International Journal of Research in Humanities, Arts and Literature (IJRHAL)
Vol. 1, Issue 2, July 2013, 69-76

MINIMIZATION OF HEALTH AND ENVIRONMENTAL HAZARDS OF TOBACCO AMONG THE FOLK COMMUNITY IN RURAL BANGLADESH

ABDULLAH AL MAMUN[1], ARMANUL HAQUE[2], SHAFIUL ALAM[3] & RUMANA SULTANA[4]

[1]Department of Folklore, Faculty of Social Science, University of Rajshahi, Rajshahi, Bangladesh

[2]Department of Information Science & Library Management, Faculty of Social Science, University of Rajshahi, Rajshahi, Bangladesh

[3,4]Department Geography and Environmental Studies, Faculty of Life and Earth Science, University of Rajshahi, Rajshahi, Bangladesh

ABSTRACT

The research basically deals with evaluation of the negative impacts of tobacco on health and the environment with a view to minimize tobacco cultivation among the folk peasants in rural Bangladesh. Therefore, the study has been conducted through the survey method with the easy to understand structured questionnaire through which the data are collected by interview and personal observation. However, this study reveals the information about the duration of cultivation of tobacco as well as identified its effects on health from the tobacco processing place. Moreover, it focuses on the consciousness building in the local farmers and adaptation of the cautions during the tobacco cultivation. The study concludes that the various government and non government organizations, institutions and media could play important roles to create the awareness in the folk community for minimizing the tobacco cultivation and reducing its negative impact on health and the environment.

KEYWORDS: Tobacco Farming, Folk Population, Negative Impact, and Consciousness Building

INTRODUCTION

In rural Bangladesh, the tobacco is being cultivated and processed for the income generated by a group of local people in the course of their socioeconomic practices handed down from their forefathers with *artistic communication* (Ben-Amos, 1982). However, the common uses of tobacco in Bangladesh are in producing cigarettes, *bidi*, *hookka* and, *jarda* for chewing with betel leaves and nuts. The plant is cultivated as *a Rabi winter crop*. In that case, the best tobacco producing districts are Rangpur, Kushtia, Jessore, Dhaka, Faridpur, Patuakhali, and Chittagong. (Banglapedia, 2012). Nowadays, tobacco is also being cultivated to a lesser extent by the folk farmers in the Tarash Upazila in the district of Sirajganj of Bangladesh. It is a matter of anxiety that the folk people of this area have a tendency to cultivate the tobacco because of the propitious fertile land as well as the easy loan from the tobacco company. But, folk community associated with tobacco cultivation are not aware of the negative impact of tobacco cultivation on health and environment. Health risks associated with tobacco farming were identified as early as 1713 by Bernardino Ramazzini who is considered by many as the father of occupational medicine. He recorded various symptoms in Italian tobacco workers, such as headaches and stomach ailments, attributing them to exposure to tobacco dust (Eckholm, 1978). In 1970, green tobacco sickness (GTS) —a disease specific to tobacco farm workers—was first described in Florida (Weizenecker and Deal, 1970). Folk peasants face different types of health risks for their tobacco cultivation. One of them is green tobacco sickness. Green tobacco sickness is frequently defined as a disease characterized by vomiting or nausea and dizziness or headache during

or after exposure to the agent *Nicotiana tabacum* in tobacco leaves. However, GTS may also result in severe conditions such as dehydration and consequently in the need for emergency medical care (Arcury et al. 2001a).

Nicotine is water and lipid soluble alkaloid found in tobacco leaves (Dawson and Solt, 1960) and harvesters who manually collect tobacco leaves absorb nicotine through the skin due to failure contact. During the tobacco harvesting process, a folk peasant's hand and forearms receive the most exposure (CDC, 1993). Increased levels of nicotine and cotinine have been measured in biological samples of exposed folk workers versus non-exposed folk workers (Gehlbach et al. 1975; D'Alessandro et al. 2001; Quandt et al. 2001). In particular, harvesting has been associated with the highest salivary cotinine levels among all tasks performed by tobacco farm folk workers (Quandt et al. 2001). Environmental degradation is also caused by the tobacco plant, which leaches nutrients from the soil, as well as pollution from pesticides and fertilizers applied to tobacco fields (HJ, 1999). These prove that tobacco cultivation is very harmful not only for health but also for environmental degradation. Under these circumstances, this paper attempts to discuss the tobacco cultivation and its negative impact on health and the environment and the roles of various government and non government organizations, institutions and media's to create the awareness among the folk community for minimizing the tobacco cultivation and reducing negative impact on health and the environment.

