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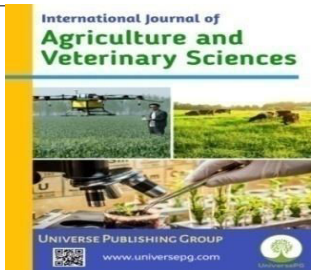

Non-Biotech Student's Perception of Biotechnology and its Applications in a University Theology Faculty Student's: A Brief Survey Study

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ABSTRACT

Recent advances in Biotechnology and its application could potentially have an enormous impact on society. Successful commercialization of products from Recombinant DNA technology, henceforth called Biotechnology, will depend on the nature of the technological advances, government regulations, and public acceptance. Public perceptions of Biotechnology are important components in the ultimate approval and use of new technology. At the last of the 20th century, it emerged as a new discipline and is going on a rhythmic motion by the demand of our civilization. In recent years revolution in biology has occurred due to the potential of biotechnology. In the present study, we assessed the knowledge and perception of Biotechnology and its applications in different sectors of our society and environment for the benefit of humanity.

Keywords: Non-biotech student's, Perception, Biotechnology, Different faculties, and Applications.

INTRODUCTION:

The term " biotechnology '' was created in 1971 by a Hungarian scientist, Karl Ereky, to describe an integrated process for the large extent production of pigs by using sugar beets as a major component of food. According to Ereky, biotechnology was "all steps of work by which final products are produced from raw materials of with the aid of living matters" (Glick & pasternak, 2005).

Although our land is fertile but natural calamity like; flood, drought, storm, smog, saline water & some wastes chemical of Industries are responsible for low harvest of crop & poor quality. As a demand of huge population basic need we are very thoughtful today. There are no solutions of this without developing biotechnology in our country (Rahman *et al*., 2019).

Modern Biotechnological processes are being continuously adapted for the production of crops, foods and pharmaceuticals which has lead to an increase in Discussion about the benefit or otherwise, of the technology. While it has been suggested that the attitude of the general public towards scientific developments in general are closely associated with trust in source of information the role of increased scientific literacy and understanding of the technology remain unclear.

It has further been suggested that an increased understanding of Biotechnology will assist people in making more informed decisions about this modern technology (Harms, 2002). On October 15, 1980, within 20 minutes of the start of trading on the New York Stock Exchange, the price of shares in the biotechnology com-

pany Genentech went from $35 to $89. This was the fastest increase in the value of any stock in the history of this market. By the time the market closed that day, Genentech stock was valued at $71.25 per share. The bidding 528,000 shares of Genentech stock were so frenetic that many investors who wanted "a piece of the action" never even got a chance to purchase a single share. This may very well have been the first time that a major technological revolution was acclaimed by the clanging of stock exchange bells. At the time of their first public offering in 1980, Genentech was a four year-old California company specializing in gene splicing (rDNA technology, genetic engineering, gene cloning) (Sharif *et al*., 2019).

Two years previously, scientists at Genentech had successfully isolated portions of the gene (DNA sequence) that encodes human insulin and had transplanted them into genetic elements (Cloning vectors that could be maintained in the common bacterium Escherichia coli this bacterial host cells acted as biological factories for the production of the two peptide chains of human insulin that, when combined, could then be purified and used as a medicine by those diabetics who were allergic to the commercially available procine (pig) insulin. In the previous decade this feat would have seemed absolutely impossible; by today's standards, however, this type of genetic engineering is considered common place (Glick and Pasternak, 2000).

During 1970s, biotechnology emerged as a new discipline, as a result of marriage of biological science with technology. Biotechnology is not a pure science, but an integrated effort of science and technology. So, we can define biotechnology as- "the development & utilization of biological procedures, forms & systems for obtaining higher level benefits to man & other forms of life." The organization for economic co-operation & development (OECD), 1981 define- "Biotechnology is the application of scientific & engineering principles to the handling of components by biological materials to provide products & services." Techniques have been created to produce new & medicinally high value molecules, to change genetic properties of plants & organisms, to diagnosis of diseases to produce beneficial chemicals & to clean up & restore the environment. Even so biotechnology has large impact in the fields of medical, food/& agriculture & environmental conservation. Due to fast development the current situation is that there is no dis-similarity between pharmaceutical firms & biotechnology factory. Although, approved goodss in the pipeline & renewed public confidence create it one of the key promising fields of financial growth (Dubey, 2003).

Biotechnology has caused a revolution in agricultural science. Cell culture & protoplast fusion procedures have resulted in hybrid/cybrid plants through intergeneric crosses which are the generally not possible through conventional hybridization procedures. It has also helped in manufacturing of encapsulated seeds, somaclonal variations, disease resistance plants, herbicide & stress resistant plants. For the better yield of agricultural crops, use of bio-fertilizers (seed bacteriztion, algalization & green manuring) has become a newly invented tool for chemical fertilizers.

In rDNA technology programmes, it has become possible to map the whole genetic material of an organism to find out the function of the genes, cut & transfer into other organism. Owing to successful achieved from gene amplification, many products have been found through genetically modified cells, & hopefully many can be created during current decade. rDNA technology has made it easy to the detection genetic diseases & cure before birth of a new stains or suggest accordingly. Gene bank & DNA clone bank have been created to make available various types of genes of its known activities. Thus, rDNA technology has bulit it possible to design a vaccines against viral & malarial diseases, growth hormones, & interferons (Joshi, 2000). For the protects of the environment & abatement of pollution, remediation of sewage, transformation of domestic effluents & xenobiotic pollutants has drawn much attention in last few years. To combat these problems such bacterial plasmid have been developed that could be used to degrade the complex polymers into non-toxic forms. Strains of cyanobacteria, green algae & fungi have been dessigned which could be utilized for the remediation of municipal & domestic sewage & industrial dis-charges into less and non-toxic forms & renew them as key source of bioenergy (Shahen *et al*., 2019).

The Biotechnology has supported the bio-industries in manufacturing the novel components & optimization,

& scale up products, for example bio-acids, alcohols, antibiotics & enzymes & single cell protein (SCP) & mycoproteins (Dubey, 2003; Uddin *et al*., 2017).

