

Analyzing the Level of Health Education Awareness through Quantification of Knowledge, Attitude, and Perception of Prevalent Diseases

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Abstract

Health education lays a prime foundation stone in a medical professional's career for acquiring the necessary knowledge and skills. The prevalence of Communicable and Non-communicable diseases has been increased. KAP (Knowledge, Attitude, Practical) study helped us to assess the current level of knowledge among first year M.B.B.S. and BDS students about communicable and non-communicable diseases. A total of 138 questionnaires were completed. The socio-demographic details of each student included the age, gender, place of residence. All questions were based on a multiple choice format. The data were entered and interpreted using the SPSS version 17.0, the frequencies and percentages were calculated for the categorical responses. Chi square test was used to determine the association of various factors with risk factors, $P < 0.05$ was considered significant. Our study results showed that the students had sufficient knowledge of communicable and non-communicable diseases. Efforts can be made to fill gaps in the factual information at an early stage, by promoting health education.

Keywords:

Malaria, Dengue, Swine flu, Cancer, undergraduate medical students

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1. INTRODUCTION

Undergraduate medical education lays the foundation stone in a medical professional's career for acquiring the necessary knowledge and skills. Medical students being the future providers of healthcare are expected to have greater knowledge and awareness of not only endemic diseases but also diseases like HIV and cancer which has a high mortality and morbidity and the incidence of which is on a rise. Mangalore is an emerging hub of education and technology in India. Students from all over the country come to pursue various professional courses. Despite being a relaxed coastal town with scenic beaches and sacred temples, Mangalore is faced with emerging diseases which are a threat to public health.

Mosquito borne diseases have emerged as a serious public health concern (Malhotra G et al., 2014). These diseases affect all sections of the population, and are fairly preventable. Reports shows that, about 22% of the population in India lives in areas where the transmission rate for malaria is high. Whereas, 67% live in the area where transmission level is low and 11% live in areas which is free from malaria (Acharya A et al., 2013). In, Karnataka, the incidence of malaria has been on the rise since 2015 with almost 60% of cases from the state occurring in Mangalore alone. Dengue virus infection is a major threat to public health. Yearly the incidence of dengue fever and dengue hemorrhagic fever increasing to more than 100 million resulting in increased death rate (Gubler DJ, 2002; Gubler DJ, 1998). Nearly 3.97 billion people from 128 countries reside

in regions potentially at risk for transmission of dengue (Brady OJ et al., 2012; Bhatt S et al., 2013). A sharp rise in the incidence of Dengue Fever in Coastal areas of Karnataka has raised concerns about an outbreak in Dakshina Kannada district (Bhatt S et al., 2013; Padbidri VS et al., 1995). Recently several cases of dengue infection were reported in and around Mangalore (Padbidri VS et al., 1995).

Swine flu is a highly contagious pandemic disease that has affected the world's population over the last decade. It is caused by one of the numerous influenza A strains (Girard MP et al., 2010). The virus is transmitted from human to human in a manner similar to that of seasonal influenza. The youth, especially students are in close contact with each other in residence halls, classrooms, library, shared bathrooms and other common gathering places. Swine flu can thus be easily transmitted among the younger generation. During a pandemic, this virus could spread more rapidly from one student to another thereby leading to severe outcomes. An outbreak among university students, would result in loss of productivity and academic delay as the institution may have to close.

Detection of HIV/AIDS, it has been a sensitive topic, full of concerns and controversies. According to the UNICEF, in 2018, 5, 10,100 individuals between the age group 15-24 were newly infected with AIDS, worldwide (Pervin M et al., 2010). The youth in the field of health care are at occupational risk for contracting AIDS hence it is essential to assess their level of knowledge and perception about the disease so that the teaching programme can be fine-tuned accordingly.

Cancer is a widely feared disease worldwide and is considered synonymous with death. In India, the annual incidence of cancer is nearly one million, and the mortality rate is 67.2 per 100,000 (Chittem M et al., 2013; Laxmi S et al., 2013). Lack of awareness gives rise to many myths and misconceptions regarding cancer. This leads to delay in diagnosis of cancer. Primary prevention being one of the most important methods of controlling most cancers, it is essential to assess the knowledge regarding cancer and its control, among the youth.

