Students’ perceptions on snake in Northwestern Bangladesh

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Abstract. Jaman MF, Rabbe MF, Alam MM, Shome AR, Hossain MA, Sarker MAR. 2020. Students’ perceptions on snake in Northwestern Bangladesh. Asian J Ethnobiol 21: 62-69. Human-snake interaction has an ancestral history with different outcomes at different times. This study was done to assess the student's perceptions of snakes and current superstitions practiced in some areas of northeastern Bangladesh. We interviewed 348 students from 7 educational institutions under 3 districts from January 2019 to April 2019. We asked dichotomous (yes-no) question to know perceptions about snakes and variation among superstitions of the students. We found significant variation in responses with respect to the demographic status of the respondents. Religion and education were the most influencing factors affecting the results of students’ perceptions. Among the total respondents, 329 (94.5%) had seen snakes, 182 (52.3%) considered snake as a notorious animal, 224 (64.4%) considered snakes as an economically harmful animal, 155 (44.5%) think killing snake gives a good feeling, 313 (90%) believe that snakes attack humans, 321 (92.2%) students have seen others killing snakes and 127 (36.5%) had killed snakes themselves. Of the five superstitions, “snake can drink milk” was the topmost statement believed by 293 (84.2%) students. Due to these negative attitudes and misconceptions, we assume that snakes are regularly killed and there is a potential risk for population decline.

Keywords: Perceptions, northwestern Bangladesh, misconceptions, student, superstitions

INTRODUCTION

Bangladesh is a small country with diverse cultures and rich in wildlife resources (Nishat et al. 2002). Reptiles occupy a significant position among them and approximately 170 species of reptiles are known to be present here (Khan 2008; Hasan et al. 2014; IUCN Bangladesh 2015; Khan 2015, 2018). Among them, in total 100 species of snakes (67% species are non-venomous and 33% venomous) are assessed by the IUCN Red List Bangladesh (2015). Eight species are placed in the threatened categories.

The northwestern districts of Bangladesh are enriched with mostly agricultural and plain lands, rivers, canals, and some areas are covered with deciduous forests (Khan 2008; Khan 2015). Recent survey (Rabbe 2018) has shown that most of the snakes in this region are facing numerous anthropogenic threats. Among them, habitat destruction and fragmentation, road accidents, and killing by local people without any definite valid reason have been posing serious threats on snakes leading to a drastic decline in their natural population (Hasan et al. 2014). In addition, human-snake conflicts due to snakebite incidences have placed them in a vulnerable position. The study of Mondal et al. (2011) in Rangpur medical college (a hospital in northwestern Bangladesh) showed that 5.71% of patients are killed due to snakebite.

People in various cultures are afraid of snakes, provoking a pronunciation and persecution that hampers conservation efforts for this group of reptiles (Babalola et al. 2020). Traditional practices to prevent snakebites and treatment of snakebite probably lead to killing snakes (Rahman et al. 2010), consequently leading to decline number in the natural population of snakes in the northwestern region. Snake phobia probably is the main reason for school children for killing snakes. Every year during the rainy season snakebite incidences increase since the houses are made of homestead bush making an ideal place for snake (Rahman et al. 2010; Guidelines for the Management of Snakebite in Bangladesh 2018). Unfortunately, people in Bangladesh generally treat every snake as venomous, probably due to the lack of proper knowledge about snakes. The study of Rabbe (2018) showed that younger people of north-western region are intended to kill snakes just for fun resulting in young individuals more prone to snakebite. Faiz et al. (1999) also suggested that children in Bangladesh are at high risk of snakebite envenoming. Snakes and snakebite in Bangladesh have mythological fragrance leading to higher mortality (Global Snakebite Initiative 2020). Superstitions have dominated the mind of people consequently they go to Ojha (a person who traditionally treats snakebites and shows snakes for entertainment in markets, villages) for snakebite treatment (Alam et al. 2015). Among the superstitions, the jewel of the snakes’ head, snakes dancing by whistle, and milk sucking of snake from cow are the most popular (Kabir 2018).