Over the last 10 years there have been dramatic developments in basic research and in applications of biotechnology. Among the most notable developments are the creation of genetically modified foods, the cloning of Dolly the sheep, the sequencing of the human genome, and developments in stem cell research. All these innovations have been widely discussed in policy and mass media arenas throughout Europe, and in these discussions, competing visions of the future can be heard. On the one hand is the promise of science and technology to deliver benefits in health, agriculture and foods and in industrial production. On the other hand is the concern that the scientifically possible is not always socially, ethically or environmentally desirable (Gupta, 1998). Our country is densely populated, agricultural based developing country and food is one of the fundamental needs but the environmental adverse condition (like flood, drought, saline, storm, etc.), deficient of fertilizer and lack of knowledge of our farmer retard the production of sufficient food for people, so we are badly dependent on foreign country for food supply. Only biotechnological approach (like flood, drought, saline tolerant crop and high yielding hybrid crop, etc) can change that condition and make our country self dependent for food.

Biotechnology has the ability to make enormous changes not only in agricultural sector but also in industrial, medical and environmental sector. If we want to make enormous changes above those sector in our country at first we need to gather much knowledge about this technology. To considering this matter the course- "Biotechnology and Genetic Engineering" has been added in B.Sc (honors) at 1998-99 sessions in Islamic University, Kushtia. Since biotechnology is one of the modern subjects in the world and it has been studying for last 10 years in our university so we want to know from non-biotech student what their concept about biotechnology is? And what they think about biotechnological products? For this reason department of "Biotechnology & genetic engineering" were arranged a survey on the title of- "A survey on non-biotech student's perception on biotechnology in Islamic University". This is the first survey on student perception about biotechnology in Bangladesh. The survey has been conducted over three months (January, February and March) in 2009. The survey is based on a representative sample of about 1300 respondents of Islamic university. Currently, issues in Bangladesh such as flood, saline & drought tolerant crop, hybrid and insecticide free vegetable, transgenic animal, vaccine production, the co-existence of GMF, conventional and organic farming, the use of genetic information, and other innovations such as cloning and gene therapy, are under discussion. We think our effort will be helpful our country because we realize that students are representative of our society and socio-economic development of our country largely depend on their participation to any work. We also believe that there is no alternative of biotechnology in prospering all over condition of our country (Firoz *et al*., 2016).

Way to awareness of biotechnology

The journalist who lacked knowledge or experience with biotechnology practice did not have accurate perception about biotechnology issue an important outcome from the study by (Vestel & Briers, 1999). According to scientist the media tends to focus on sensational news stories or to squeeze stories into a sound - bite format .Thus public hears only part of the story & that part tends to arouse concern. Even with the stories that are reported, studies indicate that many people do not feel they have sufficient information about biotechnology (Wingenbach *et al*., 2003).

Our Survey area

We collect approximately 200 data from 1st to 5th year students of three subjects. By analysis of this data, an important outcome is released from consumer perception and attitude is influenced by family, friends & culture in which they live. Thus practical biotechnology science experiences play a greater role in determining student's perception than our conventional attitude of awareness.

Our tendency to developed biotechnology

We are third world developing nation. About half of our people is illiterate they have no knowledge of biotechnology at all and among literate people biotechnology is not famous. In our survey we try to find the accurate perception about biotechnology issue in faculty of commerce (Islam *et al*., 2020).

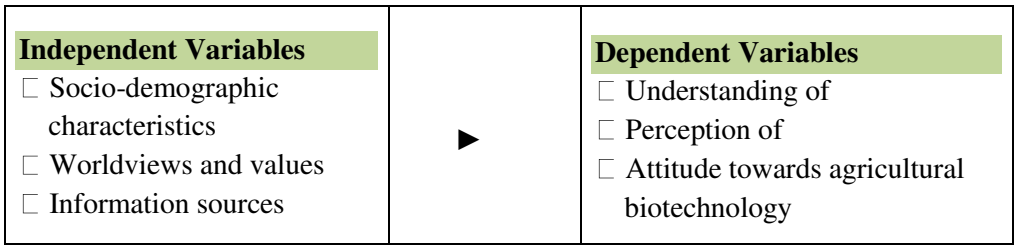
Objective of the Study

Now a day's the prospect of biotechnology is increasing day by day in Bangladesh. So the knowledge about biotechnology is gradually increased among the non-biotech students. Because they are already using some of biotech product, such as fermented food (vinegar, cheese , butter alcoholic beverage), hormone, vaccine, Vitamins, amino acid, biogas, transgenic plant via tissue culture, some biomedical products including monoclonal antibodies, Insulin etc. Not only this, they also get various latest information's in newspapers, TV or Internet. So our duty is to collect the data from them and analyzed it according to various parameters. The objective of this view is given bellow –

1) To collect the appropriate known data from commerce students.
2) Their consideration about biotech products on commercial view.
3) To grew awareness in this field.
4) To solve their various question about biotechnology.
5) To know their expectation from biotechnology.
6) To remove misconception about biotechnology from them.
7) To know their suggestion for the improvement of biotechnology in our country.
8) Comparison their perception among their faculty & also others faculty.

Conceptual Framework

In keeping with the objectives, the study determined the relationship between the socio-cultural & economical factors, including communication factors, and the respondents' understanding, perception, and attitude towards biotechnology. Using appropriate statistical tests (Chi-square test and Spearman's Rank Correlation) variables with significant relationships were determined. The conceptual framework of this study is summed up in the below.



Conceptual framework of the survey study.

MATERIALS AND METHODS:

Methodology is a set of methods & principles used to perform a particular activity. Methodology involves with the selection of areas & the respondent, variables & sources of data, method of data collection and processing of data. In this research we use both quantitative & qualitative method of data analysis.

