DISEASES AWARENESS SURVEY AMONG THE MICROBIOLOGY STUDENTS

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Abstract

The recent decades have witnessed a radical change in the diseases, types and their outbreak in community, from infecting diseases to chronic ones. Disease awareness is utmost important aspect in the community for prevention and control of diseases. Awareness of Disease and symptoms is essential for screening and early detection. If members of the public are aware of a disease and its symptoms, they are more likely to take action to prevent it happening to them, or go to healthcare providers for check-ups. Hence, taking this into consideration, the present survey aims to acquire facts about most common diseases viz. AIDS, Dengue fever, Measles, Rubella and Sickle cell anaemia among the 100 Microbiology students of undergraduate and post graduate section. The findings suggests that the awareness about queried diseases is high in post graduate students of Microbiology department as compared to under graduate students which indicates that Microbiology education helps in improving the health awareness in students. Health education campaign regarding the common infectious diseases should be scheduled in schools, colleges and other sectors of the society.

Keywords: diseases, Disease awareness, survey, Health education, Microbiology

A disease is an abnormal condition that negatively affects the structure or function of part or all of an organism, and that is not due to any external injury. Infectious Diseases are disorders that are caused by microorganisms viz. bacteria, viruses, fungi, or parasites that are passed, directly or indirectly, from one person to another. Some Diseases are caused by the genetic disorders.

The recent decades have witnessed a radical change in the diseases, types and their outbreak in community, from infecting diseases to chronic ones. Disease awareness is utmost important aspect in the community for prevention and control of diseases[1][2]. Preventive medicine is concerned with reducing the incidence of disease by modifying environmental or behavioral factors that are related to illness. It is necessary that the general health practitioners and family physicians work in close collaboration with the community. It is mandatory to mobilize the community for resolving their health issues and to assess their knowledge about infectious diseases. In order to adopt a healthier lifestyle, increasing the awareness of the community is an important preventive strategy[3].

The lack of awareness among the people is one of the key aspects responsible for transformation of endemic diseases into pandemic. Lack of awareness is due to the absence, inaccessibility or inaccuracy of information, which is sometimes made harder by cultural taboos, myths and fear, which can stop people from taking preventative action or seeing doctors[4]. As a result of lack of awareness, people often come to healthcare facilities when their disease has worsened or reaches a late stage, resulting in lower chance of effective treatment. Lack of awareness is not only dangerous in term of worsening health outcomes; it can also be divisive in society and can affect quality of life[5].

Awareness of Disease and symptoms is essential for screening and early detection. If members of the public are aware of a disease and its symptoms, they are more likely to take action to prevent it happening to them, or go to healthcare providers for check-ups[6]. If people are not aware of diseases and healthcare options it keeps them from taking preventative action or from visiting their doctor and accessing care. Taking this into consideration, the present survey aims to acquire facts about diseases awareness among the college students.

MATERIALS AND METHOD

Survey Instrumentation

The instrument used for this study was a structured questionnaire containing multiple choice questions. The questionnaire consisted of 10 questions each on AIDS, Dengue[7], Sickle

[1] Ghosh, T. K. (1986). AIDS: a serious challenge to public health

[2] Limbasiya, R. D., Prabhakar, M. M., & Gadhavi, R. (2018). Stigmatizing attitudes in community towards people living with HIV/AIDS: A cross-sectional study.

[3] MacIntyre, *et.al.*,(2020). Public awareness, acceptability and risk perception about infectious diseases dual-use research of concern: a cross-sectional survey

[4] Godwin, P. (1998). The looming epidemic: the impact of HIV and AIDS in India.

[5] Park, K. (2005). Park's textbook of preventive and social medicine

[6] Giang, H. *et.al.*,(2021). Survey of knowledge, attitude and practice of healthcare professionals on dengue transmission, diagnosis and clinical classification

[7] Malavige GN *et.al.*,() Dengue viral infections.

Cell Anaemia, measles and rubella[8][9][10]. The questions were based on the general information regarding the particular disease which involves socio-demographic characteristics, knowledge of the various diseases, their features, transmission and complications, methods of prevention[11].

Participants

Participants in this study were undergraduate and post graduate college students attending a Microbiology education in R.A. College, Washim. Total 100 students participated in this survey. 20 students (10 males and 10 females) from each class viz. B.Sc (I,II,III) and M.Sc (I,II) were selected for the present survey. The participants belong to the age group of 18 to 25 years. The Participants were not placed in physical, emotional, or academic harm at any time during the course of the study.

Procedure

The Diseases questionnaire was administered to all the participants in September 2023[12]. Before the questionnaires were distributed, a consent form was read and distributed to all students for their review. After the consent form was read and distributed, students had approximately 30 minutes to complete their questionnaire in class-room under keen supervision. To maintain the confidentiality of all participants, names and signatures were not retrieved on the questionnaires. [13].

RESULTS AND DISCUSSION

The questionnaire was processed and following results were obtained.