Snakes also bite humans and cattle when entering the home yard, leading to increased conflict with humans and representing risks to human life (Alves et al. 2012a, b). Moreover, traditional folk stories promote negative attitudes spreading fear and dislike among people in the
community (Alves et al. 2014). Negative perceptions are often dangerous for both people and snakes since it influences people to take irrational decisions that often cause snake deaths or an increased risk of snakebite, resulting in low interest of conservation of snakes (Alves et al. 2012b). The ethnobiological approach may be one way to investigate and establish relationships between the locals and provide scientific knowledge among the school children for conservation strategies of snakes (Baptista and El-Hani 2009).

Considering the above scenario and from an ethnozoological point of view, the present study is the first to investigate the perceptions and knowledge of students about snakes in the northwestern region of Bangladesh. The aims of this research are to investigate and establish relationships between the locals and provide scientific knowledge about people’s attitudes, superstitions, snakebite, snake mortality, and other related information. Later, we selected the areas of the upazilas through personally communicating with deliberate snake rescuers, wildlife biologists, and news reporters who worked in those areas. We also considered social media (Facebook) information for selecting the survey areas. For example, a popular Facebook group of Bangladesh named ‘Deep Ecology and Snake Rescue Organization’ continuously updates information about snakebites, snake rescue, and snake killing incidences. We selected institutions where students come from the areas of interest to conduct the survey (Table 2). The questionnaire was entirely close-ended and 348 students were randomly sampled in this study. We surveyed students aged 14 to 20 years and from 9th grade to Higher Secondary level. Students were informed about the aims and objectives of the questionnaire survey to encourage them to participate in the research.

Among all respondents of the survey, 147 (42.2%) were males and 201 (57.8%) were females. As for the age proportions, 157 (45.1%) were low aged (14-16 years) and 191 (54.9%) were high aged (17-20 years). With regard to religion, 308 (88.5%) were Muslims, 37 (10.6%) were Sonatons, 3 (0.9%) were Christians. Education level of the interviewees varied; 128 (36.8%) were secondary level (SSC) students and 220 (63.2%) were higher secondary level (HSC) students. Among the respondents, 97 (27.9%) had access to social media whereas 251 (72.1%) had not.

### MATERIALS AND METHODS

#### Problems, strategy, and variable assignment

Before starting survey we assessed superstitions practiced by the local people and set up our questionnaire accordingly. We divided the questionnaire into two segments-perceptions and superstitions (Table 1). We sorted the information in a series of questions and all questions were bi-category variables expressed as v<sub>i</sub> (i = 1, 2, ...,7) and s<sub>i</sub> (i = 1, 2, ...,5) in Table 1. For perceptions, we collected responses by asking simple to complex questions i.e., the first perception variable (v1) is about seeing snakes, while the last variable (v7) is about killing snakes. Demographic background of the respondents such as age, gender, education, religion, and social media usage was also collected.