Field Selection

Field selection is the major part of a research. To do a good research, field selection is very much necessary. We are student of Islamic University (IU) Kushtia. We select for this survey the students of theological faculty. This faculty contains three subjects; 1) Al Quran and Islamic Studies; 2) Al Hadith and Islamic Studies; and 3) Dawah and Islamic Studies. We selected 200 students for this survey in which 70 students are reading in Al Quran, 65 in Al Hadith and 65 in Dawah and Islamic Studies. We included both male and female students. For this survey we select 44 questions which include background information, agricultural, medical and environmental biotechnology. In addition this basic questionnaire consisted of questions relating to knowledge of biotechnology, source of information and views about usefulness and safety of various biotechnology related items.

Population

Population is the entire set of relevant unit of analysis or data. In our research, all of the students of those above departments are the population. The population of this census study consists of undergraduate and graduate students.

Sampling

Sampling is the process of selecting sample. We select the non- probability purposive sampling to collect the data from respondent.

Sample Selection

The total number of students of those departments is near about 1200. It is difficult to collect data from all of students. A total of 200 responses were collected.

Data Collection Technique

Data collection is the important part of research. We collect primary data from field. To collect the data we have used the Interview Schedule Techniques. The advantages of these techniques are given bellow:

1) A face to face data collection
2) Less time & money consumer
3) More scientific
4) Less factual error

We used content question to collect the data. Content question were three types. They are –

a) Factual question (deals with background i.e. sex, father occupation, family income, age etc)
b) Perception question (deals with actual perceive knowledge about biotechnology)
c) Opinion question (deals with the psychological matter i.e. believe, felling attitude etc.)

We also used structural question to collect the data. There are three types of structural question. They are given bellow:

a) Open-ended question
b) Close -ended question
c) Contingency question

We also avoid the leading question, threading question and double-barred question.

Data Processing and Analysis

A survey form was used in the study to determine the perceptions and attitudes of non-Biotech students on Biotechnology 44 questions were asked on questionnaire, based in the survey form in five different sections. The first section consisted of questions related to background information of non-Biotech students. The second sections consisted of questions relating to perception on Biotechnology. The third section consisted of question relating to agricultural Bio-technology. The fourth section consisted of questions related to medical Biotechnology. The fifth section consisted of questions related to environmental Bio-technology. The majority of the questions in the survey form were multiple choices in type.

After collection of data, the researcher duty is to processing & analysis the data. So we process & analysis the data through field editing, coding, categorization & tabulation. Then we use the Statistical Program for Social Science (SPSS). By SPSS, we analyze the Unvaried (i.e. mean, median, mode, frequency distribution, standard deviation. To analysis the data we also use the Pie-Chart, & Histogram. To test the hypothesis by SPSS, we also use correlation Cross tabulation, Chi-Square Tests. From this test we will get a finding.

RESULTS:

Age of the respondents

The study area of this was the Islamic University and information from 200 respondents was collected. From this research it was found the following information about the respondents.

Table 1: Age of the Respondent.

Age	Frequency	Percent
18	2	1.0
19	23	11.5
20	28	14.0
21	35	17.5
22	52	26.0
23	31	15.5
24	18	9.0
25	8	4.0
26	3	1.5
Total	200	100.0

This **Table 1** shows that one percent 1.5% of the respondent belongs in 26 years age, 4.0% respondent belongs in 25 years age, 9.0% respondents belong in 24 years of age, 15.5% of the respondent belongs in 23 years of age, 26.0% of the respondent belongs in 22 years age, and 17.5% of the respondents belong in 21 years age. 14.0.0% of the Respondents belongs in 20 years age, and 11.5% of the respondents belong in 19 years age old. And 1.0% of the respondents belong in 18 years age old. The respondent's maximum age is 26 and minimum is 18.

Relation between age and perceived idea

From the analysis it is found that there has a quite relation between the perceived knowledge about biotechnology and respondent sex. It is found that the respondent has very well knowledge about biotechnology who is about 18 or 23 years old, although the term is also unknown to many of them. Respondent around the age 21-22 know very little about biotechnology. Following **Fig. 1** indicate the perceived knowledge of respondent and their age. The following **Fig. 1** shows that among respondents 11.0% at the age of 20 is little knowledge about biotechnology, at the age 21 is 12.5% and at the age 22 is about 22.5 % at the age 18 & 19 is about 1.0 % & 0.0%. At the higher age, 24, 25 & 26 the percentage of knowledge is 7.0%, 3.5%, 0.0%. Very ell knowledge is highest at the age of 23 is about 1.0% and no knowledge is at the age of 23 is about 0.7%.