MATERIALS AND METHODOLOGY

Study Area and Data Collection

The researchers have chosen the Magurabinod union of the Tarash upazila in the district of Sirajganj of Bangladesh as the sample area. Tarash Upazila (Sirajganj district) with an area of 297.20 sq km, is bounded by Sherpur (Bogra) Upazila on the north, Bhangura and Chatmohar Upazilas on the south, Raiganj and Ullahpara Upazilas on the east, Gurudaspur and Singra Upazilas on the west (Banglapedia, 2012). The researchers conducted the survey with the easy to understand structured questionnaire through which they collected the data by interviews, and also gathered the relevant data through personal observations. The researchers have completed the survey by going through 90 structured questionnaires to 90 tobacco folk cultivators in the Magurabinod union area. During the formal interviews with the questionnaire, the researchers tried to make the questions understood to the folk peasants. Throughout the survey conducted, sometimes the respondents were silent and the researchers, then tried to explain the question informally to retrieve the possible best answers.

Empirical Technique

The collected data were then analyzed through table, graph and qualitative approach.

A chi-square test has been applied for evaluating the perception of the tobacco cultivators in relation to the negative impact on health and the environment.

$$\mathrm{X}^2 - \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

Where,

X^2 = Pearson's cumulative test statistic, which asymptotically approaches a χ^2 distribution.

O_i = an observed frequency;

E_i = an expected (theoretical) frequency

Now, $E=\frac{R\times C}{N}$.

Where, R=Aggregation of Rows, C= Aggregation of Columns, and, N=Number of Respondents.

Hypothesis

Null Hypothesis: H_o

According to folk peasants' perception, tobacco cultivation does not reduce the fertility of soil and is not responsible for the negative impact on health and the environment.

Alternative Hypothesis: (H_1)

According to folk peasants' perception, tobacco cultivation causes the degradation of the soil fertility and is responsible for the negative impact on health and the environment.

RESULTS AND DISCUSSIONS

The WHO estimates that 6 million people die due to tobacco-related diseases every year, more than the death caused by the combined effects of tuberculosis (TB), HIV/AIDS and malaria (WHO, 2008, 2011). In 2015, tobacco is projected to kill 50% more people than HIV/AIDS and will be responsible for 10% of all deaths globally (Mathers and Loncar, 2006). The resultant discussion of the study demonstrates the findings of the work. There is a wider relationship between tobacco cultivator's health and their environment. The folk peasants who are associated with tobacco cultivation may get the lump sump of immediate monetary benefit but in the long run gradually they do enormous harm in both their health and environment irrespective of degradation of soil fertility, causing big harm to health and resulting the pollution of the environment. The resultant discussion of the study demonstrates the findings of the work.

Table 1

Areas where Tobacco Cultivation does Harm	Yes	No	Total
Environment pollution	45	45	**90**
Tobacco cultivation reduces the fertility of soil	75	15	**90**
Tobacco cultivation does harm on health	60	30	**90**
Total	**180**	**90**	**270**

Table 2

O	E	O-E	$(O-E)^2$	$\frac{(O-E)^2}{E}$
45	60	-15	225	3.75
45	30	15	225	7.5
75	60	15	225	3.75
15	30	-15	225	7.5
60	60	0	0	0
30	30	0	0	0
Total				**22.5**

Degree of Freedom (DF)= (3-1) × (2-1) =2

In the statistical calculation through chi-square χ^2 test based on the 5% significance level and 2 degrees of freedom, the calculated value is 22.5, is greater than the table value 5.991. Which is why, the null hypothesis is rejected. So the alternative hypothesis is accepted. In this regard, according to tobacco cultivators' perception, tobacco cultivation

causes the degradation of the soil fertility and is responsible for the negative impact on health and the environment. Tobacco cultivation reduces land fertility, decreases cereal food production leading towards food shortages, increasing liabilities of the farmers and adversely affecting the environment, ecology and bio-diversity (The Daily News Today, 2012).

The research shows that the greater part of the respondent's age level is between (25-30) years and the largest proportion of tobacco cultivators is illiterate who is associated with tobacco cultivation from 5 years.