### Table 1. Variables with their denotations and code used afterward in the article

| Category       | Information (variable denotation) | Code                                                                 |
|----------------|----------------------------------|----------------------------------------------------------------------|
| Demography     | Age                              | 14-16 years = 1, 17-20 years = 2                                     |
|                | Sex                              | Female = 1, Male = 2                                                 |
|                | Religion                         | Islam = 1, Sonaton = 2, Christian = 3                               |
|                | Education                        | 9<sup>th</sup> grade to Secondary School (SSC) = 1, Higher secondary (HSC) = 2 |
|                | Internet                         | No = 1, Yes = 2                                                     |
| Perceptions    | Snake seen by the respondent (v1) | No = 1, Yes = 2                                                     |
|                | Snake is considered as a notorious animal by the respondent (v2) | No = 1, Yes = 2                                                     |
|                | Snake harm their economical condition by preying on their domestic animals and by snakebite incidence (v3) | No = 1, Yes = 2                                                     |
|                | Respondent thinks killing snake gives a good feeling (v4) | No = 1, Yes = 2                                                     |
|                | Respondent thinks snake attack humans (v5) | No = 1, Yes = 2                                                     |
|                | Respondent has seen killing of a snake by other people (v6) | No = 1, Yes = 2                                                     |
|                | Respondent killed a snake themselves (v7) | No = 1, Yes = 2                                                     |
| Superstitions  | Snake bear snakestone (Moni) on head (s1) | No = 1, Yes = 2                                                     |
|                | Snake can dance hearing the sound of flute played by snake charmer Ojha (s2) | No = 1, Yes = 2                                                     |
|                | Snake can drink milk (s3) | No = 1, Yes = 2                                                     |
|                | Snake takes revenge (if one snake is hurt by humans another individual of the pair takes revenge) (s4) | No = 1, Yes = 2                                                     |
|                | Snakes have hair (Dari) on its skin (s5) | No = 1, Yes = 2                                                     |
affirmed they did not distinguish between venomous and non-venomous species. Considering snakes as aggressive and dangerous animals is a serious fact to consider when implementing conservation plans, since it stimulates snake killing, regardless of whether or not they are poisonous (Alves et al. 2014).

The next question was about the impact of snakes on their daily life. We asked respondents if snakes do any kind of economic damage, like eating their domestic animals (especially chicken), snakebites to human and domestic animals, etc. We found that 224 (64.4%) respondents considered snakes as an economically harmful animal and they experienced some sort of damages from it. This response varied significantly by the religion of the respondent (P = 0.003).

We wanted to know the psychological perception of snake killing or seeing the killing of snakes. Snake killing by them self or seeing them killed by others may give psychological pleasure and we asked about it to the students. In total 155 (44.5%) respondents gave a positive response, but their response varied significantly in terms of age, religion, and education (Table 3). Muslims believe snake killing is religiously good and this belief is practiced by the respondents as well. Our result reflects that Muslim students who are low aged and educated at lower levels were more positive to this response (P = 0.003).

Snakes attack humans” is a popular belief to all people and we asked students to record their response about it. We received almost 90% positive response corresponding to this question and this response was significant considering age, religion, education, and internet use (Table 3). The next question pair was ‘respondents have seen the killing of snake’ and ‘respondent killed by them self’. Among the respondents, 321 (92.2%) students had seen killing snakes by others and 127 (36.5%) killed by themselves. The first response varied significantly with age and educational status while the second response varied significantly with sex, religion, and internet use (Table 3). Pandey et al. (2020) suggested that people intend to kill snakes when they encountered them and the study also reported that snake killing attitudes of school students are acute when they face snakes indoors or outdoors such as in the yard or backyard and roads. Ethnozoological research revealed that this kind of perception attributes to the development of negative behavior regarding these animals (Alves et al. 2014). The study showed that students assuming eventual encounters with snakes, almost half of the students (n = 53, 49%) responded in such a way that indicates that they

### RESULTS AND DISCUSSION

#### Perceptions towards snakes

Following the dichotomous method, we asked questions from simple to complex. Almost all the respondents (n = 329, 94.5%) have seen snakes in their areas. This response significantly varied in terms of sex, religion and education (Table 3). The percentage of seeing snakes was higher for female students (97%), Sonaton followers (97.3%), and higher educated students (97.3%). The second question was if the respondent considers snake as a notorious animal. This question was asked to know their primary attitudes towards the snake. Among the total respondents, 182 (52.3%) were positive and considered snakes as a notorious animal, and the response varied significantly only for religion (Table 3). Most of the students who follow Sonaton religion do not consider snakes as notorious animals, rather they are considered animals of religious importance. Sonaton followers believe the markings on the hood of cobras hailed from the god Vishnu (Wake 1873). We interviewed local Sonaton people and found that serpents are imagined as heavenly animals with the capacity to bless and curse. Serpents are also believed to be associated with fertility of women, healing, and familial prosperity; hence they are widely worshipped to obtain these blessings. The work of Alves et al. (2012a; 2014) showed that students have a widespread perception considering most snake species as being tarnished and poisonous, regardless of whether or not the particular snake possesses this characteristic. This is the same perception of a considerable part of the students interviewed, who

