

ASSESSMENT OF KNOWLEDGE, AWARENESS AND ATTITUDE REGARDING FEVER AND MOSQUITO-BORNE ILLNESSES AMONG SECONDARY AND SENIOR SECONDARY SCHOOL STUDENTS OF RURAL AREA OF KANNAUJ DISTRICT IN UP, NORTH INDIA

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ABSTRACT

BACKGROUND

Knowledge regarding fever and mosquito-borne illnesses, and their mode of transmission, and methods of prevention, are important for the wellbeing of an individual, and disease-prevention in the community. We wanted to study the knowledge, awareness, and attitude, with regard to fever and mosquito-borne illnesses among secondary and senior secondary school students in a rural area of Kannauj district.

METHODS

This is a cross-sectional questionnaire-based study conducted among students of class 6 to 12 of a rural school in a backward district- Kannauj. All the students present on the day of survey in the school were included in the survey.

RESULTS

Of the 165 students included in the study, 153 (93%) knew usual timing of mosquito bite; 114 (69%) knew ways of protection from mosquito-bite, 53 (32%) had heard about bird flu, and 58 (35%) had heard about swine flu. Among 165 students, 99 (66%) had electricity in their homes. These students belong to the lower stratum of society.

CONCLUSIONS

Knowledge regarding fever and mosquito-borne illnesses can be enhanced among secondary and senior secondary school students through awareness programs and community participation campaigns.

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BACKGROUND

Human development is expressed as expected years of living.¹ This measurement of quantity of life in a way is a surrogate-marker of quality of life. Therefore, to improve human wellbeing, improvement of health-status of masses is a key parameter² and there are three levels of healthcare delivery system here- primary, secondary and tertiary level.³ It is a well-established fact that improvement in primary healthcare delivery-system reduces disease-burden and also makes healthcare provision less costly as it makes chances of full blown disease unlikely or delays those

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manifestations.⁴ Having the fact in mind, in recently launched Pradhan Mantri Jan Aarogya Yojana (PM-JAY), there is provision for creation of Health and Wellness Centres at a large scale.⁵ One of the ways of primary-prevention is health-promotion and mass-awareness.⁶ In fact some studies make it clear that basic health-education to population has a larger effect on population- health than providing secondary- or tertiary- care infrastructure.⁷ Hence in a society as heterogenous and unequal as India, we need to have a baseline data to measure awareness of masses about common illnesses, and then knowledge of preventive measures for protection.

According to Deputy Director General of WHO, at Primary Health Centre at their most basic level, there should be an emphasis on preventing disease with vaccination, screening, appropriate education, counselling, and treatment.⁸ CEO of recently launched Aayushman Bharat (Long live India) government scheme discloses that there are only a few studies to assess disease-pattern in bottom 40% of the population.⁹ UP is one of the laggard states on several demographic-parameters e.g. sex ratio¹⁰ and

Kannauj district (27.0514 N, 79.9137 E) has poorer sex ratio in UP,¹¹ hence backward. Government of India has been conducting decadal exercise of Census since 1881.¹² Results of this statistics is used for implementing various ongoing schemes and projects. At the beginning of this current decade, a similar exercise was conducted all over India. Similarly, socio economic and caste census has been conducted¹³ and poor families' list is uploaded on State government website.¹⁴ And these poor households are eligible to get free diagnostics and treatment at enlisted healthcare facilities.

Aims and Objectives

In this study we planned and conducted a survey of young school students of class 6 to 12 in a Government Inter College, Kannauj district to know their awareness about fever-its common causes and measures to control flu. And to know undercurrents in social-hierarchy, we estimated social status of these students by utilising tools used by government of India in recently conducted Socio Economic and Caste Census (2011).

METHODS

Present cross-sectional study was conducted among 165 students of class 6 to 12 of a government school in a rural area of Kannauj District. As this is a co- educational school, students of both the sexes were involved. A pre-tested questionnaire was prepared to assess awareness level of the students. Verbal consent was taken from all the students at the beginning of the survey. The questions were explained to the students before asking them to fill the questionnaire. Tools-As 4 of us worked/working in this region in a Medical College, we knew that the students in the government-school belonged to lower part of socio-economic ladder. Hence, we included some questions to know their asset-ownership-pattern in their households in the same questionnaire.