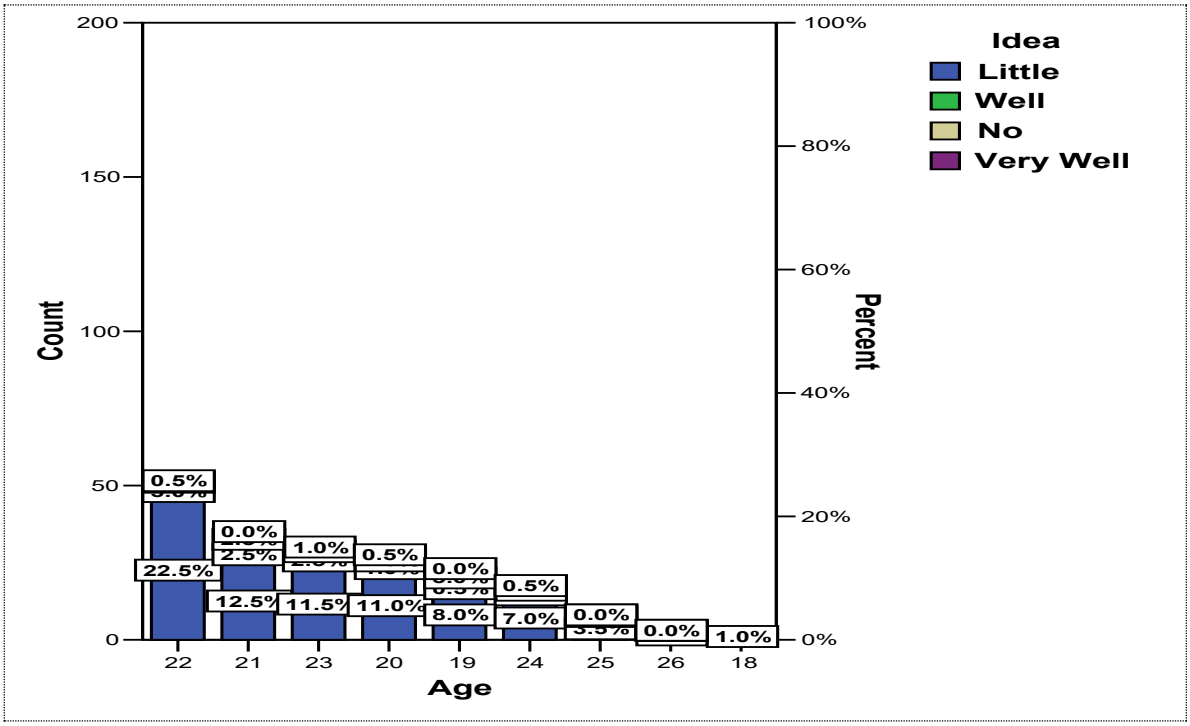


Fig. 1: Relation between age and perceived idea.

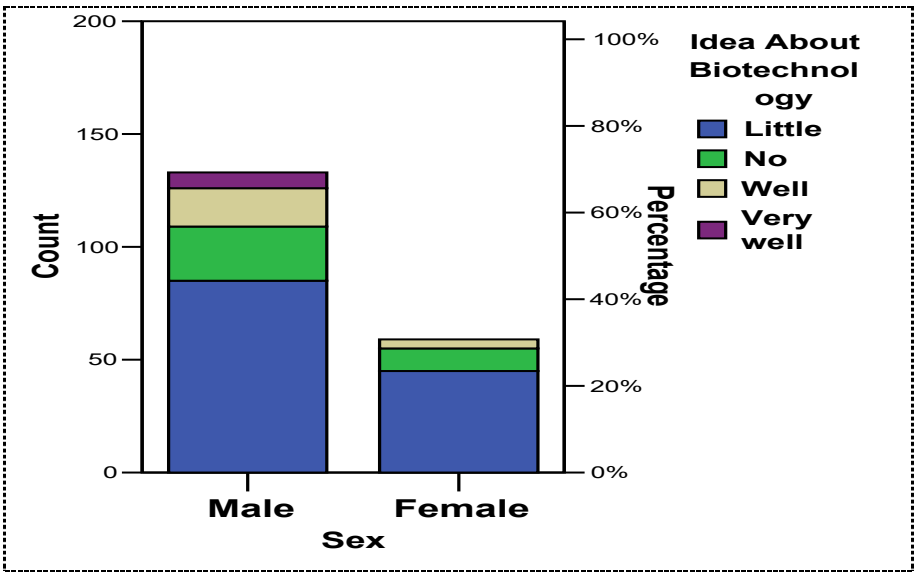


Fig. 2: Relation between sex and perceived knowledge about biotechnology.

Sex of the respondents

For this research was the data was collect from both male and female. The following **Table 2** indicates their percentage and participation.

Table 2: Sex of the respondents.

Sex	Frequency	Percent
Male	148	74
Female	52	26
Total	200	100.0

This **Table 2** shows that 74% of the respondents are male and 26% are female.

Relation between sex and perceived knowledge

This research found that there has a variation of the perceived knowledge about biotechnology in male and female. The above **Fig. 2** shows that some male respondents know very well about biotechnology many know well. But in the case of female, there has no respondent who know very well about bio-technology

Department and perceived idea of the respondents

Table 3: Department and perceived idea of the respondents.

Department	Frequency	Percent
Al-Quran	70	35
Al-Hadith	65	32.5
Dawah	65	32.5

The **Fig. 3** shows that 35% of the respondents are Al-Quran students & 32.5% of the respondents are Al-Hadith students and 32.5% of the respondents are Dawah students are participants our survey works.

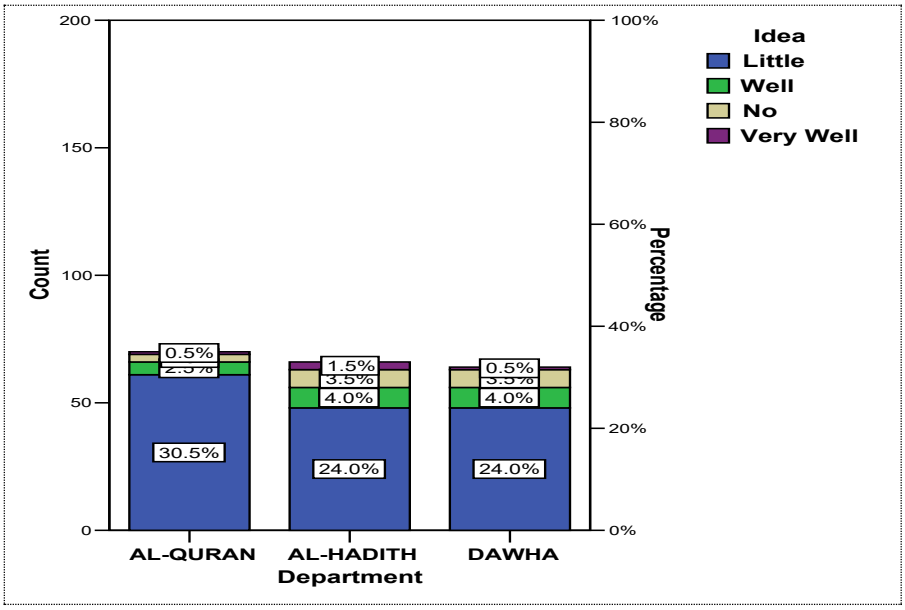


Fig. 3: Relation between department and idea.

Relation of Perception among different department in our working faculty

We work at this faculty on three departments (a) Al-Quran; (b) Al-Hadith; and (c) Dawah, we can found that Al- Quran & Dawah respondents have little knowledge about biotechnology. Al-Hadith respondents knew it very well than two departments.