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**Table 2. Institutions and locations where the survey was conducted**

| District | Upazila | Institution’s name | Sample size |
|----------|---------|-------------------|-------------|
| Rajshahi | Tanore  | Koel High School  | 60          |
|          | Godagari| Premtoli Degree College | 57          |
| Natore   | Singra  | Satpukuria Dimukhi High School | 52          |
|          |         | Kalam Degree College | 38          |
| Rangpur  | Kaunia  | Kaunia College     | 60          |
|          |         | Vayarhat Piaaria Fajil Madrasah | 40          |
|          | Mithapukur| Shukurer Hat High School | 41          |

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**Data evaluation and analysis**

The main focus of this survey will result in two major findings: i) killing of snakes is dependent on demographic and perception related variables; ii) demographic responses are related to superstitions and believing superstitions are correlated with each other. All demographic responses and the perceptions response (v1 to v6) are considered as independent variables except v7 which is considered as a dependent variable. We used multiple regression models to calculate the impact of independent variables on the dependent variable. The relations of perceptions, superstitions, and demography of the respondents were analyzed in a bivariate logistic model. Mutual correlation of superstitions and their impacts were analyzed using Kendall’s tau-b coefficient.
would kill the animal. The study also found that female students were more prone to kill snakes than males, which do not match with our results (15.4% female killed snake). This was probably due to their fear of snakes. Usually, females are more fearful of snakes than males (Prokop et al. 2009). However, Alves et al. (2014) and Pandey et al. (2020) conducted research on students’ attitudes toward snakes and verified that a good number of students showed positive attitudes about the ecological and economical values of snakes. This study also reported similar results from the students such as ‘students believed snakes are useful to the ecosystem’ and ‘snakes are necessary for producing antivenom’. These positive responses were mostly received from highly educated, Sonaton followers and internet users in this study. It is true that greater knowledge and awareness of people about snakes and their ecological and utilitarian roles decrease the fear and negative attitudes to snakes (Pandey et al. 2020). Frequent exposure of people with scientific and environmental educational activities about venomous snakes and their ecological roles seems to have been influential for the higher tolerance to snakes (Gramza and Temple 2010; Pandey et al. 2020).

Impact of factors on killing snakes by the respondents

Different demographic status had different impacts on students’ perceptions of snakes as seen in Table 4. In order to get a better understanding of the impacts of all factors on a particular variable (dependent) such as demographic variables, other related independent variables need to be taken into consideration.

The regression analysis showed that sex, religion, v1, v4, and v6 had a significant impact on the dependent variable (Table 4). The odds ratio for the dependent variable is (1.684–1)= 0.684 times higher for male students, (0.788–1)=0.269 times higher for Sonaton students (1.349–1)= 0.349 times higher for students who had seen snakes (v1), (1.216–1)= 0.216 times higher for students who think killing snake gives a good feeling (v4), and (1.197–1)= 0.197 times higher for students who had seen killing snake by others (v6), keeping all other predictors at a fixed level (Table 4). This result suggested that respondents who are male and followers of Islam and Christian religion are more likely to kill snakes. Besides, students who had positive responses towards some independent variables, for example, v1, v4, and v6 are proportionally positive in their attitude toward killing snakes. Generally, animal phobia is higher among female and younger individuals (Fredrikson et al. 1996). Previous research of Prokop et al. (2009) also showed that most respondents (n= 66; 61.1%) were fearful of snakes and fear of snakes was higher in female than in male students. A similar result was reported for female respondents for other animals such as spiders and bats (Prokop and Tunnicliffe 2008). Being less fearful, male students are more interested in killing snakes that match this study also. Different cultures and religions consider snakes as being deadly venomous resulting in fear of snakes (Molander et al. 2012). Our study also found that students other than the Sonaton religion are intended on killing snake. Sonaton people believe that snakes (especially Cobra) are a deity, hence they usually do not kill any kind of snakes. But, people following other religions possess false ideas about snakes and they think killing them is religiously good.