Inclusion Criteria

All the students present on the on the day, 1 November 2018, were included for the study.

Exclusion Criteria

A few students were leaving school in front of us. We tried to persuade them to stay for our survey. Those who were not willing for the same, were requested to fill the questionnaire then and there, and then leave. Some of them obliged, others didn't.

Statistical Methods

Data was compiled and analysed using SPSS software.

RESULTS

141 (85%) subjects correctly identified an insect causing potentially lethal illness. 153 (93%) students correctly marked usual timing of mosquito-bite. Only 53 (32% or one third) ever heard of Bird Flu somewhere and 58 (35% or just more than one third) ever heard of Swine Flu. 114 (69% or

about two third) students correctly knew ways to avoid mosquito bite. 107 (65% or just under two third) knew that full-sleeve clothes provide protection against mosquito-bite. Among all the students, 88 (53% or just above half) knew proper cough etiquettes; 56 (34% or only one third) students' families cleaned their water coolers during summer season. This is despite the fact that 99 (60% or three fifth) students had electric connection in their homes. We could not enquire about frequency of the cleaning as we initially thought that additional questions may lengthen our questionnaire, and they may not fill that fully. 31 (18%) students had mosquito repellent spray at their homes and only 52 (32% or less than one third) students ever saw or heard any advertisement promoting hand-washing practice. This is despite massive electronic media campaign to promote the practice. 114 (69% or just more than two third) correctly knew breeding- places of mosquito and 148 (90%) correctly knew the season of malaria epidemic.

Among all the students, 76 (46%) correctly knew season of spread of swine flu and 105 (64%) knew that some mosquitoes lay eggs on stagnant water. Only 49 (30%) students could find a link between discarded tyre or bottles and mosquito-breeding and 59 (36% or just above one third) could recall outdoor fumigation by a Gram Panchayat (local governing body) employee. 100 students (61%) correctly knew that the outdoor mosquito-repellent fumigation should be done in the evening at the time of active malaria transmission and 84 (51% or just above half) had mosquito-repellent coil/ vaporised liquid at their homes. But only 28 (17%) were aware of any possible side effect/ health hazard of the fumes of coil-repellent/ vaporised-liquid. 126 (76% or about three fourth) had mosquito-net in their homes and almost all of them (124 or 75%) were using it. 136 (82%) could correctly name one or two illnesses caused by mosquito and 94 (57%) by house fly. 140 (85%) correctly knew vector of Dengue fever and 111 (67% or just above two third) correctly knew vector of Chikungunya fever. 47 (28%) marked that on having fever, family members of their households make self- medication, i. e. they go to a medical-store and consume some drugs on their own-without any prescription.

While conducting its decadal census exercise this time in 2011, Government of India determined its number of poor households nationwide. In that exercise it had certain inclusion- and exclusion- criteria. Inclusion- criteria are those whose possession automatically makes a household qualified to get included in the poor, and makes them eligible to get benefits of various schemes, e.g. to get subsidised-ration and kerosene. On the other hand, if a household has certain amenities, e.g. pays income- tax, or has a landline-phone connection or a tractor or refrigerator or a Kisan-Credit-Card, then that household is automatically excluded from the poor's list. In our study 69 (42%) students had a refrigerator or a tractor in their homes. 64 (39%) students had an automobile at their homes. Only 41 (25% or less than one fourth) students ever heard or saw a health message on their television or radio set. 22 (13%) students had somebody in their homes in a government job.