Table 1 and figure 1 represents the response of participants about AIDS. From the table, it is observed that maximum correct response was given by M. Sc-II year students followed by M. Sc-I. The mean of the correct response was calculated to be 9.2 for both male and female of M. Sc-II year. In case of M. Sc-I, female students has given more correct response (mean value- 8) regarding AIDS as compared to males (mean value- 6.6). Among B.Sc-III students, males have given more correct response (mean value- 6.2) as compared to females (mean value- 4.8).The calculated mean value of correct response among B.Sc-II was 4.8 and 4 respectively for males and females. In case of B. Sc-I students, the mean value for correct response was calculated to be 2.2 and 2.8 respectively for males and females.

[8] Rima, B. K., & Duprex, W. P. (2006). Morbilliviruses and human disease.

[9] Taneja, D. K., & Sharma, P. (2012). Targeting rubella for elimination.

[10] Ogamdi, S. O., & Onwe, F. (2000). A pilot study comparing the level of sickle cell disease knowledge in a university in southeastern Texas and a university in Enugu, Enugu State, Nigeria, West Africa. *Ethnicity & Disease*, *10*(2), 232-236.

[11] Khun, S., & Manderson, L. (2007). Community and school-based health education for dengue control in rural Cambodia: a process evaluation

[12] Bazuaye, G. N., & Olayemi, E. E. (2009). Knowledge and attitude of senior secondary school students in Benin City Nigeria to Sickle Cell Disease. *World Journal of Medical Sciences*, *4*(1), 46-49.

[13] Fatton, M *et.al.*, (2021, September). Microbes Go to School: Using Microbiology and Service-Learning to Increase Science Awareness and Fostering the Relationship Between Universities and the General Public.

Figure 2 represents the findings on frequency of correct response regarding the specified disease. Out of the five different criteria considered viz. Basic information regarding AIDS, transmission, symptoms, treatment and prevention for survey, maximum students has given correct response regarding the basic information(65) of AIDS followed by symptoms(61), treatment(57), transmission(56) and prevention(50).

Table 2 and figure 3 represents the response of participants about Dengue fever. From the table, it is observed that maximum correct response was given by M. Sc-II year students followed byM. Sc-I. The mean of the correct response was calculated to be 9.4and 9 for male and female respectively. In case of M. Sc-I, male students has given more correct response (mean value- 8.8) regarding Dengue fever as compared to females (mean value- 8.6). Among B.Sc-III students, females have given more correct response (mean value- 5.8) as compared to males (mean value- 5.2).The calculated mean value of correct response among B.Sc-II was 5.8 and 4.2 respectively for males and females. In case of B. Sc-I students, the mean value for correct response was calculated to be 4 and 3.6 respectively for males and females. The above result were compared with Kalra, *et.al.,* ((2014) & Lennon JL [14][15].

Figure 4 represents the findings on frequency of correct response regarding the specified disease. Out of the five different criteria considered viz. Basic information regarding Dengue fever, transmission, symptoms, treatment and prevention for survey, maximum students has given correct response regarding the symptoms(90) of Dengue fever followed by basic information (66), transmission(62), prevention(53) and treatment(51).

Table 3 and figure 5 represents the response of participants about Measles disease. From the table, it is observed that maximum correct response was given by M. Sc-II year students followed byM. Sc-I. The mean of the correct response was calculated to be more in females (9.6) as compared to males (9.2). In case of M. Sc-I, male students has given more correct response (mean value- 8.6) regarding Measles disease as compared to females (mean value- 8.2). Among B.Sc-III students, males have given more correct response (mean value- 4.8) as compared to females (mean value- 4.4).The calculated mean value of correct response among B.Sc-II was 3.8 and 1.4 respectively for males and females. In case of B. Sc-I students, the mean value for correct response was calculated to be 1.4 and 2 respectively for males and females. The following result were compared with Odega, *et.al.,*(2010)[16].

Figure 6 represents the findings on frequency of correct response regarding the specified disease. Out of the five different criteria considered viz. Basic information regarding Measles disease, transmission, symptoms, treatment and prevention for survey, maximum students has given correct response regarding the basic information (61) of Measles disease followed by treatment(56),symptoms(54), transmission(50) and prevention(46). The following result were compared with Weldegebriel, *et.al.,*(2011)[17].

Table 4 and figure 7 represents the response of participants about Rubella disease. From the table, it is observed that maximum correct response was given by M. Sc-II year students followed byM. Sc-I. The mean of the correct response was calculated to be more in females

[14] Kalra, *et.al.,* ((2014). Awareness of dengue fever among school children: a comparison between private and government schools

[15]Lennon JL. Knowledge of dengue hemorrhagic fever by Filipino University Students.

[16] Odega, *et.al.,*(2010). Completeness of suspected measles reporting in a southern district of Nigeria.

[17] Weldegebriel, *et.al.,* (2011). Measles resurgence following a nationwide measles vaccination campaign in Nigeria, 2005–2008

(9.4) as compared to males (9.2). In case of M. Sc-I, female students has given more correct response (mean value- 6.8) regarding Rubella disease as compared to males (mean value- 6.6). Among B.Sc-III students, females have given more correct response (mean value- 3.8) as compared to males (mean value- 3).The calculated mean value of correct response among B.Sc-II was 4.4 and 3 respectively for males and females. In case of B. Sc-I students, the mean value for correct response was calculated to be 2.6 and 1.8 respectively for males and females. The following result were compared with Dewan, P., & Gupta, P. (2012)[18].