| Perceptions variables | Yes percentage, \( \chi^2 \), and p-value | Demographic variables |
|-----------------------|------------------------------------------|----------------------|
|                       | 14-16 | 17-20 | Male | Female | Islam | Sonaton | Christian | SSC | HSC | Yes | No |
| v1                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 93.6  | 95.3  | 91.2 | 97.0   | 94.8  | 97.3    | 33.3      | 89.8| 97.3| 96.9| 93.6|
| p                     | 0.459 | 5.646 |      |        | 22.360| 8.652   | 1.46      |     |     |     |    |
|                       | 0.498 | 0.017 |      |        | 0.000 | 0.003   | 0.227     |     |     |     |    |
| v2                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 50.3  | 53.9  | 47.6 | 55.7   | 54.5  | 29.7    | 100       | 53.1| 51.8| 48.5| 53.8|
| \( \chi^2 \)          | 0.450 | 2.234 |      |        | 10.914| 0.055   | 0.797     |     |     |     |    |
| p                     | 0.502 | 0.135 |      |        | 0.004 | 0.814   | 0.372     |     |     |     |    |
| v3                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 65.6  | 63.4  | 60.5 | 67.2   | 66.9  | 40.5    | 100       | 65.6| 63.6| 57.7| 66.9|
| \( \chi^2 \)          | 0.191 | 1.622 |      |        | 11.669| 0.140   | 2.582     |     |     |     |    |
| p                     | 0.662 | 0.203 |      |        | 0.003 | 0.709   | 0.108     |     |     |     |    |
| v4                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 50.3  | 39.8  | 49   | 41.3   | 47.1  | 18.9    | 100       | 55.5| 38.2| 40.2| 46.2|
| \( \chi^2 \)          | 3.866 | 2.031 |      |        | 14.371| 9.789   | 1.023     |     |     |     |    |
| p                     | 0.049 | 0.154 |      |        | 0.001 | 0.002   | 0.312     |     |     |     |    |
| v5                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 93.0  | 85.3  | 89.1 | 88.6   | 90.6  | 73      | 100       | 93.8| 85.9| 83.5| 90.8|
| \( \chi^2 \)          | 5.072 | 0.027 |      |        | 10.678| 4.999   | 3.779     |     |     |     |    |
| p                     | 0.024 | 0.870 |      |        | 0.005 | 0.025   | 0.052     |     |     |     |    |
| v6                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 88.5  | 95.3  | 90.5 | 93.5   | 92.5  | 89.2    | 100       | 87.5| 91.8| 92.4|     |
| \( \chi^2 \)          | 5.491 | 1.108 |      |        | 0.770 | 6.360   | 0.045     |     |     |     |    |
| p                     | 0.019 | 0.292 |      |        | 0.680 | 0.012   | 0.832     |     |     |     |    |
| v7                    |       |       |      |        |       |         |           |     |     |     |    |
| Yes                   | 33.1  | 39.3  | 65.3 | 15.4   | 39.3  | 13.5    | 33.3      | 38.3| 35.5| 57.7| 28.3|
| \( \chi^2 \)          | 1.404 | 91.160|      |        | 9.480 | 0.279   | 26.173    |     |     |     |    |
| p                     | 0.236 | 0.000 |      |        | 0.009 | 0.597   | 0.000     |     |     |     |   |
uses relation of superstition lute showing his ic eving the two respondents believe. The dual (snakebite treatments through magic potions, snakestones or showed that myths and tales that are not related to religion misconceptions towards traditionally and a belief in one superstitions. This means students believing 'snake bear snake stone' (s1) is significantly correlated with 'snake can dance hearing the sound of the flute played by snake charmer Ojha' (s2). The second maximum is 0.332 between s2 and s4, implying that the higher belief of s2, the higher the chance of believing s4. All superstitions variables are significantly correlated with other superstitions variables at p<0.001, except for s5 (Table 5).