As future healthcare providers, medical students play an important role in the care of patients suffering from various diseases. As a good foundation for the future doctor, undergraduate medical education is very much in providing good foundation for future doctors. Awareness regarding the diseases needs to be created among medical students at an early stage so that they can actively contribute to prevention activities. The present study was aimed to assess and compare the basic knowledge, attitude and perception of more prevalent diseases like malaria, dengue, H1N1, HIV and cancer among undergraduate medical and dental students.

2. MATERIALS AND METHODS

A descriptive, cross-sectional study was conducted to evaluate the malaria, dengue, H1N1, HIV and cancer -related knowledge, attitudes and practices of the medical and dental students. A total of 138 questionnaires were completed. The study was executed after the approval received by the Institutional ethical committee. A validated and pre-tested questionnaire was formed and distributed amongst 20 students as a convenience based pilot test. The ambiguous questions regarding the mythical concepts were omitted from the final performa. To minimize bias and improve understanding, two doctors reviewed the questionnaire. All students from the first comprised the study population, and no internists or medical personnel were included. All those who hesitated to participate were excluded. Students, who answered 2 /3rd (66.6%) of the questions pertaining to each disease correctly, were considered to have good knowledge of that disease.

The socio-demographic details of each student included the age, gender, place of residence. The questionnaire was divided into three sections, namely knowledge, attitudes, and practices. All questions were based on a multiple choice format. The first part focused on the nature of the disease, mode of transmission, signs, and symptoms, risk factors, incubation period, availability of the medication, vaccines and possible complications. The second part was based on practices and was assessed by the students' hand hygiene and use of a face mask. The attitudes were gauged by the perception of the participants regarding a swine flu outbreak and contact with an infected patient.

The data were entered and interpreted using the SPSS version 17.0. A knowledge score was calculated to reflect the participants' overall knowledge regarding the risk factors and signs/symptoms. This was scored out of a total of 31 points. The frequencies and percentages were calculated for the categorical responses.

Table 1: Socio-demographic characteristics of the participants

Male	74 (53.6%)
Female	64 (46.3%)
Residents of India	126 (91.3%)
Non Residents of India	12 (8.69%)

The current study was performed to assess the knowledge, awareness and perception of Dengue, Malaria, H1N1, cancer and HIV AIDS among first year medical students. A total of 138 respondents were enrolled in the study, out of which 74 (53.6%) and 64(46.3) were male and female respectively. The maximum respondents were residents of India 126 (91.3%) and 12 (8.69 %) were non-residents of India (Table 1)

Table II shows the response of the students, to the questions about Dengue. All the students (100%) were aware that Dengue is transmitted by mosquitoes. 39.9% of the students responded correctly about the incubation period of Dengue being 7 days. The majority of students (52.9%) reported the incubation period as 15 days. When asked about the time of transmission of Dengue Fever, majority of the students (50.7%) correctly answered it as dawn. Regarding breeding sites of vector of Dengue, majority (94.9%) of the students correctly answered it as Flower pots, stagnant water. Regarding clinical features of Dengue, most of the students (81.2%) answered correctly as high fever with severe headache, pain behind the eyes, muscle and joint pain and rash. When asked about the complications of Dengue, 74.6% of the respondents answered correctly as Dengue Shock Syndrome and Dengue Hemorrhagic Fever. 81.2% of the students correctly answered that the blood showed low platelets in Dengue Fever. 90.6% of the students correctly agreed that Dengue was a major public health problem in Mangalore. Overall, 74.63% of the students were found to have good knowledge about Dengue. Chart I shows the perception of the students regarding prevention of Dengue. Most of the students (90.5%) agreed that elimination of vector habitats was an essential method of prevention of Dengue.

Table II: Knowledge about Dengue

Incubation Period of Dengue	
7 days	55(39.9%)
15 days	73(52.9%)
25 days	5(3.6%)
30 days	5(3.6%)
Time of transmission of Dengue	
Dawn	70 (50.7%)
Late Night	20(14.5%)

When Raining	30(21.7%)
When humidity is high	18(13%)
Breeding sites for Dengue fever vector	
Flower pots, stagnant water	131(94.9%)
Rotting and organic matter	4(2.9%)
Tall grassy areas	2(1.4%)
Forests	1(0.7%)
Clinical Picture of Dengue	
High fever, severe headache, pain behind the eyes, joint and muscle pain	112(81.2%)
Fever with chills and rigors, pain behind the ears	17(12.3%)
Flu like symptoms	8(5.8%)
Long standing cough and fever	1(0.7%)
Dengue is transmitted by	
Mosquito	138(100%)
Flies	0
Ticks	0
Fleas	0
Complications of Dengue Fever	
Dengue Haemorrhagic Fever	28(20.3%)
Dengue Shock Syndrome	3(2.2%)
Both the above	103(74.6%)
Mouth ulcers, generalised itching	4(2.9%)
Blood picture in Dengue Fever	
Low RBC Count	19(13.7%)
Low Platelet Count	112(81.2%)
Low Eosinophils	4(2.9%)
Low Haemoglobin	3(2.2%)