Present place of living of the respondent

The data was collected from respondents who are lived at various place including campus, mess and home. The following graph indicates the percentage of three place of living of the respondents.

Table 4: Present place of living of the respondent.

Present place	Frequency	Percent
Campus	132	66
Mess	44	22
Home	24	12

The **Table 4** shows that 66.0% of the respondents live at campus hall, 22.0% respondents live at mess and 12.0% respondents live at home.

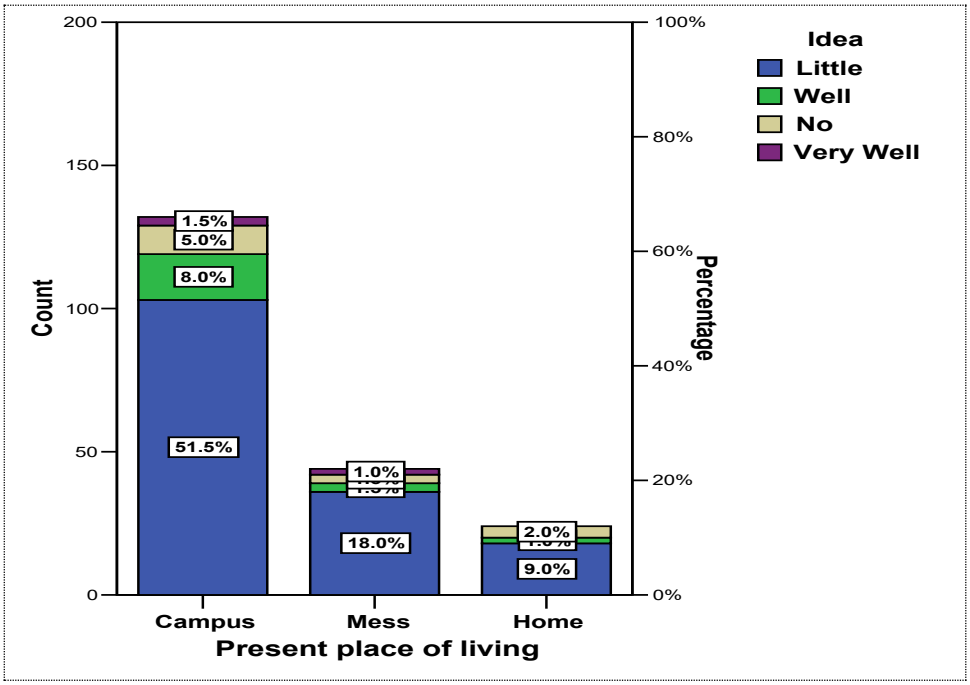


Fig. 4: The relationship between place of living and the knowledge about biotechnology.

This research found variation between the respondents who lived in campus hall, mess & home. Respondents number were little that had very well knowledge about biotechnology lived in campus, very few respondent who knows about biotechnology very well lived in home but there was 1.2% respondent who lived at home knows well about biotechnology.

Birth Place of the respondents

This **Fig. 5** indicates that maximum students are living in village location. Among respondents data can found 81.5% lived in village, in municipal 10.0%, in District 6.0% & City Corporation 2.5%. Here birth place of village is most & in city corporation is lowest

Table 5: Birth Place of the Respondent.

Birth place	Frequency	Percent
Village	163	81.5
Municipal	20	10.0
District	12	6.0
City Corporation	5	2.5
Total	200	100.0

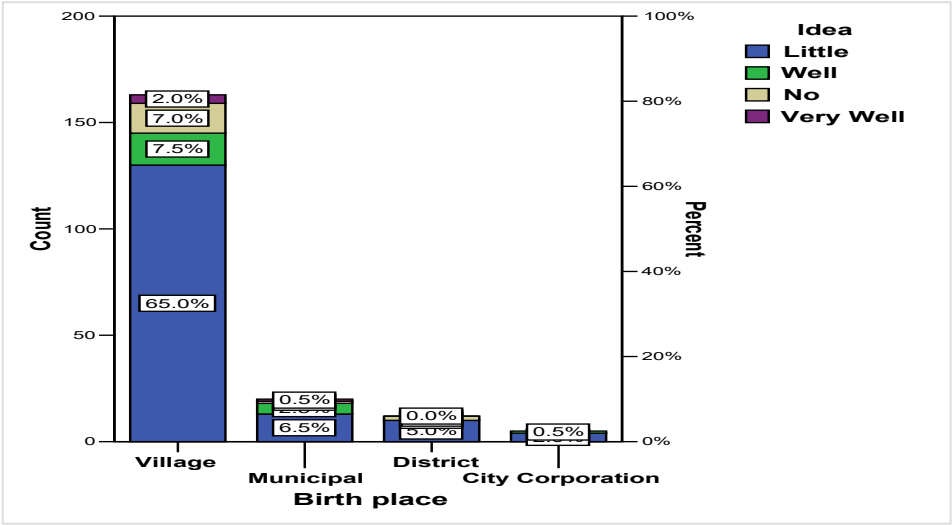


Fig. 5: Relation between birth place and knowledge.

The relationship between Birth Place & the knowledge about biotechnology

This **Fig. 5** indicates about 65.0% respondents lived in village have little knowledge about biotechnology and 7.5% known well, 7.0% not here this name at all & 2.0% knew very well. In case of municipal 6.5% have little knowledge about biotechnology & 2.0% is well. For district respondents 1.5% knows well but 5.0 % have little knowledge & for city corporation 3.0% have little knowledge about biotechnology but no comments of other.

Academic year of the respondents

For this research data was collected from various academic years. The following **Table 6** indicates their participation & percentage.

Table 6: Percentage of academic year of the respondents.

Academic Year	Frequency	Percent
1st	33	16.5
2nd	28	14.0
3rd	34	17.0
4th	48	24.0
Masters	57	28.5

This **Table 6** indicates that all academic years of the respondents students are frequently participates our survey works. However the highest percentage (24. 0%) of masters students are participants our survey works & the lowest percentage (14.0%) of 2nd year students are participates our survey works.

