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**CONTENTS**

*Editorial*

# Food Safety- Farm to Plate: Saving Lives by Healthy Eating

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Foodborne diseases are an important cause of morbidity and mortality, and a significant hurdle to socioeconomic development worldwide, but the full extent and burden of unsafe food, and especially the burden arising from chemical and parasitic contaminants, has been unknown. Precise information on the burden of foodborne diseases can adequately inform policy-makers and to allocate appropriate resources for food safety control and intervention efforts.

The initiative by WHO to estimate the global burden of foodborne diseases and prepared by the WHO Foodborne Disease Burden Epidemiology Reference Group (FERG), provides the first estimates of global foodborne disease incidence, mortality, and disease burden in terms of Disability Adjusted Life Years (DALYs).[1]

For the global estimates, thirty-one foodborne hazards causing 32 diseases are included, being 11 diarrhoeal disease agents (1 virus, 7 bacteria, 3 protozoa), 7 invasive infectious disease agents (1 virus, 5 bacteria, 1 protozoan), 10 helminths and 3 chemicals. Together, the 31 hazards caused 600 (95% uncertainty interval [UI] 420–960) million foodborne illnesses and 420,000 (95% UI 310,000–600,000) deaths in 2010.[1]

The most frequent causes of foodborne illness were diarrhoeal disease agents, particularly *norovirus* and *Campylobacter spp*. Foodborne diarrhoeal disease agents caused 230,000 (95% UI 160,000–320,000) deaths, particularly non-typhoidal *Salmonella enterica (NTS)* which causes diarrhoeal and invasive disease. Other major causes of foodborne deaths were *Salmonella Typhi, Taenia solium, Hepatitis A virus,* and *Aflatoxin*. The global burden of foodborne disease by these 31 hazards was 33 (95% UI 25–46) million DALYs in 2010; 40% of the foodborne disease burden was among children under five years of age. Worldwide, 18 (95% UI 12–25) million DALYs were attributed to foodborne diarrhoeal disease agents, particularly NTS and enteropathogenic *Escherichia coli* (EPEC). Other foodborne hazards with a substantial contribution to the global burden included *Salmonella Typhi and Taenia solium.*[1]

**Codex Alimentarius**

The Codex Alimentarius Commission is a joint intergovernmental body of the Food and Agriculture Organization of the United Nations (FAO) and WHO with 187 Member States and one Member Organization (EU). Codex has worked since 1963 to create harmonized international food standards to protect the health of consumers and ensure fair trade practices.

WHO works on the provision of independent international scientific advice on microbiological and chemical hazards. Scientific advice is the basis for the development of international Food Standards by Codex.[2]

**Five Keys to Safer Food Programme**

WHO built the Five Keys to Safer Food Programme to assist Member States in promoting safe food handling behaviors and educate all food handlers, including consumers, with tools easy to adopt and adapt. The Five Keys to Safer Food explain the basic principles that each individual should know all over the world to prevent foodborne diseases. Over 100 countries have reported using the Five Keys to Safer Food.[3] As a result, billions of food handlers, including consumers, are empowered to prevent foodborne diseases, make safe and informed choices and have a voice to push for a safer food supply.

To ensure the same understanding in practice along the full chain WHO has developed additional Five Keys materials directed to rural people who grow fruits, vegetables and fish for their own use or for sale on local markets. WHO's objective is to target those who usually do not have access to food safety education despite the important role they play in producing safe food for their community (e.g. rural women).

***The Five Keys to Safer Food[4]***

1. ***Keep clean***
2. ***Separate raw and cooked***
3. ***Cook thoroughly***
4. ***Keep food at safe temperatures***
5. ***Use safe water and raw materials***

Diseases that people get from eating contaminated food are an important cause of illness, disability and deaths around the world, as revealed by the first ever WHO Estimates of the Global Burden of Foodborne diseases published in December 2015. Foodborne diseases—

especially those caused by bacteria, viruses, parasites and fungi—are preventable, and education in safe food handling is a key measure for prevention, including to contain antimicrobial resistance. With the Five Keys materials, WHO's objective is to promote the same understanding along the food chain and target those who usually do not have access to food safety education despite the important role they play in producing safe food for their community.

**Way forward**

Health agencies such as WHO and state governments should do capacity building to prevent, detect and manage foodborne risks by providing scientific assessments on microbiological and chemical hazards that form the basis of international food standards, to improve the national food food systems and legal frameworks, promotion of safe food handling through systematic disease prevention and awareness programmes and advocacy of food safety by integration of national policies and programmes in line with international health regulations and ensuring food safety along the entire food chain from production to consumption.

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# Awareness on HIV/AIDS among mothers of medical undergraduates in Chandigarh

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**Abstract**

**Introduction:** The adequate awareness regarding spread, prevention and cure of HIV/AIDS is essential.

**Objective:** To assess awareness of mothers of medical undergraduate students about HIV/AIDS.

**Methods:** Community based cross sectional study was conducted among 230 mothers of medical undergraduates of three batches. Data was collected with help of predesigned and pretested structured questionnaire by interview technique. Descriptive analysis was done. Chi-square test was used as test of significance, taking $p<0.05$ as significant.

**Result:** Majority of the participants (84.8%) were aware that AIDS is caused by virus, 78.7% knew it is a disease of people from high risk groups, 98.7% stated that it is transmitted by infected blood, and 99.1% aware that use of condom prevents its transmission.

**Conclusion:** This study revealed a high level of awareness among the participants.

**Key words:** Awareness, HIV/AIDS, women, India

## Introduction

In India, around 2.1 million people are estimated to be living with HIV in 2015. The proportion of HIV among women has increased from 29% in 1990s to 39% in 2008-09 to 40.5% in 2015.[1] The National HIV/AIDS Policy 2001 acknowledged the special issues and challenges in addressing the women's vulnerability to HIV and proposed directions to address the same.[2] The Government of India has initiated National AIDS Control Program (NACP) which aims to halt and reverse the epidemic in India. NACP has been focusing on raising awareness regarding HIV/AIDS and promoting the use of preventive measures to prevent the spread of the infection. The third round of National Family Health Survey (NFHS-3) survey reported that 61 percent of women and 84 percent of men had heard of HIV/AIDS. This was considered as a sizeable increase given that the percentage of the population that was aware of HIV/AIDS was only 41 percent during the second round (NFHS-2).[3] In general, women and rural residents had lower levels of awareness regarding HIV diagnosis, treatment and

prevention. However, recent studies from India have indicated epidemiological transition i.e. that the virus has moved from urban to rural areas and from high risk to general population, disproportionately affecting women and the youth.[4] It leads to concern regarding the level of HIV/AIDS awareness and practices in the general population, and more specifically amongst the rural residents and women.