Variables	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total
Mosquito as Dangerous Insect	2 (40%)	5 (100%)	8 (66.7%)	32 (84.2%)	33 (84.6%)	36 (92.3%)	25 (92.6%)	141 (85.5%)
Aware of Time of Mosquito Bite	5 (100%)	4 (80%)	12 (100%)	33 (86.8%)	37 (94.9%)	37 (94.9%)	25 (92.6%)	153 (92.7%)
Ever Heard of Bird Flu	5 (100%)	0 (0%)	0 (0%)	17 (44.7%)	7 (17.9%)	17 (43.6%)	7 (25.9%)	53 (32.1%)
Ever Heard of Swine Flu	5 (100%)	0 (0%)	1 (8.3%)	13 (34.2%)	5 (12.8%)	24 (61.5%)	10 (37%)	58 (35.2%)
Aware of Lifecycle of Mosquito	0 (0%)	3 (60%)	9 (75%)	24 (63.2%)	28 (71.8%)	32 (82.1%)	18 (66.7%)	114 (69.1%)

Table 1. Awareness of School Students Regarding Agent Factor

Variables	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total
Measures of Protection from Mosquito Bite	5 (100%)	1 (20%)	1 (8.3%)	29 (76.3%)	27 (69.2%)	33 (84.6%)	18 (66.7%)	114 (69.1%)
Value of Full Armed Garments in Bite	5 (100%)	3 (60%)	9 (75%)	17 (44.7%)	27 (69.2%)	28 (71.8%)	18 (66.7%)	107 (64.8%)
Awareness of Etiquettes of Coughing	0 (0%)	3 (60%)	10 (83.3%)	37 (97.4%)	36 (92.3%)	35 (89.7%)	22 (81.5%)	143 (86.7%)

Table 2. Awareness of School Students Regarding Host Factor

	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total
Practice Changing Water of Cooler	5 (100%)	1 (20%)	2 (16.7%)	16 (42.1%)	17 (43.6%)	9 (23.1%)	6 (22.2%)	56 (33.9%)
Avail Safe Drinking Water	0 (0%)	2 (40%)	11 (91.7%)	38 (100%)	37 (94.9%)	34 (87.2%)	22 (81.5%)	144 (87.3%)
Hand Hygiene	0 (0%)	5 (100%)	12 (100%)	36 (94.7%)	37 (94.9%)	39 (100%)	25 (92.6%)	154 (93.3%)
Season of Malaria	0 (0%)	4 (80%)	11 (91.7%)	35 (92.1%)	37 (94.9%)	38 (97.4%)	23 (85.2%)	148 (89.7%)
Season of Swine Flu	0 (0%)	3 (60%)	6 (50%)	7 (18.4%)	9 (23.1%)	30 (76.9%)	21 (77.8%)	76 (46.1%)
Diseases from Stagnant Water	0 (0%)	1 (20%)	0 (0%)	16 (42.1%)	11 (28.2%)	13 (33.3%)	8 (29.6%)	49 (29.7%)
Timing of Fumigation	0 (0%)	1 (20%)	7 (58.3%)	23 (60.5%)	25 (64.1%)	29 (74.4%)	15 (55.6%)	100 (60.6%)
Use Mosquito Net	0 (0%)	4 (80%)	7 (58.3%)	28 (73.7%)	32 (82.1%)	35 (89.7%)	20 (74.1%)	126 (76.4%)

Table 3. Awareness of School Students Regarding Environment Factor

	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total
Diseases from Mosquito	0 (0%)	3 (60%)	11 (91.7%)	34 (89.5%)	31 (79.5%)	35 (89.7%)	22 (81.5%)	136 (82.4%)
Disease from House Fly	0 (0%)	1 (20%)	4 (33.3%)	24 (63.2%)	20 (51.3%)	26 (66.7%)	19 (70.4%)	94 (57%)
Vector of Dengue	0 (0%)	4 (80%)	9 (75%)	34 (89.5%)	36 (92.3%)	33 (84.6%)	24 (88.9%)	140 (84.8%)
Vector of Chikungunya Fever	0 (0%)	5 (100%)	8 (66.7%)	25 (65.8%)	27 (69.2%)	28 (71.8%)	18 (66.7%)	111 (67.3%)