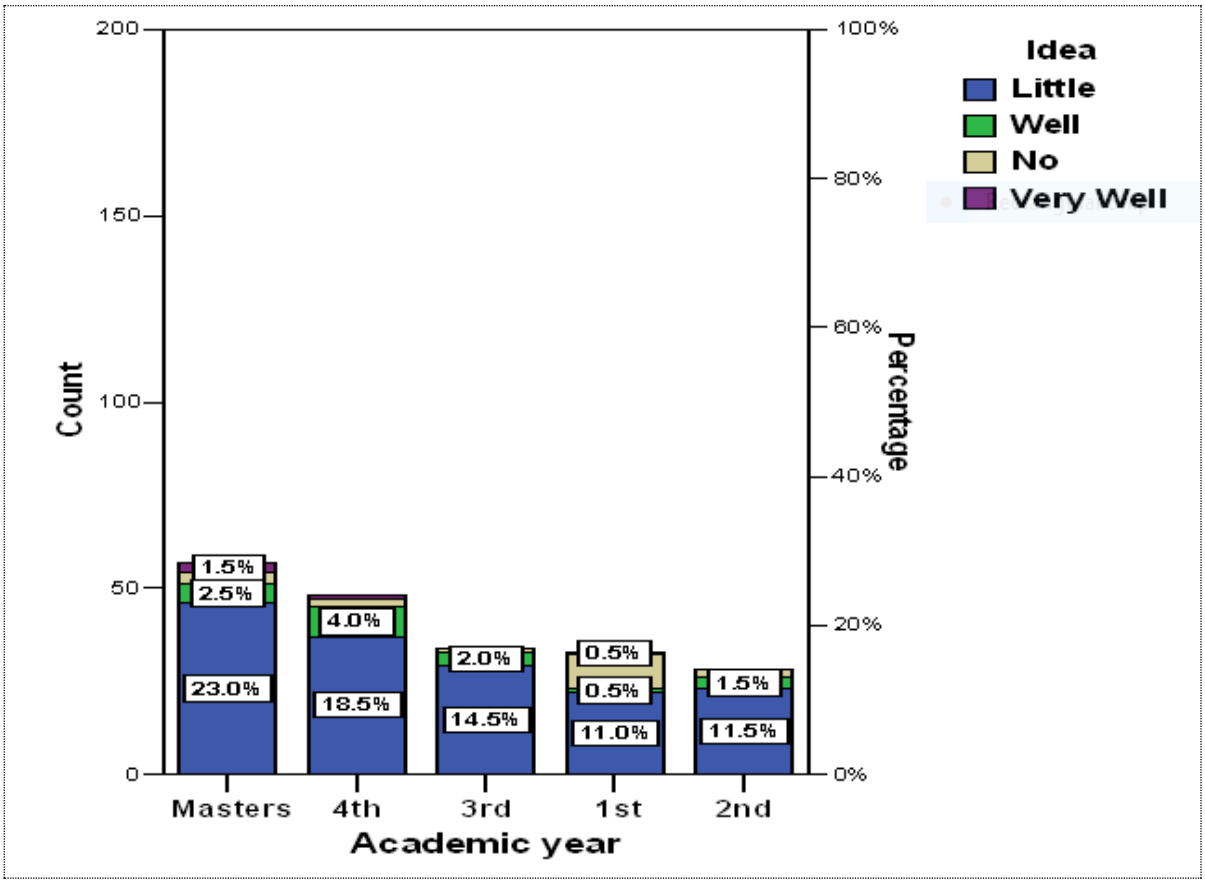


Fig. 6: Relation between academic year and perception about biotechnology.

Relation between academic year & Perception about biotechnology

The above **Fig. 6** shows variation among respondent who studied in various academic year in case of their perception about biotechnology. It was found that the some respondent had very well perceptive knowledge about biotechnology who studied in masters & very few had well perceptive knowledge. On the other hand in case of 1st year respondent number is very few & little who had well perceptive knowledge.

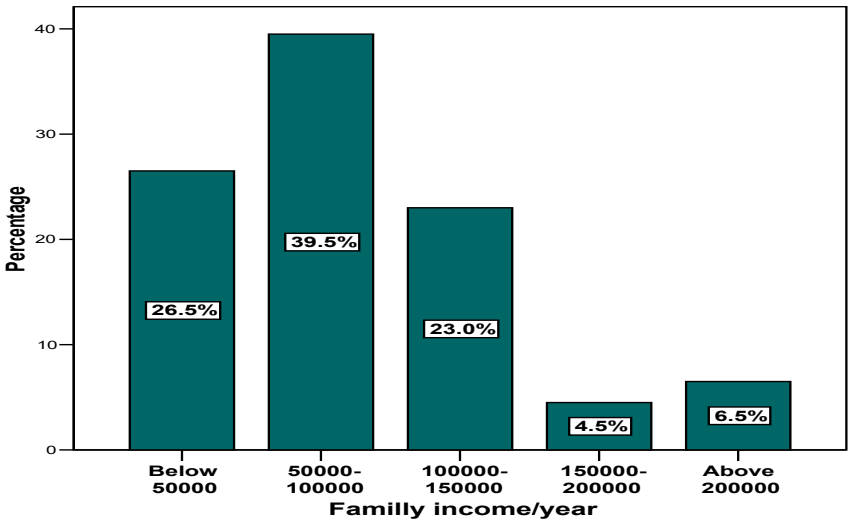


Fig. 7: Relation between family income and perception.

Family income of respondent

The data was collected from various respondents that show variation among their family income. The above **Fig. 7** shows that there has been 26.5% respondent whose family income is bellow 50000, 39.5% respondent whose family income between 50000-100000, 23.0% respondent whose family in-come between 100000-150000,4.5% respondent whose family income between150000-200000 taka and 6.5% above 200000 taka.