Against this background, the present study was conducted among mothers of medical undergraduates to ascertain their awareness regarding HIV/AIDS, its mode of transmission and its prevention.

**Materials & Methods**

Chandigarh is a city of Northern India with a population of 10,55,450 including 97.2 per cent population living in urban areas.[5] Government Medical College, Chandigarh is the only medical college in the city. A descriptive study was done based up on secondary data obtained from family study manuals of medical undergraduate students. Data was collected from three batches of medical undergraduates (MBBS) *i.e.* batch 2012, 2013 and 2014 (according to year of admission). Batch 2012 had 50 students whereas batches 2013 & 2014 had 100 students each. It is due to increase in number of medical undergraduate seats (from 50 to 100 per year) form year 2013 onwards. With these number of students, total sample size came to 250 but 20 students could not be included as 14 questionnaires were incomplete, four students left MBBS course in between due to various reasons and mothers of two students were not alive.

As a part of teaching and training in Department of Community Medicine, students study families allotted to them during sixth and seventh semester. One family was allotted to each student from the rural community and another study unit was their own family. The data was collected by students on pre-designed, pre-tested and structured questionnaire in their family study manual. The questionnaire was discussed in depth with students prior to data collection, so as to resolve any query. Students then filled the questionnaire by asking their mothers about HIV/AIDS using interview technique. The questionnaire included socio-demographic profile, knowledge about HIV/AIDS, high risk groups, its modes of transmission, treatment, prevention and control. The questionnaire is close ended with response either 'yes' or 'no'. The collected data was verified and checked randomly, either by visit to student's home or telephonically.

The data was entered in Epi-Data version 3.1. Statistical analysis was done with the help of Microsoft Office Excel 2007 and SPSS version 20.0. Descriptive statistical analysis was represented through frequency and percentages. Chi square test was used as test of significance, considering $p<0.05$ as level of significance.

**Results**

Table 1 shows socio-demographic profile of study participants. Majority of the participants (156, 67.8%) were below 50 years of age. Mean (SD) age of the participants was 47.4 (4.1) years. Three-fourth of participants (177, 77.0%) was qualified up to graduation and above. There were only five participants (02.2%) who had studied up to primary class and two participants (00.9%) were illiterate. More than half of the participants (124, 53.9%) were home maker. Rest of them were working as professional (48, 20.9%), semi-professional (47, 20.4%) and clerical (11, 04.8%). Majority of the respondents (145, 63.0%) belongs to middle class.

**Table 1: Socio-demographic profile of participants (N=230):**

| Variables | Number | Percent |
|---|---|---|
| **Age group (in years)** | | |
| Less than 50 | 156 | 67.8 |
| 50 & above | 74 | 32.2 |
| **Education of participant** | | |
| Graduate & above | 177 | 77.0 |
| Intermediate & below | 53 | 23.0 |
| **Occupation of participant** | | |
| Home maker | 124 | 53.9 |
| Employed | 106 | 46.1 |
| **Socio-economic status** | | |
| Middle | 145 | 63.0 |
| Upper | 85 | 37.0 |

Table 2 shows awareness of participants about HIV/AIDS. Majority of the participants (195, 84.8%) were aware that AIDS is caused by virus. Almost all of them (219, 95.2%) thought that the person will remain infected for life. Majority of participants (197. 85.7%) responded that it leads to development of many other diseases in person suffering from AIDS. Nearly three-fourth of respondents (181, 78.7%) told that it is a disease of people from high risk groups. Majority of the respondents were aware that high risk groups included commercial sex workers (226, 98.3%) followed by truck drivers (181, 78.7%), health professionals (160, 69.6%) and migrant labourers (142, 61.7%). However, only one-fourth of the participants (59, 25.7%) were aware that street children are also high-risk group. Regarding mode of transmission, few participants reported 'other' modes of transmission *viz.* bite of mosquito (10.0%), coughing & sneezing (08.7%), and sharing food from same utensils & sharing towels (07.0%). Majority of the participants mentioned that there is no treatment available (122, 53.0%) and no vaccine available (154, 67.0%). Only 41 (17.8%) participants mentioned that use of strong medicines is treatment for AIDS. Majority of the respondents were aware that prevention and control is possible by use of condoms during intercourse (228, 99.1%), use of

disposable syringes/needles (224, 97.4%) and screening of blood before transfusion (217, 94.3%). Few participants (29, 12.6%) believed that it is possible by keeping away from people suffering from AIDS.

**Table 2: Distribution of participants according to awareness about HIV/AIDS**

| Variables | Number | Percent |
|---|---|---|
| **General awareness** | | |
| It is a sexually transmitted disease | 228 | 99.1 |
| It is caused by virus | 195 | 84.8 |
| It is a non-curable disease | 217 | 94.3 |
| **High risk groups** | | |
| Commercial Sex Workers | 226 | 98.3 |
| Truckers | 181 | 78.7 |
| Health professionals | 160 | 69.6 |
| **Modes of transmission** | | |
| Transfusion of infected blood | 227 | 98.7 |
| Contaminated needles & syringes | 227 | 98.7 |
| Sexual intercourse | 214 | 93.0 |
| From infected mother to child | 211 | 91.7 |
| **Prevention and control** | | |
| Use of condoms during intercourse | 228 | 99.1 |
| Using Disposable syringes / needles | 224 | 97.4 |
| Screening of Blood for HIV before its transfusion | 217 | 94.3 |

Table 3 shows relationship between education level of participants and awareness about HIV/AIDS. Graduated and above participants were significantly more aware that it is caused by virus (p=0.01) and health professionals are among high risk groups (p=0.02). No significant difference was found between education level of participants and other variables viz. treatment is available (p=0.73), there is no vaccine against HIV/AIDS (p=0.40), high risk groups include truckers (p=0.62), migrant labourers (p=0.93) and street children (p=0.10).

