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IAPSM Declaration 2018: A Promising Beginning

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Abstract:

Community Medicine discipline and role of Department have been debated for long. IAPSM Declaration 2018 attempts to address these issues for developing a better understanding. The strength of declaration lies in the change in focus to basic clinical services, traditional 'Community Medicine' functions, effective community based training and liaison with district health care delivery systems. The definition, overlapping of key functions with 'Public Health' and a focus on curative services, however, need further attention. The Departments have to work closely with Clinical Departments in Medical Institutions, District Health agencies at all levels as well as Communities to achieve these objectives.

Key words: IAPSM Declaration, Defining Community Medicine, Primary role of a specialist in Community Medicine

Introduction:

With changing global and health environment, the confusion of Preventive and Social Medicine / Population Medicine / Community Medicine / Community Health / Public Health Preventive Medicine (PHPM)/ Community and Family Medicine (CFM)/Public Health has added International as well as Global health in its inbox.^[1,2] The relevance of Community Medicine to national needs has been addressed time and again including a detailed framework described by Shrivastav Committee.^[3] The recommendations have been half heartedly implemented, leaving a scope for non ending search to fill the gaps.^[4,5] Few publications emphasized strengthening the roots of subject as envisaged.^[6, 7] With growing emphasis on Public Health and Family Medicine and ad hoc changes in some Departments, the IAPSM Declaration 2018 comes as a much needed guiding force.^[8]

Defining Community Medicine:

Even Royal Commission on Medical Education did not define it and explained the practice!^[9] The declaration definition is an amalgamation of century old Winslow's definition of Public Health (*science*

"...a science and art of promoting health, preventing diseases and prolonging life by range of interventions (promotive, preventive, curative, rehabilitative and palliative) in close partnership or association with health care delivery system and with active community participation and inter-sectoral coordination."

and art of promoting health, preventing diseases and prolonging life), definition of Comprehensive Health Services (*promotive, preventive, curative, rehabilitative and palliative*) and Primary Health Care (*with active community participation and inter-sectoral coordination*).^[10-12]

Initial phrase of Winslow's definition is in fact a goal of all health services. The definition is supplemented by the additional sentence (*focuses on determinants of health... and organization of health care services to attain optimal quality of health*), leaving nothing from Public Health that is not community health. We may argue that community health is but public health limited to a geographic area but then it needs acknowledgement and not integration! The current definition is too complex compared to simple definitions available till now to differentiate the two Specialties.^[1,13,14]

Community Medicine focuses on determinants of health, local health issues, community-oriented primary health care, and organization of health care services to attain optimal quality of health.

It is appreciated that palliative interventions are introduced as part of Comprehensive Health Services, keeping in view the growing chronic conditions and geriatric population but palliative care is currently described in context of terminal disease and covers physical, psychological and spiritual aspects that need specific training beyond current training expertise.^[15]

Core content of Subject:

It is a welcome change that the core subjects identified include basic clinical training. No one can deny the importance of allied sciences but unless we limit ourselves to defined core areas, we cannot climb higher!^[1] Perhaps it is better for us to collaborate for postgraduate training with institutes having experts of allied sciences rather than trying to include all of them in Departments in Medical Colleges where their skills will almost always be underutilized and they are likely to continue to feel out of place!^[16]

Primary role of a specialist in Community Medicine:

It is defined in terms of placement prospects but misses the Community Medicine expert role as researcher (unless it is implied as health manager), epidemiologist, teacher/educator (including health promotion as part of definition) and wellness expert. Health promotion is our unutilized strength, for example, nutrition is an integral part of current subject curriculum and we are better equipped than clinicians and dieticians to tackle problem of growing obesity.

Key functions of a Community Medicine Specialist:

The first five functions i.e. identify and prioritize health needs, identify determinants, undertake prioritized interventions, organize health care delivery services through community mobilization

The key functions of a Community Medicine Specialist include:

- a. Identify and prioritize health needs of the defined community*
- b. Identify the (direct and indirect) determinants influencing health and diseases.*
- c. Prioritize and undertake interventions to address the health needs and health determinants of the defined community*
- d. Plan and organize health-care delivery services to address health needs through community mobilization to achieve community empowerment*
- e. Lead the health team and provide community-oriented primary health care*
- f. Advocate for equitable, quality, accessible, cost-effective and appropriate health care services, as the basis for achieving Universal Health Coverage (UHC)*
- g. Conduct health system research to evaluate health-care services and recommend measures to improve their effectiveness and efficiencies*
- h. Understand the role of other sectors which influence health and work with them to improve health status of community.*

and lead the health team for primary health care, are the essence of Community Medicine. 'Lead the health team to provide' rather than 'Lead the health team and provide.... 4(e)' would impart sense of ownership to whole health team. Omitting 'study of distribution' while retaining 'determinants' is quite unlike the usual practice of mentioning both as a pair.^[17] Advocacy statement falls more in ambit of Public Health. Health promotion and disease prevention functions are omitted Explicitely in this section and the whole focus shifts to be 'disease and cure' oriented.

Effective training in Community Medicine:

Development of Intensive Field Practice Area , urban as well as rural, is a prerequisite to effective training in discipline and the operational guidelines are available.^[18] Somehow urban primary health care

concept fails, probably due to higher community expectations, presence of multiple competing providers and easy access to higher levels of health care. We need to explore alternatives, for example collaborating with preexisting urban health delivery system and upgrading clinical services or providing specialist services from mobile clinics with the help of

For effective training in Community Medicine, every department should have an Urban and a Rural Health Training Center; where the undergraduates and postgraduates get an opportunity to learn and practice the discipline. Wherever possible, departments should aim to establish model health care delivery system at primary care level.

clinicians from Medical College. ROME scheme emphasized reorientation of students as well as medical college faculty to primary health care. We have failed to involve and reorient colleagues from other Clinical disciplines and their reorientation though it should not be difficult, observing their keenness to become Public Health Experts.

For rural training area, it is usually the junior faculty who is delegated the task of teaching in community setting. Reluctance is obvious as there is lack of role models. One has to recall that at most of the Departments, the interest in community based training developed with initiatives of Senior Faculty and hence there is need for commitment from Senior Faculty of all departments, including the clinical ones.

Close association with local health systems:

Reiteration of stronger liaison with district hospitals for postgraduate training is strength of Declaration. Post graduates need to sharpen clinical skills if they have to train undergraduates, act as 'eyes' of community and take up role of an epidemiologist.^[2] This can be possible only if we move from PHCs to District/Sub district Hospitals. Failure to do so has resulted in perceiving Community Medicine as a non clinical subject. On the other hand, merely posting them in alien environment can be a waste unless the learning is promoted. This support can come from clinical department colleagues and it will fulfill our

responsibility of reorienting faculty and residents of other Clinical Departments to the district health services. The activity is expected to result in strengthening and bringing credibility to Department in eyes of colleagues at Medical College as well as District Hospital Staff. At almost all the medical colleges where community medicine departments command recognition and respect from students and fellow clinical faculty, the free hand they got 'to manage cases they could not touch at a tertiary level institute during residency' is well appreciated! There are other benefits too like rapport building between residents as well as faculty of different specialties.

Achieve Universal Health Care (UHC) in India:

IAPSM strongly supports the concept of UHC. It believes that to achieve UHC in India, a post of Community Medicine specialist should be created at every Community Health Center (CHC), alongside other specialists. At CHCs, Community Medicine specialist would be responsible for mentoring and monitoring the referral linkages between primary, secondary, and

Many esteemed colleagues continue to argue that the Department should limit to train post graduates and not waste time in undergraduate teaching. It has been the view in other countries too due to which undergraduate medical education in subject has suffered a lot.^[19] Undergraduate orientation to real world is only through Community Medicine. If we see MCI regulations, we find that almost all the objectives for training of medical graduates are in fact related to Community Medicine.^[20] Still the discipline lost its position from clinical to be treated as a para clinical discipline due to our inclination towards public health, research and health management sciences at the cost of developing field practice areas.^[6,7,21] The subject has a great role to play in reorienting medical curriculum itself.^[4] If our undergraduate training in Community Medicine achieves its objectives, we will always have trained public health force to meet the demands of future, wherever they work! If we orient them properly, only then Universal Health Care can be possible.

Our post graduates are mostly interested in managing big projects, research and some teaching as we prepare them for these activities only. Unless the learning opportunities reflect what they are expected to do in real world, this disconnect will always remain.^[22] This puts a huge responsibility on shoulders of current Faculty for building bridges between Department and clinical colleagues, the local health care delivery system as well community, to create an appropriate learning environment.

Last but not the least, most of us are members of both professional bodies related to the disciplines of Community Medicine and Public Health and a joint IAPSM – IPHA declaration would have endorsed the clarity and a common understanding amongst all the stakeholders. On a personal note, the write up was written almost an year back and was suggested to be published in journal of the other association as it was thought to be more relevant to 'them'.

Conclusion:

The Declaration' is an important step towards defining the future of the discipline as a part of Medical Institution and curriculum. However more clarity to define the subject would clear its similarities and differences from public health. It is need of the time, in view of commitment to objectives laid by MCI, rolling out of competency based curriculum as well as UHC, to put our efforts unanimously in line with the Declaration to not only improve the quality of medical education and health care delivery but also to gain the deserved status of Department and the discipline as a part of Medical Institute.

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Dengue : An Emerging Public Health Challenge

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Introduction:

Epidemiological transition of the world with a focus on developing countries have resulted in the dual burden of diseases whereby non-communicable diseases (NCDs) are increasing without any significant reduction of communicable diseases.^[1] Effective newer drugs and vaccines have played pivotal role in conquering/controlling communicable diseases like Smallpox, Poliomyelitis, Dracunculiosis, Yaws, Malaria, Leprosy, Tetanus (neonatal & maternal) etc. This decline is being compensated by unabated Tuberculosis and emergence of other vector borne diseases (VBDs) especially the arthropod borne viral (arboviral) diseases such as Dengue and Chikungunya Virus. Between the two, dengue attracts more attention because of the mortality associated which is rarely seen in Chikungunya Virus.

Dengue an emerging important VBD is caused by 4 closely related yet serologically distinct serotypes DEN 1, 2, 3 & 4) of RNA virus from group B arbovirus. Infection with one serotype (primary infection) provides lifelong immunity for that serotype but when the same person in hyperendemic areas is infected with another serotype (secondary infection), it can lead to a complicated case such as dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS). Number of annually reported dengue cases to WHO from the entire world increased from 0.4 million (1996) to 1.3 million (2005), 2.2 million (2010) to 3.2 million in 2015. With substantial under reporting inherent to the disease, reporting system and mathematical modelling, it is estimated that there have been 50 – 100 million symptomatic cases in 2015 across the world; largely from Asia, Latin America and Africa. In 2013 dengue was estimated to be responsible for approximately 9000 deaths, the majority occurring in lower middle income countries,

and for 1.1 million disabilities adjusted life years (DALYs).^[2] Global burden of disease (GBD) since 1990 have also documented 610% increase in dengue fever incidence, consistent with its widespread emergence in Asia, Africa, and the Americas; much beyond what would be expected due to changes in population demographics.^[3] In short, the global burden of dengue is formidable and represents a growing challenge to public health officials and policy makers.^[4] High dengue disease burden and frequent outbreaks result in a serious drain on economy and stress on the health systems.

History, Epidemiology, Changing scenario:

Distribution of dengue is the distribution of its principal vector *Aedes aegypti* - largely confined to 25 ° N to 25 ° S to equator where it also transmits yellow fever and chikungunya fever. However, it is known to cause outbreaks up to 30 ° N and 40 ° S depending on the favourable season and climatic conditions.

Dengue fever caused major epidemics from 17th to early 20th centuries.^[5] First confirmed case of dengue was reported by Benjamin Rush in 1789 and he coined the term “Break bone fever” due to the myalgia and arthralgia associated with dengue fever. However, its viral aetiology and mosquito borne transmission was established only in 20th century. In most Central and South American countries, effective disease prevention was achieved during 1950s - 1960s by eliminating *A. aegypti*. In Asia, however, it was never achieved and a severe form i.e. dengue haemorrhagic fever (DHF) emerged post-World War II (between 1950 – 70) as periodic epidemics in a few countries. During 1980s, however, incidence increased dramatically, expanding distribution of the pathogen and vector to the Pacific islands and tropical America.⁵ In the latter region, the *A. aegypti*

eradication program had been disbanded in the early 1970s and by 1980s, this species re-infested most tropical countries thus increasing the transmission and frequency of epidemics in Asia, resulting in a dramatic increase in epidemic dengue fever; hyperendemicity (co-circulation of multiple virus serotypes).

DHF a potentially lethal complication of Dengue, was first recognized in 1950s during the epidemic in Philippines and Thailand but today it affects most Asian countries and is a leading cause of childhood deaths. Globally it is showing rising trend as before 1970, only 9 countries were affected but now it is endemic in more than 100 countries. Globally, DHF has emerged as a major cause of hospitalization and death. The number of DHF cases reported between 1981 - 1995 is four times higher than that of the previous 30 years. Dengue is the second most important tropical disease (after malaria) with approximately 50 - 100 million and 500,000 cases of DHF each year.^[5]

Factors responsible for the emergence/resurgence of VBDs:

They are complex and multiple such as insecticide/ drug resistance, changes in public health policy, demographic/ societal changes, emphasis on emergency response, de-emphasis of vertical control programs and emergence of climatic factors (less amenable for conventional control strategies) influencing survival and/or multiplication of vectors. All these in turn influence vector habitat, its distribution, abundance, intensity and temporal pattern of vector activity (biting rates) and also the rates of development, survival and reproduction of pathogens within vector.

In other words, this resurgence and expansion of endemic regions for dengue fever can be attributed to

1. Unplanned urban over population areas leading to inadequate public health systems (water, sewerage & waste management)
2. Poor vector control – stagnant water pools facilitating mosquito breeding

3. Climate change and viral evolution (increased viral transmission has been linked to El Nino effect)
4. Increased international travel to endemic areas

Indian Scenario:

The epidemiology of dengue in India was first reported in Chennai in 1780; outbreaks have been documented since 1950s but severity has increased only in the last two decades. First major outbreak associated with hemorrhagic manifestation occurred in Calcutta in 1963 followed by a major outbreak of DHF in Delhi in 1996 after which Dengue became a notifiable disease and a number of policies were formulated to bring the Dengue as well as its vector under control.^[6] Delhi home to more than 13 million people, is endemic for sero type one.^[7] City experienced another outbreak after 6 years in 2003 with one of the wettest monsoons in 25 years, leading to a spate of mosquito growth creating an alarming situation of mosquito borne diseases in many other states as well.^[8] Despite hosting country's policy making institutions, Delhi found itself often paying a price on account of these diseases,^[9] and faced this peak in 2003 after which all VBDs were put under single umbrella program - National Vector Borne Disease Control Program (NVBDCP). As per data of VBD (2010- 16), Delhi reported 34,052 cases (9.31 % of total cases). Despite the maximum number of cases during this period, it could contain deaths due to dengue while Maharashtra with 218 deaths (18.7% of the total deaths) occupied the top spot, ^[10]In 2017 maximum dengue cases were reported from Tamil Nadu not from Delhi followed by Kerala, Karnataka, Punjab, West Bengal, Andhra Pradesh, Assam, Gujarat, Haryana, Maharashtra, Odisha, Rajasthan, Delhi and other states.^[11]

There have been no community-based studies reporting incidence of dengue. Monitoring and surveillance activities are generally geared up only at the time of epidemic though they carry more value for epidemic preparedness.