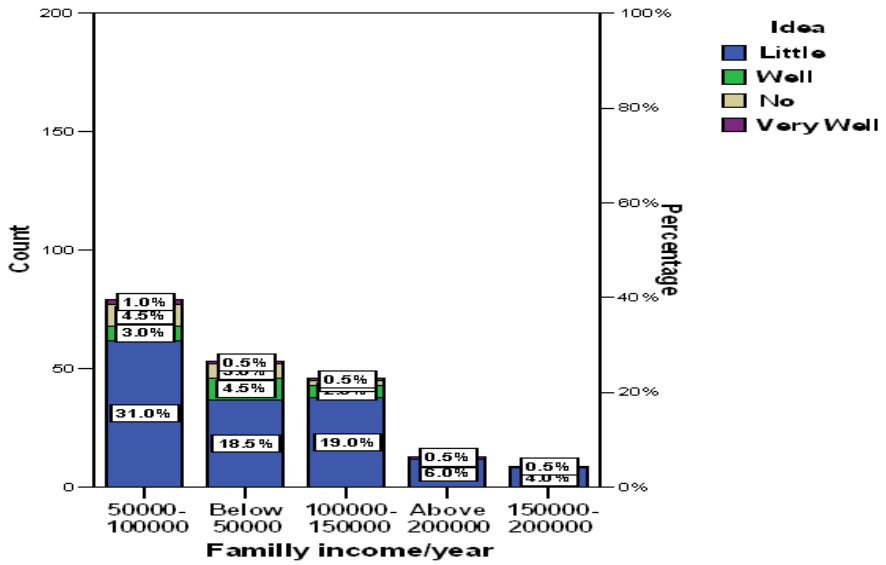


Fig. 8: Relation between family income/ year and idea.

Relation between Family Income/ Year and Idea

The above **Fig. 8** shows that respondent whose family income is 50000-100000 they have very well perceptive knowledge about biotechnology & respondent whose family income between below 500000 they have well perceptive knowledge about biotechnology.

Student's perception of biotechnological product (insulin)

Table 7: Insulin using perception.

	Frequency	Percent
Diarrhea	14	7.0
Diabetics	136	68.0
AIDS	27	13.5
Hepatitis B	23	11.5
Total	200	100.0

This **Table 7** indicates that respondent's knowledge about biotechnological product, one question was asked about the use of common biotechnological product insulin. There as many option. About 7.0% answered diarrheas. 68.0% answered diabetics, about 13.-5% answered AIDS, and 11.5 % answered Hepatitis B

Table 8: Knowledge about Insulin Production.

	Frequency	Percent
Chemical Technology	27	13.5
Food Technology	24	12.0
Biotechnology	65	32.5
Not Known	84	42.0
Total	200	100.0

This **Table 8** indicates that shows there was 42.0% respondents had no knowledge about insulin production technology. 32.0% respondents know about insulin production technology. 25.5% respondents had wrong information about insulin production technology.

Perception about technology involved in insulin production

To understood the respondents knowledge about insulin production technology one question was asked & the above **Table 8** show the variation-

Conception & attitude about human cloning

Cloning is a modern approach of biotechnology. Now it is commonly used in various agricultural sectors and medical sectors. But there has a contradiction about human cloning world wide. Students also expressed a negative response about human cloning. The following **Fig. 9** represents the students' opinion towards human cloning.

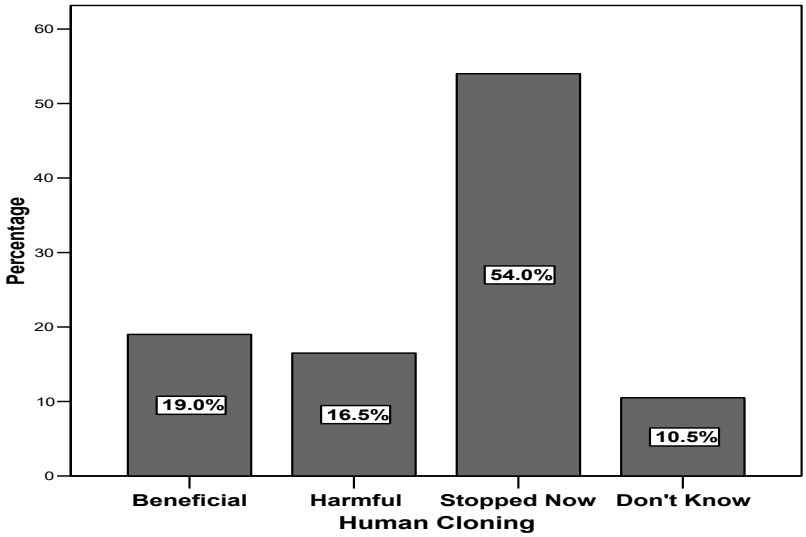


Fig. 9: Conception and attitude about human cloning.

Attitude about human and animal cloning of Madrasa students

This **Fig. 9** indicates that maximum (54.0%) Madrasha students answered their consideration about human cloning is it should be stopped now & 19.0% students answered their consideration about human cloning is it is beneficial and 16.5% said it may harmful to us, 10.5% answered don't know.

Attitude about Biotechnological Product in Agriculture sectors for removing our national food crisis and environmental pollution

Table 9: Perception on Biotechnological Product in Agriculture sectors for removing our national food crisis and environmental pollution.

Ideas	Response (%) n=200					
	Very Important	Slightly Important	Somewhat Important	Moderately Important	Not at all Important	Don't Know
Flood Saline and Drought Tolerant Crop	83.9	4.7	2.1	6.3	1.0	2.1
Insecticide free Vegetables	84.4	8.3	1.0	4.2	.5	1.6
Biogas Plant	78.1	10.9	5.7	4.7	0	.5
Hybrid Crops and Vegetables	77.6	9.9	4.2	5.7	1.6	1.0

This **Table 9** shows that maximum students answered very important about the four questions; however the highest percentage of correct responses was 84.4% (Insecticides free vegetables). Some students answered moderately and slightly. A very few percentages of students answered not at all important and don't know.