**Table 3: Relationship between education level of participants and awareness about HIV/AIDS**

| Variable | Graduate & above N=177 (%) | Intermediate & Below N=53(%) | Chi square; p-value |
|---|---|---|---|
| **It is caused by HIV** | | | |
| Yes | 156 (88.1) | 39 (73.6) | 6.71; **0.01*** |
| No | 21 (11.9) | 14 (26.4) | |
| **Treatment is available for AIDS** | | | |

| | | | |
|---|---|---|---|
| Yes | 82(46.3) | 26(49.1) | 0.12; 0.73 |
| No | 95 (53.7) | 27 (50.9) | |
| **No vaccine is available against AIDS** | | | |
| Yes | 116(65.3) | 38(71.7) | 0.70; 0.40 |
| No | 61 (34.7) | 15 (28.3) | |
| **Health professionals are HRG for HIV/AIDS** | | | |
| Yes | 130(73.4) | 30(56.6) | 5.46; **0.02*** |
| No | 47 (26.6) | 23 (43.4) | |
| **Street children are HRG for HIV/AIDS** | | | |
| Yes | 50(28.2) | 09(17.0) | 2.71; 0.10 |
| No | 127 (71.8) | 44 (83.0) | |

***Significant**

**Discussion & Conclusion**

The present study revealed that awareness regarding HIV/AIDS among mothers of medical undergraduate students was high. Majority of them were aware that it is a sexually transmitted disease (99.1%) and caused by virus (84.8%). The findings are slightly higher than study done a decade ago among mothers of medical students of same college in which 83.5% & 66.9% participants were aware that it is a sexually transmitted disease and caused by virus respectively.[6] This finding might be due to the fact that the study population being specialized belonged to middle and upper class, and 77% of them were educated up to graduation and above. However, as per fourth round of District Level Household Survey (DLHS-4) in Chandigarh, percentage of women who have heard of HIV/AIDS reduced to 89.0% from 94.7% in DLHS-3.[7] The high level of awareness could be explained by the widespread dissemination of information on HIV/AIDS in the mass media, and shows its importance in the promotion of HIV/AIDS campaigns under National AIDS Control Programme. Majority (94.3%) participants in our study were aware that disease is not curable which is higher than findings of study done by Biradar & Biradar among married women in rural area of Karnataka where 64.2% women were aware that it is not curable.[8]

Participants were aware that it is a disease of high risk groups (HRGs). For majority of participants (98.3%), HRGs were commercial social workers. Awareness about other HRGs like health professionals and migrant laborers was less i.e. 69.6% and 61.7%, respectively. Only 25.7% were aware that street children are also among HRGs. This reflects the stigma

attached with disease that it affects mostly person having illicit relationship with multiple sex partners.

Beside sexual route, participants were aware about other routes of HIV transmission viz. transfusion of infected blood (98.7%), contaminated needles & syringes (98.7%) and from infected mother to child (91.7%). These findings were higher than as found in other studies. In a study in Karnataka, participants told that HIV/AIDS spreads through unprotected sex (20.4%), through blood products (17.0%), mother to child (06.3%), infected syringes (07.3%) and 27.7% told they don't know how it spreads.[8] Study by Subramanian et al among women in rural area of Tamil Nadu found that 52.5%, 21.5% and 0.6% women mentioned that it spreads through unprotected sexual contact, through infected blood, and through infected mother to child, respectively.[9] In study by Shree & Prasad among pregnant women in rural area of Patna, 79.1% participants were aware about spread through unprotected sexual contact, 21.0% through infected blood, and only 08.1% through infected mother to child.[10]Bassey et al in a study among antenatal women in Nigeria found that 88.2% participants knew sharing of infected needles transmit HIV, and infected women can transmit HIV to her unborn child (80.2%) and to her new born by breastfeeding (67.3%).[11] However, in present study there were few participants who still believed that it may spread through mosquito bite (10.0%), sharing utensils and sharing towels (07.0%), and by touching infected person (03.0%). It may be due to myths and misconceptions about the disease. In study by Yaya et al. among women in Bangladesh, though most women were aware the major routes of transmission, there were misconceptions presents as 22.0%, 47.3 and 55.6 % believed that it could be caused by means of witchcraft or supernatural powers, through mosquito bite and sharing food with persons who has HIV, respectively.[12]Bassey et al found that 14.8% respondents misbelieved that a mosquito bite could transmit HIV/AIDS, and 13.7% respondents said that HIV/AIDS could be transmitted by sharing a meal with an infected person.[11] Such misconceptions create discrimination and stigmatization of people living with HIV/AIDS. This needs to be redressed by the provision of health education on modes of transmission.

As far as the prevention and control is concerned in our study, participants knew that best method of control is prevention. It was found to be very high as use of condoms (99.1%), disposable syringes (97.4%) and screening of blood before transfusion (94.3%) as preventive measures. Thus, the knowledge of mothers regarding all the different modes of prevention of HIV/AIDS is very high in our study compared to other studies. In a study in Karnataka, 49.5% women did not know how to prevent the spread of HIV/AIDS, 23.1% said it can be prevented by safe sexual practices, 13.1% by using disposable syringes, and 04.8% by

screened blood for transfusion.[8] Study in Tamil Nadu found that 45.0% women reported avoid unprotected sex, 19.9% reported use disposable syringes and test blood before transfusion, and only 2.5% reported use condom for prevention.[9] About two-third women knew that condoms could help prevent sexual transmission of HIV.[12]Bassey et al found that 58.6% respondents knew that the use of condoms was protective, 63.1% knew abstinence from sex can protect, and 56.3% knew antiretroviral medication can reduce the risk of transmission.[11]

Education is strongly associated with HIV knowledge. The level of literacy was found to be closely associated with their knowledge of HIV/AIDS, as more educated (graduation and above) women were found having better awareness than the less educated (intermediate or below). Misconceptions and wrong beliefs associated with HIV/AIDS were found to be more prevalent among women who were less educated. K.S. Negi et al (2006) in study among pregnant women at Dehradun found that literate respondents were having more awareness about HIV/AIDS.[13] In study by Bhise & Deo at rural tertiary hospital in Ambajogai among pregnant women, significant association was found between knowledge of HIV/AIDS and the educational status of the respondent.[14]Bassey et al found a significant association between knowledge of HIV/AIDS and the educational status of the respondents.[11] However, study by Shree & Prasad among rural women in Patna found that the relationship of education with the awareness regarding HIV / AIDS was not found to be statistically significant.[10] This could partly be explained by the fact that highly educated people usually have more access to information of all types including that on HIV/AIDS.

It is concluded that this study shows high level of awareness about HIV/AIDS among the participants as majority of them belong to educated group. Still some lacunae could be found like it may spread through mosquito bite, sharing utensils and sharing towels, and by touching infected person, and there is no treatment available against AIDS. It is very essential to target the uneducated & less educated women about the correct knowledge regarding spread and prevention of HIV/AIDS. This can further help to remove the myth and misconceptions attached with this disease.

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# Internet Addiction: Does It Really Exists

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Over the years the advancement in technology has been commendable. On one hand this technology has helped us in making life easy but on the other hand our dependence on it has increased drastically. The internet services have been of great help to us but our dependence on it especially of the younger age group is no less than an addiction.