Table 3: Age of the Respondents

Age (By Year)	Respondents	Percentage
20-25	13	14.44
25-30	25	27.78
30-35	23	25.56
35-40	19	21.11
40+	10	11.11
Total	**90**	**100**

Source: Field Survey, 2011

Table 3 shows that almostone third of the respondent's age level is between (25-30) years while (30-35) years fall into one tenth percent. One fourth of the respondents are 30 to35 years old.

Table 4: Educational Qualification and Duration of Connection with Tobacco Cultivation

Educational Qualification	Period	Respondents	Percentage
Higher Secondary Certificate	1 year	05	05.56
Secondary School Certificate	2 years	10	11.11
Primary education	3 years	21	23.33
Signature Literate only	4 years+	24	26.67
Illiterate	5 years+	30	33.33
Total	**--**	**90**	**100**

Source: Field Survey, 2011

Table 4 represents that more than one third of the folk farmers have been cultivating tobacco for more than 5 years who are illiterate. On the other side, less than one tenth of the folk cultivators who have the higher secondary certificate, are engaged in cultivating tobacco from 1 year. Moreover, the signature literate only i.e. almost one fourth percent respondents have been cultivating it for 4 years followed by 23.33% respondents from 3 years who are primary school pass.

It is also observed that a large proportion of folk respondents processes their produced tobacco in their respective home. Maximum folk respondents said that they faced difficulties in terms of smooth breathing.

Table 5: Effects of Tobacco on Health, Multiple Responses (N=428)

Effect of Tobacco on Health	Respondents	Percentage
Vomiting	45	10.51
Eye irritation	69	16.12
Abdominal pain	55	12.85
Headache	65	15.19
Breathing difficulties	85	19.87
Pain in leg	38	8.88
Ulcer in hand and leg	48	11.21
Others	**23**	**5.37**
Total	**428**	**100**

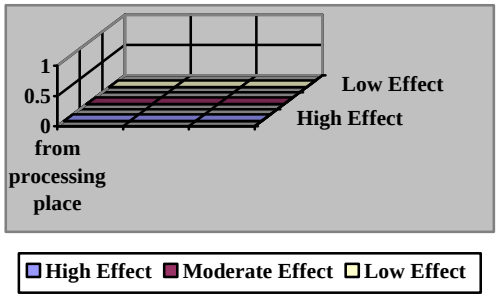
Source: Field Survey, 2011

Tobacco curing requires making the tobacco useful for the tobacco consumption which has an enormous negative impact on not only health but also the environment. Table 5 expresses about the effect of tobacco curing on health where almost one fifth percent of the respondents said that they face difficulties in terms of smooth breathing. Eye irritation represents the second highest value. Similarly, Headache, abdominal also shows higher value.

Table 6: Health Risk of the Tobacco Processing Place

Distance		
0-0.25 km	0.26-0.40 km	0.41 + km
High effect	Moderate effect	Low effect

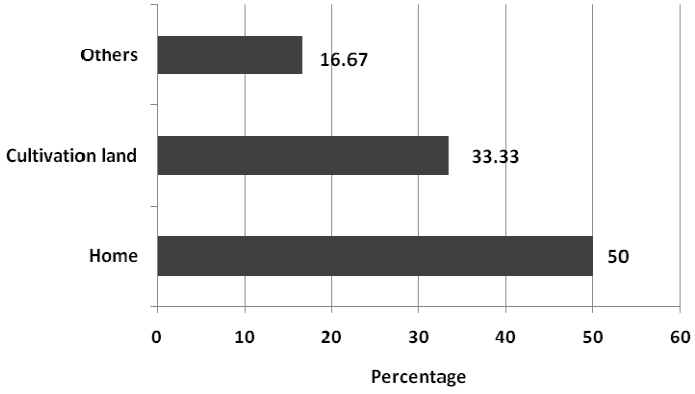
Source: Field Survey, 2011



Source: Field Survey, 2011

Figure 1: Health Risk of the Tobacco Processing Place

The hazards posed by tobacco cultivation place of folk workers have increased risk of injury and illness (Minh et. al., 2009). Several harmful chemicals and pesticides used in tobacco cultivation can enter into the food chain and thereby cause adverse health effects among humans (Ministry of Health and Family Welfare, 2004). The researchers surveyed the research area and identified the health risk zones by the conversation with the respondents and sharing experiences of the tobacco processing area. Table 6 identifies the health risk from the tobacco processing place. It is observed that there has been the wider risk of health around 0 to 0.25 km where 0.26-0.40 km is moderate and 0.41+ km is low effect from the place of processing the tobacco. The effect is also shown in figure 1 by a circle with different color where the deepest colors are defined as high risk, semi deep is identified as moderate and the light deep is as low effect. Moreover, they faced difficulties in terms of smooth breath. It is also found that there is a wider risk of health around the 0 to 0.25 km from the place of the tobacco processing area. The study demonstrates that only 10 respondents out of 90 adopted the different cautions during and after the cultivation of tobacco where those who are conscious among the folk respondents, the majority percents of folk respondents wear socks on the feet during their tobacco cultivation.