Snake bear snakestone (Moni) on head (s1) About half (n= 179, 52%) of the respondents believe that snake bear snakestone (s1). The response for this superstition significantly varied among sex and internet usage of the students (Table 6). The result showed that female students believed s1 more than males and respondents who do not use the internet are inclined to believe s1.

People believe that snakestone is made by snakes that have magical properties and snakes can bear it on their heads. People also believe that snakestones can heal snake bites and act as anti-venom. Although experimental studies showed that snakestones are not reliable for snakebite treatment (Chippaux et al. 2007). This indigenous first-aid treatment has been practiced in many countries of Asia, Africa, and Latin America (Baldwin 1995). This stone is considered as valuable as a diamond and getting it in one’s lifetime is deemed good fortune. All these misconceptions are provided by Ojha as well as the influence of mythical cinemas telecasted on different TV channels.

Snake can dance hearing the sound of flute played by Ojha (s2) More than half (n= 191, 55%) of the respondents believed that snake can hear the sound of the flute and consequently they dance with the tune. Responses to this superstition varied significantly with all demographic variables except religion (Table 6). The result showed that respondents who are low-aged, female, less educated, and do not use the internet are prone to believe s2. This is one of the popular superstitions about snakes in Bangladesh (Kabir 2018). When the Ojha plays the flute showing his special movements thereafter the snake follows those signals; observing the flute or other movements to sense a threat. Sometimes snakes pretend to bite for protection but actually, these are dry bite.

Snake can drink milk (s3) Of the 348 respondents, 293 (84.2%) believed that snake can drink milk as their food. This is the highest believed superstition among students and the response significantly varied among sexes and internet usage of the students (Table 6). Female respondents (88.6%) believed this superstition more than males and 87.3% of the respondents who do not use the internet believed this superstition.

| Variables | Category | Estimates | SE | P-value | OR |
|-----------|----------|-----------|----|---------|----|
| Age       | (Intercept) | 0.520   | 0.132 | <0.001 | 1.683 |
|           | 14-16    | -       | -    | -       | -   |
|           | 17-20    | 0.051   | 0.056 | 0.369   | 1.052 |
| Sex       | Female   | 0.521   | 0.055 | <0.001 | 1.684 |
|           | Male     | -       | -    | -       | -   |
| Religion  | Islam    | -       | -    | -       | -   |
|           | Sonaton  | -0.238  | 0.070 | <0.001 | 0.788 |
|           | Christian | 0.043  | 0.235 | 0.854   | 1.044 |
| Education | SSC      | -       | -    | -       | -   |
|           | HSC      | -0.020  | 0.059 | 0.741   | 0.981 |
| Internet  | No       | -       | -    | -       | -   |
|           | Yes      | -0.018  | 0.061 | 0.772   | 0.982 |
| v1        | No       | -       | -    | -       | -   |
|           | Yes      | 0.299   | 0.098 | 0.003   | 1.349 |
| v2        | No       | -       | -    | -       | -   |
|           | Yes      | 0.011   | 0.046 | 0.805   | 1.012 |
| v3        | No       | -       | -    | -       | -   |
|           | Yes      | 0.022   | 0.048 | 0.641   | 1.023 |
| v4        | No       | -       | -    | -       | -   |
|           | Yes      | 0.195   | 0.047 | <0.001 | 1.216 |
| v5        | No       | -       | -    | -       | -   |
|           | Yes      | 0.093   | 0.070 | 0.184   | 1.098 |
| v6        | No       | -       | -    | -       | -   |
|           | Yes      | 0.180   | 0.079 | 0.024   | 1.197 |