Do you think Dengue is an important public health problem in Mangalore?	
Yes	125(90.6%)
No	13(9.4%)

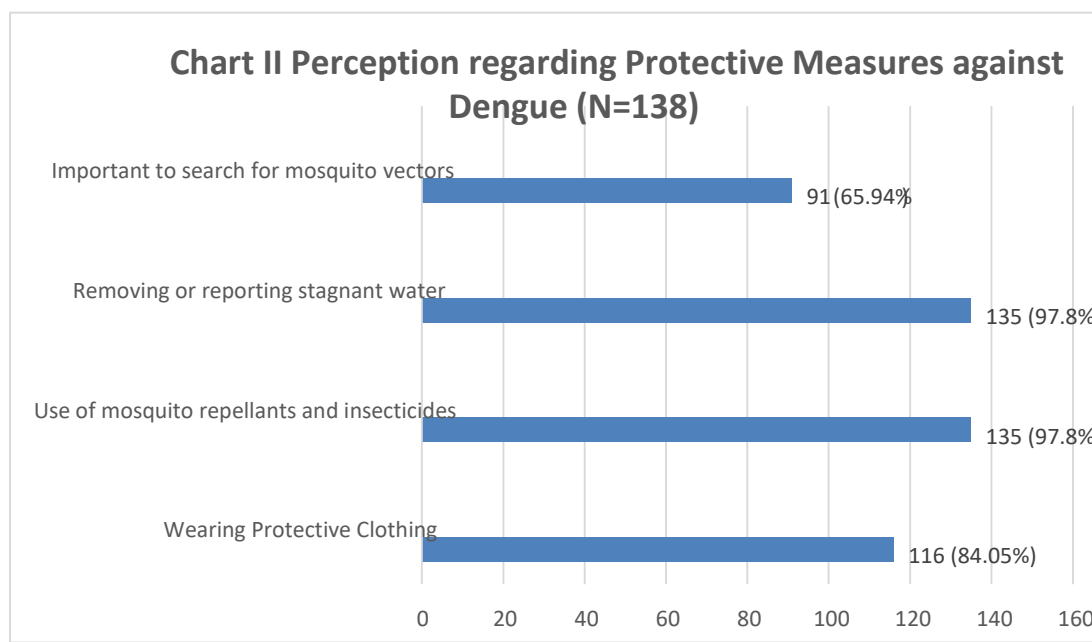
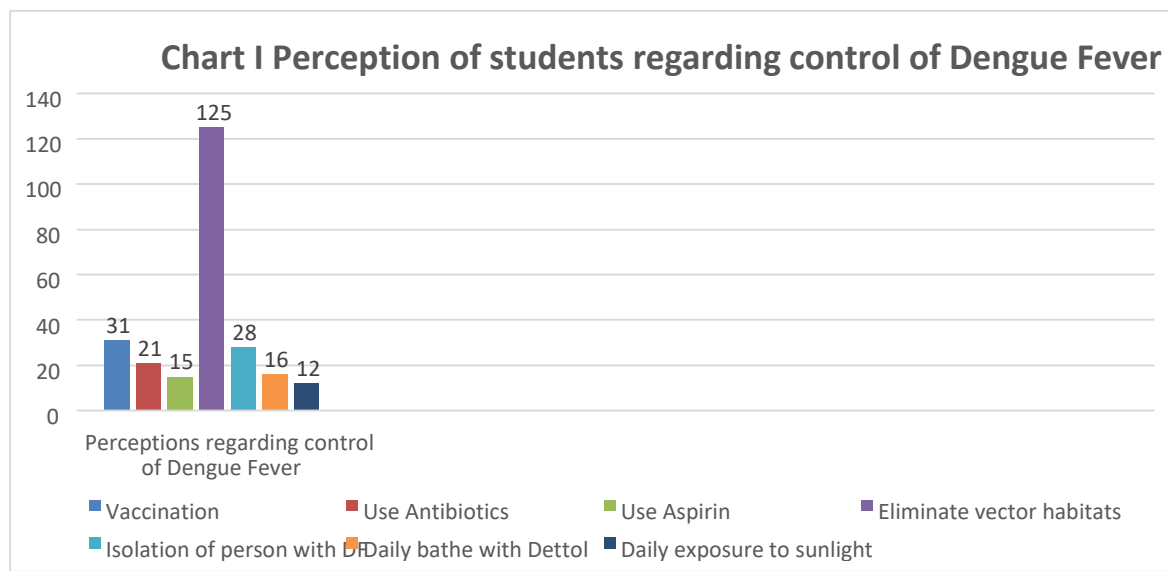