Figure 8 represents the findings on frequency of correct response regarding the specified disease. Out of the five different criteria considered viz. Basic information regarding Rubella disease, transmission, symptoms, treatment and prevention for survey, maximum students has given correct response (53)regarding the transmission and symptoms of Rubella disease. The results were at par with each other. The correct response regarding treatment was found to be 51 followed by prevention(49) and basic information (47).

Table 5 and figure 9 represents the response of participants about Sickle cell anemia. From the table, it is observed that maximum correct response was given by M. Sc-II year students followed byM. Sc-I. The mean of the correct response was calculated to be more in females (6.6) as compared to males (5.6). In case of M. Sc-I, male students has given more correct response (mean value- 6.2) regarding Sickle cell anemia as compared to females (mean value- 5). Among B.Sc-III students, both males and females have given correct response at par (mean value- 3).The calculated mean value of correct response among B.Sc-II was 2 and 3 respectively for males and females. In case of B. Sc-I students, the mean value for correct response was calculated to be 1.4 and 1.2 respectively for males and females. The following result were compared with Lee *et.al.*,(1995), Kate, S. L., & Lingojwar, D. P. (2002) and Adewuyi, J. O. (2000) [192021].

Figure10 represents the findings on frequency of correct response regarding the specified disease. Out of the five different criteria considered viz. Basic information regarding Sickle cell anemia, transmission, symptoms, treatment and prevention for survey, maximum students has given correct response regarding the basic information(49) of Sickle cell anemia followed by treatment(40), transmission(37),symptoms(32) and prevention(27). The following result were compared with Olakunle *et.al.*,(2013), Odunvbun, *et.al.*,(2008), Ameade, *et.al.*,(2015)[222324].

Table 6 and figure 11 represents the Frequency of correct response about diseases in males and females participants. From the table it is observed that maximum correct response was given by male participants as compared to females. Male participants have given total 670

[18] Dewan, P., & Gupta, P. (2012). Burden of congenital rubella syndrome (CRS) in India: a systematic review

[19] Lee *et.al.,* (1995). Improved survival in homozygous sickle cell disease: lessons from a cohort study.

[20]Kate, S. L., & Lingojwar, D. P. (2002). Epidemiology of sickle cell disorder in the state of Maharashtra.

[21] Adewuyi, J. O. (2000). Knowledge of and attitudes to sickle cell disease and sickle carrier screening among new graduates of Nigerian tertiary educational institutions.

[22] Olakunle *et.al.,* (2013). Knowledge and attitude of secondary school students in Jos, Nigeria on sickle cell disease

[23] Odunvbun, *et.al.,* (2008). Knowledge of sickle cell disease among parturiant mothers in Benin City and their attitude to newborn screening.

[24] Ameade, *et.al.,* (2015). Sickle cell gene transmission

correct response and females has given 646 correct responses about the queried diseases. Among the queried diseases, maximum correct response was found about Dengue fever (322) followed by AIDS (289), Measles (267), Rubella (253) and Sickle cell anaemia (185).

Table 7 and figure 12 represents the frequency of correct response about disease criteria of queried diseases. It is observed that maximum participants are aware about the symptoms of the queried diseases (290) followed by the basic information (288), disease transmission (258), treatment of the diseases (255) and prevention (225) of the queried diseases.

CONCLUSION

Maximum participants in the present survey were aware about the symptoms of the queried diseases (290) followed by the basic information (288), disease transmission (258), treatment of the diseases (255) and prevention (225) of the queried diseases. Among the queried diseases, maximum awareness was found about Dengue fever followed by AIDS, Measles, Rubella and Sickle cell anaemia. Maximum correct response was given by male participants as compared to females about queried diseases. Male participants have given total 670 correct response and females has given 646 correct responses about the queried diseases. The awareness about queried diseases is high in post graduate students of Microbiology department as compared to under graduate students which indicates that Microbiology education helps in improving the health awareness in students. Public health intervention program are suggested to be initiated including education of the community and also the health workers.

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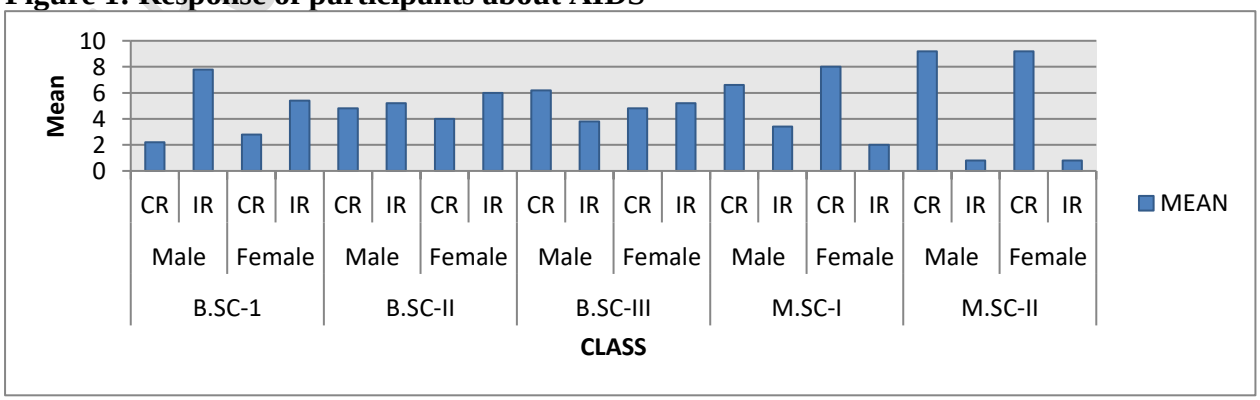
TABLE AND FIGURES