Table 4. Estimates of regression parameters with standard error (SE), p-value, and odds ratio (OR) obtained from the logistic regression model

| Superstitions | s2 | s3 | s4 | s5 |
|---------------|----|----|----|----|
| s1            | 0.494 | 0.304 | 0.246 | 0.122 |
|               | (<0.001) | (<0.001) | (<0.001) | (0.024) |
| s2            | 0.272 | 0.332 | 0.076 |
|               | (<0.001) | (<0.001) | (0.156) |
| s3            | 0.280 | -0.007 |
|               | (<0.001) | (0.902) |
| s4            | 0.085 |
|               | (0.115) |

Table 5. Kendall’s tau-b coefficient results of superstitions about snakes with p-value in the first parenthesis

Superstitions about snakes

Student possesses many superstitions about snakes traditionally and a belief in one superstition is related to believing others. These traditional misbeliefs or misconceptions towards snakes are very likely to cause snakebites (Pandey et al. 2020). Alves et al. (2012b) showed that myths and tales that are not related to religion contribute to the persecution of snakes in the Brazilian semiarid region. Besides, cinemas showing traditional snakebite treatments through magic potions, snakestones or alcohol influence believing firmly in superstitions (Henderson and Dujon 1973).

Table 5 shows the correlation of superstitions variables that have 10 variable pairs. The dual-trail verification at the
Respondents shared this traditional belief. People claim that snakes come to barns at night to drink milk from the cows. But, the myth is false and can easily be explained. Barns often attract rats, which are the main food source of many snakes. Snakes come to predate rats and if a farmer sees snakes around the barn on a day when milk production is low, he may believe this myth. Additionally, *Ojha* propagates the belief that snakes drink milk. Drinking milk is a religious belief established by the Hindus (Sonaton) as they use milk to shower *Shibmurti* (incarnate) during *Nagpuja* (a religious ritual). The myth of the *Naga* refers to heavenly snakes with numerous heads believed in both Hinduism and Buddhism (*Wake* 1873). However, when the snake is quite thirsty, it can be seen drinking any kind of easily available liquid food which may include milk. The study of *Pathak* and *Metgud* (2017) found that 76.25% (n=305) of respondents offer milk to snakes brought by local snake charmers on the *Nag Panchami* festival.

### Snake can take revenge if hurt (s4)
Among 348 respondents, 194 (55.7%) answered “yes” to the question that snake can take revenge if hurt by anyone. The response was higher for respondents who are high aged, female, Sonaton, less educated, and do not use the internet but not significant with any demographic status (Table 6). People believe that snakes live in pairs and if one is wounded by a man, the other can go for the same man and take revenge. These bywords are practiced by people, especially in Bengali and Hindi mythical cinemas. Actually, snakes have no ability to identify the same person, it is more likely to see snakes in pairs during the breeding season or if the habitat is suitable enough to support many snakes (Stanley 2008).

### Snake has hair (Dari) on its skin (s5)
Only 55 students believe that snakes have hair (Dari) on their skin (s5). This response varied significantly between the two age groups, 19.9% high aged students believed that snake has hair on its skin whereas only 10.8% low aged students believed this superstition. Snakes molt for growth and while molting some parts of the skin may be attached to the skin. People of the study areas considered it as hair (*Dari*) and *Ojha* keeps the molted skins to show people when they entertain them.