Table III shows the knowledge of the students regarding Malaria. 53.6% of the students correctly answered post rainy season as the transmission season of Malaria. Most (97.1%) of the students were aware that malaria is transmitted by mosquitoes. 80.4% of the respondents knew the etiological agent of Malaria as parasite (Plasmodium). Only 59.4% of the students correctly answered the question pertaining to clinical features of Malaria. Regarding the control measures of Malaria, 94.2% of the students correctly answered as larvicide, oil whereas 5.8% of the students considered filling water bodies as a control measure against malaria. Majority of the students (92%) were aware that malaria is a public health problem in Mangalore. Most of the students (90.6%) were aware of all protective measures against malaria. 68.1% of the students proactively looked for areas of water stagnation in their locality. On the whole, 68.84% of students were

found to have good knowledge about malaria.

Table III: Knowledge about Malaria

Transmission season of Malaria	N(138)
Rainy	56(40.6%)
Post Rainy	74(53.6%)
Winter	4(2.9%)
Summer	4(2.9%)
Malaria is transmitted by	N (138)
Mosquito	134(97.1%)
Flies	3(2.2%)
Ticks	0
Fleas	1(0.7%)
Causative agent of Malaria	N (138)
Bacteria	10(7.2%)
Virus	16(11.6%)
Parasite	111(80.4%)
Fungus	1(0.7%)
Clinical Features of Malaria	N
Fever, Cold, Headache, Shivering	53(38.4%)
Enlargement of liver and spleen	2(1.4%)
Both the above	82(59.4%)
Long standing cough and fever	1(0.7%)
Practice on controlling mosquito breeding	N (138)
Filling water bodies	8(5.8%)
Larvicide, Oil etc	130(94.2%)
Do you think Malaria is an important public health problem in Mangalore?	N
Yes	127(92%)

No	11(8%)
Protective measures against Malaria	N
Use of Bed Nets	4(2.9%)
Mosquito repellents(coils, mats)	5(3.6%)
Wearing protective clothing	4(2.9%)
All of the above	125(90.6%)
Do you check for areas of water stagnation in your locality?	N
Yes	94(68.1%)
No	44(31.9%)

Table IV: Knowledge about HIV

Can HIV be transmitted from infected mother to child?	N
Yes	135(97.8%)
No	3(2.2%)
Can HIV be transmitted by contact with air and water?	N
Yes	4(2.9%)
No	134(97.1%)
Can HIV be transmitted by social contacts like sharing clothes/cups/plates/spoons/shaking hands/kissing?	N
Yes	15(10.86%)
No	123(89.14%)
Do you think HIV can be completely cured with the available anti-retroviral therapy?	N
Yes	4(2.9%)
No	134(97.1%)
Can HIV patients donate blood?	N
Yes	2(1.4%)
No	136(98.6%)
Does avoiding mosquito bites prevent HIV?	N
Yes	18(13.0%)

No	120(87%)
Can sharing food with HIV infected individuals transmit HIV?	N
Yes	9(6.5%)
No	129(93.5%)
Can contact with feces, urine, saliva cause HIV?	N
Yes	49(35.5%)
No	89(65.5%)

Table IV shows the knowledge of students regarding HIV. Most of the questions were answered correctly with >85% correct answers. Large number of students (97.1%) of the students was found to have good knowledge about HIV. 65.5% of the students were aware that contact with feces/urine/saliva of infected people does not transmit HIV while the rest thought it did. Chart III shows the knowledge of students regarding transmission methods of HIV. 121 students knew that Unprotected intercourse was a potential way of transmitting HIV, The respondents were aware that occupational exposure (10 students) , unscrined blood (61 students) transfusion and drug abuse (52 students) were other potential modes of transmission of HIV. Table V shows the attitude of students towards individuals suffering from HIV. Most students had a fairly positive attitude towards HIV patients.