Attitude about biotechnological approach

Table 10: Attitude about Biotechnological Approach.

	Response (%) n=200			
	Yes	**Moderately**	**Slightly**	**Not at all**
Frequently consumption of high yielding crops	77.1	13.5	7.8	1.6
Growing Insecticide free vegetable with more vitamin and nutrition	92.7	5.7	.5	1.0
Consuming Genetically Modified Livestock	70.3	16.7	9.4	3.6
Using Biodegradable plastic	87.5	5.7	2.6	4.2
Developing a plant to reduce ground Arsenic level through Bio-engineering	95.3	1.0	1.6	2.1
To clean up hazardous and Toxic Substance, using Bioremediation process	88.5	3.6	5.2	2.6

This **Table 10** indicates that most students answered yes about the six questions correctly; however the highest percentage of correct responses was 95.3% (Developing a plant to reduce ground Arsenic level through Bioengineering). Some students answered moderately and slightly. A few percentages of students answered not at all.

DISCUSSION:

Our survey work was used in the study to determine the perceptions and attitudes of non-Biotech students on Biotechnology 44 questions were five different sections. The first section consisted of questions related to background information of non-Biotech students. The second sections consisted of questions relating to perception on Biotechnology. The third section consisted of question relating to agricultural Biotechnology. The fourth section consisted of questions related to medical Biotechnology. The fifth section consisted of questions related to environmental Biotechnology. From the analysis (**Fig. 1**) it is found that there has a quite relation between the perceived knowledge about biotechnology and respondent sex. It is found that the respondent has very well knowledge about biotechnology who is about 18 or 23 years old. Although the term is also unknown to many of them. Respondent around the age 21-22 know very little about biotechnology. This research (**Fig. 2**) found that there has a variation of the perceived knowledge about biotechnology in mail and female. The above **Fig. 3** shows that some male respondents know very well about biotechnology. But in the case of female, there has no respondent who know very well about biotechnology. We work at this faculty on three departments (a). Al-Quran; (b) Al-Hadith; and (c) Dawah, we can found that Al- Quran & Dawah respondents have little knowledge about biotechnology. Al-Hadith respondents knew it very well than two departments.

Fig. 4 indicates that the Respondents have very well knowledge about biotechnology lived in campus, very few respondent who knows about biotechnology very well lived in home. The **Fig. 5** indicates About 65.0% respondents lived in village have little knowledge about biotechnology and In case of municipal 6.5% have little knowledge about biotechnology & 2.0% is well. For district respondents 1.5% knows well but 5.0 % have little knowledge and for city corporation 3.0% have little knowledge about biotechnology but no comments of other. Relation between academic year & Perception about biotechnology, it was found that the some respondent had very well perceptive knowledge about biotechnology who studied in masters. On the other hand in case of 1st year respondent number is very few & little who had well perceptive knowledge. The **Fig.** 7 shows that respondent whose family income is 50000-100000 they have very well perceptive knowledge about biotechnology but respondent whose family income between below 500000 they have not very well knowledge about biotechnology. The **Table 7** indicates that respondent's knowledge about biotechnological product, insulin. There is 7.0% answered diarrhea. 68.0% answered diabetics, about 13. 5% answered AIDS, and 11.5 % answered Hepatitis B. This **Table 8** indicates that there was 42.0% respondents had no knowledge about insulin production technology. 32.0% respondents know about insulin production technology. 25.5% respondents had wrong

information about the insulin production technology (Alam *et al*., 2017; Hayle *et al*., 2020).

Cloning is a modern approach of biotechnology. Now it is commonly used in various agricultural sectors and medical sectors. But there has a contradiction about human cloning world wide. Students also expressed a negative response about human cloning. The following **Fig. 9** indicates that in ethical view maximum (54.0%) Madrasha students answered their consideration about human cloning is it should be stopped now & 19.0% students answered their consideration about human cloning is it is beneficial and 16.5% said it may harmful to us, 10.5% answered don't know. This report describes a survey administered to university level students attending a Biotechnology innovation festival in Islamic University, Kushtia, Bangladesh.

Two hundred Students of Theology faculty are participants in this survey, among them 70 students of Al Quran, 65 of Al Hadith and 65 of Dawah and Islamic Studies Department. The range of age of respondents was 18-26 years with 74% male and 26% female. Some male respondents know very well about biotechnology. But in the case of female, there has no respondent who know very well about biotechnology. Majority of respondents come from madrasa with arts background. Every year students of these three departments are participating in this survey. Among the respondents 81.5% came from village, 10% from municipal, 6% from district and 2.5% from city corporation. Most of the participants at present living in the campus (66%). Others are in mess and in home. Sources of funding for most students are there family. Most participants use newspaper as source of information. Majority of the respondents have little idea about Biotechnology (Islam *et al*., 2020).

Insulin is the first product of recombinant DNA technology and it is use for treat diabetics. This question is including in our survey that in which cases insulin is treat. Most respondents gave the correct answer about 68%. Cloning is a modern approach of Biotechnology. Most participants say about human cloning that it should be stopped now (54%) some say it is harmful (10.5%), some say it is beneficial (16%) and others have no knowledge about human cloning.

CONCLUSION:

This type of survey work was occurred in Australia. The title of this survey is "Riverina high school student's views of biotechnology". This report describes a survey administrated to upper high school level students attending a biotechnology innovation festival in regional NSW, Australia. This area is primarily agricultural and is one of the few sites in NSW with approval to undertake small scale field trials of genetically modified crop plants. This study has demonstrated that at least two-thirds of students attending the festival had good knowledge of medical biotechnology issues; however, a significant proportion of the students did have concerns about the use and safety of biotechnology. During our survey work we found that they are already used many biotechnological products every day but they do not know these products are produced by biotechnologically. They are also agree, economical freedom can be achieved by proper use of biotechnology. At last, we would like to thank the students of theology faculty to help our survey works although they have insufficient knowledge about in English because our survey form was prepared in English language.

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CONFLICTS OF INTEREST:

The authors state that they don't appear to have any conflicts of interest of part related to the study.

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