Table 1: Response of participants about AIDS

	BSc I				BSc II				BSc III				MSc I				MSc II				Total of CR
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		
	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	
Basic information	05	05	04	06	06	04	04	06	07	03	06	04	07	03	08	02	08	02	10	00	65
Transmission	02	08	03	07	05	05	02	08	06	04	05	05	08	02	07	03	09	01	09	01	56
Symptoms	03	07	04	06	04	06	06	04	05	05	06	04	03	07	10	00	10	00	10	00	61
Treatment	01	09	02	08	06	04	04	06	07	03	03	07	08	02	08	02	10	00	08	02	57
Prevention	00	10	01	09	03	07	04	06	06	04	04	06	07	03	07	03	09	01	09	01	50
TOTAL	11	39	14	36	24	26	20	30	31	19	24	26	33	17	40	10	46	4	46	4	
MEAN	**2.2**	**7.8**	**2.8**	**5.4**	**4.8**	**5.2**	**4**	**6**	**6.2**	**3.8**	**4.8**	**5.2**	**6.6**	**3.4**	**8**	**2**	**9.2**	**0.8**	**9.2**	**0.8**	

CR- Correct response, IR- Incorrect response

Figure 1: Response of participants about AIDS



CR- Correct response, IR- Incorrect response

Figure 2: Frequency of correct response about AIDS

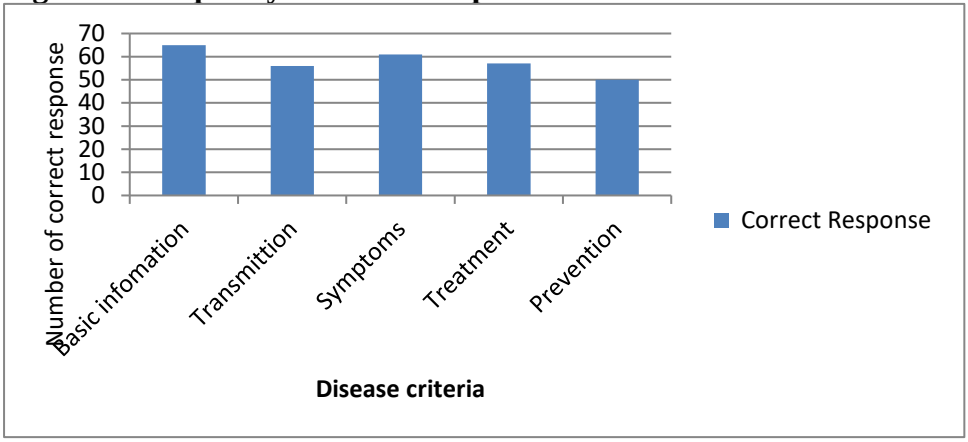
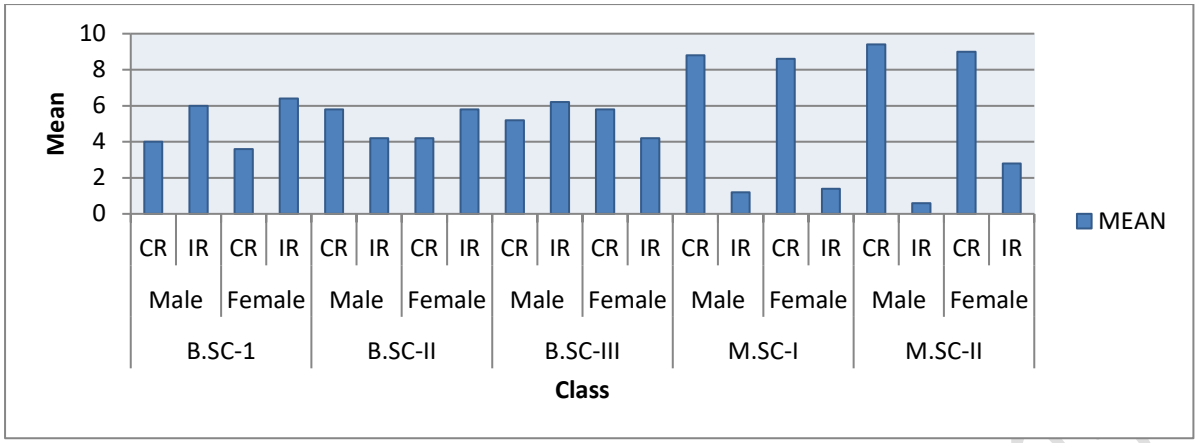