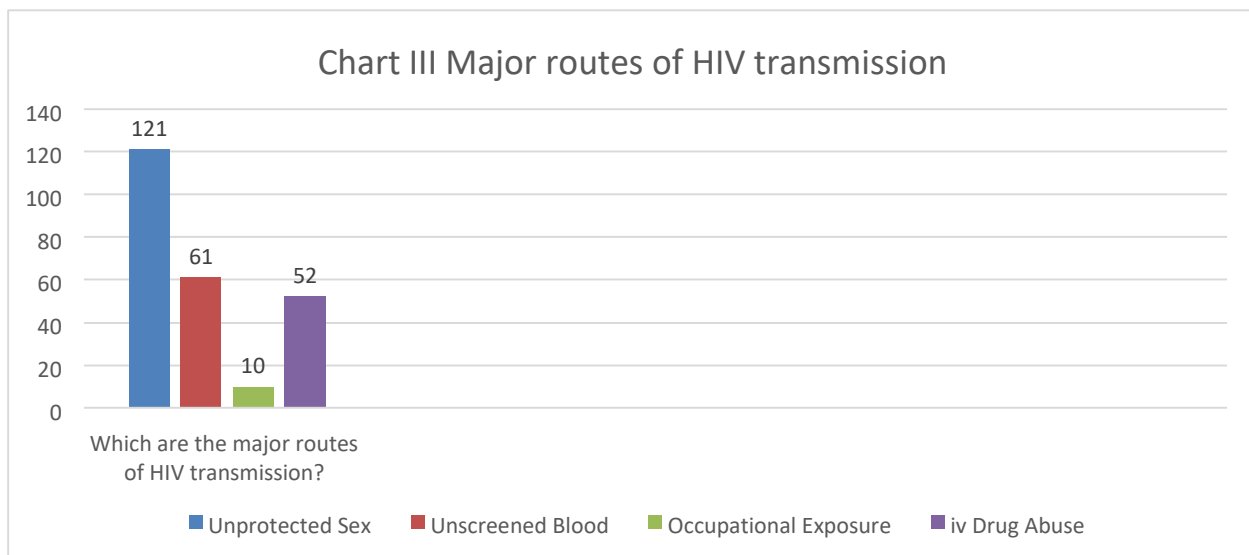


Table V: Attitude of students about HIV

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
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I would prefer not to take care of HIV patients	1(0.7%)	4(2.9%)	21(15.2%)	36(26.1%)	76(55.1%)
I am willing to assist in operations on HIV patients	60(43.5%)	56(40.6%)	20(14.5%)	0	2(1.4%)
Patients with HIV should be nursed separately	17(12.3%)	35(25.4%)	35(25.4%)	26(18.8%)	25(18.1%)
HIV infected children should be educated in separate schools	5(3.6%)	9(6.5%)	13(9.4%)	35(25.4%)	76(55.1%)
Patient with HIV should be quarantined/isolated	1(0.7%)	1(0.7%)	8(5.8%)	43(31.2%)	85(61.6%)

Table VI shows the knowledge of students about Swine Flu. Majority of the students (91.3%) knew the causative agent of swine flu as H1N1 virus. 92.8% of the students knew the clinical features of Swine flu. When asked whether swine flu can be transmitted from pigs, 76.2% of the students responded in the affirmative. Table VII shows the attitude of the students towards a vaccine against H1N1. Majority (92%) of the students were willing to accept a vaccine against H1N1. The others, unwilling to take a vaccine felt they were not at risk (27.3%) or were worried about side effects (36.2%). Chart IV shows the knowledge of students regarding preventive measures against H1N1. The students had fairly good knowledge about the preventive measures. However, 31.1% and 28.26% of the students also believed that antibiotics and herbal remedies were effective against H1N1 respectively. 89.85% of the student had good knowledge about H1N1.