The internet is an informal term for the world-wide communication network of computers. Addiction is defined as a brain disorder characterized by compulsive engagement in rewarding stimuli, a "compulsive need for and use of a habit-forming substance characterized by tolerance and by well-defined physiological symptoms upon withdrawal; broadly: persistent compulsive use of a substance known by the user to be harmful".[1]

Rapidly increasing use of smart phones, tablets, and computers have made internet an indispensable part in modern society. The negative impact of excessive, maladaptive or addictive internet use has attracted much research attention. In particular, internet addiction (IA) has become a major public health issue worldwide and brought about a dramatic proliferation of research in this area.[2]IA is defined as a pathological pattern of internet use, which is also described as internet dependence, compulsive internet use, problematic internet use, internet abuse, and pathological internet use. The user cannot self-control the use of internet, resulting in significant impairments at school, home, work, health or interpersonal relationships. They may find it difficult to stop using the internet due to its anonymity, convenience and accessibility and may use it as a way to escape reality. The types of activity involved in IA include online gaming, social networking, online gambling, online shopping, virtual sex and information overload. Internet addiction is a subset of a broader "technology addiction."[3] Widespread obsessions with technology goes back at least to radio in the 1930s and television in the 1960s, but it has exploded in importance during the digital age. A study published in the journal Cyber psychology, Behaviour, and Social Networking (2014) suggests that prevalence of Internet addiction varies considerably among countries and is inversely related to quality of life[4].

The idea that excessive internet usage is actually an addiction disorder was first proposed by Young in 1996. She conducted a pioneering study which used DSM criteria for pathological gambling to classify internet users into "dependent" and "non-dependent" users and also described the differences in internet use between the two groups[5].

Internet addiction results in personal, family, academic, financial, and occupational problems that are characteristic of other addictions. Impairments of real life relationships are disrupted as a result of excessive use of the Internet. Individuals suffering from Internet addiction spend more time in solitary, spend less time with real people in their lives, and are often viewed as socially awkward. Arguments may result due to the volume of time spent on-line. Those suffering from Internet addiction may attempt to conceal the amount of time spent on-line, which results in distrust and the disturbance of quality in once stable relationships.[6]

It can be described as impulse control disorder, where person may not involve in any intoxicating drug use and is similar to pathological gambling. Some may develop an emotional attachment to on-line friends. They enjoy the fact that that internet allows them to meet, chat, and socialize with other people. Some internet users spend endless hours researching topics of blogs or sites.[7]

Some suffering from Internet addiction may create on-line personas or profiles where they are able to alter their identities and pretend to be someone other than himself or herself. Those at highest risk for creation of a secret life are those who suffer from low-self esteem feelings of inadequacy, and fear of disapproval. Such negative self-concepts lead to clinical problems of depression and anxiety.

Many persons who attempt to quit their Internet use experience withdrawal including: anger, depression, relief, mood swings, anxiety, fears, irritability, sadness, loneliness, boredom, restlessness, procrastination, and upset stomach. Being addicted to the Internet can also cause physical discomfort or medical problems such as: Carpal Tunnel Syndrome, dry eyes, backaches, severe headaches, eating irregularities, (such as skipping meals), failure to attend to personal hygiene, and sleep disturbance.[2]

In a study conducted in a university in Chandigarh mobile phones were seen as the most common mode of internet access. Around 50% students were spending almost rupees 500 on internet per month. Strain on eyes and headache were the commonest symptoms resulting from excessive internet use. Social media was the most common site visited by students. Almost three forth of the students accepted internet usage as the mode to fight loneliness. Mean internet addiction score is 38% which suggests that the mild level of the internet addiction is present among students.

Since the use of internet in adolescent is high therefore there is ***a need for developing prevention/interventions strategies,*** primarily targeting children and adolescents at risk of severe Internet addiction along with that their parents, teachers, peers, and others who are part of their formative environment. All of them should also be sensitized towards the risk of internet addiction and how it should be prevented and controlled.

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# Sample Size: Factors affecting it and implications

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The size of sample is an important issue to be decided at the time of sampling. Size of the sample matters because cost, administration and time of the survey has direct bearing over the sample size. Large sample size is usually hard to manage because of requirement of large manpower, money and material for the same. Small sample sizes do not adequately represent the sample because it may not have adequate representativeness of the study universe. Also the sample size should be adequate enough to represent the study universe and to avoid unnecessary expenses[1].

Factors which affect the size of sample are:

**Homogeneity of universe**: A homogenous universe requires a small sample size which represents all the alike units of the universe whereas a non-homogenous or heterogeneous study universe requires a large sample size because the study units are not similar and a representative sample has to be taken hence inflating the sample size.

**Nature of study**: The size of the sample also depends on the nature of the study. In case of opinion surveys, the interview is kept short and large number of people may be interviewed.

**Manpower and money**: Practical considerations such as time availability, funds available, trained manpower at disposal for study/survey are important determinants of the sample size. If adequate resources are available, the sample size may be increased but not on the cost of wasting the resources.

**Accuracy**: The accuracy of the study must be taken into account. The larger the sample size, larger is the representativeness or accuracy of the study. Although it does not hold true for all the cases as large sample size is no guarantee for representativeness. As the technique of sampling is becoming more scientific, more number of samples which are smaller in size are being chosen. In spite of the above argument, large sample size is being taken for its greater reliability.

**Nature of the participants contacted**: If the study participants are distant in geographic location, a small sample size may be suitable. Also, if the dropout rate or attrition is high, a large sample size is required for compensating the losses.

**Type of sampling used**: If simple random sampling is used, a large sample size is required. Since law of statistical equality properly works where large number of units are being

sample and have equal chances of being chosen. In stratification, reliability of the sample size can be achieved in smaller samples. But the stratification done should be proper otherwise it will only add bias to the sample.

**Power of the study**

Statistical power is the measure of the likelihood that an investigator will find statistical significance in a sample if the effect exists in the study universe. Power is a function of three factors which are sample size, effect size and significance level. One of the reasons to perform a sample size calculation in planning phase of study is to assure confidence in the study results. Most of the funding agencies are concerned about sample size and the power of the study they support that would otherwise waste limited resources. Power is directly related to sample size. An increase in sample size will increase the power whereas power is inversely related to variability[2].Usually power employed for statistical analysis is 80%.

**Precision**

Precision refers to lack of random errors or random variation in a study's estimates. It also refers to closeness of two or more measurements to each other. The term absolute precision is used when one wishes to estimate the population parameter to within defined percentage points of the true value. The term relative precision is used when one wishes to estimate the population parameter to within a defined percentage of the population parameter itself. With all the other factors kept steady, as the sample size increases, the standard error decreases or the precision increases or it gets more precise[3]. This has ramifications for both the descriptive and inferential uses of the standard error. Descriptively, as the sample size goes high, parameter estimates become more precise. Inferentially, as sample size goes up, parameter estimates become more precise.