Table 4. Awareness of School Students Regarding Disease

	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total
No. of Students in Each Class	5	5	12	38	39	39	27	165
Electricity	0 (0%)	5 (100%)	8 (67%)	21 (55%)	23 (59%)	27 (69%)	15 (56%)	99 (60%)
Fridge/Tractor	0 (0%)	2 (40%)	7 (58.3%)	20 (52.6%)	12 (30.8%)	20 (51.3%)	8 (29.6%)	69 (41.8%)
Automobile	0 (0%)	3 (60%)	4 (33.3%)	16 (42.1%)	13 (33.3%)	19 (48.7%)	9 (33.3%)	64 (38.8%)
Television/Radio/Phone	0 (0%)	4 (80%)	3 (25%)	28 (73.7%)	22 (56.4%)	34 (87.2%)	25 (92.6%)	116 (70.3%)
Government Job	0 (0%)	3 (60%)	3 (25%)	8 (21.1%)	4 (10.3%)	2 (5.1%)	2 (7.4%)	22 (13.3%)

Table 5. Possession of Household Assets

DISCUSSION

Therefore, we observe that there are wide variations in knowledge, awareness and attitude of school-going-students regarding common symptoms of common illnesses in developing world. And this variation may have strong influence on population health, as today's students are tomorrow's citizens. We have eliminated small pox from the face of the Earth.^{15,16,17} We recently eliminated polio,^{18,19,20,21,22} neonatal tetanus,²³ and drancunculiasis.^{24,25} We also have plans to eliminate Tuberculosis^{26,27} and Malaria²⁸ within ten to fifteen years. A WHO report 3 years ago shows that an increasing number of countries have moved towards eliminating Malaria, although it also warns against complacency.²⁹ But elimination of these infectious-illnesses requires reaching out to those last pockets and burrows of resistance, which are generated and then sustained by illiteracy, negligence, ignorance and social-exclusion.

National Vector Borne Disease Control Program, a government run Institution, asks for community-mobilisation and population-participation in controlling vector- borne-diseases.³⁰ Hence we made an attempt to identify those communities by using tools which were already validated and utilised by our government in its latest census-enumeration, with some modification- so as to be suitable in a school-survey. What we found is that marginalised section of our society- although looking similar in a uniform- have different level of knowledge and awareness. Hence every possible attempt should be made to reach out to these communities, so as to bring them at par with others, i. e. rest of us.

Alyousefi et al. conducted a survey in Yemen regarding awareness of population and also estimated socio-economic status of these subjects, which to our knowledge is the only study of its kind.³¹ But the country is now in the grip of a civil war³² and is different from India. Although inequality is a worldwide phenomenon,³³ we in India have a vastly different social order, are highly unequal on economic- and political- ladder and there are huge variations between and within any defined group (s).³⁴ Social-hierarchy is so much tall here that to define it is a huge task. In this respect, its useful to paraphrase an economist, if something is true for India, its reverse is also true.³⁵

WHO promotes application of mosquito-control-measures for control of Malaria.^{36,37} Neafsy et al. are designing a vaccine against Malaria³⁸ and Bloom writes about similar strategy against Tuberculosis³⁹ with variable success rates in a defined demographic- and geographic-group. These vaccines are still in a developmental phase, have specific target population, elicit variable efficacy and don't provide complete protection. But the biggest vaccine against these illnesses is knowledge, awareness, practices and attitude of the masses. If a mosquito can breed on a bottle cap,⁴⁰ lying discarded, unattended and forgotten in a corner of a house, no legislation can stop that process of mosquito- breeding unless we make those people educated about the phenomenon. Mortality due to coronary heart disease decreased in US in last four decades. Ford et al.

calculate that half of this decrease is due to control of risk factors and the other half is due to adoption of evidence based medical therapies.⁴¹ Similarly disease burden in the affluent West started to decrease even before discovery of wonderful and effective drugs & devices and its credit goes to improved sanitation and better understanding of disease process.⁴²