Source: Field Survey, 2011

Figure 2: Place of Processing Tobacco

Figure 2 shows about the place where the folk cultivator processes tobacco. As of the figure, it is clear that half of the respondents processes their produced tobacco in their respective home while one third of the respondents do it in the cultivation land. Besides, less than one fifth of the respondents process the tobacco in other places.

In addition, a large portion of folk communities believes that television can play the paramount role in disseminating the effective information for the creation of awareness among them. The research demonstrates that tobacco cultivation reduces the fertility of soil and is harmful for health and the environment.

Table 7: Adaptation to Caution for Tobacco Cultivation

Cautions	Respondents	Percentage
Wearing gloves in the hand	3	30
Wearing socks on the feet	4	40
Wearing masks in the mouth	3	30
Total	**10**	**100**

Source: Field Survey, 2011

When the tobacco cultivation process goes on, folk farmers should adapt some cautions so that they cannot be affected by the various diseases. Respondents were asked about the adaptation to the different cautions during tobacco cultivation. While asking the folk peasants about the adaptation of various cautions during tobacco cultivation, only 10 respondents out of 90 could adopt the different type of cautious steps. As in table 7, it is seen that more than one third of the respondents wear socks on their feet during tobacco cultivation followed by less than one third of them wearing gloves in the hands and wearing masks in the mouth respectively.

The folk community of this study was asked to specify their opinion about the roles of various awareness body/ institutions in the creation of awareness among them to minimize the negative effect on health and the environment. Table 6 expresses the roles of awareness body / institutions to minimize the negative impact of tobacco cultivation on health and the environment where it is found that the majority portion of the folk peasants think that television can play the most paramount role in disseminating the effective information for the creation of awareness among them while the lower part of them assume that cultural organization can do the same which is less than one cent.

Table 8: Roles of Institutions on Minimizing Negative Impact of Tobacco

Awareness body / Institution	Respondents	Percentage
Agriculture Extension Officer	70	11.43
Government body	65	10.62
NGOs	55	8.99
Public Library	10	1.63
Union Information Service Center	25	4.08
Schools	20	3.27
Various Cultural Organization	5	0.83
Radio	75	12.25
Television	80	13.07
Newspapers and posters	45	7.35
Educated Person in the Village	27	4.41
Health Worker	36	5.89
Medical Officer of Nearby Hospital	21	3.43
Mobile Phone Operator by SMS	46	7.52
Local Government Body And Politician	32	5.23
Total	**612**	**100**

Source: Field Survey, 2011

Moreover, less than one fifth of the respondents believe that radio can accomplish the task by the various awareness based programs. Similarly role of various government body and NGOs is almost one tenth percent. On the other hanf mobile phone operator, newspapers and posters role is less than one tenth percent. So, maximum folk peasant considers the television as a medium which can hold the responsibility to create the awareness and make them conscious about the tobacco cultivation and its negative impact on health and the environment.

CONCLUSIONS AND RECOMMENDATIONS

These days, climate change and environmental degradation are the burning issues all over the world as well as Bangladesh. The peoples are now affected by different harmful diseases due to the large number of the population of the world, unplanned life leading, air pollution, uncontrolled and excessive implication of chemical fertilizer to the cultivable land, various industries waste, tobacco cultivation and tobacco processed products. This study has paid the attention to awareness building to the folk peasants for minimizing the tobacco cultivation and its negative impact on health and the environment in the Magurabinod Union (a small unit of local administration) in Tarash Upazila in the district of Sirajganj, Bangladesh. It is found that majority number of farmers have been cultivating tobacco from 5 years and most of them are illiterate. The research paper has also expressed that the majority of the respondents suffers from breathing difficulties due to tobacco cultivation. It is also proved that tobacco cultivation is responsible for the contamination of the environment and creates terrible impact on health. It is found that there has been the wider risk of health around the 0 to 0.25 km from the place of the tobacco processing area. Besides, the majority portion of the folk peasants feel that television is the supreme means that can take part in making their conscious level in a very significant stage. Most of the countries of the world now include health education as an essential part of their school curriculum. School based tobacco education programs that focus on skills training such as refusal and advocacy skills and address multiple psychosocial factors associated with tobacco use have been shown to be effective (Centers for Disease Control and Prevention, 1994). Moreover, various government and non government organizations, print and electronic media, the various professional bodies should come forward with awareness programs, coordination activities and with the extensive initiatives and measures so that the farmers become inspired to follow the alternative cultivation which is pro-environmental and health friendly.