Table 2: Response of participants about Dengue fever

	BSc I				BSc II				BSc III				MSc I				MSc II				Total of CR
	Male		Female		Male		Female		Male		Female		Male		Female		Male	Female			
	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	
Basic information	02	08	03	07	06	04	04	06	06	04	07	03	09	01	10	00	10	00	09	01	66
Transmission	03	07	02	08	05	05	03	07	05	05	06	04	10	00	08	02	10	00	10	00	62
Symptoms	08	02	07	03	09	01	09	01	08	09	09	01	10	00	10	00	10	00	10	10	90
Treatment	03	07	02	08	04	06	03	07	04	06	04	06	08	02	08	02	08	02	07	03	51
Prevention	04	06	04	06	05	05	02	08	03	07	03	07	07	03	07	03	09	01	09	01	53
TOTAL	20	30	18	32	29	21	21	29	26	31	29	21	44	6	43	7	47	3	45	15	
MEAN	**4**	**6**	**3.6**	**6.4**	**5.8**	**4.2**	**4.2**	**5.8**	**5.2**	**6.2**	**5.8**	**4.2**	**8.8**	**1.2**	**8.6**	**1.4**	**9.4**	**0.6**	**9**	**3**	

CR- Correct response, IR- Incorrect response

Figure3: Response of participants about Dengue fever



CR- Correct response, IR- Incorrect response

Figure4: Frequency of correct response about Dengue fever

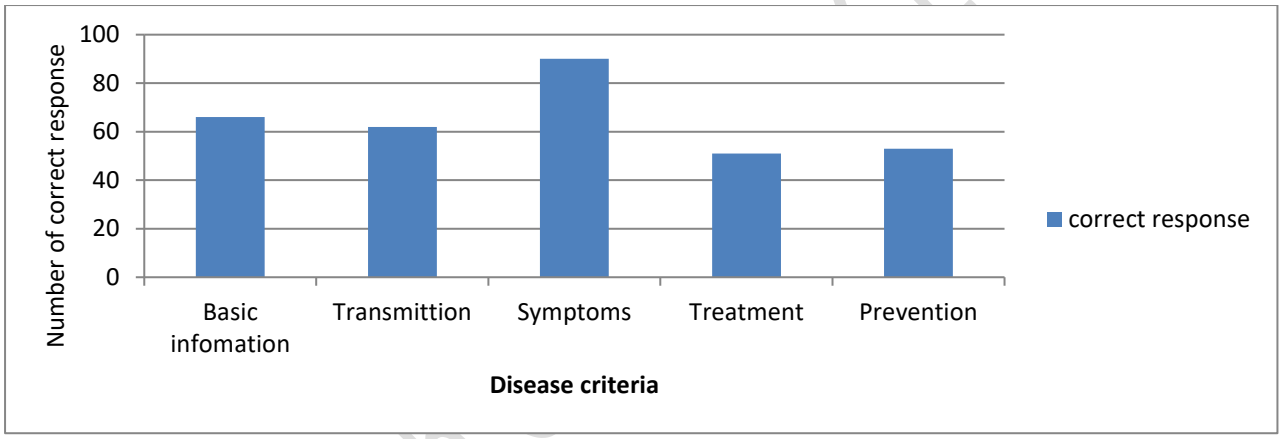


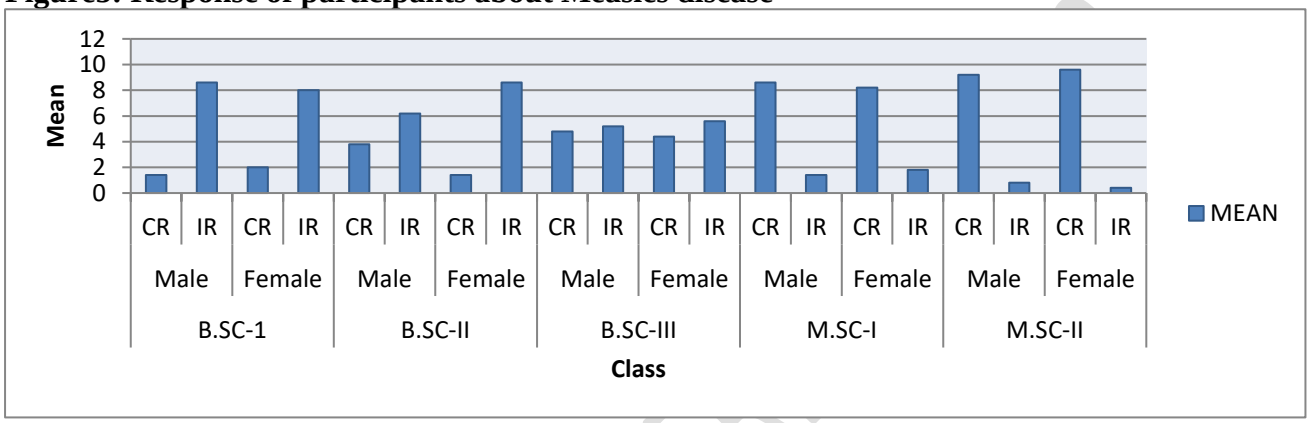
Table 3: Response of participants about Measles disease

	BSc I				BSc II				BSc III				MSc I				MSc II				Total of CR
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		
	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	
Basic information	03	07	02	08	05	05	04	06	06	04	07	03	07	03	08	02	09	01	10	00	61
Transmission	02	08	03	07	04	06	01	09	04	06	04	06	08	02	07	03	08	02	09	01	50
Symptoms	01	09	04	06	05	05	02	08	05	05	02	08	09	01	07	03	09	01	10	00	54
Treatment	00	10	01	09	03	07	00	10	06	04	06	04	10	00	10	00	10	00	10	00	56