Changing scenario:

Dengue is the only VBD which affect all areas; urban, peri urban including slums and rural, all socioeconomic strata extremely poor to rich (incidentally famous film producer Mr.Yash Chopra died of dengue). Since mid-1990, epidemics have increased specially in urban areas and not only that it has quickly spread to new regions, such as Orissa. DF has been known to be endemic in India for over two centuries as a benign and self-limited disease but in recent years, the disease has changed its course manifesting in the severe form as DHF, or DSS with increasing frequencies.^[12]

Epidemiological Determinants:

Transmission cycle is maintained by “human – mosquito – human” cycle and the principal vector is *Aedes aegypti* which is capable of quick adaptation to human habitation. Main mode of transmission is through the bite of a vector (got infected by biting a viraemic patient) to a vulnerable host. Transmission from other primates or through blood products or from infected mother to new-born are very rare. Therefore, determinants of Dengue incidence are those which determine high vector density include post rainy season collection of water facilitating breeding compounded with other climatic factors like high humidity and Optimum temperature favouring long survival.

Causative Agent & factors:

They playing a role in severity. Causative agent belongs to group B arbovirus, genus *Flavivirus* of family *Flaviviridae* and serotypes Den-1, Den-2, Den-3 and Den-4). When a person has had classic dengue (i.e. infection by one serotype), a second infection later by another serotype increases the likelihood of suffering from DHF. Infection with one serotype give immunity against that serotype and some partial immunity against other but as there is no cross resistance so person in endemic areas during life time can have infection with all 4 serotypes.

Host Determinants:

“Vector breeds everywhere so everybody from everywhere is at risk”

Dengue fever affects infants, young children and adult in fact everyone is at risk as no race/ traits (like in malaria) provide immunity against it. Especially school going children and young adults are the major group affected - may be due to more exposure to day biter, the severity of disease in India is still lower than that reported elsewhere in South-East Asia; and paediatric cases of dengue haemorrhagic fever have a high mortality. High prevalence of co morbidities attributes to high case fatalities in adults and vulnerable population.

Environmental Determinants:

During the past century, surface temperatures have increased by a global average of 0.75°C per year warm, humid and rainy seasons favour abundant mosquito growth and shorten the extrinsic incubation period leading to substantial increase in dengue epidemic potential.^[13] In most of the countries, Health risks due to climatic changes will differ between countries that have developed health infrastructures and those that do not.^[14] this global issue of vector borne disease was taken up by World Health Organization (WHO), 2014 by marking it as a theme of World Health Day (WHD) - '**small bite big threat.**'

Increasing Water Scarcity-tendency to store water-increases breeding: Apart from climatic factors (Temperature/ humidity/rainfall) favouring vector density and disease transmission, environmental determinants also include water scarcity leaving large number of water containers, high population density, poor sanitation and large number of manmade containers (construction site/coolers/domestic plants etc) as well as in rural areas where the environment is also mosquito friendly (storage water for cattle feeding & drinking).

Receptivity of the vector:

Female *Aedes Aegypti* gets infected by biting a

dengue (viraemic) patient - 1 day prior to onset of rash to 5 days of illness. Trans ovarian transmission helps in passing the virus to subsequent generations of the vector. Vectors can survive up to 12 - 14 days (adequate for the disease transmission) when temperature of surroundings is around 30 ° centigrade with 60% relative humidity. Receptiveness to pathogenic organisms by a vector depends on its anthropophilic nature. Closeness to reservoir of infection with presence of high population density and efficient biting species further facilitates the transmission.

Personal protection (Host): It's a day biter-how important for prevention?

Aedes aegypti is office (school?) time biter and bites in day between 9 am and 5 pm. Day biting nature is a challenge as it needs protection from the vector not only at home but also at school/ workplace (practically everywhere). Mosquito control measures (good night/ coil/all out) at household level by community are usually practiced during night time due to lack of awareness that vector is a day biter. Vector control measures are neglected at work place/ schools/institutions/ hospital premises. Hence these premises need to have mosquito trapping electronic devices apart from other permanent vector control measure like wire mesh at window/doors. Wearing full sleeve shirts/ full pants during day time can prevent mosquito bite. Vulnerable population like pregnant women/ children/older people even when sleep during the daytime must use insecticide treated bed nets (ITBNs).

Role of travel especially international:

Disease disappeared from Europe mainly due to nearly universal use of piped water but is frequently introduced by travellers returning from dengue-endemic countries but no local transmission has been reported since it depends up on the reintroduction of *Aedes aegypti* which is adapted to urban environments. However, over the last 15 years another competent vector *Aedes albopictus* (Asian

tiger mosquito) has been introduced into Europe and expanded into several countries, raising the possibility of dengue transmission. Clinical symptoms develop after a 3 – 14 days incubation period with a usual of 4 – 7 days. If a person develops confirmed dengue infection 14 days after the visit to an endemic country, the attribution to travel shall be ruled out and an indigenous transmission should be suspected.

Community participation:

It is key to the success of any control program and must have the involvement of Panchayati Raj Institutions (PRIs), and Mahila Arogya Samiti (MAS), Students in the schools can be involved as effective change agent because of (1) their vulnerability for bite during school time and (2) their potentials to take the message to their respective homes. Community participation requires community sensitization, mobilization (through IEC and IPC) A good example of the IEC is given at figure 1 targeting the community in general and primary care providers. A media hype has been there in the community about the severity of dengue and its potential to kill. Every case of dengue is considered as serious while number of them are purely asymptomatic or self-limiting. This point should be highlighted while delivering the Information, Education and Communication (IEC).

As part of community participation, **National Dengue Day** is observed in India on **May 16** with the recommendation of Ministry of Health & Family Welfare (Mo H & FW), Government of India (GOI) to create awareness and to intensify preventive measures and preparedness for the control of disease in the country before transmission season starts.^[15]

Delhi initiative:

National Capital Delhi has the eighth highest literacy rate in the country and high penetration of media, making it easier to achieve the intended results in public health campaigns through IEC. Delhi is also the most urbanised state in the country with

highest accessibility to healthcare.^[16] Delhi government has taken a unique initiative in the form of Mohalla (community) Clinics to make basic healthcare accessible. Each clinic is staffed by a doctor, a nurse, a pharmacist and a laboratory technician.^[17] This has helped to decongest higher level health facilities.

Another issue is that 52 % of Indians indulge in self-medication.^[18] This tendency of not consulting doctor in case of common symptoms like fever and seasonal flu coupled with Over The Counter (OTC) sale of prescription drugs makes the case worse in many instances. Once the case is out of hand due to misdiagnosis and delay in appropriate treatment, people then directly approach emergency care which also hampers health services for the less privileged who may actually need emergency care on an urgent basis.

Drawing lessons from the current and previous crises, governments should develop a multipronged strategy with focus on prevention of such outbreaks. One important takeaway from the recent outbreak of chikungunya is the need for an adequate surveillance mechanism, and governments should aim to put in place mechanisms that ensure round the year stringent surveillance of vector-borne diseases rather than doing it just during (rather after) the outbreak of the disease. State of Tamil Nadu presents a good example of such a strict surveillance mechanism that helped in reducing the number of chikungunya cases and preventing the outbreaks of vector-borne diseases.

The role of the community health worker is very important in the case of prevention of any infectious diseases at the local level. Therefore, their training and adequately capacity building towards preventing VBDs should be the primary focus of government. As these workers come from the local community, they are better aware of the problems in that particular area. This places them in an important position to act as a crucial link between policy makers and the local community, which can be helpful in taking timely actions by the public health authorities in spread of diseases.

Prevention and control:

In view of non-availability of any specific Treatment, prevention and control assumes importance and here the mainstay is vector control along with host protection (from mosquito bite). World Health Organization emphasizes on integrated vector management with environmental engineering and use of long-term sustainable insecticides.

Vaccination:

Development of a vaccine is in a very early stage. CYD-TDV or Dengvaxia® is a live attenuated (recombinant) tetravalent (all 4 serotypes) vaccine. It has been evaluated through the phase 3 randomized control trials (RCTs) in Asia and Latin America. Vaccination schedule consists of 3 injections of 0.5 mL administered at 6-month intervals for the prevention of dengue illness in individuals above 9 years of age and living in dengue endemic areas (lower limit of 9 years of age due to safety concern). Vaccine efficacy during 25 months post first doze period was around 50 – 60% showing variation depending on the age groups, previous exposure status and the geographical area. According to the WHO, countries should consider this vaccine CYD-TDV only in geographic settings (national or subnational) with a high burden of disease (prior infection with any serotype, as measured by seroprevalence, should be $\geq 70\%$ to maximize health impact and cost effectiveness.

Lab Diagnosis:

It is made by detecting the virus and/ or any of its components (virus, genome, dengue antigen) or by serological responses after infection and the objectives are to (i) confirm the clinical diagnosis for individual case management and (ii) conduct surveillance from public health point of view. Laboratory diagnosis is not very crucial for clinical management except in atypical cases or during differential diagnosis with other infectious diseases.

Febrile phase (day 1 to days 4–5 of fever):

Acute infection with very high sensitivity and serotype identification can be done by isolation of virus by tissue culture and virus genome detection by real-time RT-PCR. NS1 Ag is a marker of acute dengue and can be detected by enzyme-linked immunosorbent assay (ELISA) and rapid commercial tests.

Critical and convalescent phases (after days 4–5 of illness):

Specific IgM is the best marker of a recent dengue infection (persist for almost 3 months) and is best detected by MAC-ELISA and rapid tests. High levels of specific IgG in sera collected early after fever onset and detected by ELISA and Hemagglutination Inhibition Assay (HIA) also suggest a recent dengue infection. Primary infections are characterized by high levels of IgM and low levels of IgG, while low levels of IgM with high levels of IgG characterize secondary infections. Classification into primary or secondary infection is also determined by IgM/IgG optical density ratio. Ratios >1:2 suggest a primary infection.^[19] In addition, IgG titres higher than 1/1280 by HIA or ELISA are also suggestive of a secondary infection. In dengue endemic countries, acute clinical cases with a positive IgM are classified as probable dengue cases. A case is called confirmed by the detection of the virus, viral genome or NS1 Ag, or seroconversion of IgM or IgG (from negative to positive IgM/IgG or four-fold increase in the specific antibody titre) in paired sera. As patients access care some early and some late – a combination of both NS1 Ag and IgM markers is advisable. Figure 2 presents the time when a particular test is to be advised.^[20]

Both probable and confirmed dengue cases should be notified to health authorities.^[20-23]

Management:

Symptomatic cases are around 25% of total infections and classical constellation of symptoms

for an uncomplicated, yet symptomatic dengue case include fever associated with headache, retro-bulbar pain, prostration and extensive myalgia (responsible for its local name “KAMAR TOD BUKHAR” or break bone fever. These are self-limiting and complicated forms such as DHS and DSS only typically occur with second- or third-time infection with a different serotype. Further, the mortality is different between children and adults. Presence of co morbidities (hypertension, diabetes etc.) put the patients at a higher risk and complicate the management.

As it is difficult to differentiate dengue from other febrile illness during and immediately after monsoon, timely initiation of treatment is missed by health provider compounded by the treatment seeking behaviour leads to higher morbidities/mortalities. As mentioned above, in absence of any specific therapy management is basically supportive type focussing on fluid management in complicated cases. Some of the below given points are worth considering during the management of dengue/ DHF cases.

1. **Rule of 20:** Following indicate high risk situation & require immediate medical attention
 - a. Rise in pulse by > 20
 - b. Fall of blood pressure by > 20
 - c. Difference between upper & lower blood pressure < 20 mm of mercury
 - d. Presence of haemorrhagic spots in an arm (after tourniquet test) > 20
2. Death in DHF or DSS does not occur due to platelets deficiency but due to capillary leakage of fluids leading to multi organ failure. Therefore, fluid replacement @ 20 ml/ kg / hour till pulse Pressure > 40 mm or patient passes urine is more important than platelet transfusion (needed only when platelet count < 10000/ mm³),

In any developing country including India which is prone to the spread of many infectious diseases due to its geographical location, various

epidemiological, social demographic and climatic factors, prevention of dengue fever is the most cost effective and sustainable mechanism to ensure healthy lives to its population.

Figure 1: IEC material about dengue for treatment provider/ community ^[24]

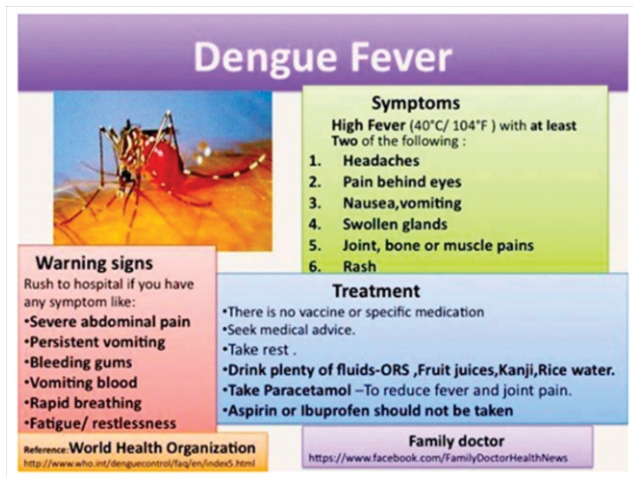
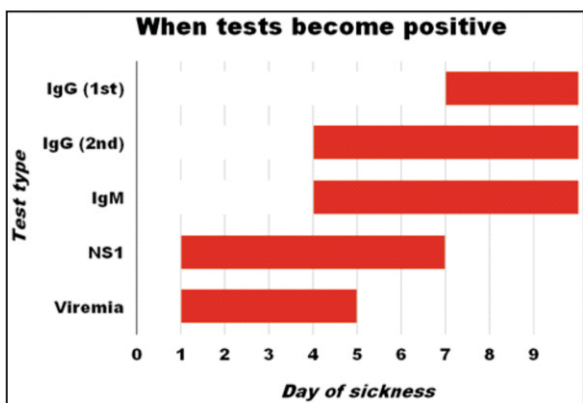


Figure 2: Diagnostic tests in dengue source ^[25]



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Impact of Ban on Smokeless Tobacco (SLT) on Second Hand Smoke (SHS) Exposure among Males : Findings of a Community-based Survey in Delhi

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Abstract :

Introduction: Ban on gutka/smokeless tobacco (SLT) in India beginning in 2011 raised apprehension of its users switching to smoking and thereby increased second-hand smoke (SHS) exposure to non-users. Delhi Government issued notification banning gutka and pan-masala containing tobacco and/or nicotine in 2012. To address circumvention of ban by SLT manufacturers, ban was revised and reissued in 2015 to explicitly ban all SLT products. **Objectives:** To assess change in second hand smoke (SHS) exposure in Delhi three years after gutka ban and one year after explicit ban on all SLT products. **Method:** Cross-sectional household survey was conducted in Delhi during March-December 2016 to assess SHS exposure at home, workplace and public places. Males aged 15 years and above living in urban Delhi were asked questions similar to Global Adult Tobacco Survey (GATS)-India, 2010. Survey data were compared with 2010 records to assess change in SHS exposure between 2010 and 2016. **Results:** As compared to 2010, 12.0% less non-smokers reported SHS exposure at home. Among those working outside home, 13.7% non-smokers reported SHS exposure at indoor workplace as compared to 19.3% in 2010. Less educated people are more likely to face SHS exposure at work. Chance of exposure at any public place during last one month has also decreased by 6.5%. **Conclusion :** Probability of coming across SHS exposure has decreased in urban Delhi at all places in 2016 as compared to 2010. Efforts to enforce SLT ban must sustain without fear of increase in SHS exposure.