**Confidence interval**

When we survey a small sample of the population, uncertainty comes into the statistical part. If we survey only a certain proportion of the true population, we can never be absolutely sure that study statistics are complete and accurate representation of the population. This uncertainty is termed as sampling error and usually measured by confidence interval. It means if your results are at a 90% confidence interval, that means if the survey is repeated over again, 90% of the time you would get the same results. Increasing the sample size decreases the width of confidence interval. Smaller sample size generate wider intervals. There is an inverse square root relationship between confidence intervals and sample size.

**Effect size**

It is defined as the measure of the strength of the phenomenon. When the difference is statistically significant, it does not necessarily means important. To know if an observed

difference is not only statistically significant but also meaningful, we need to calculate its effect size. Generally, effect size is calculated by taking the difference between two groups and dividing it by standard deviation[4]. The effect size should represent the smallest effect that would be clinical significance. In clinical studies, it may take severity into account for the disease being treated or it may take account of alternative treatment or the cost and side effects of the treatment used.

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# Public health issues related to street food vendors.

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## Introduction

Street vendors form a very important segment of the unorganized sector in the country. Street food vendors constitute 2% of metropolitan city population. According to the National Association of Street Vendors of India (NASVI), there are 715 organizations registered with 4.5 lakh street vendors from 23 states[1]. This profession supports livelihood of millions of urban poor. A 'Street Vendor' is defined as 'a person who offers goods or services for sale to the public in a street without having a permanent built-up structure.' There are three basic categories of street vendors: (a) stationary; (b) peripatetic and (c) mobile. Stationary vendors are those who carry out vending on a regular basis at a specific location, e.g. those occupying space on the pavements or other public places and/or private areas either open/covered (with implicit or explicit consent) of the authorities. Peripatetic vendors are those who carry out vending on foot and sell their goods and services and includes those who carry baskets on their head/slung on their shoulders and those who sell their goods on pushcarts. Mobile street vendors are those who move from place to place vending their goods or services on bicycle or mobile units on wheels, whether motorized or not. They also include vendors selling their wares in moving buses, local trains etc.[1] The convenience and low prices make street food most favoured choice. In developed countries, food streets and food centres have emerged as new tourist attractions. Major tourist places offer street food as exotic local foods.

**Street-vended foods and public health**

Though we often say that India has fantastic diversity of street food, none of our tourist destinations make way for it. Lack of basic infrastructure and services for the street food vendors makes it difficult for them to maintain hygiene and sanitation. Street food vendors suffer from problems such as restricted access to potable water, toilets, refrigeration, washing and waste disposal facilities. General lack of factual knowledge about the microbiological status or the precise epidemiological significance of many street vended foods makes it vulnerable to an impending outbreak.

**National policy on Urban Street Food Vendors, 2009[1]**

Considering the National Policy on Urban Street Vendors Food Safety and Standards Bill, following points can be summarized under its ambit:

I. Vendors can be partners in urban food supply system.
II. Legitimacy and regulation of vendors.
III. Training of vendors on the basic principles of sanitation, manufacturing quality and safety besides consumer rights and education.
IV. Provision of safe food towns.
V. Training to street food vendors- Hygienic practices
VI. Helping them in getting registered and provided authorized vending spaces.
VII. Health check-ups to ascertain the health status of vendors and their families and follow up.
VIII. Provision of health insurance (health cover) and life insurance.
IX. Grants for scientific designed safe and hygienic food kiosks.
X. Facilitation of micro-finance for street food vendors.
XI. Promotion of clean and tasty street food through awards for the best vendors.

**Food Safety Standards Act, 2011[2]**

It is a step towards legitimizing and categorizing the street food vendors under section "Sanitary and Hygienic Requirements for Street Food Vendors and Units other than manufacturing/Processing" in the Act. This act calls for clean vending premises, food handling storage and service standards, food safe from infections. But this act avoids the will to pursue a rightful need of promotion of safe food available on streets. This act also avoided street food vendors licensing questions and there is no mention of promotion of health standards and social protection of concerns of millions of unorganized workers in food processing industries.

**Way forward**

Operations of street food vendors and their impact on sustainable urban life in high density metropolitan cities of India need an appropriate Food legislation, regulation and enforcement. It must reflect the changing circumstances and incorporate them into town planning to ensure sustainability of street food vending and hence its contribution towards sustainable development. This informal sector can also be a product of rational behaviour of innovative entrepreneurs that seek to escape government regulations and registration of business enterprises. With the increasing pace of globalization and tourism, the safety of street food has become one of the major concerns of public health and a focus for

governments and scientists to raise public awareness. Following are the few suggestions/ issues of concern in relation to this sector.

I. Policy for social security for vendors and workers of food processing units is required.

II. There should be a provision of greater awareness and participation of street food vendors at implementation level, too, is also greatly felt.

III. Provision of smart skills for street food vendors under the Government's flagship skills training scheme- Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and subsequent registration cards.[3]

IV. Launching of a mobile application (app.)/computer programme to reach out to food enforcement machinery for concerns and suggestions is also the need of the hour.

V. In Union Territory of Chandigarh, authorities have decided to register 25000 street food vendors though the actual count seems to be 32000. So mainstreaming of as many number of street food vendors as possible should be carried out to ensure a clean, hygienic and healthy food at an affordable price playing an important socio-economic role in terms of employment potential as well.

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# Sensitization of Healthcare Professionals on Materiovigilance: Need of the day

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***[3]Professor cum Chief Editor, Department of Community Medicine, GMC, Chandigarh***

## Introduction

The propensity to decrease the adverse and undesirable occurrences caused by the use of medical devices led to the emergence of a new vigilance reporting system, known as Materiovigilance. It is a vigilance system which comprises identifying, collecting, reporting, and estimating undesirable occurrences and reacting to medical devices or safety corrective actions after their post-marketing phase.[1]Many serious untoward incidents have occurred related to Medical Devices, emphasising the need of understanding and adapting materiovigilance by the healthcare professionals.[2]

Medical devices are defined as all the articles (instruments, apparatus, materials, etc.) which are intended to be used for a medical purpose i.e. diagnosis, prevention, monitoring, treatment or alleviation of disease and are an integral part of health system.[2,3]

## Materiovigilance Programme of India (MvPI)

The health ministry has approved the Materiovigilance Programme in an effort to ensure safety of medical devices. The Materiovigilance Programme of India was started by DCG (I) on 6th July 2015 at Indian Pharmacopoeia Commission, Ghaziabad. Indian Pharmacopoeia Commission is National Coordination Centre (NCC) for MvPI.[2]

The Programme has been introduced for the safety of Indian population by aiming to reduce the risks associated with use of Medical Devices. The objective of the programme is to collect adverse drug reactions of classified medical devices as any instruments, apparatus, machine, implants, appliances, in vitro reagents or calibrator, or other similar medical devices and monitor these medical device-associated adverse events (MDAE), create awareness among healthcare professionals about the importance of MDAE reporting in India and the benefit-risk profile of medical devices.[1,2]

In this programme, Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Thiruvananthapuram, shall be the National Collaborating Centre; National Health System Resource Centre (NHSRC), New Delhi, shall act as Technical support partner, and Central Drugs Standards Control Organisation (CDSCO), New Delhi, shall continue to function as regulator.[2,3]

**Medical Device Adverse Event(MDAE) Reporting**

All healthcare professionals including clinicians, pharmacists, nurses, technicians and also biomedical engineers can report medical device adverse events (MDAEs). Pharmaceutical companies can also send information about adverse events related to their product to NCC .