Prevention	01	09	00	10	02	08	00	10	03	07	03	07	09	01	09	001	10	00	09	01	46
TOTAL	7	43	10	40	19	31	7	43	24	26	22	28	43	7	41	9	46	4	48	2	
MEAN	**1.4**	**8.6**	**2**	**8**	**3.8**	**6.2**	**1.4**	**8.6**	**4.8**	**5.2**	**4.4**	**5.6**	**8.6**	**1.4**	**8.2**	**1.8**	**9.2**	**0.8**	**9.6**	**0.4**	

CR- Correct response, IR- Incorrect response

Figure5: Response of participants about Measles disease



CR- Correct response, IR- Incorrect response

Figure6: Frequency of correct response about Measles disease

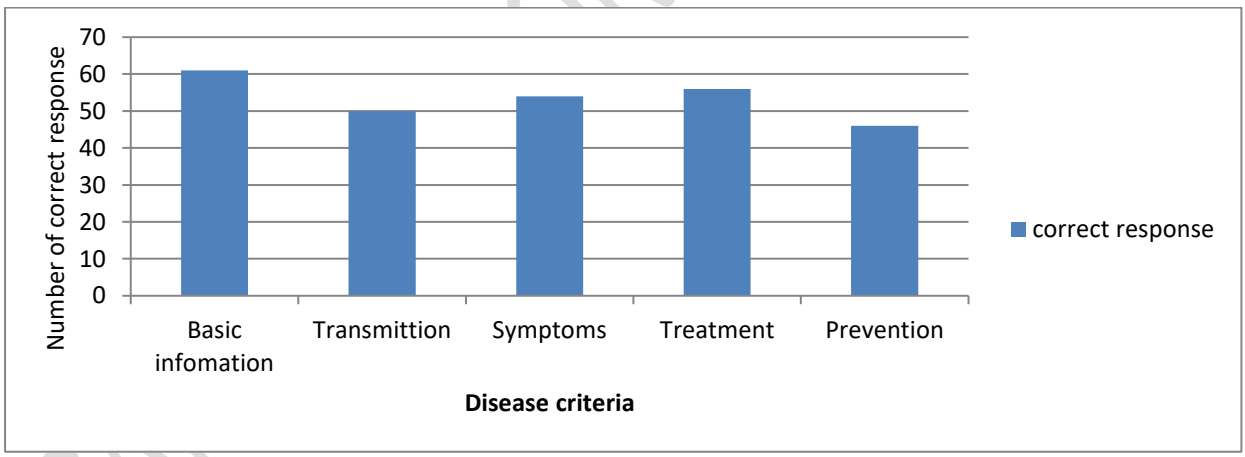


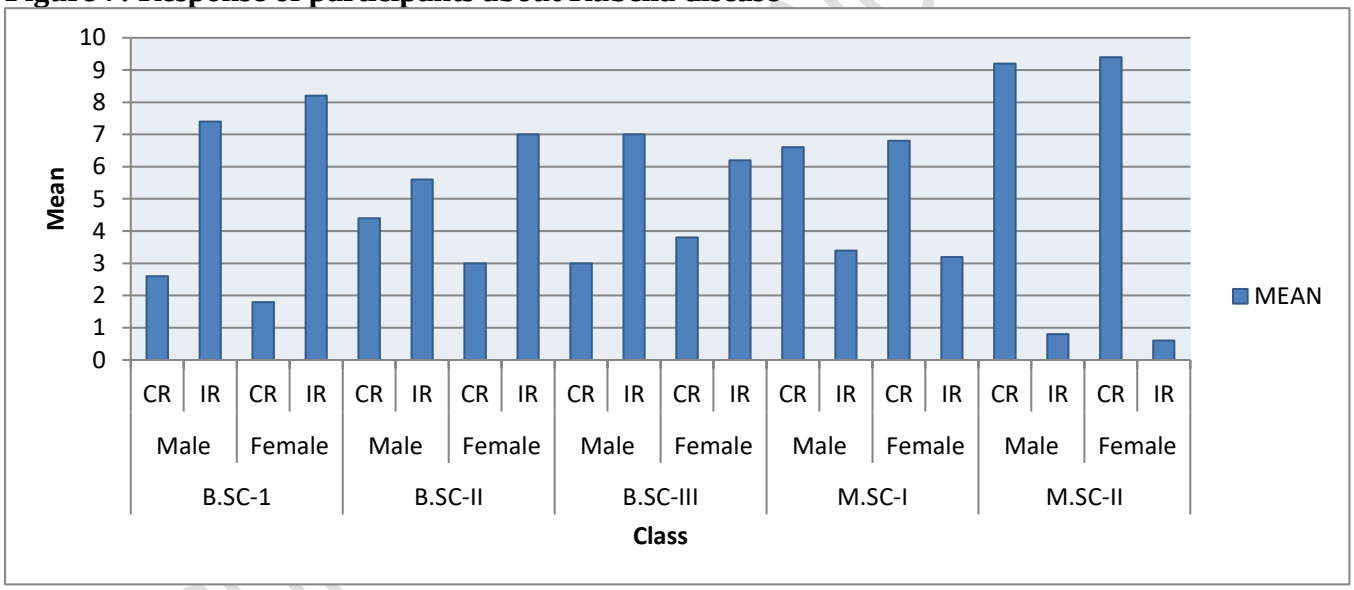
Table 4: Response of participants about Rubella disease