Key words: Gutka Ban, Second-Hand Smoke Exposure, Smokeless Tobacco Ban

Introduction:

Ban on gutka/smokeless tobacco (SLT) in India beginning in 2011 raised apprehension of its users switching to smoking and thereby increased second-hand smoke (SHS) exposure to non-users. The apprehension was raised by both sides: SLT industry as well as tobacco control experts and activists, though with different objectives.^[1-7]

SLT manufacturers and their raw material suppliers described government's ban on SLT as unfair arguing that smoking products were not banned and SLT users will switch to smoking which unlike SLT use, is harmful for nonsmokers around.^[1-4] Large advertisements were placed by them in leading national and vernacular newspapers raising this fear and demanding ban to be withdrawn.^[1,4]

Some tobacco control experts and activists also, though supporting the ban, apprehended that selective tobacco ban on SLT alone, will lead to switching to smoking.^[5-7] Some experts even shared their personal experience or small research in the community supporting the apprehension, especially increased bidi smoking.^[5,8] They advocated for extending scope of SLT ban to include smoking products as well.^[5]

Some business analysts also predicted that gutka/SLT ban will benefit the cigarette industry. Their anticipation was of benefit especially to low end brands whose cigarettes can best match the banned cheap SLT products in price.^[9] SHS is known to cause coronary heart disease and lung cancer in adults and premature death and disease in

children.^[10-13] And, there is no risk-free level of exposure to SHS.^[13] Hence, article 8 of WHO-Framework Convention on Tobacco Control (FCTC) and 'P' policy of WHO's MPOWER package have mandated measures for 'protection' from SHS in indoor workplaces, public transport, indoor public places and, as appropriate, other public places.^[14,15]

Government of Delhi had issued first ban notification on 11 September 2012 which prohibited 'gutka and pan-masala containing tobacco and/or nicotine'.^[16] When gutka manufacturers circumvented ban by replacing gutka with twin-pack (pan masala and chewing tobacco sold separately to be mixed by user to create gutka), the government revised and reissued notification on 25 March 2015 which explicitly bans all SLT products including the twin-pack.^[17]

The objective of this study, conducted in 2016 after three years of ban on gutka/pan-masala with tobacco and after one year of unambiguous bans on all SLT products, is to assess if SLT exposure increased in the community during this period as was apprehended by SLT industry and some tobacco control experts.

Method:

Cross-sectional household survey was conducted using a standardized questionnaire in urban area of Delhi during March-December 2016. Males aged 15 and above randomly chosen, one from each household selected through a three-step randomization process in urban Delhi, were included

in the survey. For eligibility for the survey, the person must be living in his primary residence prior to survey date and agree to participate. In case of respondents below 18 years, prior consent of the parent or guardian of the minor was also needed. To be eligible, the respondent must also be non-institutionalized i.e. not living in collective living spaces like students' dormitories, hospitals, hotels, prisons, military barracks.

Households were selected through three-stage sampling process. City wards were the primary sampling units (PSUs) and census enumeration blocks (CEBs) were the secondary sampling units (SSUs) selected through probability proportional to size (PPS) sampling. Households formed the tertiary sampling units (TSUs) selected through random walk method.

Questionnaire administered to respondents sought information on their current exposure to SHS. The respondent told about his exposure at home and in last 30 days at indoor workplace, if he worked outside home. He also informed about his exposure at government buildings/government offices, health care facilities, restaurant, public transportation, if he visited any of these public places during last 30 days. The questions asked in this survey and sampling methodology were similar to the Government of India's Global Adult Tobacco Survey (GATS) conducted during 2009-2010 to allow comparability of data. Current exposure to SHS as per our survey is compared with SHS exposure as recorded in the same population during 2009-2010 GATS survey.

Table 1: Change in SHS exposure to adult males at home and at indoor workplace in urban Delhi since 2010

Smoking Status	Year 2010*		Year 2016**		% change	Chi Square	P Value
	N	SHS exposure	N	SHS exposure			
SHS exposure at home							
Non-smoker	572	55.30%	1218	43.30%	-12.0	22.69	<0.05
Overall	851	65.80%	1612	58.10%	-7.7	13.77	<0.05
SHS exposure at indoor workplace							
Non-smoker	351	19.3%	926	13.7%	-5.6%	6.29	<0.05
Overall	530	25.9%	1224	21.8%	-4.1%	3.39	> 0.05

* GATS, 2010; ** Present study

Table 2: SHS exposure among adult males who work indoors by educational background

Educational Background	N	Worked indoors outside of home	Exposed to SHS at indoor workplace
No formal schooling	189	127	47 (37.0%)
Less than primary school	129	80	29 (36.3%)
Primary up to Senior secondary level	940	705	144 (20.4%)
College and above	352	310	47 (15.2%)
Missing/Didn't tell	2	2	0 (0.0%)
All respondents	1612	1224	267 (21.8%)

Table 3: Change in SHS exposure to adult males at public places in urban Delhi since 2010

Public Place	Year 2010*		Year 2016**		% change	Chi Square	P value
	N (visited place)	SHS exposure	N (visited place)	SHS exposure			
Govt. building or govt. office	380	33.4%	953	24.2%	-9.2	11.65	<0.05
Health care facility	287	37.0%	524	31.9%	-5.1	2.12	> 0.05
Restaurants	462	57.1%	708	33.7%	-23.4	62.86	<0.05
Public transport	682	34.2%	1146	24.3%	-9.9	20.54	<0.05
Any public place	777	48.7%	1417	42.2%	-6.5	8.44	<0.05

* GATS, 2010; ** Present study

Chi-square was used to test the statistical significance of the difference observed. SPSS was used for data management and analysis.

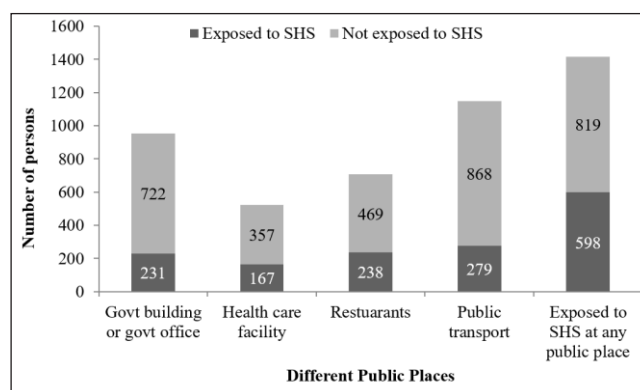
Study protocol was approved by the Institutional Research Committee and participants were interviewed after they gave a written, signed and informed consent.

Results:

Out of 1710 households visited, 1628 households had an eligible member agreeing to participate and 1612 completed the interviews. Survey data shows that 58.1% (95% CI: 55.7% - 60.5%) males aged 15 and above in urban Delhi get exposed to second-hand smoke at home. As compared to 2010, there is 12.0% drop in SHS exposure to non-smokers at home and it is statistically significant (Table 1).

75.9% adult males in our survey worked indoors or 'both indoors and outdoors' outside of home.

Figure 1: Exposure to SHS at public places among adult males visiting that public place in 2016



13.7% non-smoker respondents among them got exposed to SHS at the workplace during last 30 days. SHS exposure at workplace has decreased by 5.6% among non-smokers since 2010 and the decrease observed is statistically significant (Table 1). Less educated people are much more likely to be employed/work at such places where indoor

smoking, and hence SHS exposure, happens (Chi square = 35.76, df = 3, p < 0.01) (Table 2).

59.1%, 32.5%, 43.9%, 71.1% respondents in our survey told that they had visited a government building/office, a healthcare facility, a restaurant or travelled in a public transport in last 30 days respectively. SHS exposure among those who visited these places is shown in figure 1.

87.9% respondents visited at least one of these public places. Among them, 42.2% (95% CI: 39.6% - 44.8%) got exposed to SHS at one or more sites. Table 3 shows the change in SHS exposure encountered at these public places in 2016 as compared to 2009-2010. Overall, risk of coming across SHS exposure at any public place in last 30 days has decreased by 6.5% during these years which is statistically significant.

Discussion:

Data in our survey show that since 2010, SHS exposure has decreased across the board, at home, at indoor workplace and at all public places. The decrease observed in probability of being exposed to SHS is statistically significant in most cases.

The decrease observed is in line with decrease in prevalence with smoking as detected in nationwide round-2 of GATS during 2016-2017. Prevalence of Smoking in Delhi has decreased from 17.4% in 2009-2010 (GATS-1) to 11.3% in 2016-2017 (GATS-2), a relative decrease of 35.0%.^[18,19] In addition, awareness on adverse health effects of tobacco smoke and changing social norms leading to more and more non-smokers unaccepting to someone smoking in their vicinity, thereby de-normalizing public smoking, might have played a role in decrease in SHS exposure rates. However, 'whether this is true' will need to be tested through separate behavioural study. Also, although there is net decrease in smoking prevalence between GATS-1 and GATS-2, it will be interesting to see in future research papers, if there was increase in smoking due to some gutka/SLT users initiating it due to ban. Establishing cause-effect relationship to link 'drop in SHS exposure' with any cause is beyond the scope of this research paper. However, it has provided data-based evidence that net outcome of all tobacco

control interventions during these years is that there is significant decrease in SHS exposure, rather than increase which was apprehended when gutka/SLT ban policy was being put in place.

Many research papers have highlighted gaps in enforcement of Gutka /SLT ban.^[20-23] Based on our findings, we can strongly recommend to take all measures and ensure strong enforcement of ban on all SLT products, while continuing with other tobacco control interventions in place, without any concern of increase in SHS exposure to non-users.

A limitation we have in our study design is that data are not available on level of SHS exposure in 2012 when ban was first imposed. Due to this, we had to use 2010 exposure levels as pre-ban exposure level. Any change in SHS exposure that was already there since 2010 through 2012 cannot be discounted from our findings. Another limitation is that study is representative of change in SHS exposure only among males living in urban Delhi.

Our findings also highlight need of more stringent workplace norms and their strict enforcement. 21.8% males get exposed at indoor workplace, where they don't have a choice, workplace being a matter of livelihood. Also, data show that the need is particularly high in jobs engaging people with low education. Another, surprising and concerning finding is that least drop in SHS exposure has been recorded at health care facilities and they still have second highest SHS exposure among public places in 2016. It is expected that health care facilities come forward and play a pro-active role in tobacco control.

Conclusion:

After three years of ban on 'gutka and pan-masala containing tobacco and/or nicotine' and after one year of explicit ban on all SLT products, probability of coming across SHS exposure has significantly decreased in urban Delhi. This nullifies the apprehension of increase in SHS exposure harming non-users as a side-effect of gutka/SLT ban. Efforts to enforce SLT ban must sustain without any fear of increase in SHS exposure.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Cross-Sectional Study on Assessment of the Knowledge of Mothers Regarding Identification of Developmental Milestones of Young Children at an Urban Area of Bhavnagar, Gujarat

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Abstract :

Introduction : The present study focused on the levels of knowledge about development among mothers. This is the first population-based study to examine maternal knowledge of child development in urban environments in a Gujarat. This research supports other studies conducted on mothers on the finding that majority have inadequate knowledge about child development. **Objectives**: This study was carried out with the objective to find out the levels of knowledge of mothers regarding identification of developmental milestones of child and factors contributing to it. **Method**: It was a cross-sectional study conducted amongst 195 mothers by interviewing, with objective to measure knowledge score regarding developmental milestones of child by mothers from an urban health training centre area affiliated to community medicine department, Govt. medical college, Bhavnagar. **Results**: Out of 195 mothers, maximum 148 (75.9%) mothers had average score of knowledge followed by 26(13.3%) had good and 21(10.8%) had poor score. The independent t-test between knowledge score of mothers did have a significant difference with respect to religion, caste, education, status of mother employment and mother native place. Pearson's correlation coefficient "r" between knowledge score of mothers and age, number of family members, per capita income, years of education were significantly different from 0. **Conclusion**: We conclude that the most of mothers had average knowledge about developmental milestones. Further, it was observed that knowledge regarding motor development was higher than cognitive milestone. Age of mother, religion, caste, level of education, employment status, socio-economical status and native place of mother were associated with good knowledge score of mothers regarding child development.

Key words : Developmental Milestones, Gross and Fine Motor Development, Physical Growth.

Introduction:

"The children of today are the citizens of tomorrow"

The birth of a child is a major occasion in any family. The health of a growing child is always a matter of great concern to the parents. The Growth of a child is at most requirement for mental and physical development as well as social integrity. Growth refers to an increase in the physical size of the whole or any of its parts. It results because of cell division and the synthesis of proteins. It causes a quantitative change in the child's body. Development refers skills and

capacity to function. It results in a qualitative changes in child's functioning.^[1]

Developmental delays are common in early childhood affecting at least 10 percent of the children. These delays if not intervened timely may lead to permanent disabilities including cognitive, hearing or vision impairment.^[2]

Knowledge of developmental milestones is essential for assessing normal development and to identify any delay in development. Normal growth and development take place only if there is optimal nutrition, freedom from recurrent episodes of

infection and freedom from adverse genetic and environmental influences. In a developing country like India, the high prevalence of under-nutrition, iodine deficiency, iron deficiency and inadequate cognitive stimulation are important risk factors for sub-optimal development. Yet, health care providers at the primary level are mostly unaware of the importance of the timely acquisition of developmental milestones by children under their care.

Mothers who are usually taking care of the child, must have adequate knowledge regarding monitoring the child growth and development. So this knowledge is very important because it will help to identify the developmental disabilities and seek early interventions and management.

This research was carried out with the objective to find out the knowledge of mothers regarding identification of developmental milestones of young children and the variables affecting it.

Method:

Study area: The study was conducted among 195 young mothers from UHTC area, which is affiliated to Community Medicine Department, Govt. Medical College, Bhavnagar. The Medical College is functional since the year 1996 and tertiary care hospital is attached with it, which is catering to around thirty lakh population of Bhavnagar district.

Study type: It was a cross-sectional study conducted among young mothers.

Study duration: The study was carried out for a period of 4 months from June-September 2016.

Sample size: The minimum sample size was estimated to be 195 using the formula $N = 4PQ / L^2$ where P is the prevalence, Q = 1-P and L = allowable

error. The prevalence of good knowledge score regarding developmental milestones of infants in mothers was taken as 53%^[3] and allowable error was decided to be kept at ± 0.75 .

Study tool: Data was collected by personal interviews of mothers using pre-tested and pre-structured proforma and grading of mother's knowledge regarding developmental milestone done by Tool.

Development and Description of tool: A structured knowledge tool consisting of two sections

Section 1: Items on demographic proforma like age of mothers, religion, cast, parity, employment, educational level, number of family member, native place of mother and per capita income.

Section 2: Consisting of a 20 knowledge question on identification of developmental milestones which was derived from developmental checklists of birth to five years and with some modification, the primary form of the revised questionnaire was reviewed by 4 experts (2 consultant pediatricians, 2 community medicine specialists). Each item consists of one correct answer and each correct answer carries two marks.

Criterion Measure:

The criterion measure used in the study was knowledge score on developmental milestones. The knowledge score refers to the total obtained score on knowledge items in structured questionnaire by mothers.

Research Variables:

Independent Variable –

The independent variables of the present study were age, religion, cast, education, occupation,

The questions were related to the following aspects

Area of knowledge regarding developmental milestone	ITEMS	
Component -1	Physical growth	7
Component -2	Language Development and Social Development	6
Component -3	Gross and fine motor development	7

Total Items = 20, Maximum score = 40, Minimum score = 0

Level of knowledge		Score	Percentage
A	Good	≥26	≥65%
B	Average	14-25	36-64%
C	Poor/Below average	≤13	≤35%

gender of child, parity, native place of mother, per capita income etc.

Dependent Variable -

The dependent variables of the present study is knowledge regarding growth and development of child among young mothers in selected area.