In conclusion, people usually think that all snakes are venomous and fatal to humans. Furthermore, they bear and practice many preconceptions, misconceptions, and misbeliefs about snakes. As a consequence, many people are frequently involved in killing snakes as well as destroying their habitats. Our study provides some evidence that snakes are perceived by many of the students as being harmful and dangerous animals, and most students show antipathy toward them. These perceptions encourage negative attitudes, especially related to the attempts to kill snakes whenever one is found. These negative attitudes can be a potential threat to snakes. This might be happening due to the lack of knowledge about these animals and conservation awareness. We found many unaware people who do not know about the role of snakes in the ecosystem and we consider this as one of the main reasons for killing snakes. The same situations occur not only in Bangladesh but also in different locations worldwide, making snakes among the most disliked animals (Opler 1945; Molander et al. 2012; Alves et al. 2014). Meanwhile, a significant portion of students responded to positive aspects of snakes, highlighting their ecological and economical importance. This positive perception may help for the conservation of snakes. Therefore, students, teachers, and local people should be encouraged to come forward in order to conserve snakes. The study of *Makashvili* et al. (2014) showed that effective teaching and a combination of education with other approaches is helpful in reducing snake-fear.

Increasing human population pressure and agricultural development in the northwestern Bangladesh region are severe. As a result, further research and investigation of

### Table 6. Superstitions practiced by respondents about snakes in relation to different demographic status

| Superstitions variables | Yes percentage, χ², and p-value | Age | Sex | Religion | Education | Internet |
|-------------------------|---------------------------------|-----|-----|----------|-----------|----------|
| s1                      | Yes                             | 56.1 47.6 40.1 59.7 | 51.3 54.1 33.3 | 56.3 48.6 35.1 | 57.8 |
| χ²                     | 2.438                           | 13.012 0.000 | 0.780 | 0.171 | 0.000 |
| p                      | 0.118                           | 0.000 55.5 51.4 | 33.3 | 65.6 48.6 32 | 63.7 |
| s2                      | Yes                             | 63.1 48.2 44.9 62.2 | 55.5 51.4 33.3 | 65.6 48.6 32 | 63.7 |
| χ²                     | 7.715                           | 10.252 0.799 | 0.932 | 28.548 |
| p                      | 0.005                           | 0.001 58.7 88.6 | 64.4 | 89.1 81.4 76.3 | 87.3 |
| s3                      | Yes                             | 82.8 85.3 78.2 88.6 | 84.4 83.8 66.7 | 89.1 81.4 76.3 | 87.3 |
| χ²                     | 0.417                           | 6.803 0.709 | 3.604 | 6.318 |
| p                      | 0.518                           | 0.009 0.702 | 0.058 | 0.012 |
| s4                      | Yes                             | 54.1 57.1 51.7 58.7 | 55.8 59.5 0.0 | 57.8 54.5 47.4 | 59 |
| χ²                     | 0.299                           | 1.689 3.987 | 0.350 | 3.778 |
| p                      | 0.584                           | 0.194 0.136 | 0.554 | 0.052 |
| s5                      | Yes                             | 10.8 19.9 19 13.4 | 16.6 10.8 0.0 | 12.5 17.7 21.6 | 13.5 |
| χ²                     | 5.324                           | 2.012 1.388 | 1.662 | 3.453 |
| p                      | 0.021                           | 0.156 0.500 | 0.197 | 0.063 |
people’s perceptions of snakes are needed to ensure that a threat category is not triggered in the future for the decline of snake population. The benefit of wildlife especially snakes for livelihood and agriculture is increasingly recognized worldwide (Babalola et al. 2020). Therefore, dissemination of public information and education about snakes, their value, and the consequences of human activities on local biodiversity are required (Alves et al. 2012b; Trombulak et al. 2004). This is because education can play a crucial role in informing people about organisms and the environment, which can help to develop more responsible attitudes towards animals (Kellert 1996). Snakes naturally prey on large amounts of insects and rodents, thus controlling their population and thus translating into economic benefits for the national economy (Zug 1993; Adeola 1992). All these facts suggest that conservation strategies for snakes should consider the interactions and perceptions of the local population towards this animal group. We addressed major misbeliefs, misconceptions, preconceptions, and traditional beliefs among the respondents. Therefore, our study has certainly increased awareness among the respondents that may help to develop responsible attitudes and behaviors thus, promoting the cessation of snake killing.

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