	BSc I				BSc II				BSc III				MSc I				MSc II				Total of CR
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		
	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	
Basic information	01	09	02	08	05	05	02	08	04	06	03	07	07	03	06	04	09	01	08	02	47

Transmission	03	07	03	07	04	06	03	07	03	07	04	06	06	04	07	03	10	00	10	00	53
Symptoms	04	06	01	09	06	04	05	05	05	05	01	09	07	3	04	06	10	00	10	00	53
Treatment	02	08	01	09	04	06	04	06	01	09	06	04	06	04	08	02	09	01	10	00	51
Prevention	03	07	02	08	03	07	01	09	02	08	05	05	07	03	09	01	08	02	09	01	49
TOTAL	13	37	9	41	22	28	15	35	15	35	19	31	33	17	34	16	46	4	47	3	
MEAN	**2.6**	**7.4**	**1.8**	**8.2**	**4.4**	**5.6**	**3**	**7**	**3**	**7**	**3.8**	**6.2**	**6.6**	**3.4**	**6.8**	**3.2**	**9.2**	**0.8**	**9.4**	**0.6**	

CR- Correct response, IR- Incorrect response

Figure 7: Response of participants about Rubella disease



CR- Correct response, IR- Incorrect response

Figure8: Frequency of correct response about Rubella disease

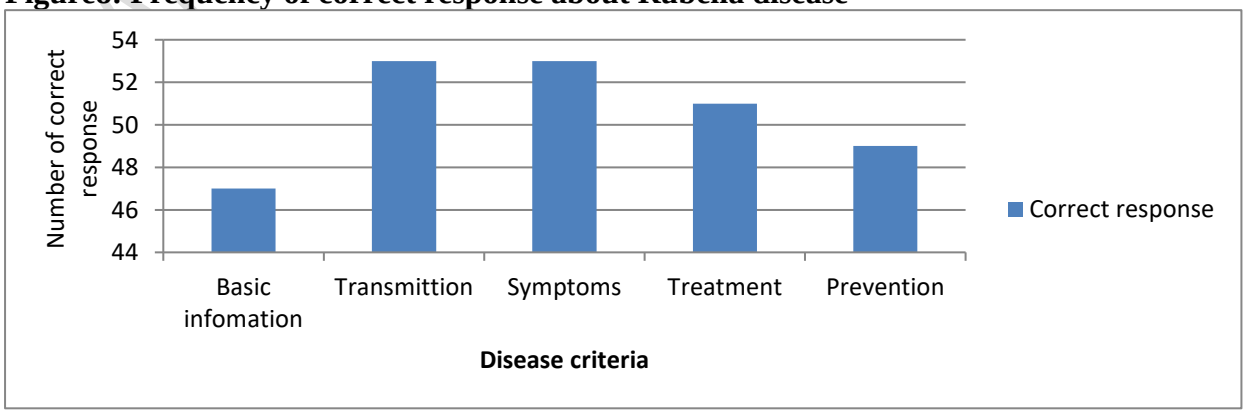
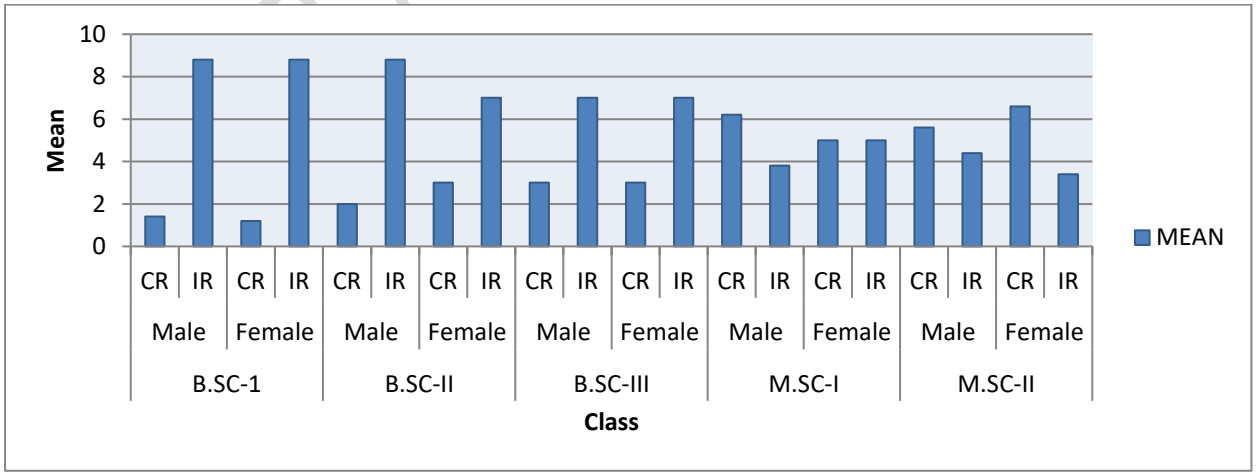