Inclusion criteria:

All mothers above 18 years of age, having child below 5 years of age, giving written informed consent to participate in the study and who is available during the period of data collection, were included in the study.

Exclusion criteria:

Mothers who were not willing to participate, Mothers of newborn with congenital abnormalities and Mothers who cannot understand Gujarati, Hindi and English.

Reliability of the Tool:

Reliability was computed by Cronbach's Alpha. The reliability of the Questionnaire “r” was 0.709, and with that reliability of tool was ensured.

Ethical issue:

Written informed consent was taken from the mothers who agreed to participate in the study.

Statistical methods used:

Student t-test was applied for uni-variate quantitative. Pearson's correlation coefficient (r) and multiple regression were applied to find out the relationship between mothers knowledge score and various potential predictors. Difference would be said to be significant when p-value <0.05. Data was analyzed using IBM SPSS Statistics version 22 (evaluation copy).

Results:

Variable	Frequency	Percentage
Age (Year)		
≤20	11	5.6%
21-25	87	44.6%
26-30	75	38.5%
31-35	22	11.3%
Religion		
Hindu	135	69.2%
Muslim	60	30.8%
Caste		
General	32	16.4%
OBC (Other Backward Classes)	88	45.1%
SEBC (Socially & Educationally Backward Classes)	55	28.2%
ST (Scheduled Tribes)	20	10.3%
Gender Of Child		
Male	132	67.7%
Female	63	32.3%
Number of children (Parity)		
1	92	47.2%
≥2	103	52.8%
Socio Economic Status		
Class I	36	18.5%
ClassII	23	11.8%
ClassIII	48	24.6%
ClassIV	74	37.9%
ClassV	14	7.2%
Maternal Education		
Illiterate	34	17.4%
primary	86	44.1%
Secondary	23	11.8%
Higher secondary	8	4.1%
Graduate	40	20.5%
Post graduate	4	2.1%
Maternal Employment		
Employed	34	17.4%
Unemployed	161	82.6%
Native Place Of Mother		
Rural	86	44.1%
Urban	109	55.9%

Table 2: Minimum, maximum, mean and standard deviation of knowledge score of mothers regarding growth and development of Childs according to areas of development (n=195)

Areas of Knowledge	Minimum	Maximum	Mean	Std. Deviation
Component-1	0	14	7.53	3.077
Component-2	0	10	4.34	3.366
Component-3	0	14	7.34	3.491
Total score	0	36	19.21	6.147

Table 3: Frequency and Percentage distribution of mother's level of knowledge regarding growth & development of child's (n=195)

Level of knowledge	Frequency	Percentage
Good	26	13.3%
Average	148	75.9%
Poor/Below average	21	10.8%

Table 4: Mean, standard deviation and unpaired t-test between different variables and Knowledge score of Mothers

Variable		n	Mean± SD	t-test	df	Mean Diff.	95% CI	p-value
Religion	Hindu	135	20.22±6.81	-	190.9	-3.29	-4.73- -1.85	<0.001
	Muslim	60	16.93±3.36	4.509*				
Cast	General	32	26.88±5.51	-9.242	193	-9.17	-11.13- -7.21	<0.001
	Others	163	17.71±5.05					
Education	Literate	161	19.74±6.24	-2.655	193	-3.03	-5.29- 0.78	0.009
	Illiterate	34	16.71±5.04					
Employment	Employed	34	27.29±6.96	-	38.6	-9.79	-12.30- -7.28	<0.001
	Unemployed	161	17.50±4.36	7.882*				
Gender of child	Male	132	19.09±6.05	0.392	193	0.37	-1.49- 2.23	0.696
	Female	63	19.46±6.38					
No. of child	One	92	19.13±7.63	-	143.2	-0.15	-1.95- 1.65	0.868
	Two or more	103	19.28±4.46	0.166*				
Native place of mother	Rural	86	20.98±6.34	3.678	193	3.16	1.47- 4.85	<0.001
	Urban	109	17.82±5.64					

*The assumption of equality of variances was not being met; therefore Welch t-test was applied for these variables.

A total of 195 homes of children aged below 5 years were visited for the study. As shown in Table 1, most mothers (94.4%) were above 20 years of age and 55.9% of mother had native place in urban. Out of the 195 mothers, 135(69.2%) of mothers were Hindu and 60(30.8%) of were Muslim and 18.5% of mothers belonged to the upper socio-economic class (class I) of Modified Prasad's classification. Most families

(52.8%) had two or more children and two- third of families had last male child. Almost 82.6% of mothers literate and most of mothers were housewife.

Above table 3 explains mother's knowledge regarding growth and development of child. As presented in table 3, most of mothers 148(75.9%) had average knowledge followed by 26(13.3%) had good and 21(10.8%) had poor score.

Table 5: Correlations between Total knowledge score of mothers and different variables (n=195)

Variable	Pearson's correlation coefficient (r)	p-value
Total score and Age	0.364	<0.001
Total score and No. of family member	-0.404	<0.001
Total score and Per capita income	0.365	<0.001
Total score and Year of education	0.695	<0.001

Table 6: Summary statistics, correlations and results from the regression analysis

Variable	Mean	SD	Correlation with total score	Multiple regression weights	
				b	B
Total score	19.21	6.147			
Year of study	7.63	5.843	0.629***	0.433***	0.411
Caste	0.16	0.371	0.554***	4.186***	0.253
Age	25.78	3.628	0.364***	0.421***	0.248
SES	0.45	0.499	-0.229***	2.281***	0.185
Occupation	0.17	0.380	0.606***	2.905**	0.180
No. of family member	6.08	2.370	-0.404***	-0.351**	-0.135

*** p<0.001, **p<0.05 (Adjusted R2=0.598, F (6, 188) = 49.068, p<0.001), b= Unstandardized coefficient, B= Standardized coefficient

As demonstrated in table 4, the Hindu mothers were associated with mean knowledge scores of 20.22 (±6.81). By comparison, the Muslim mothers were associated with numerically smaller mean knowledge scores of 16.93 (±3.36). To test the hypothesis that the Hindu mothers were associated with statistically significantly different mean knowledge scores, an independent samples t-test was performed. The knowledge scores distributions were sufficiently normal for the purposes of conducting a t-test (i.e., skew <|2.0| and kurtosis <|9.0|).^[4] The independent samples t-test was associated with a statistically significant effect, t(190.9)=-4.509, p<0.001. Thus, the Hindu mothers were associated with a statistically significantly larger mean knowledge scores than the Muslim mothers.

Similarly, the mean knowledge scores were also significantly higher in mothers belonging to general caste, literate mothers, employed mothers and rural native place mothers than others caste mothers, illiterate mother, unemployed mother and urban

native place mothers respectively. Also, the independent sample t-test of mother knowledge scores did not have a statistically significant difference with respect to no. of child and gender of child.

Above table 5 depicted regarding correlations between total knowledge score of mothers and different variables. From the correlations table, it can be seen that the correlation coefficient (r) between total knowledge score and year of education was 0.695, indicating a moderate relationship and p < 0.001 indicates that the coefficient is significantly different from 0.

Regarding other variables like age, no. of family member and per capita income correlation with total score was found low relationship and p < 0.001 indicated that the coefficient is significantly different from 0.

Correlation and multiple regression analyses were conducted to examine the relationship between

mother knowledge score and various potential predictors. Table 6 summarizes the descriptive statistics and analyses different variables for their correlation. Each of the variables was positively and significantly correlated with the total score, indicating that those with higher scores on these variables tend to have higher mother knowledge score. Socio Economic Status and no. of family members were negatively correlated with mother knowledge score.

The multiple regression model with all six predictors produced adjusted $R^2 = 0.598$, $F(6, 188) = 49.07$, $p < 0.001$. As observed in Table 6, the year of study, caste, age, socio economic status and occupation had significant positive regression weights, indicating mothers with higher scores on these variables were expected to have higher knowledge total score, after controlling for the other variables in the model. The no. of family members has a significant negative weight, indicating that those mothers with higher no. of family members were expected to have lower knowledge score (a suppressor effect).

Working model to predict mothers Knowledge score and it apply to the next mother

Knowledge score = $4.966 + 0.433$ (year of study) + 4.186 (caste) + 0.421 (age in years) + 2.281 (SES) + 2.905 (occupation) - 0.351 (no. of family members).

Discussion:

Milestone developmental knowledge among mothers is having its own importance in nurturing child, helps in early identification of developmental delay and could be in turn early addressed upon. This research supports other studies conducted on mothers on the finding that majority have inadequate knowledge about child development.^[6-10] The present study postulated that mothers had more developmental knowledge in area of physical development than other area. This fact was supported by other researchers.^[11,12]

The current study found that the Hindu mothers were associated with mean knowledge scores of 20.22 ± 6.81 which higher than the Muslim mothers and unpaired t-test between these was statistically

significant ($p < 0.001$). General caste mothers were higher mean knowledge score and statistically significant than others caste mothers. Cross-cultural studies and research on minority and immigrant populations in Western countries have shown that mothers from different cultures have different patterns of knowledge of child development.^[13-16]

This study observed that educated mother were associated with mean knowledge scores of 19.74 ± 6.24 which higher than illiterate mothers and unpaired t-test between these was statistically significant ($p < 0.001$). Similar positive association between good developmental knowledge and status of mother education found in study conducted by Dabar et al., Kumar et al., Chaudhri et al. and Ertem et al.^[17-21] In contrast to this finding study conducted by Rehman et al. and Puhan et al., no association found between developmental knowledge and status of mother education.^[7,8] The probable reason for this discrepancy can be the different scales and different populations used in studies.

This study found that, employed mothers were associated with higher mean knowledge scores (27.29 ± 6.96) than unemployed mothers and unpaired t-test between these was statistically significant ($p < 0.001$). Similar finding noticed in study conducted by Dabar et al., Rebekkal et al. and Kerrie proulx.^[17,22,23]

This study found that, child's gender was not significantly correlated with mother's knowledge regarding developmental milestone. This suggests that mothers of girls focused on developmental milestone in a similar number of as mothers of boys. Similar finding noticed in study conducted by Harold alderman and Kerrie proulx.^[22,24]

The current study found that, number of child was not significantly correlated with mother's knowledge regarding developmental milestone. This suggests that mothers have one child focused on developmental milestone in a similar number of as mothers have more than one child. In contrast to this finding study conducted by Ertem et al. and Safadi et al. found that mothers who have less number of child had associated with higher developmental

knowledge score.^[11,20] The probable reason for this discrepancy can be the different populations (two cities of turkey) used in studies and the choice for fewer children may be related to increased modernization and also to the desire of the mother to give more time to her children and influence their development.

This study found that, rural native place mothers were associated with higher mean knowledge scores (20.98±6.34) than urban native place mothers and unpaired t-test between these was statistically significant (p<0.001). In contrast to this finding study conducted by Ertem et al., and Anwar Alkhazrajy & Rifaat Salah Aldeen, no association found between developmental knowledge and place of mothers.^[20,21] The probable reason for this discrepancy can be the in rural area joint family is our cultural practice and elder people in the family taken care of the mother and new arrival. They were well experienced and had knowledge of the growth and development of infant. They used to teach and support the mother regarding child rearing practice.

Based on the findings of the Pearson's correlation coefficient analyses, mothers had high per capita income associated with high developmental knowledge score. Similar finding noticed in study conducted by Kolobe and Dabar et al.^[17,25]

The finding of correlation indicated that knowledge score of mothers regarding developmental milestone had positively associated with age of mothers. Similar finding noticed in study conducted by Anwar Alkhazrajy & Rifaat Salah Aldeen, Kolobe THA and Ertem et al.^[20,21,25] In contrast to this finding study conducted by Rehman et al., Safadi et al. and Puhan et al. found that no association between mother's age and developmental knowledge score.^[7,8,11]

The current study found that maximum 148 (75.9%) mothers had average knowledge regarding child developmental milestone which confides with results of study conducted by Deepika David et al. and Meshram et al. reported to be 79% and 71.67%.^[12,26]

Conclusion:

We conclude from the study that the most of mothers were average knowledge about development milestones and knowledge regarding motor development higher than cognitive milestone. Age of mother, religion, caste, level of education, employment status, socio economical status and native place of mother were associated with good knowledge score of mothers regarding child development. It is a good opportunity to address gaps of knowledge of mother regarding child development milestones by reemphasizing focus under RBSK (Rashtriya Bal Swasthya Karyakram) program.

Declaration:

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Conflict of Interest: Nil

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A Study to Find the Impact of Communication Skills Intervention in 2nd year MBBS students at One of the Medical Colleges of Ahmedabad

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Abstract:

Introduction: Communication is a fundamental prerequisite of medical profession and bedside clinical skills. It is crucial in ensuring professional success for doctors in the long run. When clinical posting of 2nd MBBS students begin, it's the optimal time they learn/refresh basic principles of communication skills.

Objectives: To find out baseline knowledge about communication skills, to impart session of communication skills, to find out effect of session. **Method:** Project was conducted as part of Problem Solving for Better Health (PSBH) activity. After due permissions, session was pre-planned and arranged with the help of faculty. A validated questionnaire was given to 159 2nd MBBS students as pre-test. Communication skill related education was given through interactive lecture using ppt, roleplay and short films. Same questionnaire was given for post-test. Overall and gender-wise analysis was done separately for knowledge, attitude and total scores. Participants' previous experience and perspectives on subject was also analysed. **Results:** There is significant gain in total score (Pre=10.173; Post=21.336) ($z=3.93$; $p<0.05$), knowledge score (Pre=1.289; Post=5.216) ($z=18.63$; $p<0.05$) and attitude score (Pre=8.884; Post=16.119) ($z=16.2$; $p<0.05$). There is no significant difference between students who have attended (13.2%) such lectures/workshops/seminars and who have not. ($z=1.30$; $p>0.05$) Significant difference was found between students who thought that such activity should be in curriculum (81.1%) and those who thought otherwise in pre-test. ($z=3.99$; $p<0.05$) **Conclusion:** There is significant gain in knowledge and attitude as seen in post-intervention scores among the students. A series of interactive sessions rather than a didactic lecture, followed by experiential learning will help students gain this skill. Due emphasis in formative and summative exams is suggested.

Key Words: Communication Skills, Doctor-Patient Communication, Medical Students

Introduction:

Effective doctor-patient communication is the foundation of therapeutic doctor-patient relationship, which is the soul of medicine and important part of high-quality health care. Patient dissatisfaction and many complaints are due to doctor-patient miscommunication. However, many doctors tend to overestimate their capability in communication.^[1]

A doctor's communication and interpersonal skills encompass the ability to gather information to facilitate accurate diagnosis, counsel appropriately, give therapeutic instructions, and establish caring

relationships with patients.^[2-4] These are the core clinical skills in the practice of medicine, with the goal of achieving the best outcome of treatment and patient satisfaction.^[5,6]

Studies on doctor-patient communication have demonstrated patient dissatisfaction even when many doctors considered the communication satisfactory or even excellent.^[7] "Tongue et al"^[8] reported that 75% of the orthopaedic surgeons surveyed believed that they communicated satisfactorily with their patients, but only 21% of the patients reported satisfactory communication with their doctors. Patient surveys have consistently

shown that they want better communication with their doctors.^[2]

In 2nd year MBBS medical students initiate their clinical posting. So, with clinical posting they should acquire communication skills. This intervention imparts the basic knowledge of communication skills to the 2nd year MBBS students and evaluates impact of the session.

Method:

After getting permission from relevant departments, we conducted this study on all the present students of 2nd MBBS of NHL Medical College, Ahmedabad City, Gujarat. This was an educational interventional study. Sample size for the study was 159 2nd MBBS students, in which all the present students and who gave verbal consent to participate were included and absent students were excluded.