MvPI encourages reporting of all types of adverse events related to Medical Devices irrespective of whether they are known or unknown, serious or non-serious, frequent or rare, to inculcate the habit of reporting and is mainly concerned with adverse events associated with Medical Devices used in India.

MDAE form for reporting the adverse events related to medical devices is available at www.ipc.gov.in that can be downloaded (downloaded form enclosed) and duly filled scanned form can be sent via e-mail on mvpi@sctimst.ac.in and copy to mvpi.ipcindia@gmail.com. A helpline number **1800-180-3024** has been created by NCC-PvPI to report adverse events associated with medical devices and medicines.[2,4-6]

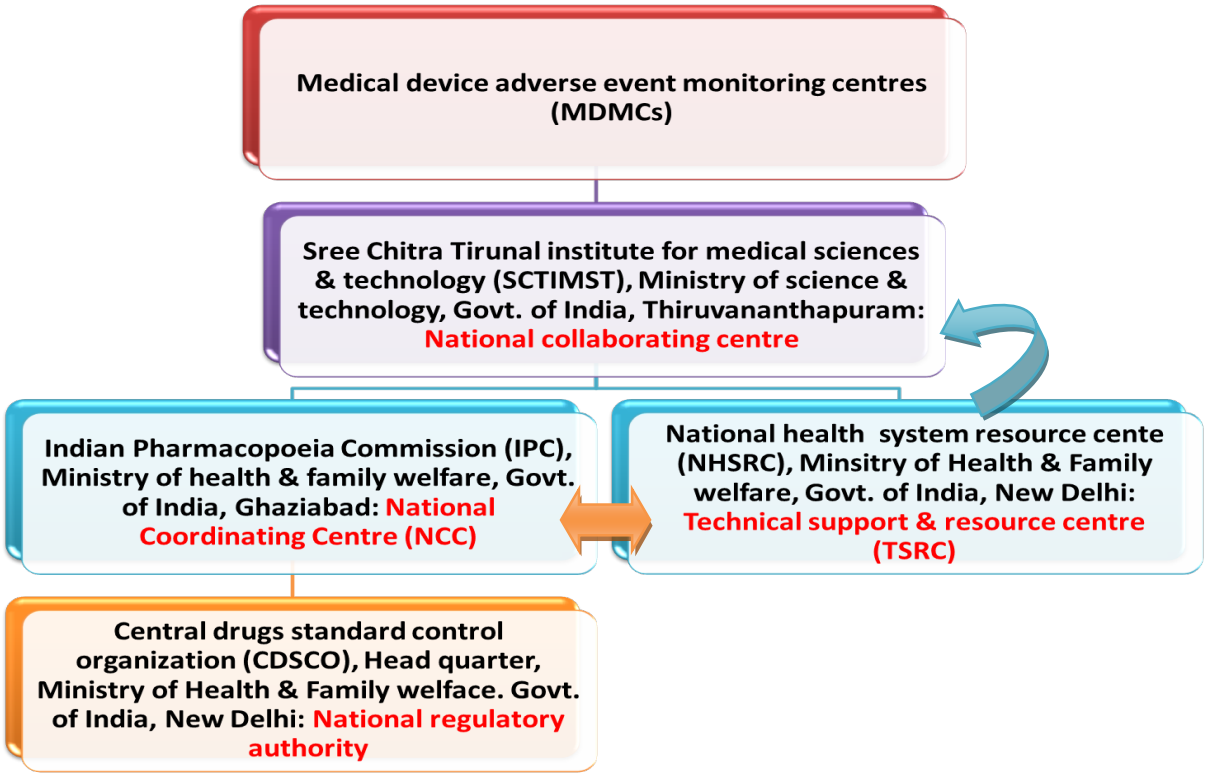

Figure 1: Flowchart for materiovigilance programme centers

# MEDICAL DEVICE ADVERSE EVENT REPORTING FORM

**Materiovigilance Programme of India**

**FOR MDMC/NCC USE ONLY**

| Type of report: Initial ☐ Follow-up ☐ | Report No. : |
|---|---|

**A. PATIENT DETAILS**

1. Patient Hospital ID ----------
2. Sex: M ☐ F ☐
3. Age at time of Event or Date of Birth _____
4. Weight (Kg)_____

**B. EVENT DETAILS**

**1. Event description-**

| Reason for the Event(Tick) | a) Electrical ☐ | b) Mechanical ☐ | c) Electronic ☐ | d) Biocompatibility ☐ | e) Clinical application error ☐ |
|---|---|---|---|---|---|

**2. Severity of the event** (Yes ☐ No ☐ ) if yes please specify following

☐ Death (---/------/--------) ☐ cause congenital-anomaly ☐ Life threatening ☐ Required intervention to prevent death or impairment of body function

☐ Hospitalization/Prolonged impairment/damage ☐ Disability ☐ Other (specify).....