Table VI: Knowledge about Swine Flu

H1N1 and Swine Flu are the same entity	N
Yes	105(76.1%)
No	33(23.9%)
Swine flu is caused by	N
HPV	5(3.6%)
H1N1	126(91.3%)
HTV	3(2.2%)
EBV	4(2.9%)
Clinical picture of Swine Flu	N
Chills, fever, sore throat, weakness, cough, severe headache	128(92.8%)

Enlarged liver, spleen	10(7.2%)
Swine flu can be transmitted from pigs	N
Yes	106(76.2%)
No	32(23.2%)
Will you accept vaccine against Swine Flu?	N
Yes	127(92%)
No	11((8%)
If no, please state the reasons	N
It is not safe	2(18.2%)
Worried it will cause side effects	4(36.3%)
I am not at risk	3(27.3%)
It will not work	2(18.2%)
Others	0(0%)

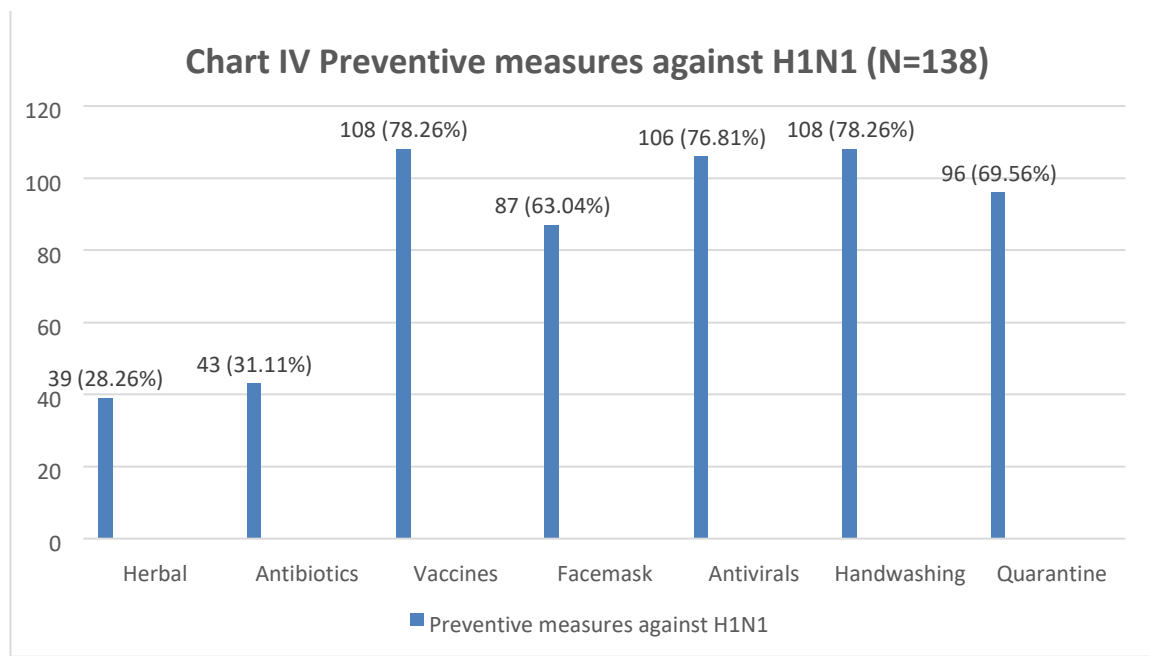


Table VIII shows the knowledge of students about cancer. Most of the students (85.5%) were aware that cancer can affect any age group. Majority of the students (97.1%) knew that cancer was non communicable. Only 17.4% of the students correctly answered Lung Cancer as the most common cancer among males worldwide, while 80.4% of the students considered Prostate cancer as the most common cancer among males. 81.9% of the respondents correctly answered Breast cancer as the most common cancer among women worldwide. 16.7% of the students felt cervical cancer was the most common cancer among women. Just over half of the students (51.4%) knew that cancer is not a hereditary disease. Majority of the students (98.6%) were aware that cancer can recur even after treatment. 84.8% of the students were aware of all modalities of

cancer treatment namely –surgery, chemotherapy and radiation therapy. Overall, 80.43% of the respondents had good knowledge about cancer.

Table IX shows the knowledge of students regarding preventive measures against cancer. 67.4% of the students were aware of self-breast examination as a measure to prevent breast cancer; 19.6% of the students considered Pap smear as a preventive measure against breast cancer. Majority of the students were aware that quitting tobacco is an essential measure to prevent lung cancer. 76.8% of the students knew that pap smear was a protective measure against cervical cancer; 12.3% of them thought quitting smoking helped prevent cervical cancer. The respondents had a fairly positive attitude, with 73.9% of them willing to accept a vaccine. The unwilling cited concern over its efficacy (50%), side effects (33.3%) etc as reasons for not accepting the vaccine.