The project was conducted as part of PSBH activity from March 2018 to June 2018. We approached ethical committee, department head and dean of the college for the permissions. Then the session was pre-planned during college hours. We formed a validated questionnaire with the help of faculty members of department. The questionnaire was divided in 2 parts knowledge related questions and attitude related questions. Knowledge related questions were about components of communications, barriers to good communication skills and benefits of good communication skills to doctor & to patients and attitude related questions were about empathy, formal doctor-patient interview

and breaking bad news.

After taking the verbal consent of present 2nd MBBS students, the questionnaire was given to 159 students as pre-test. Communication skill related education was given through interactive lecture using power-point presentation, dramatic representation by roleplay and short films. Same questionnaire was given for post-test.

Overall and gender-wise analysis was done separately for knowledge, attitude and total scores with the help of IBM SPSS 20, MS Word and MS Excel software. Score pattern for pre-test and post-test was same. The questionnaire had objective type of questions and they were scored individually. Participants' previous experience and perspectives on subject was also analysed.

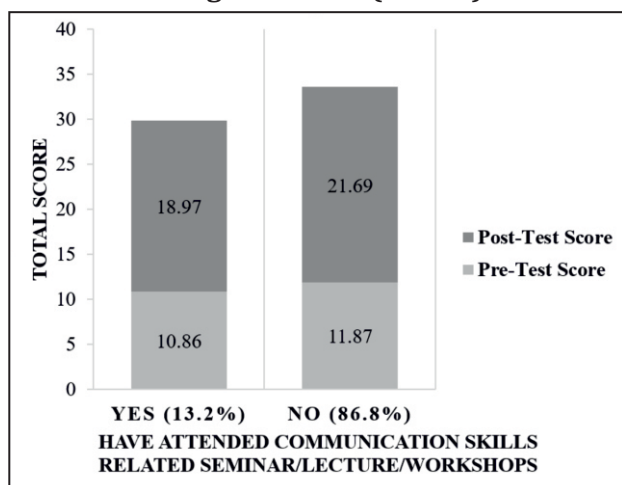
Results:

There were total 83(52.2%) male and 76(47.8%) female participants. After data analysis we came to know that 21(13.2%) students have attended this type of seminar/lectures /workshops on communication skills. Mean pre-test score of these students was 10.86 as compare to remaining 138(86.8%) students whose mean pre-test score was 11.87. But there was no significant difference between them, where $z=1.30$; $p>0.05$. In the post-test these 21 students scored 18.97(mean) and remaining students scored 21.69(mean). Again, the difference was not significant. Analysis is shown in Figure 1.

Table 1: Comparison between Pre-test and Post-test Scores (N=159)

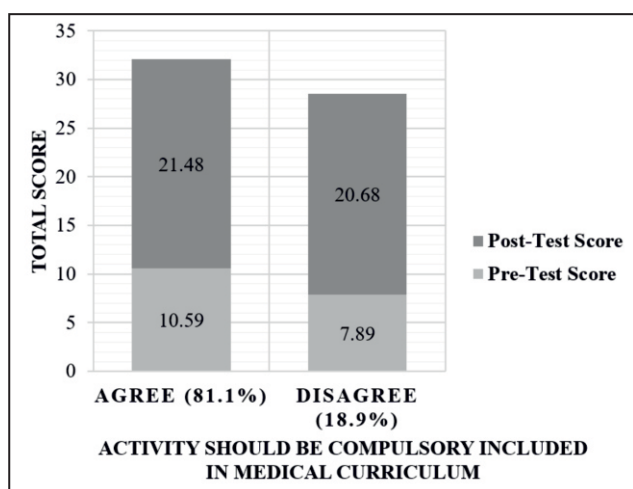
Scores	Pre-test				Post-test			
	Mean	Min.	Max.	Standard Deviation	Mean	Min.	Max.	Standard Deviation
Total Score	10.173	0	19	3.64	21.336	5	32	5.67
Knowledge Score	1.289	0	4	1.10	5.216	0	11	2.42
Attitude Score	8.884	0	19	3.32	16.119	5	24	4.55

Figure 1: Knowledge of communication skills amongst students (N=159)



Number of students who thought that such activity should be included in medical curriculum was 129(81.1%) and they scored 10.59(mean) in pre-test while remaining 30(18.9%) students scored 7.89(mean) in pre-test. There is significant difference between them in the pre-test, where $z=3.99$; $p<0.05$. In the post-test these 129 students scored 21.48(mean) and other students scored 20.68(mean). Again, the difference was not significant. Analysis is shown in figure 2.

Figure 2 : Comparison of Pre-test and Post-test scores between the participants who thought activity should be compulsory included in medical curriculum and who disagreed (N=159)

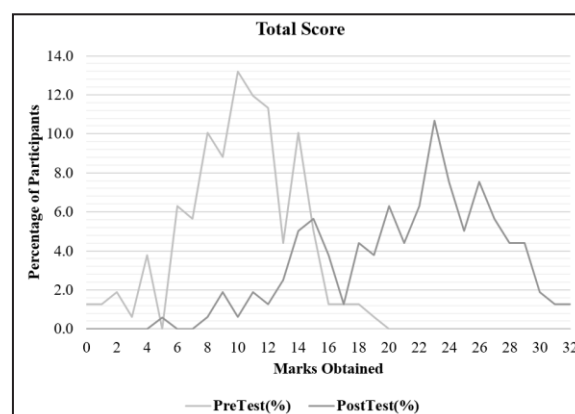


On asking about their previous experience with treating doctor; out of 159 students, 34(21.4%) students have shared that they have experienced some kind of miscommunication either as a patient or a relative to a patient.

The questionnaire included knowledge-based questions and attitude-based questions. Analysis was carried out separately for knowledge score, attitude score and total score. Overall comparison between pre-test and post-test is given in Table 1. The gain in the post-test scores compared to pre-test scores were 2.09(Total score), 4.05(Knowledge score) and 1.81(Attitude score) times respectively. The difference between pre-test and post-test for total score was statistically significant, where $z=3.93$; $p<0.05$. For knowledge score it is statistically significant, where $z=18.63$; $p<0.05$ and for attitude score it is also statistically significance, where $z=16.2$; $p<0.05$.

The total score of pre-test and post-test is also shown diagrammatically in the figure 3 as a line diagram. Here we can see right shift which means there is significant improvement in the total score.

Figure 3: Comparison Between Pre-test and Post-test total Scores (N = 159)



Gender-wise comparison of total score is given in Table 2. For males the gain was 2.14 and for females the gain was 2.09. Here the difference between pre-test and post-test for male participants is statistically significant, where $z=7.91$; $p<0.05$. For female participants it is also statistically significant, where

Table 2: Gender wise Score Distribution (N=159)

Scores	Gender	Pre-test				Post-test			
		Mean	Min.	Max.	Standard Deviation	Mean	Min.	Max.	Standard Deviation
Total Score	Male	9.28	0	17	3.51	19.92	5	29	5.87
	Female	10.94	2	19	3.60	22.87	13	32	5.05
Knowledge Score	Male	0.98	0	3	0.99	4.89	0	11	2.53
	Female	1.61	0	4	1.12	5.57	0	11	2.27
Attitude Score	Male	8.3	0	17	3.23	15.04	5	23	4.78
	Female	9.32	1	19	3.36	17.3	9	24	4.00

$z=24.22$; $p<0.05$. But there was no significant difference between male and female participant in either pre-test or post-test.

While comparing knowledge score for males the gain was 4.99 and for females the gain was 3.46, which can be observed in Table 2. Here the difference between pre-test and post-test for male participants is statistically significant, where $z=18.15$; $p<0.05$. For female participants it is also statistically significant, where $z=19.73$; $p<0.05$. But there was no significant difference between male and female participant in either pre-test or post-test.

Gender-wise comparison of Attitude Score is given in Table 2. For males the gain was 1.81 and for females the gain was 1.85. Here the difference between pre-test and post-test for male participants is statistically significant, where $z=14.73$; $p<0.05$. For female participants it is also statistically significant, where $z=19.26$; $p<0.05$. But there was no significant difference between male and female participant in either pre-test or post-test.

Discussion:

Good communication skills are an asset in medical practice. Effective communication wins the confidence and compliance of patients and helps build a healthy doctor-patient relationship. These

essential soft skills can be learned during the formative years and practised to perfection over the years. We tried to establish these points by the above project. Students develop communication skills by observing their seniors, teachers and mentors and then practice.^[9]

Substantially less attention in the literature is paid to the development of oral communication skills, whether rehearsed or spontaneous. To our knowledge, very few studies have been conducted on medical students' oral communication skills development and mentoring. Yet, a sizeable literature exists on public speaking anxiety in secondary education and its negative effects on morale, performance, and achievement.^[10-18]

In the questionnaire we asked few questions to assess whether students have attended such lectures / workshops / seminars and their thoughts on importance of communication skills. But there was negligible difference between the students who have attended previously and who haven't. In the pre-test students who thought that such activity should be compulsory included in medical curriculum have scored higher than the students who thought otherwise. So, we can see that there is variance in the score between two contradictory mindsets.

When we asked whether they have experienced miscommunication with doctor as a patient, 34(21.4%) students have answered 'Yes', which approves that community has clinicians with poor communication skills. They should improve, and new generation of clinicians should acquire proper clinical communication skills. For that, training should begin with their medical education and it will help to decrease such incidences in future.

When knowledge score was compared between pre-test and post-test there was 4.05 times increase. For male participants there is 4.99 times increase and for female participants there is 3.46 times increase in knowledge score.

Winefeild et al.^[10] did a study on medical students and the result showed that 81% students were prepared for doctor-patient interview with empathy after the session, and we agree to that result. Because in our study when attitude score was compared between pre-test and post-test there was 1.81 times increase. For male participants there is 1.81 times increase and for female participants there is 1.85 times increase in attitude score. Wright et al., studied students' attitude toward learning these skills and compared the attitudes in first- and fourth-year students, found that that fourth-year medical students do not differ from first-year medical students in terms of attitudes toward communication skills training, but they have significantly higher confidence scores about communicating with patients.^[19]

When total score was compared between pre-test and post-test there was 2.09 times increase. For male participants there is 2.14 times increase and for female participants there is 2.09 times increase in total score. Based on our result we can say that imparting lecture about communication skills can help students learn them and apply them in their clinical postings for history taking of general examination.

Conclusion:

There is no significant difference between students who have attended such lectures /

workshops / seminars previously and who have not. There is significant difference between students who thought that such activity should be compulsory included in medical curriculum and who thought otherwise in the pre-test.

When we compare overall results of pre-test and post-test there is significant increase in total score, knowledge score and attitude score.

Gender-wise total score, knowledge score and attitude score is also increased.

So, after the lecture there is marked increase in the communication skills related knowledge and attitude of 2nd MBBS students of NHL Municipal Medical College.

Recommendations:

For improvement of communication skills there should be interactive activities between students-patients as a part of medical education. If there are any activities already part of medical curriculum they should be made compulsory. Periodic students-expert doctor interaction and seminars, workshops or lectures on communications skills should be arranged. A series of interactive sessions rather than a didactic lecture, followed by experiential learning will help students gain this skill. Due emphasis in formative and summative exams is also suggested.

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Declaration:

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Evaluation of National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular disease and Stroke (NPCDCS) in Gandhinagar district, Gujarat

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Abstract:

Introduction: Program Monitoring and Evaluation (M & E) are important components of any program and are critical to sound strategic planning. NCDs are the leading causes of Morbidity and mortality. This research was aimed as evaluation of NPCDCS in Gandhinagar district. **Method:** Data were collected in form of reports and records from all centers (NCD cell, NCD cell clinic, CHC clinics) under NPCDCS in Gandhinagar district. Secondary data analysis was conducted for the financial year of 2015-2016. **Results:** At district level NCD cell, all the sanctioned post were filled. However, overall in the district 60.7% posts were vacant. Infrastructure at all levels of NPCDCS were adequately present. In financial year of 2015-16, total of 257 screening camps were organized. Total of 90399 people were screened during the camps and in OPD. Prevalence of diabetes and hypertension in Gandhinagar district in year 2015-16 were 9.9% and 9.1% respectively as per NPCDCS programme. Compliance among hypertensive patients was 72% and among diabetic was 70%. **Conclusion:** Human resources are adequately available at district level, but they are grossly lacking at sub-district level, which is the reason for poor outreach activities and OPD activities at sub-district level. NPCDCS program must ensure that benefit to the diagnosed patients should be available close to their home and also to ensure minimum drop out of put on treatment.

Key Words : Evaluation, NCD, NPCDCS

Introduction:

Non-Communicable Diseases (NCDs) are the leading causes of morbidity and mortality being responsible for 63% deaths globally.^[1] As per the World Health Organization (WHO) report, NCDs are surpassing communicable diseases as the most common causes of morbidity and premature mortality in India, both in urban and rural population, with considerable loss in potentiality productive years (age 35-64) of life.^[2] The prevention of chronic disease in populations is a complex challenge that requires efforts from multiple stakeholders to reduce the biological & behaviour risk factors for NCDs.^[3] Keeping in view, The Ministry of Health and Family Welfare (MOHFW), Government of India, launched the National Programme for Prevention and Control of

Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS) in 2010-11 with the objectives to prevent and control common NCDs through behaviour and lifestyle changes, and to provide early diagnosis and management of common NCDs.^[4] However, little information is available about effectiveness of NPCDCS program at different levels. More valuable overarching program information can be obtained by evaluating the implementation of each program - what activities occur, under which conditions, by whom, and with what level of effort.^[5,6] This information can assist with future efforts, having better articulated the condition that needs to be created to achieve successful outcomes from the program implementation.^[5] Success of any programme depends upon the monitoring and

evaluation of that programme at various levels. At higher levels of health system (National, State) information on outcome and impact of programme is most important, while at lower levels (District, Block) the input, process and outcome indicators along with the data elements are required.^[4] As effective implementation of all NCD prevention activities at the district level and below is the key to success for any programme.^[7] The objective of this research was to evaluate the NPCDCS programme at district level.

Method:

Study area: Gandhinagar district, Gujarat state, India

Study design: Analysis of secondary data generated by NPCDCS, Gandhinagar district.

Study period: April 2015 to March 2016

Study population: All the people enrolled under NPCDCS programme during financial year 2015-16 under the NPCDCS in Gandhinagar district.

Sources of data: Records, reports and registers from the in charge officer and staff of the NPCDCS centres.