ACKNOWLEDGEMENTS

We would like to gratefully acknowledge to Dr Md Abdur Rashid Sarkar, for his support and constructive criticisms during the entire study. Moreover, we are particularly indebted to Professor Dr. Md Abdul Wadud, Department of Economics, University of Rajshahi and Md Mominul Islam, Department of English, University of Rajshahi for their suggestions and guidance in different ways. Last but not least, for providing us with spontaneous responses and thoughtful views we are also grateful to the folk farmers of the Magurabinod union of Tarash upazila in the district of Sirajganj of Bangladesh where field survey was undertaken.

REFERENCES

1. Arcury TA, Quandt SA. (2012). Preisser JS. Predictors of incidence and prevalence of green tobacco sickness among Latino farm workers in North Carolina, USA. J Epidemiol Community Health 2001a; **55**: 818–824.
2. Banglapedia. http://www.banglapedia.org/httpdocs/HT/T_0185.HTM. 2012. Accessed on March 07,
3. Ben-Amos. (1982). Dan. *Folklore in context essays*. New Delhi: South Asian Publishers Pvt Ltd, **2-17**.
4. Centers for Disease Control and Prevention (CDC). (1992). Green tobacco sickness in tobacco harvesters—Kentucky, Morb Mort Wkly Rep (MMWR) 1993; **42**: 237–40.

5. Centers for Disease Control and Prevention (CDC). (2012). Guidelines for School Health Programs to Prevent Tobacco Use and Addiction. 1994 http://www.cdc.gov/mmwr/ preview/mmwrhtml/00026213.htm. Accessed 21
6. D'Alessandro A, Benowitz NL, Muzi G et al. (2001). Systemic nicotine exposure in tobacco harvesters. Arch Environ Health, **56**: 257–63.
7. Dawson RF, Solt ML. (1960). Nicotine and its botanical sources. Ann NY Acad Sci, **90**:7–11.
8. Eckholm, E. (1978). Cutting tobacco's toll. British: American Tobacco Company 20.
9. Gehlbach SH, Williams WA, Perry LD et al. (1975). Nicotine absorption by workers harvesting green tobacco. Lancet , **1**: 478–80.
10. HJ, Geist. (1999). Global assessment of deforestation related to tobacco farming. Tobacco Control. In Coping with Changing Environments Edited by: Lohnert B, Geist H., Ashgate Publications, **8**: 18–28.
11. Mathers CD. (2006). Loncar D. Projections of Global Mortality and Burden of Disease from 2002 to 2030. *PLoS Med*., **3** (11): e442.
12. Minh, Hoang Van., et.al. (2009). Tobacco farming in rural Vietnam: questionable economic gain but evident health risks. BMC Public Health, **9** (24), Available on: http://www.biomedcentral.com/1471-2458/9/24.
13. Ministry of Health and Family Welfare. (2004). Report on Tobacco Control in India. New Delhi: Ministry of Health and Family Welfare, Government of India.
14. Quandt SA, Arcury TA, Preisser JS et al. (2001). Environmental and behavioral predictors of salivary cotinine in Latino tobacco workers. J Occup Environ Med, **43**: 844–52.
15. The News Today. (2012). www.newstoday.com.bd 2012. Accessed on April 06,
16. Weizenecker R, Deal WB. (1970). Tobacco cropper's sickness. J Fla Med Assoc, **57**: 13–14.
17. World Health Organization. Tobacco Factsheet. (2011).

    http://www.who.int/ mediacentre/factsheets/fs339/en/index.html. 2011.
18. World Health Organization. WHO Report on the Global Tobacco Epidemic. (2008), The MPOWER Package. Geneva: World Health Organization.