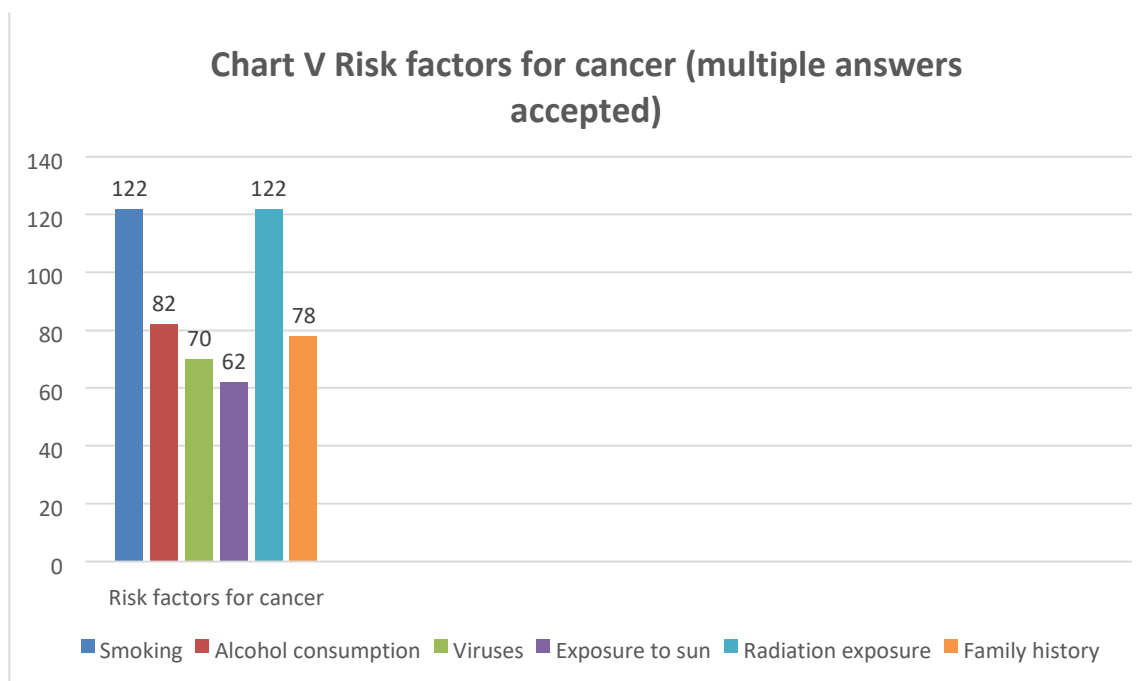
97.8% of the students were willing to spread awareness about cancer among the public.

Table VIII: Knowledge about Cancer

Cancer affects which group?	N
1-19 years	1(0.7%)
20-39years	4(2.9%)
40-49years	8(5.8%)
50+	7(51%)
All of the above	118(85.5%)
Is Cancer communicable?	N
Yes	4(2.9%)
No	134(97.1%)
Most Common cancer in males worldwide	N
Lung Cancer	24(17.4%)
Prostate Cancer	111(80.4%)
Colon Cancer	3(2.2%)
Bladder Cancer	0(0%)
Most common cancer in females is	N
Breast Cancer	113(81.9%)
Cervical Cancer	23(16.7%)
Colon Cancer	1(0.7%)
Bladder Cancer	1(0.7%)
Is cancer a hereditary disease?	N

Yes	67(48.6%)
No	71(51.4%)
Once treated, can cancer recur?	N
Yes	136(98.6%)
No	2(1.4%)
Cancer can be treated by	N
Chemotherapy	3(2.2%)
Radiotherapy	3(2.2%)
Surgery	1(0.7%)
Chemo and radiotherapy	14(10.1%)
All of the above	117(84.8%)
Measure to prevent breast cancer	N
Pap Smear	27(19.6%)
Self breast examination	93(67.4%)
Quit tobacco and alcohol consumption	16(11.6%)
Pap smear in women of reproductive age group	2(1.4%)
Measure to prevent lung cancer	N
Quit tobacco consumption	127(92%)
Quit alcohol consumption	6(4.3%)
Stop consuming spicy food	5(2.7%)
Measure to prevent cervical cancer	N
Quit smoking	17(12.3%)
Self breast exam	2(1.4%)
Quit alcohol consumption	13(9.4%)
Pap smear in women of reproductive age group	106(76.8%)
Are you willing to accept a vaccine against cancer	N
Yes	102(73.9%)
No	36(26.1%)