Data collection: After getting administrative permission from programme in-charge of Gandhinagar district and ethical approval from institutional ethical committee, data collection were done. Organizational structure, Infrastructure (including human resources) of National programme for Prevention and Control of Cancer, Diabetes, Cardiovascular disease and Stroke from all four NPCDCS centers of the Gandhinagar district had been collected. De-identified data of all patients enrolled under the NPCDCS program during the financial year 2015-16 of all the NPCDCS centers of Gandhinagar

Table 1: Human resources under NPCDCS program in Gandhinagar district (2015-16)

	Post	Sectioned	Filled N (%)
District NCD Cell	Program Officer	1	1 (100)
	Programme Coordinator	1	1(100)
	Finance Cum Logistic Consultant	1	1(100)
	Data Entry Operator	1	1(100)
	Total	4	4 (100)
District NCD Cell Clinic	Medical Officer	1	0 (0.0)
	Nurse	2	0 (0.0)
	Laboratory Technician	1	0 (0.0)
	Physiotherapist	1	0 (0.0)
	Counsellor	1	1 (100)
	Data Entry Operator	1	1(100)
	Total	7	2 (28.57)
Cancer Care Unit (CCU)	Medical Officer	1	1 (100)
	Nurse	4	0 (0.0)
CHC NCD Clinic	Medical Officer	8	4 (50)
	Nurse	8	3 (37.5)
	Laboratory Technician	8	0 (0.0)
	Counsellor	8	3 (37.5)
	Data Entry Operator	8	5 (62.5)
	Total	45	16 (35.55)
	Total	56	22 (39.29)

Table 2: Outreach activities done under NPSDCS, Gandhinagar (2015-16)

Activities	Male	Female	Total
Total screening during camps	27417	29106	56523
Total positive for diabetes among screened	1186 (4.32%)	1116 (3.8%)	2302 (4.07%)
Total positive for hypertension among screened	961 (3.51%)	924 (3.17%)	1885 (3.33%)

Table 3: Proportion of Diabetes and Hypertension as per NPCDCS (2015-16)

	Male	Female	Total
Diabetes	4827 (11.72%)	4144 (8.42%)	8971(9.9%)
Currently on treatment	3452 (71.51%)	2833 (68.36%)	6285 (70.05%)
Hypertension	4363 (10.60%)	3911 (7.94%)	8274 (9.1%)
Currently on treatment	3124 (71.60%)	2847 (72.79%)	5971 (72.16%)
Cardiovascular disease treated at CCU	608	272	880
Total examined (in camps, OPD)	41165	49234	90390

Figure 1: Trend of Diabetes during year 2015-16

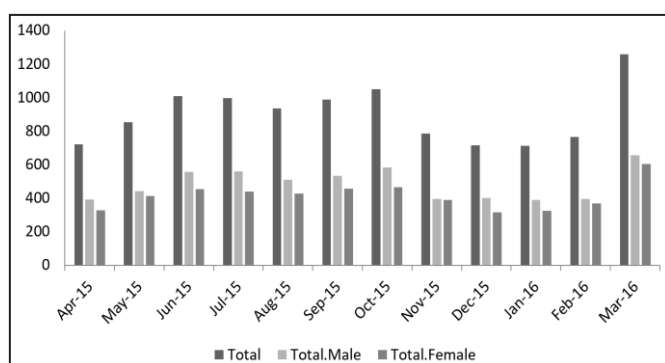
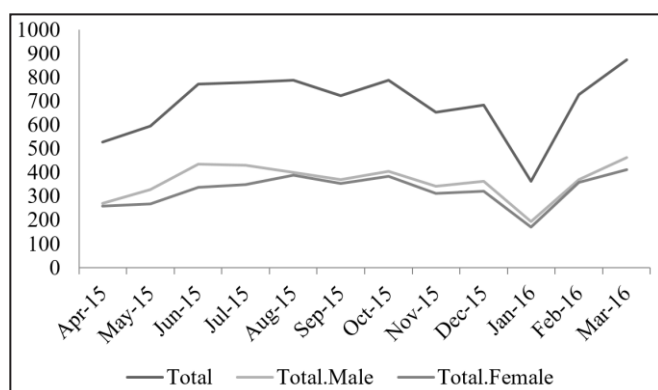


Figure 2: Trend of Hypertension during year 2015-16



were also collected. All collected data were entered in to Microsoft Excel 2013. Double Data Entry and Data cleaning was done before analysis for quality control.

Statistical methods: Data were analyzed using Microsoft Excel & the Epi Info software. Percentages were calculated to find prevalence of diabetes and

hypertension. Line charts were prepared to show time trend for the diabetes and hypertension in the program.

Results:

Table no 1 shows comparison of sanction post against filled post at the all levels under NPCDCS program in Gandhinagar district. Out of 56 post, 22 posts were filled and 34 posts were vacant (60.71%). At district level NCD cell, all the sectioned post were filled. At District NCD Cell clinic, post of Medical Officer (MO), Nurse, Laboratory Technician (LT) and Physiotherapist were vacant. At cancer care unit, post of all 4 nurses are vacant. At sub-district (CHC) level, half of the MO (4 out of 8) and all LT (8 out of 8) posts were vacant. So at administrate level (NCD cell), all posts are filled while at the program implementation level (NCD cell clinic, CHC NCD clinics), there was deficiency of staff where the actual need of the manpower.

Structure and Infrastructure under NPCDCS at Gandhinagar (2015-16):

There was one NCD cell for the management of all the NCD centers of Gandhinagar district. Out Patient Department (OPD) was well functioned in the main OPD department of the Civil hospital Gandhinagar. Also, adequate numbers of the beds are available for the indoor patients at tertiary care level (district) in

the civil hospital, Gandhinagar and at all Community Health Centre (CHC). Cardiac care unit (CCU) with 6-8 beds and equipped with ventilator and other necessary CCU equipment was available. Laboratory diagnostic facilities for the routine test such as lipid profile, complete blood count (CBC), random blood sugar (RBS) etc. were available. Facilities for special procedures like ECG, ECHO, CT-scan were available. Standard list of equipment, medicine, diagnostic kits and other consumables as per Indian Public Health Standards (2012) were available^[8].

Activities done under NPCDCS at Gandhinagar (2015-16)

Organization of screening camps:-

A total of 257 camps were organized during the financial year of 2015-16 under NPCDCS in Gandhinagar district. Diabetes and hypertension are two major diseases which were screened. Total 56523 patients were screen in all camps out of which 4.07% were positive for diabetes and 3.33% were positive for hypertension. All screening positive patients either for diabetes and/or hypertension were referred to NCD cell clinic/CHC clinic for the confirmation of the diagnosis. Details of camps were given in table 2.

(Table 3) In present study, prevalence of diabetes was 9.9% and hypertension were 9.9% and 9.1% respectively. Prevalence in male was more in both Diabetes and Hypertension as compared to females. Trends of diabetes and Hypertension in year 2015-16 were given in figures 1 and 2.

Treatment Adherence:

Around 28% of diagnosed hypertensive and 30% of diagnosed diabetic patients were not on treatment in present study. Treatment adherence between new cases and old cases of diabetes is not statistically significant in either male or females while it is statistically significant in case of hypertension (Table-4).

Table 4: Treatment adherence under NPCDCS at Gandhinagar (2015-16)

	On treatment	Without treatment	p-value
Total diagnosed diabetes			
New cases	885	373	0.83
Old cases	5400	2313	
Male diagnosed diabetes			
New cases	490	181	0.37
Old cases	2962	1194	
Female diagnosed diabetes			
New cases	395	192	0.58
Old cases	2438	1119	
Total diagnosed diabetic			
Male	3452	1375	0.001*
Female	2833	1311	
Total diagnosed hypertension			
New cases	1074	291	<0.001*
Old cases	4897	2012	
Male diagnosed hypertension			
New cases	543	160	0.0003*
Old cases	2581	1079	
Female diagnosed hypertension			
New cases	531	131	<0.001*
Old cases	2316	933	

(*statistically significant)

Discussion:

The objective of this research was to evaluate the NPCDCS programme at district level. There are many strategies to find out the prevalence of diabetes mellitus, hypertension and cardiovascular diseases (NCDs) in a population. These include surveys, national and central registries, school and hospital record based data in various age groups. This study has used NCD cell data records based data for assessing the prevalence of hypertension, diabetes, cardiovascular diseases in a population. A study done in Karnataka by Rao CR et al^[9] found in his study that Compliance to hypertension treatment was found to be 82.2%, while 83.6% of individuals with type 2 diabetes mellitus were on regular medication. While Lasker A et al^[10] from Delhi showed that the compliance in hypertension was very much lower 47.8% than the present study. In his study compliance

for hypertension in males and females were 45.8% and 48.8% respectively. Adherence for diabetic medication was 91.5% which is higher than the present study. This may be due to sampling variability. One of the reasons for the non-compliance for the chronic diseases may be lack of awareness about importance of anti-diabetic treatment and anti-hypertensive treatment. In early stage of diabetes and hypertension, patient is relatively asymptomatic so patients are reluctant to take daily medicine or the patients may have gone to private hospitals. Although Noncommunicable diseases are controlled with lifestyle modifications but still there is need of monitoring of treatment adherence in case of non-communicable diseases like diabetes and hypertension as patient has to take treatment lifelong. Policy makers should give emphasis in developing a surveillance system in NCD monitoring as developed in TB (DOTS and 99 DOTS). In this Information technology era, it can be possible digital monitoring of the treatment adherence in any public health important diseases.

Limitation of Study:

This study collected data from NPCDCS program that is running the program either through OPD of CHC/district hospital or through camps in outreach areas. The data is not representative of actual population parameters as most of the data is only from Government set up and hospital based. So, the findings of the study (including prevalence) are not generalizable to the population level. However, longitudinal data of such time may give trend of disease burden in population, which may be useful for the policy makers.

Conclusion:

The infrastructure and supplies of medicine were adequate at both district and sub district level under the NPCDCS program. Many hidden cases were detected due to NPCDCS program in early stages due to OPD and Camps organized regularly throughout the districts. This will lead to reduce burden on health system in long run, as complications can be substantially reduced by early detection and regular

treatment of these cases. Human resources are adequately available at district level, but they are grossly lacking at sub-district level, which is the reason for poor outreach activities and OPD activities at sub-district level. It is necessary to fill all required posts of NPCDCS as per the norms to ensure better implementation of the program. This study found that many around 28% of diagnosed hypertensive and 30% of diagnosed diabetic patients were not put on treatment. This may be due to lack of awareness or due to lack of facility close to home. NPCDCS program must ensure that benefit to the diagnosed patients should be available close to their home and also to ensure minimum drop out of put on treatment. There is also need to design strong monitoring and evaluation tool like TB and AIDS control program under NPCDCS to check the adherence to the drugs as chronic diseases like diabetes and hypertension requires lifelong treatment. Also, present program is not able to detect cancer cases as desired. The program need to add focus on early detection of oral cancer among males and breast and cervix cancer among females through awareness campaigns and diagnostic camps along with diabetes and hypertension screening camps and also among OPD patients. There is huge scope of improvement in this component of NPCDCS program.

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Declaration:

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Conflict of Interest: Nil

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A Cross Sectional Study on Impact of Anti Tuberculosis Treatment in Tuberculosis (TB) Human Immunodeficiency Virus (HIV) Co-Infection

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Abstract:

Introduction: TB is the most common opportunistic infection in HIV positive people. HIV-TB co-infection is a fatal combination with higher death rates in developing countries. In cured TB cases in HIV positive people, chances of recurrent also high. ART prevents the progression of HIV, reduces the chances of another opportunistic infection that could make management of care more complicated, and reduces the chances of TB recurring. **Objectives:** To document the profile of HIV positive TB patients availing both Anti-Retroviral (ART) and Anti Koch's Treatment (AKT) at a tertiary care hospital. **Method:** A retrospective descriptive study was conducted using available records of 198 HIV positive TB patients enrolled at an ART Centre of South Gujarat from November 2016 to November 2017. Age at enrollment at ART Centre, sex, native place, ART status, CD4 count were recorded along with detection, category, previous history and treatment of TB. Test of significance (t test) was applied to analyze the difference between CD4 count before and after treatment with AKT. **Results:** Mean age of male (n=123) and female (n=75) patients at the time of HIV detection was mean 37.62 (SD±11.61) years and mean 34.05 (SD±8.85) years respectively. Majority (86.87 %) were migrants from states other than Gujarat, of which 31.31% were from Maharashtra. Among them, 66% patients were on CAT-I AKT and 10.6% had previous history of TB. Among 56.1% patients who had extra-pulmonary TB, common were abdominal TB (47.75%), lymphadenopathy (18.02%) and pleural effusion (16.22%). While 32% of patients had completed their AKT regimen, 68% were on AKT. Among those were missed out (8.6%) and lost to follow up (3.5%) from ART, almost half (41.67%) had been initiated under CAT-II AKT. Mean CD4 count for 84 patients who completed their AKT was increase, this was statistically significant (p=0.001). **Conclusion:** Majority of patients were migrants and extra pulmonary TB was more common in this study group. Mean CD4 count increased significantly after completion of AKT. Prompt treatment and preventing loss to follow up are key to successful treatment completion and cure.

Key Words: HIV positive TB patients, AKT, CD4 count

Introduction:

Worldwide, among people living with HIV most common opportunistic infection is TB. Despite being a preventable and treatable disease, it is also the most common cause of death in HIV-positive adults living in developing countries.^[1] Annually, about 1,10,000 people in India are estimated to be HIV-TB

co-infected, with the national average for HIV prevalence among incident TB cases at 5%.^[2] It is recognized that HIV and TB count for a fatal combination with extremely high death rates (15–18%) reported among HIV infected TB cases notified under the Revised National Tuberculosis Control Program (RNTCP). Further, even among cured TB cases with HIV infection, the risk of

recurrent TB is quite high. TB is estimated to cause about 25% of all deaths among People Living with HIV (PLHIV) in India. The National Framework for Joint HIV/TB Collaborative Activities articulates the national policy for collaboration between NACP and RNTCP for HIV-TB activities to ensure reduction of the HIV-TB burden in India.^[3]

HIV-associated immune dysfunction increases the risk of TB disease, is associated with worse TB treatment outcomes, and increases the risk of TB relapse after initial cure.^[4,5] Antiretroviral therapy (ART)-mediated immunological recovery is associated with decreased risk of TB, and sequential ART after initiation of TB treatment has been shown to improve outcomes.^[4-10]

People living with HIV who have a low CD4 count are at a much higher risk of falling ill from TB infection than HIV negative people. In fact, the risk of developing active TB is estimated to be 26 and 31 times greater in people living with HIV than in those who are HIV-negative.^[11]

ART also prevents the progression of HIV, reduces the chances of other opportunistic infections that could make clinical management more complicated, and reduces the chances of TB recurring. However, treating both conditions at the same time can be challenging because of side-effects, pill burden, and drug interactions.

Objectives:

To document the profile of HIV positive TB patients availing both Anti Retroviral Therapy (ART) and Anti Koch’s Treatment (AKT) at a tertiary care hospital.

Method:

A retrospective descriptive study was conducted at ART centre, New Civil Hospital, Surat in Gujarat in November 2017. All HIV-TB (198) co-infected patients who were registered between November 2016 and November 2017 at ART center were enrolled in the study.

Study Variables: Information about age at enrollment for ART, native place, sex, on ART status,

previous history of TB, type and site of TB and status of AKT were collected from the records available at ART centre. CD4 counts of those patients who had completed the treatment (AKT) in this period at the time of starting and after completion of AKT were also obtained.

Data was entered in MS Excel and analyzed using SPSS. Mean for quantitative variables and frequency for qualitative variables were calculated. Paired t-test was applied to find difference of CD4 count at initiation and completion of AKT.

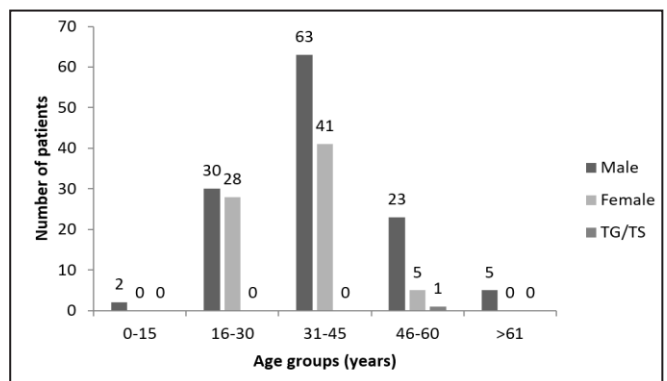
Confidentiality of the participants: This was a retrospective descriptive study using programmatic data. Personal identifiers were not collected.

Ethical Issues: No bio marker will be collected from study participants. Study is approved by Human Research Ethics Committee, Government Medical College Surat and Gujarat State AIDS Control Society.