Biography of Robert Koch teaches us that if we accurately and clearly understand Koch's postulates, we can control spread of infectious diseases, including pulmonary tuberculosis.^{43,44} Therefore there is a case for long- term community awareness and participation on common health issues affecting the masses and then partaking in sharing of knowledge we have gained so far. Nobel laureate in Economic Sciences in 2015, Angus Deaton, states that if foreign aid is giving to countries on the conditions set by donors, often wasteful and useless expenditures occur and at the time of payback, there is economic destabilisation and social instability in receiver countries.⁴⁵ Hence before investing money in a project, there is a need for proper exploration of onset and maintenance of disease- process from all the possible angles. And community-participation and behaviour-changes are a few of the crucial and the most economical & scalable factors determining course of infectious illnesses. Only then intelligent decisions can be made to control its spread, which have an effect on all of us. We made a small attempt to unravel understanding of disease processes in an apparently uniform group. To our knowledge, this is the first study of its kind, where awareness of a sample is observed and then their stratum of socio-economic ladder. And that gives us unequal results. Hence there is a need to make a larger study, involving larger group (s), and a wider geography. By further exploring social undercurrents, we will be better able to dissect population-behaviour in response to a disease-process, and be better able to modify that. This modification may provide us a window to make better and wiser future strategies.

A large part of population of India still does not has electric connection at their homes. In our sample, about one third students did not have this essential commodity. But those who had, obtained it legally or not, we were left guessing. While mingling and talking with local population, we discovered that still several electrified villages did not get electricity meters. Hence what is the duration of electrification and what are future prospects, we will know only on follow up. Government of India excludes household in possession of refrigerator from list of the poor. But if there is no stable and legal power supply, what is its utility, is a question, whose answer we are still searching for. On the other hand, ownership of tractor also excludes a household from getting entitlements allotted to a poor. But several households obtained that commodity on bank-loan, and because of poor farm- income due to falling price of farm-produce, are now finding it difficult to repay the bank- loan. We witnessed various forms of agrarian-crisis and farmer – distress during our several visits to the village. Hence what

is the value of these fixed criteria of Government of India to define the poor, we are left wondering.

CONCLUSIONS

There is wide variation among students about having information and understanding about mosquito- borne-illnesses. These students correctly knew the serious nature of illnesses caused by these vectors and there is also some awareness regarding preventive- strategy. In our study many students have never heard about swine flu and bird flu. Also, many students were not aware of proper cough etiquettes. Hence there is lot of space and opportunity to fill these knowledge-gaps, which help in self-protection and check spread of diseases in community. As one third of the students did not have electricity connection at their homes, we believe that our cohort included some of the most vulnerable and unprotected (to illnesses) section of our society.

Limitation of The Study

There are 3 limitations of the study. First, this study is done at one government school of a village, in a backward district; hence, there is a need to conduct similar study with a larger sample size. Second, there is an issue of poor attendance. There were one thousand enrolments in the school, but on the day of survey we could find only 165 of them. Also, some students were coming to and others were leaving from, during the working hours- in front of us. Hence, we could sample only a part of the school. When we curiously enquired a group of girl students leaving from, about their reason, she explained that she is going to bank to check the arrival of funds under Direct-Benefit-Transfer scheme in her parents' savings bank-account. She further explained that as her school and bank, both the institutions, are open only during working-hours, it is her obligation to attend the financial and educational institutions simultaneously-sometimes at the expense of the other.

Third limitation is that several students left several questions blank. Hence, we were unable to decipher its reason. We were left wondering if that is either due to inability to read these questions or unwillingness to reply as the students were finding these too intrusive/difficult or there was some other reason/s.

Relevance of the Study

While working at the Government Medical College, Kannauj, we observed that patients visiting OPDs or indoor departments of the hospital did not have basic knowledge of nature of the common illnesses or their modes of spread or precautionary-measures to be observed to stop further transmission. Hence, we wanted to know if that lack of awareness is there with a few specific patients or whether it is a generalised one. Here we could discover that this is a generalised one. Hence, there is a need to strengthen our basic-education-system, improve attendance- not only on paper, but also on the ground, and make some useful dialogue and community engagement.

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