**3. Date of event** - (dd/mm/yyyy)

**4. Location of the event**- OPD ☐ IPD ☐ Others (Please specify).....

**5. Device category:** (A) Therapeutic ☐ Diagnostics ☐ Both ☐ (B) Implantable device ☐ Non Implantable device ☐
(C). Single use device ☐ Reusable device ☐ Reuse of manufacture marked single use device ☐

**6. Date-**

| Last preventive maintenance | Last calibration |
|---|---|
| | |

**7. Location of device after the incident:**

Place of use ☐ Place of reporter ☐ Place of Manufacture/vendor ☐ With patient or end user ☐

**8.** Is device in use after incident Yes ☐ No ☐

**9.** (A) Is same model device available in organisation? Yes ☐ No ☐ If yes, Quantity.....
(B) Organization - Healthcare facility ☐ Manufacturer ☐

**C. MEDICAL DEVICE(S) DETAIL**

| Name of Medical Device (1) | Manufacturer (2) | Brand Name (3) | Model No. (4) | Serial No. (5) | Batch No./ Lot No. (6) | Catalogue No. (for instruments only) | Date of installation/ implantation/ explantation (8) | List of Accessories (9) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| 10. Actions taken immediately after incident | 11. A Whether other medical devices were being used at same time with above device for therapeutic of diagnostic service? If yes, please specify.....<br><br>11 B. Any history of adverse event(s) from device with same serial/model/catalogue number. If yes please specify..... |
|---|---|

Page 1 of 2

Figure 2: Medical Device Adverse Event reporting form

| D.REGULATORY DETAILS | | | E. REPORTER DETAILS of MvPI CENTRE |
|---|---|---|---|
| Manufacturer name:<br><br>Regulator in Country of origin:<br><br>Regulatory status in origin country: | Entity legally representing the Manufacture:<br><br>Country: | Notified Body name in:<br><br>(I) Country of Manufacturing :<br><br>(II) In India: | Name and Professional Address:_____ Pin:_____ E-mail_____ Tel. No. (with STD code)_____<br><br>Designation:_____<br><br>Signature:_____<br><br>Date of this report ___dd/mm/yyyy |
| **F. Causality Assessment Details** | Completed ☐ | In Progress ☐ | Awaited ☐ |
| Additional Information: | | | |

**Confidentiality:** The patient's identity is held in strict confidence and protected to the fullest extent. Programme staff is not expected to and will not disclose the reporter's identity in response to a request from the public. **Submission of a report does not constitute an admission that medical personnel or manufacturer or the product caused or contributed to the adverse event.**

**National Collaborating centre-Materiovigilance Programme of India.**

**Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST)** under the Department of Science & Technology, Government of India. Biomedical Technology Wing, Poojappura, Thrivananthapuram 695012,Kerala. Phone: 91- 471 – 2340411, Fax: 91- 471 -2341814, Email: head-bmtw@sctimst.ac.in.

**National Coordination Centre-Materiovigilance Programme of India.**

**Indian Pharmacopoeia Commission (IPC),** Ministry of Health and Family Welfare, Government of India, Sector-23,Rajnagar, Ghaziabad-20002, Tel.:0120-2783400, 2783401, and 2783392, FAX: 0120-2783311, Email. ipclab@vsnl.net, pvpi.ipcindia@gmail.com

**Technical support and Resource Centre- Materiovigilance Programme of India.**

**National Health System Resource Centre (NHSRC)**, NIHFW campus Baba Gangnath marg, Munirka, New Delhi-110067, Phones: 011 26108982 / 83 / 84 / 92 /93, Fax: 011-26108994 Email: nhsrc.india@gmail.com.

**Where to report**

- **Duly filled Medical Device Adverse Event Reporting Form can be send to Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), National Collaboration Centre-Materiovigilance Programme of India), Biomedical Technology Wing, Poojappura, Thrivananthapuram 695012,Kerala,India.**
- **Or Can directly email the duly filled form to mvpi@sctimst.ac.in.**
- **Call on Helpline no. 1800 180 3024 to report Adverse event.**

**Event description** Details of adverse event including description of device (deficiency or malfunction), clarification of hazards associated with device and the associated risk of patient, user or person any possible risk to patient associated with previous use.

**Additional Information** Other relevant information related to treatment should be provided.

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# Maternal Death Surveillance and Response and Maternal Near Miss Review: Operational guidelines

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Approximately 44000 women die across India every year due to causes related to pregnancy. It is critical to note at this juncture that India accounts for approximately 15% of maternal deaths across the world. Under the National Health Mission (NHM), a significant reduction in the number of maternal deaths across the country has been achieved. The Maternal Mortality Ratio (MMR) in India has declined from 556 in 1990 to 167 per 1,00,000 live births in 2011-2013. Still, we have a long way to go. The gap analysis of last 5 years of implementation of Maternal Death Reviews (**MDR**) have shown varying degree of reporting, lack of capacity of established institutions to undertake quality review at various levels and the delayed transition of key findings into action.

In order to understand and consequently act upon the causes of maternal deaths, it is important to collect accurate information on how many women died, where they died and why they died. Maternal Death Surveillance and Response (MDSR) is a mechanism to collect and ascertain such information and also to take action on findings of review. MDSR system is a continuous cycle of identification, notification and review of maternal deaths followed by actions to improve quality of care and prevent future deaths. Large lacunae have been identified in implementation of MDR and taking action on findings of current system of MDR.

The pregnant mothers who suffer severe complications and come close to maternal death but do not die are the "**Near Miss**" which needs to be investigated for finding programme gaps. Due to the success of modern medicine, maternal deaths are fewer in number but there are innumerable "near miss" events which have the potential to teach us lessons.

A national level orientation workshop was organized by the Ministry of Health and Family Welfare (MoHFW) conducted on 18 and 19th July, 2017 in New Delhi along with World Health Organization, South East Asian Region (SEAR) with stakeholders from health department and Obstetrics & Gynecology and Community Medicine departmental representatives from all states and Union Territories (UT) were engaged and the platform was utilized to sensitize, discuss the practical issues and improved reporting, prevention and management of cases of near miss and maternal deaths in the country. Guidelines

provided during this workshop were an empowering tool for the medical colleges, where majority of near miss cases are likely to happen. So role of medical colleges is vital as far as MDSR and Maternal Near Miss (MNM) are concerned. It is envisaged that the health department in collaboration with the medical colleges will work relentlessly to find out the bottlenecks in causation and management of maternal deaths or near miss cases and to find effective and lasting solutions to improve the situation further, to reduce the MMR and to achieve the targets set in the Millennium Development Goals.

Based on the learning and feedback from states, the guidelines are revised with focus on surveillance for improved reporting and action planning after analysis. Current guidelines have used ICD-10 instead of ICD-9 for classification of maternal deaths. Another area of concern is that 60% of maternal deaths have been classified as others in the Health Management Information System (HMIS).

Purpose of guidelines is to strengthen the process and to conduct confidential review into maternal deaths. Community Based MDSR is a method of identifying personal, family and community factors that may have contributed to death by interview using a verbal autopsy format. Pregnancy surveillance through MCTS/RCH Portal, if strengthened, would improve reporting of maternal deaths. All maternal deaths must ultimately get reported through Civil Registration System (CRS).

All maternal death reports compiled by District MDSR Committee will be put up to the District Collector, who will review a sample of these deaths. In urban areas, District Collector/ Commissioner, MC/CEO, Zilla Parishad/Deputy Commissioner will conduct the maternal death review. Facility Based Maternal Death Review Committee (FBMDSRC) is in process in many government teaching hospitals, referral hospitals, district hospital, sub district and CHCs and secondary level hospitals where more than 1000 deliveries are conducted in a year and are also being constituted in the rest of the abovementioned health facilities.