Results:

Mean age of Male (n=123) and Female (n=75) patients at the time of HIV detection was 37.62±11.61 years and 34.05±8.85 years respectively. (range: 3 years to 70 years). Figure 1 shows that majority belongs to 31-45 years age groups.

Figure 1 : Age- Sex distribution of HIV positive TB patients (n=198)



Majority (86.87%) of them were migrants from states other than Gujarat, namely Maharashtra (31.31%), Uttar Pradesh (18.69%), Bihar (9.6%), Rajasthan (5.05%) and the rest from other states (Madhya Pradesh, Andhra Pradesh, Jharkhand, Odisha, Nepal, West Bengal and Tamil Nadu).

Table 1: Current ART status of PLHIV initiated on AKT in the study period

ART Status	Intensive phase of AKT n= 71 (%)	Continuation Phase of AKT n=63 (%)	Completed AKT Treatment n= 64 (%)
On ART	25 (35.2)	48 (76.2)	53 (82.8)
Transferred out	17 (23.9)	1 (1.6)	3 (4.7)
Missed out	7 (9.9)	4 (6.3)	6 (9.4)
Loss to follow up	5 (7)	2 (3.2)	0 (0)
Opted out	0 (0)	2 (3.2)	0 (0)
Died during the study period	17 (23.9)	6 (9.5)	2 (3.1)

Among those patients who were Missed out/ Loss to follow up (LFU), 87.5% were from states other than Gujarat (n=21).

Table 2: Distribution of HIV positive patients according to their TB Category (n=198)

Type of TB	N (%)	Site of TB (%)
Pulmonary TB	87 (43.94)	
Extra Pulmonary TB	111 (56.06)	Abdominal TB (47.76)
		Lymphadenopathy (18.02)
		Pleural Effusion (16.22)
		TB meningitis (9)
		Spine TB (4.5)
		Milliary TB (4.5)

Table 3: Difference in CD4 count after completion of treatment (n=64)

Cd4 count (cells/cumm)	n	Range of CD4 count at the time of initiation	Mean CD4 count at the time of initiation (±SD)	Range of CD4 count at the end of treatment	Mean CD4 count at the end of treatment with AKT (±SD)	t statistic	p value
Less than 500	56	31-490	210 (±132)	35-1232	287.38 (±260)	2.35	0.02
More than 500	8	543-885	712 (±149)	207-1167	516(±296)	-2.2	0.06

All 198 patients were initiated on treatment, of which, at the time of this study, 35.9% (71) were in Intensive phase of AKT, 31.3% (63) were in Continuation phase and 64 (32.3%) had completed the treatment. Table 1 shows the ART status of the patients initiated on AKT.

Category-I AKT was started in 130 (65.66%) of patients and Category-II AKT in 68 (34.34%) patients. Almost half (41.67%) of those who were missed out and lost to follow up (n=24) were being treated under Category-II.

Table 2 shows that 56.06% had Extra Pulmonary TB and 43.94% had Pulmonary TB. In Extra Pulmonary TB patients majority were suffering from Abdominal TB (47.76%), Lymphadenopathy (18.02%), Pleural Effusion (16.22%), TB meningitis (9%), Spine TB (4.5%) and Milliary TB (4.5%).

Majority of the patients (89.4%) were suffering from first episode of TB while the rest (10.15%) were being treated for recurrent TB. Extra pulmonary TB was more in number than pulmonary TB in both new

cases of TB (n= 98) as well as recurrent cases (n=13), however this was not statistically significant ($\chi^2=0.326, p=0.646$).

Mean CD4 count of patients was 259(± 198) cells/cumm. Majority of the patients (n=179) had CD4 count less than 500 cells/cumm.

Among patients who completed treatment, mean CD4 count at the time of initiating AKT was 272(± 214) and after treatment it was 315(± 273) cells/cumm, and this rise was not statistically significant ($t=1.32, p=0.191$). Only 8 patients among them had initial CD4 count more than 500 cells/cumm.

There was a significant rise in the CD4 count in patients who initially had CD4 count less than 500 and completed treatment with AKT (Table 3). However, there was no significant difference in the CD4 count at the end of AKT in patients who had CD4 count more than 500 initially.

Discussion:

We designed a retrospective record based descriptive study to document the profile of patients receiving both ART and AKT. The study aimed at documenting the sociodemographic profile, diagnosis and treatment history of TB and difference in CD4 count before and after AKT. Among the 198 records studied, 64 had completed the treatment during the study period. Among 24 Missed Out /LFU from ART, only 6 had history of completed the treatment with AKT.

Retention in Care for ART among HIV positive TB patients: Those who were missed out and lost to follow up (n=24) from ART, almost half (41.67%) had been initiated under CAT-II AKT. Out of 198 HIV-TB patients, 10.15% were being treated for Recurrent TB. A study by Schechter et. al shows that among 91 HIV positive TB patients 75% were cured, 3% were lost to follow-up, 3% had recurrence TB infection and 19% were death.^[12]

Distribution HIV positive patients according to their TB Category: During the study period, the

National guidelines for TB (RNTCP) recommended two categories of treatment for TB. [13] However, it was revised later. In this study, about 66% patients were on CAT-I and 34% were on CAT-II AKT. Only 10.15% were being treated for recurrent TB while the rest (24%) on CAT-II treatment were either treatment after loss to follow up or treatment after failure.

A study in South India by Sara et. al shows that 50% were on CAT-I, 18.5% were on CAT-II and 31.5% were on others daily Regimens.^[14] Distribution HIV positive patients according to their TB type: Extra-pulmonary TB was more common than Pulmonary TB. Among Extra-pulmonary TB cases, 47.75% had abdominal TB most common, 18.02% had lymphadenopathy, 16.22% had pleural effusion and 9% had TB meningitis.

A study in Ethiopia by Alemie et. al shows that 51.8% participants were diagnosed with pulmonary TB. Extra-pulmonary TB were recorded in 44% patients of whom 60.8% had TB lymphadenitis, 10.6% had pleurisy, 9.3% had peritonitis, 7.1% had TB of the spine, 5.2% had cold abscess, 2.9% had Skin TB, 2.5% had TB arthritis and 1.7% had TB osteomyelitis.^[15]

Mean CD4 count of HIV-TB patients who Completed AKT at different time intervals: Among patients who completed treatment (n=64), mean CD4 count at the time of initiating AKT was 272(± 214) and after treatment it was 315(± 273) cells/cumm, and this rise was not statistically significant ($t=1.32, p=0.191$). Median CD4 at the time of starting of AKT was 210 and after completion of AKT it was 223. The rise in CD4 count was significant in patients who had CD4 count less than 500 cells/cumm initially.

A study in Sweden by Skogmaret et al shows that among 35 patients who had baseline median CD4 count of 188, after 6 months of AKT, median CD4 count increased to 417, among 19 patients who had baseline median CD4 count was 505, after 6 months of AKT median CD4 count decreased to 407 and in

rest 17 patients who had baseline median CD4 count of 243, after 6 months of AKT median CD4 count was not changed.^[16]

Conclusion:

Majority of patients were migrants from other states than Gujarat and majority of patients who were lost to follow up were also migrants. The proportion of Pulmonary and Extra-pulmonary cases are mostly equal in this study. There was a significant rise in the mean CD4 count after completion of AKT among those who had lower CD4 count initially.

Recommendation:

Adherence to treatment has been long recognized as the key to successful cure of TB and management of HIV. Tracking of those lost to follow up is crucial because of the advantage of AKT- ART drug adherence has on the CD4 count of the patient, especially among those who had low CD4 counts initially as seen in this study. Since majority of the patients were migrants and majority of those who were lost to follow up were also migrants, we recommend the optimum use of web based monitoring tool like 99DOTs. Greater involvement of networks of HIV positive patients to trace those lost to follow up will also be advantageous.

Acknowledgement:

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Declaration:

Funding: Nil

Conflict of Interest: Nil

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Completeness and Appropriateness of Integrated Management of Neonatal & Childhood Illness (IMNCI) Forms filled by the Interns of Tertiary Care Hospital in Gujarat

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Abstract:

Introduction: IMNCI is an important strategy being implemented across our country in order to improve health worker's performance and also aim to reduce infant & under-five mortality. Training of MBBS students in IMNCI is being carried out at PramukhSwami Medical College, Karamsad since more than 10 years. In present study, quality of forms filled by interns during their posting at Urban Health Training Centre is assessed in terms of completeness & appropriateness. **Objectives:** To assess & compare completeness & appropriateness of Upto 2 months IMNCI forms of interns of 2012-13 & 2013-14 batch. **Method:** This was a record based study in which analysis of filled forms of Two MBBS batches was done. Completeness criterion was based on completely filled forms & appropriateness criterion was based on criterion of completely filled correct forms. **Results:** All available 216 forms were analyzed. Completeness was found in 18.9% (n=20) & 7.3% (n=8) forms of 2012-13 & 2013-14 batch respectively. Appropriateness of forms was 17.9% (n=19) forms of 2012-13 batch & 7.3% (n=8) forms of 2013-14 batch. **Conclusion:** Completeness & appropriateness was found to be poor, however it was better in the batch who had received training in final year of MBBS.

Key Words : IMNCI; MBBS; Medical curriculum; Pre-service IMNCI

Introduction:

Integrated Management of Neonatal & Childhood Illness (IMNCI) programme was introduced in India to reduce infant mortality rate & under-five mortality. It is also proven fact that, IMNCI improves health worker's performance.^[1,2] Over last 3 decades deaths among infant & <5 years children worldwide have reduced by third but this reduction is not equal among all nations.^[3] Every year more than 10 million children die before reaching 5 years of age.^[4] Particularly in infant deaths, 64% deaths occur in first month of life and in that most during first week of life.^[4] Systematic review and meta-analysis of IMNCI related studies have shown that IMNCI can significantly reduce Infant and under-5 mortality.^[5] If doctors and other healthcare workers have received pre-service IMNCI

training and are knowledgeable in IMNCI, than it can substantially help to diagnose & treat various neonatal & childhood illness at outreach areas.

IMNCI training is provided to MBBS students at PramukhSwami Medical College since 10 years as a part of their third year MBBS curriculum. Assessment of forms of 2012-13 year batch & 2013-14 year batch was done, as 2012-13 batch received their IMNCI training in final year of MBBS, while comparison group 2013-14 batch received their training as usual in third year of MBBS. Several such studies are done in Medical officers of PHCs & other health care providers which have shown incomplete & inappropriate filling of forms by them.^[6-10] However, very few studies are done amongst MBBS students.^[3] In present study, the aim was to evaluate

knowledge about the pre-service IMNCI training amongst MBBS students.

Objectives:

1. To assess completeness & appropriateness of upto 2 months Integrated Management of Neonatal & Childhood Illness (IMNCI) form filled in the field by interns
2. To compare completeness & appropriateness of upto 2 months Integrated Management of Neonatal & Childhood Illness (IMNCI) form of 2012-13 & 2013-14 year interns

Method:

Study was carried out after obtaining permission from Institutional Ethics Committee, Head of Department of Community Medicine & Incharge of Urban Health Training Centre (UHTC). Present study is a record based study. IMNCI forms filled by interns posted in Dept. of Community Medicine were obtained from UHTC. The forms obtained were filled by Interns during their field work (visit to Health & Nutrition Day at Anganwadi or during house to house survey) at UHTC. All available (n=216) upto 2 months IMNCI forms were evaluated. Evaluation was done by the faculty & resident who had also received training for IMNCI.

Completeness criterion was whether all the applicable fields in the form were field. Appropriateness criterion was based on whether all the forms filled completely were fully correct or not & if there was a mistake (even one) it was considered as an incorrect form.

Statistical analysis: Entry of data was done in Microsoft Office Excel 2007 sheet & frequency was calculated using Statistical Programme for Social Science 16.0 version.

Results:

All of the available (n=216) upto 2 months IMNCI forms, found in record file at UHTC were studied. For further description in result section, batch of 2012-13 MBBS intern of PramukhSwami Medical College is addressed as "batch A" & 2013-14 MBBS intern batch of PramukhSwami Medical College is addressed as

"batch B". 106 forms of batch A & 110 forms of batch B were studied.

Name, Age & Weight was mentioned in all forms of both the batches. Temperature was not measured & mentioned in 16% (n=17) of forms in batch A, while same mistake was in 9.1% (n=10) forms of batch B. Inquiry about problems was not made in 11.3% (n=12) forms of batch A & 14.5% (n=16) forms of batch B. Classification of visit as initial or follow-up was missed in 8.5% (n=9) forms of batch A & in 12.7% (n=14) forms of batch B.

Possible bacterial infection and/or jaundice was not checked or some points were missed in 2.8% (n=3) forms of batch A & 8.2% (n=9) forms of batch B. Appropriate classification was done for Possible bacterial infection and/or jaundice in all forms of both batches if complain was present. Diarrhoea complain was not inquired in 7.5% (n=8) forms of batch A & 6.4% (n=7) forms of batch B. Out of 98 forms of batch A which had inquired for diarrhoea, 14 forms had complain of diarrhoea & amongst that 28.6% (n=4) forms had missed some point in examination. Similarly for batch B out of 103 forms which had inquired for diarrhoea, 13 complained for diarrhoea & in that 61.5% (n=8) forms had missed some point in examination. Point missed in batch A were: - diarrhoea since how many days not inquired (in 1 form), blood in stool not inquired (in 2 forms) & skin pinch not done (in 1 form), while in batch B: - diarrhoea since how many days not inquired (in 3 forms), blood in stool was not inquired (in 3 forms) & skin pinch not done (in 2 forms). Classification for diarrhoea was not appropriate in 35.7% (n=5) forms of batch A & 38.5% (n=5) of batch B.

Inquiry for feeding problems & malnutrition was missed in 10.4% (n=11) forms of batch A while inquiry for feeding problem & malnutrition was not done in 7.3% (n=8) forms of batch B. All problems were not assessed in 13.7% (n=13) & 17.6% (n=18) forms of batch A & B respectively. Points missed in batch A were: - difficulty in breast feeding (in 4 forms), is infant breast feed (in 1 form), how many times in 24 hours (in 1 form) & other food or drink received (in 7 forms). In batch B points missed were:

Table 1: Points missed in breast feeding assessment

Point missed in assessment	Batch A	Batch B
4 Attachment point	-----	1
Overall attachment assessment	7	1
Suckling assessment	17	10
Inquiry regarding pain while breast feeding	20	41
Attachment + suckling + pain while breast feeding	6	1
Attachment + suckling	1	-----
All points	12	13
Total	63	67

Table 2: Advice to be given to parent/guardian which was missed

Advice Point missed	Batch A	Batch B
None	54 (50.9%)	45 (40.9%)
Medical	1 (0.9%)	1 (0.9%)
Non-medical	10 (9.4%)	5 (4.5%)
When to return immediately	35 (33%)	47 (42.7%)
Non-medical + When to return immediately	5 (4.7%)	10 (9.1%)
All	1 (0.9%)	2 (1.8%)

- difficulty in breast feeding (in 4 forms), is infant breast feed (in 2 forms), how many times breast feed in 24 hours (in 5 forms), other food or drink received (in 7 forms). Weight for age classification was not done in 19.8% (n=21) forms in batch A & 28.2% (n=31) forms of batch B. Breast feeding was not assessed in 59.4% (n=63) forms of batch A & 60.9% (n=67) forms of batch B. Points missed in breast feeding assessment are shown in Table 1. 41.5% (n=44) forms of batch A & 46.4% (n=51) forms of batch B had not appropriately classified for feeding problems & malnutrition.