Table 5: Frequency of correct response about sickle cell anemia

	BSc I				BSc II				BSc III				MSc I				MSc II				Total of CR
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		
	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	CR	IR	
Basic information	01	09	02	08	03	07	03	05	05	05	06	04	06	04	07	03	09	01	07	03	49
Transmission	01	09	03	07	01	09	04	06	04	06	03	07	06	04	05	05	04	06	06	04	37
Symptoms	02	08	01	09	02	08	01	09	01	09	04	06	07	03	03	07	07	03	04	06	32
Treatment	03	07	00	10	03	10	05	08	02	08	02	08	08	02	04	06	06	04	07	03	40
Prevention	00	10	00	10	01	10	02	07	03	07	00	10	04	06	06	04	02	08	09	01	27
TOTAL	7	43	6	44	10	44	15	35	15	35	15	35	31	19	25	25	28	22	33	17	
MEAN	**1.4**	**8.6**	**1.2**	**8.8**	**2**	**8.8**	**3**	**7**	**3**	**7**	**3**	**7**	**6.2**	**3.8**	**5**	**5**	**5.6**	**4.4**	**6.6**	**3.4**	

CR- Correct response, IR- Incorrect response

Figure9: Response of participants about Sickle cell anemia



CR- Correct response, IR- Incorrect response

Figure10: Frequency of correct response about Sickle cell anemia

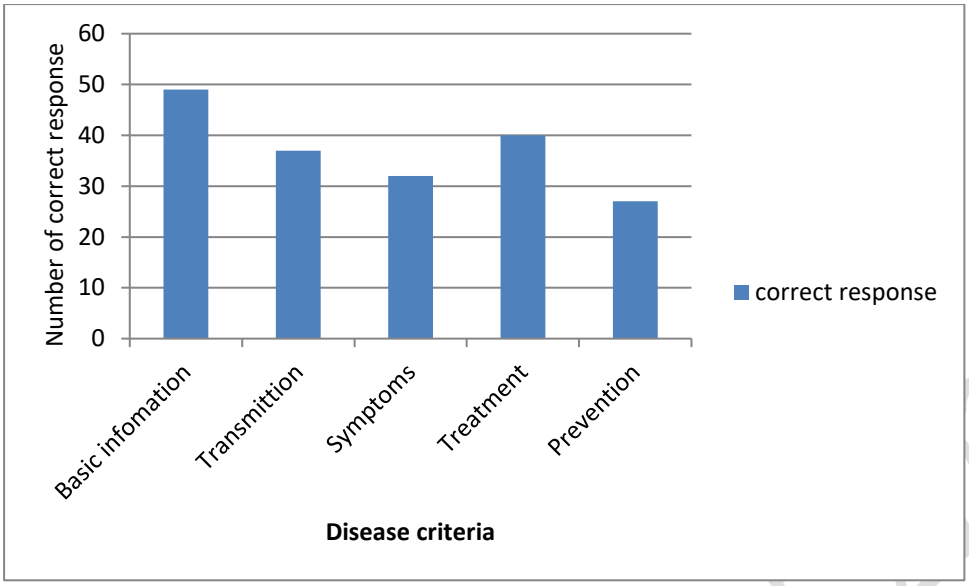


Table 6: Frequency of correct response about diseases in males and females participants

Disease	Correct response		Total
	Males	Females	
AIDS	145	144	289
Dengue fever	166	156	322
Measles disease	139	128	267
Rubella disease	129	124	253
Sickle cell anemia	91	94	185
Total	**670**	**646**	**1316**

Figure 11:- Frequency of correct response about diseases in males and females participants

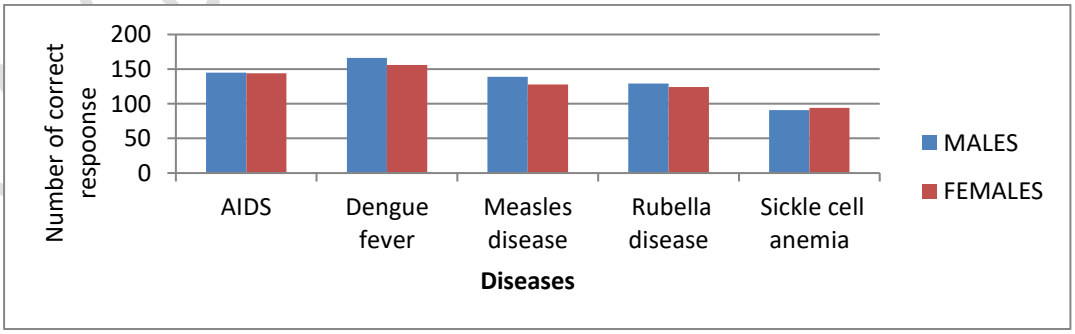


Table 7: Frequency of correct response about disease criteria of queried diseases

Disease criteria	AIDS	Dengue fever	Measles disease	Rubella disease	Sickle cell anemia	Total

	Number of correct response					
Basic information	65	66	61	47	49	**288**
Transmission	56	62	50	53	37	**258**
Symptoms	61	90	54	53	32	**290**
Treatment	57	51	56	51	40	**255**
Prevention	50	53	46	49	27	**225**
Total	**289**	**322**	**267**	**253**	**185**	**1316**

Figure 12:-Frequency of correct response about disease criteria of queried diseases