Women who survived complications during pregnancy and childbirth have been studied as surrogates of maternal deaths and been termed Maternal Near Miss (MNM). Reviews of such cases are considered a less threatening approach to improve maternal health care by the service providers. Maternal Near Miss Review (MNMR), will be able to identify the delays during the near miss and thereafter and take corrective action. It will enable us to utilize the opportunities to prevent the deaths of mother who might face a similar fate. As Near Miss occurs much more frequently than maternal deaths, a more reliable quantitative analysis can provide a comprehensive profile of the health system functioning.

Near Misses are relatively simpler to analyse and easier to resolve. This knowledge will help in identifying the contributory factors of maternal deaths so that actions can be taken at community and health systems level. So MNMR will definitely bring a sharper focus on decreasing number of maternal deaths and morbidities in India.

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## INSTRUCTIONS TO THE AUTHORS

***ORIGINAL ARTICLE***

The text of original articles amounting to up to 3500 words (excluding Abstract, references and Tables) should be divided into sections with the headings Abstract, Key-words, IMRAD format (Introduction, Material and Methods, Results, Discussion), References, Tables and Figure legends.

**Abstract**: It should be structured, not more than 300 words, briefly mentioning background, objectives, methods, results, conclusion, and 5-8 key words.

**Introduction**: State the purpose and summarize the rationale for the study or observation.

**Materials and Methods:** Describe your selection of the observational or experimental participants (healthy people, patients or laboratory animals, including controls) clearly, including inclusion and exclusion criteria and a description of the source population. Describe the method of calculating sample size. Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration. When data are summarized in the Results section, specify the statistical methods used to analyze them. Specify the computer software used. Whenever possible quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). For all P values include the exact value and not less than 0.05 or 0.001. Mean differences in continuous variables, proportions in categorical variables and relative risks including odds ratios and hazard ratios should be accompanied by their confidence intervals. A statement on ethics committee permission and ethical practices must be included in all research articles under the 'Materials and Methods' section.

**Results:** Present results in a logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess its support. Restrict the number of figures and tables below six. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

**Discussion & Conclusion:** Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, what this study adds to the available evidence, effects on patient care and health policy, possible mechanisms); Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research).

Do not repeat in detail data or other material given in the Introduction or the Results section. In particular, contributors should avoid making statements on economic benefits and costs unless their manuscript includes economic data and analyses. Avoid claiming priority and alluding to work that has not been completed. New hypotheses may be stated

if needed, however they should be clearly labelled as such. Preferably number of references should be less than 60.

***REVIEW ARTICLE***

The prescribed word count is up to 4000 words excluding tables, references and abstract. The manuscript may have about 90 references. The manuscript should have an unstructured summary (250 words) representing an accurate summary of the article. The section titles would depend upon the topic reviewed. Authors submitting review article should include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract. Restrict the maximum number of tables and or/figures to six.

The journal expects the contributors to give post-publication updates on the subject of review. The update should be brief, covering the advances in the field after the publication of the article and should be sent as a letter to editor, as and when major development occurs in the field.

***SHORT COMMUNICATION / BRIEF REPORT***

Short communication should contain interesting observations/ brief reports of original studies presenting the authors' views on a topic of current interest. Short Communication should be limited to 1,500 words with unstructured summary not exceeding 150 words, no more than four tables and/or figures, and no more than 25 references. Short communication could be authored by up to six authors. Ethical consideration as per original article should be followed.

***CASE STUDIES***

New, interesting and intriguing case studies can be reported. They should be unique and have demonstrated methods to overcome any public health challenge by use of novel tools and techniques and provide a learning point for the readers. Case studies with public health significance or implications will be given priority. These communications could be of up to 1000 words (excluding Abstract and references) and should have the following headings: Abstract (unstructured summary not exceeding 150 words), Key-words, Introduction, Case report, Discussion, Reference, Tables and Legends in that order.

The manuscript could be of up to 1000 words (excluding references and abstract) and could be supported with up to 15 references.

***EDUCATION FORUM***

Education forum articles are usually solicited by editorial board. They should review, discuss and deliberate on recent advances in public health practice and research. The focus should be on methodological issues related to tools and techniques in public health research, operational issues of practice of public health and scaling up of interventions. The manuscript could be of up to 1500 words (excluding references and abstract) and could be supported with up to 15 references. An unstructured summary not exceeding 150 words should be provided.

***LETTER TO THE EDITOR***

These should be short and decisive observations. They should preferably be related to articles previously published in the Journal or views expressed in the journal. They should not be preliminary observations that need a later paper for validation. The letter could have up to 750 words and 10 references. It could be generally authored by not more than six authors.

***OTHERS***

Editorial, Guest Editorial (no summary/abstract needed) and Commentary (with unstructured summary of about 100-150 words) are solicited by the editorial board.

***REFERENCES***

All references should be compiled at the end of the article in the Vancouver style. References should be numbered consecutively in the order in which they are first mentioned in the text (not in alphabetic order). Identify references in text, tables, and legends by Arabic numerals in superscript with square bracket after the punctuation marks. References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure.

***TABLES***

Tables should be self-explanatory and should not duplicate textual material. Tables with more than 10 columns and 25 rows are not acceptable. Number tables, in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each. Place explanatory matter in footnotes, not in the heading. Explain in footnotes all non-standard abbreviations that are used in each table. Obtain permission for all fully borrowed, adapted, and modified tables and provide a credit line in the footnote. For footnotes use the following symbols, in this sequence: *, †, ‡, §, ‖,¶ , **, ††, ‡‡. Tables with their legends should be provided at the end of the text after the references. The tables along with their number should be cited at the relevant place in the text.

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Provide the images in JPEG/JPG format. The file size should be within 4 MB. Figures should be numbered consecutively according to the order in which they have been first cited in the text. Labels, numbers, and symbols should be clear and of uniform size. The lettering for figures should be large enough to be legible after reduction to fit the width of a printed column. Symbols, arrows, or letters used in photomicrographs should contrast with the background and should be marked neatly with transfer type or by tissue overlay and not by pen. Titles and detailed explanations belong in the legends for illustrations not on the illustrations themselves. When graphs, scatter-grams or histograms are submitted the numerical data on which they are based should also be supplied. The photographs and figures should be trimmed to remove all the unwanted areas. If photographs of individuals are used, their pictures must be accompanied by written permission to use the photograph. If a figure has been published elsewhere, acknowledge the original source and submit written permission from the copyright holder to reproduce the material. A credit line should appear in the legend for such.

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