 (93.1)	

Mothers' income per day			0.645
< BDT 200	61 (7.9)	716 (92.1)	(0.422)
BDT 200+	20 (9.6)	189 (90.4)	
Food collection			54.488
Street shop	49 (14.8)	281 (85.2)	(0.000)
Begging	16 (17.8)	74 (82.2)	
Home made	14 (2.7)	503 (97.3)	
Institution	9 (5.3)	162 (94.7)	
Smoking practice			250.981
Yes	74 (33.9)	144 (66.1)	(0.000)
No	14 (1.6)	876 (98.4)	

Note: () indicates percentage of respondents

The effects of socio-demographic and health related characteristics on drug addiction of street children

The effects of different significant characteristics on drug addiction of street children have been presented in Table 2. The information of model fittings was shown at the bottom of the Table. It was revealed that the model was better fit due to smallest shrinkage coefficient (0.0031). It was found that the street working children (OR=0.465, CI: 0.222-0.977) and children from street families (OR=0.352, CI: 0.105-1.179) were less likely drug addicted than street living children. It may happen due to the street living children stay more time on street than the other categories of street children. It was also found that the street children who were interviewed at railway station/bus stand/launch terminal (OR=0.044, CI: 0.018-0.111), kachabazar (OR=0.027, CI: 0.008-0.086) and park/institution (OR=0.046, CI: 0.014-0.156) were less likely drug addicted than the street children who were interviewed at mazar. The street children whose place of birth was urban area (OR=1.663, CI: 0.942-2.934) were more likely drug addicted than the street children whose place of birth was rural area. Smoker street children (OR=13.167, CI: 6.881-25.196) were more likely drug addicted than the non-smoker street children which is the similar finding of Ikoh et al. (2019).

Table 2 Effects of selected socio-demographic and health related characteristics on drug addiction of street children

Explanatory variables	Coefficients(β)	S.E of β	P-values	Odds ratio (OR)	95.0% C.I.for OR	
					Lower	Upper
Types of street children						
Street living children (r)	……..	……..	……..	1.000	……..	……..
Street working children	-0.765	0.378	0.043	0.465	0.222	0.977
Children from street families	-1.044	0.617	0.091	0.352	0.105	1.179
Children who were in institutional care	-0547	0.845	0.517	0.579	0.110	3.032
Gender of street children						
Male (r)	……..	……..	……..	1.000	……..	……..
Female	-0.236	0.586	0.687	0.790	0.251	2.489
Places of interview						
Mazar (r)	……..	……..	……..	1.000	……..	……..
Railway station/bus stand/launch terminal	-3.114	0.468	0.000	0.044	0.018	0.111
Kachabazar	-3.610	0.591	0.000	0.027	0.008	0.086
Park/institution	-3.078	0.624	0.000	0.046	0.014	0.156
Types of work						
Small business (r)	……..	……..	……..	1.000	……..	……..
Tokai	-0.252	0.447	0.573	0.777	0.324	1.866
Coolie/minti	-0.179	0.489	0.714	0.836	0.320	2.181
Labour	-0.260	0.448	0.562	0.771	0.320	1.856
Begging	-1.075	0.771	0.164	0.341	0.075	1.549
Working hours per day						
< 5 (r)	……..	……..	……..	1.000	……..	……..
5-7	-0.598	0.473	0.205	0.550	0.218	1.388
8+	-0.091	0.452	0.840	0.913	0.376	2.214
Working days per week						
< 7(r)	……..	……..	……..	1.000	……..	……..
7	0.069	0.318	0.828	1.072	0.575	1.998
Earnings per day						
< BDT 100 (r)	……..	……..	……..	1.000	……..	……..
BDT 100+	0.173	0.296	0.559	1.189	0.665	2.126
Place of birth						
Rural (r)	……..	……..	……..	1.000	……..	……..
Urban	0.508	0.290	0.079	1.663	0.942	2.934
Parents' compositions						
Father and mother (r)	……..	……..	……..	1.000	……..	……..
Step parents	0.315	0.341	0.355	1.371	0.702	2.674
Only father or mother/ none	0.252	0.374	0.501	1.287	0.618	2.678
Food collection						
Street shop (r)	……..	……..	……..	1.000	……..	……..
Begging	-0.439	0.483	0.363	0.645	0.250	1.661
Home made	-0.367	0.483	0.448	0.693	0.269	1.785
Institution	-0.536	0.631	0.395	0.585	0.170	2.013

Smoking practice						
No (r)	……..	……..	……..	1.000	……..	……..
Yes	2.578	0.331	0.000	13.167	6.881	25.196

Model summary: Model χ^2= 1095.658 (0.000), -2 Log likelihood = 389.063
Nagelkerke R square =0.854, ρ_{cv}^2 =0.851, Shrinkage coefficient=0.0031
Stability of R square = 0.9969

Note: r represents the reference category, CI represents the confidence interval

Conclusions

The drug addiction of the street children among Dhaka City in Bangladesh was investigated in this study. Initially the practice of drug addiction of street children was distributed based on their background characteristics. Only statistically significant predictors employed by χ2- test were used in logistic regression analysis. The logistic regression analysis was used to identify the impact of significant predictors on drug addiction of street children. It was found that types of street children, places of interview, place of birth and smoking practice were the significant predictors for drug addiction of the street children. Hence, it can be suggested thatthe Government and Non-Government organizations should take necessary steps so that the street children avoid their staying from the vulnerable places like mazar, railway station/bus stand/launch terminal etc.and arrange institutional care for them especially those who born in urban area. As almost all drug addicted street children are smoker, so the policy makers should take proper steps for abating the smoking practice of street children.

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