If not, state your reasons	N
It is not safe	1(2.8%)
Worried it will cause side effects	12(33.3%)
I am not at risk	4(11.1%)
It will not work	18(50%)
Others	1(2.8%)
Are you willing to spread awareness about cancer	N
Yes	135(97.8%)
No	3(2.2%)



3. DISCUSSION

In this present study we have mainly focused to know the knowledge, attitude and perception of communicable and non-communicable diseases among first year undergraduate and medical students before their entry into the preclinical/clinical medicine. This type of assessment might play an important role in imitating crucial steps to implement programmers related to health. It also helps to develop cost effective behavioral changes creating awareness of diseases in the community.

Dengue has the potential to cause the greatest mortality (Kumar A et al., 2010; Padbidri VS; 1995; Narayanan M et al., 2002). In our study, all the students were aware that mosquitoes are main cause for dengue. Large number of students reported the normal incubation period and time of transmission. Three indicators of dengue are dengue fever, dengue haemorrhagic fever and dengue shock syndrome. All the students' awareness towards the symptoms was good. As dengue has been a cause of recent concern in

Mangalore, and through media daily (Itrat A et al., 2008) we assumed high incidence sufficient knowledge in the students. Similar results have been documented in other studies also.

In the present study, the knowledge of the students about Malaria was found to be much appreciable. Most of the students were aware that malaria is transmitted by mosquitoes and also aware about the etiological agent of Malaria as parasite and clinical features of malaria. Further, student population was aware about the control and preventive approaches for malaria. The awareness of malaria plays an important role in disease in control and prevention in the newly joined students from various countries. Prevention of malaria and dengue is a new challenge; thus information, public awareness of these diseases could be motivated through students. So that people can protect themselves early against mosquito bite.

The human immunodeficiency virus (HIV) is emerging as the formidable challenge to public health, human rights, and development (Jaiswal S et al., 2005). Spreading knowledge and awareness about HIV is one of the key factor promoting prevention and control of HIV/AIDS worldwide. In the present study, a large number of the students were found to have good knowledge about HIV. Our study is in consistent with the previous reports. The present reports are in accordance with the previous research reports (Bhalla S et al., 2005; Sarkar S et al., 2007) . The approach towards control and prevention of HIV/AIDS remains through better knowledge and the vaccine against HIV/AIDS is still not found.

In this study, more number of students was aware about the fact that H1N1 virus is the causative agent of swine flu. This was in accordance with the previous study reports. The students in this study had good knowledge about preventive measures swine flu. Less number of students believed that antibiotics and herbal remedies were effective against H1N1. Majority of studies, creating awareness also showed that frequent hand washing and use of sanitizer as an effective and preventive measure. The present study showed that medical and dental students had substantial knowledge regarding swine flu. The students studying medicine or dentistry come into direct contact with the affected population and should be aware of the clinical features and preventive measures pertaining to influenza virus. The knowledge and awareness could help them in their future role as health care providers.

Cancer is the second most common cause for mortality worldwide is another frightful disease. There is a rise in the death from cancer worldwide. Inspire of numerous screening programmers available for several types of cancer, many peoples are diagnosed with specific type of cancers due to decreased awareness about available modalities of screening (Shah SC et a., 2019) . In this study, the students were aware that cancer can affect any age group. Majority of the students knew that cancer was non communicable. Many of the students considered lung cancer and prostate cancer as the most common cancer among males worldwide. Various studies also documented the similar results.

Health education in adolescence is very essential to help develop a sense of community outreach. By analyzing malaria, dengue, H1N1, HIV and cancer, the knowledge among the students regarding these diseases, efforts can be made to fill gaps in the factual information at an early stage, by encouraging health education in schools. By analyzing the student's attitude and perception towards the diseases, we can identify gaps in the sensitiveness of the students, and emphasize on having an empathetic attitude during the clinical examination. Further, in the recent times, our dietary habits and lifestyle changes have shown to increase the incidences of various communicable and non-communicable diseases.

As all of us are know that, prevention is better than cure generating awareness about the risk factors, early screening and preventive measures might help to prevent and diagnosis of these diseases in its early stages . Medical professionals play a fundamental part in building awareness in the community. Thus, there is a prime need for these undergraduate medical graduates to have the basic understanding these diseases helping in promoting needful practices for healthy life.

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