Immunization was not checked in 3.8% (n=4) & 5.5% (n=6) forms of batch A & B respectively. If immunization was required on that day, then encircling on name of vaccine required on that day was not done in 12.3% (n=13) forms of batch A & 9.1% (n=10) forms of batch B. Date for return of next immunization was not mentioned in 40.6% (n=43) forms of batch A & 30.9% (n=34) forms of batch B.

Appropriate advice to be written on back of form was missed in 49.1% (n=52) & 59.1% (n=65) forms of batch A & B respectively. Details of points being missed in forms of both the batches is shown in **Table 2**.

After assessing the whole form, completeness was found in 18.9% (n=20) & 7.3% (n=8) forms of batch A & B respectively. Appropriateness was in 17.9% (n=19) forms of batch A & 7.3% (n=8) forms of batch B.

Statistical association for comparison of completeness & appropriateness among both batches is shown in Table 3 & 4 respectively.

Statistical association was found for both completeness & appropriateness between both batches. Overall completeness & appropriateness was found to be better among batch A, who had received training for IMNCI in final year of MBBS compared to batch B who had received training in 6th semester (third year) of MBBS.

Table 3: Comparison of Completeness between both batches

Year	Completeness		Total
	Yes	No	
Batch A (2012-13)	20	86	106
Batch B (2013-14)	8	102	110
Total	28	188	216
χ^2 (p value) = 6.433 (0.011)			

Table 4: Comparison of Appropriateness between both batches

Year	Appropriateness		Total
	Yes	No	
Batch A (2012-13)	19	87	106
Batch B (2013-14)	8	102	110
Total	27	189	216
χ^2 (p value) = 5.600 (0.018)			

Discussion:

Present study being a record based study, exact process of filling forms was not observed, however possible reasons for incompleteness and inappropriateness can be predicted. A study by Ramanuj V et al. on interns showed that 56% knew correct examination methods, 68% could correctly classify and 27% could answer the correct advice to be given to the mother / care taker.^[3] In present study, interns did correct examination & covered all points of examination in 55.5% forms, could classify correctly in 63% forms & correct advice given to parents / guardians in 45.8% forms which is almost similar to the studies result by Ramanuj V et al.

A study by Patel H et al. in Bhavnagar district showed that 40% forms of health workers were completely filled & appropriateness in classification & advice overall was 77.5% & 47.5% respectively.^[6] A similar study by Bhatt RA et al. in Mehsana district showed that when forms of health workers were reviewed during survey appropriateness for classification was 88%, while for advice it was 57.8%.^[7] A study by Mohan P et al. showed that health workers were able to appropriately classify problems in 81.8% & appropriate treatment in 80.3%

children.^[8] In our study classification was done overall in 63% forms & appropriate advice was written in 45.8% forms, which was less compared to the results of all the mentioned studies.

Completeness and appropriateness was found to be better amongst batch that received training in Final year of MBBS. This may suggest that more recent training received, more better is performance of interns.

Conclusion:

Repeat training of IMNCI is essential in internship as completeness & appropriateness of the forms is found to be poor in the study. Also such studies can be carried out in colleges where Pre-service IMNCI training is provided.

Implications:

Intensive & repeated training of MBBS students for IMNCI is advisable. Optimum timing for training of students can be decided based on strong evidence.

Limitations:

As it was a record based study, actual process of form filling was not observed. So reasons for incompleteness and inappropriateness cannot be

assessed. Moreover, only Two MBBS batches IMNCI form were studied & compared which might not be sufficient to reach conclusion.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Knowledge of Auxiliary Nurse Midwives on Immunization Safety: A Cross-Sectional Study in a Sub-Division of Purba Bardhaman District, West BengalSoumalya Ray¹, Tridibes Bhattacharya², Dilip Kumar Das³¹Assistant Professor, ³Professor and Head, Department of Community Medicine, Burdwan Medical College and Hospital, Purba Bardhaman, West Bengal, India²Senior Resident, Department of Community Medicine, Medical College Kolkata, West Bengal, India**Correspondence** : Dr. Tridibes Bhattacharya, Email: tridibes1986@gmail.com**Abstract:**

Introduction: Safe immunization is one of the prerequisites for successful routine immunization program. Awareness on various components of immunization safety among frontline health workers determines their practice. **Objectives:** This study was conducted to assess knowledge of Auxiliary Nurse Midwives (ANM) regarding various components of immunization safety and to determine association of their knowledge with some background characteristics (if any). **Method:** This cross-sectional study was conducted at four community development blocks of Sadar North sub-division of Purba Bardhaman district of West Bengal between June - September, 2017. All the 189 ANMs working in 107 sub-centres of these four blocks were interviewed for knowledge on various components of immunization safety with a pre-designed, structured, self-administered questionnaire. **Results:** Only 68 (36%) ANMs had adequate knowledge (score ≥ 33) combining all components on immunization safety. Chi-square test revealed that knowledge of ANM had statistically significant association with education level ($p = 0.00$) and last training status ($p = 0.00$). Education and last training status remained significant in binary logistic regression. **Conclusion:** Despite being trained, knowledge among ANMs regarding various components of immunization safety in the study area was still not satisfactory. Further emphasis on training and supportive supervision by local and district health authority is the need of the hour.

Key Words: Auxiliary Nurse Midwives, Immunization Safety, Knowledge**Introduction:**

Immunization is one of the most cost effective public health interventions throughout the globe. Besides reducing morbidity and mortality from vaccine preventable diseases (VPD), it has contributed to improve the quality of life in the population.^[1] However, since vaccines are administered to healthy people, especially children, besides being potent and effective, safety issues must be ensured. Thus immunization safety is a priority concern worldwide since its inception. Immunization safety has been defined by World Health Organization (WHO) as the process of ensuring and monitoring the safety of all aspects of immunization, including vaccine quality, adverse

events, vaccine storage and handling, vaccine administration, disposal of sharps and management of waste.^[2]

In our country, immunization is mostly being implemented through the primary health care delivery system along with other essential services. Auxiliary Nurse Midwives (ANMs) are the main service providers for immunization at community level. ANMs play an important role in increasing coverage as well as quality of immunization. Thus assessment of their knowledge on immunization safety is absolutely essential and this will guide district health authority to emphasize training of health workers on certain areas. There are studies on awareness about immunization among parents or

mothers but very few studies among health care providers on knowledge of immunization safety. Particularly in West Bengal, this aspect has not yet been adequately explored. In this background present study was conducted to assess the prevailing knowledge of the ANMs regarding different components of immunization safety in a sub-division area of Purba Bardhaman district, West Bengal.

Objectives:

To assess knowledge of the ANMs regarding different components of immunization safety (vaccine handling, vaccine administration, immunization waste segregation and disposal and lastly adverse effects following immunization) in a sub-division area of Purba Bardhaman district, West Bengal.

Method:

This cross-sectional study was conducted at Sadar North sub-division of Purba Bardhaman district of West Bengal between June - September 2017. Four i.e., more than 50% of the total seven community development blocks of the sub-division (Burdwan I, Burdwan II, Bhatar and Galsi II) were selected by simple random sampling. All the ANMs working in 107 sub-centres of these four blocks (i.e. 189 ANMs) were included as study subjects by complete enumeration technique. ANMs were interviewed for knowledge on various components of immunization safety with a pretested, pre-designed, structured, self-administered questionnaire. Questionnaire was comprised of two sections - background characteristics of ANMs and components of immunization safety. Immunization safety was again subdivided into four sub-sections comprising its four components - vaccine handling, vaccine administration, immunization waste segregation and disposal and lastly Adverse Effects Following Immunization (AEFI). Each of these four subsections contained six questions. Major areas of question on different subsection were as follows:

Vaccine handling: vaccine carrier, freeze sensitive vaccines, diluents, duration of use of reconstituted vaccine, vaccine vial monitor, shake test

Vaccine administration: open vial policy, key messages of vaccination, minimum gap between live vaccines, contraindication and dose, route, site, age of administration of different vaccines.

Immunization wastes: segregation of AD syringe, wrapper, sharps, disposal of black and red bag wastes AEFI: major AEFI, recording, reporting, nil reporting, monthly report, AEFI kit

During pretesting of the questionnaire, it was found that knowledge regarding dose, route, site and age of administration of different vaccines was correct among all participants. Hence, in the final analysis, these variables were excluded from scoring. Correct responses were given one mark and incorrect/no responses were given zero mark. Depending upon type of question final score of various sections were different. Maximum score for vaccine handling section was 12, for vaccine administration 15, for immunization waste disposal 6 and for AEFI 8; minimum score for each section were zero. Combining all sections, total maximum attainable score was 41. Analysing the responses, mean score of the ANMs were found to be 31.08 (standard deviation = 3.06); median score was 31 with interquartile range 29-33. With this information ANM with a score of ≥ 33 (75th percentile of the obtained score) was categorized as having adequate knowledge and < 33 was considered as having inadequate knowledge.

Data were collected after ethical approval from Institutional Ethics Committee of Burdwan Medical College and Hospital and permission from the district and respective block health authorities. Informed consent was obtained from each and every study subjects. Collected data were entered in MS Excel and were double checked for any erroneous entry. Collated data after checking were imported into SPSS software version 20, IBM, New York, USA. Data were organized and presented applying the principles of descriptive statistics in the form of tables and calculating percentages. Chi-square test was used to find out the statistical association between two categorical variables. A p-value of < 0.05 was

considered as statistically significant. Multivariate analysis was done by binary logistic regression.

Results:

Background characteristics:

A total one hundred and eighty nine ANMs working at all the sub-centres of the selected four blocks of Sadar North sub-division were interviewed; 106 of them were 1st ANMs and rest were 2nd ANMs. Majority (75.6%) of the ANMs were in the age group 31-50 years and half of the ANMs(50.3 %) were graduate and above. 3/4th of the ANMs had received last training on immunization within last 1 year.

Knowledge on components of immunization safety:

Vaccine handling:

This study revealed that almost all of the ANMs (96.8% and 96.3% respectively) had correct knowledge on use of vaccine carrier and time to use after reconstitution (within 4 hours). However, only half of the ANMs correctly knew three freeze sensitive vaccines and name and purpose of shake test. Diluent name of BCG, Measles and JE vaccine were known to only 68.8%, 23.8% and 7.9% respectively. 69.3% ANMs had correct knowledge on stages of VVM.

Vaccine administration:

In this study 86.2% of ANMs had correct knowledge regarding open vial policy. All ANMs had correct knowledge on checking of expiry date and VVM, writing of reconstitution time on vaccine vial, not to massage vaccination site and not to recap the

needle after vaccination. Contraindication to vaccination and minimum gap of 28 days between two live vaccines were known to 95.2% and 89.9% ANMs respectively.

Only 146 (77.2%) ANMs knew all four key messages of vaccination and 1st and 4th key messages were least known among them [Table 1]. Most of the ANMs had correct knowledge of dose, route, site and age of administration of different vaccines but 30 ANMs (15.9%) had incorrect knowledge on dose of BCG.

Immunization waste:

Many ANMs were deficient in knowledge on immunization waste segregation and disposal particularly in segregation of used syringe and disposal of red bag wastes as visible in the following spider diagram. [Figure 1]

Figure 1: Spider chart showing correct knowledge of ANMs regarding various aspects of immunization waste disposal (n =189)

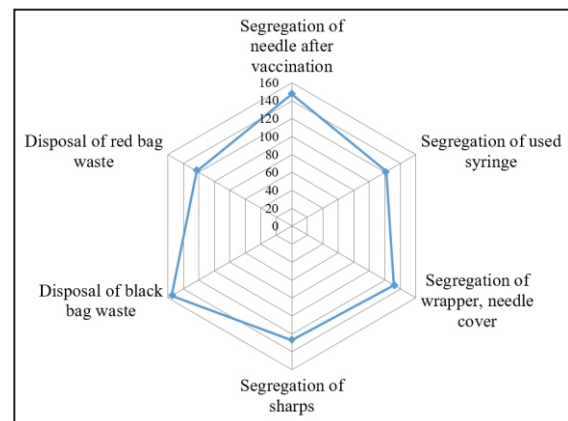


Table 1: Distribution of ANMs according to knowledge on key messages of vaccination (n = 189)

Key messages	Correct Knowledge
	Frequency (%)
Name of vaccine & disease prevented	167 (88.4)
Next date of vaccination	171 (90.5)
Minor side effects & their management	180 (95.2)
Keep immunization card safe & bring during next visit	169 (89.4)
All four messages	146 (77.2)

Table 2: Distribution of ANMs according to knowledge on components of AEFI (n =189).

Items/Components	Correct Knowledge
	Frequency (%)
Recording of AEFI in register	183 (96.8)
Reporting of AEFI	187 (98.9)
Nil reporting	61 (32.3)
Severe AEFI	145 (76.7)
Reporting related to AEFI in MIS	
Abscess	53 (28)
Death	52 (27.5)
Others	54 (28.6)
AEFI kit contents	3 (1.6)

Note: MIS - Management Information system (monthly reporting format)

Overall knowledge and association:

Combining all components, only 68 (36%) ANMs had adequate knowledge (score ≥ 33) on immunization safety [Table 3].

Table 3: Association between knowledge status and background characteristics of ANM (n = 189)

Variables	Knowledge		p value	Adjusted Odds Ratio	Confidence Interval
	Adequate (≥ 33) No (%)	Inadequate (< 33) No (%)			
Age (completed years)			0.09		
≤ 30	1 (100)	0 (0)		1	
31 – 40	21 (30)	49 (70)		0.0	
41 – 50	33 (45.2)	40 (54.8)		0.8	0.3 – 2.2
≥ 51	13 (28.9)	32 (71.1)		0.4	0.1 – 1.0
Education			0.001		
Madhyamik	18 (34)	35 (66)		1	
Higher secondary	4 (9.8)	37 (90.2)		2.4	1.1– 5.4
Graduate & above	46 (48.4)	49 (51.6)		9.1	2.6 – 31.8
Last training			0.00		
2014	3 (100)	0 (0)		1	
2015	22 (71)	9 (29)		0.0	
2016 (i.e within last 1 year)	43 (27.7)	112 (72.3)		0.1	0.03-0.3

AEFI:

Most of the ANMs were aware about the need of recording and reporting AEFI but only 61 (32.3%) of them knew about mandatory nil reporting. Approximately 1/4th ANMs knew what to report in sub-centre monthly report format. Only 3 ANMs had correct knowledge on AEFI kit contents. [Table 2]

Bivariate analysis using chi-square test revealed that knowledge of ANM had statistically significant association with education level ($p = 0.001$) and last training status ($p = 0.00$) but not with age ($p = 0.09$). Binary logistic regression between knowledge and age, education level and last training status revealed that education and training status were significantly associated. Model performed well as indicated by Omnibus chi-square test ($p = 0.00$) and Hosmer-Lemeshow test ($p = 0.72$). Here independent variables could explain 34% of variance in the dependent variable (Nagelkerke R^2).

Discussion:

Successful immunization can prevent many vaccine preventable diseases among children but its success depend on knowledge and skill of health workers who are vaccinating. The ages of the respondents ranged between 24 to 58 years with a mean age of 43.8 ± 7.2 . This showed that majority of the health workers in the study area were within productive age group.

In this study, half of the ANMs were graduate and above and 28% and 21.7% were educated up to madhyamik and higher secondary level respectively. Haldar et al^[3] in a study at Uttar Dinajpur of West Bengal found that 65.7% of ANMs were educated till higher secondary, 20% till graduation and 14.3% till secondary level. Ghosh and Chakrabarty^[4] found 53.6% ANMs had education till class X, 21.9% till higher secondary and 24.4% were graduate and above. This difference might be due to multiple reasons – opportunity of education/job, increasing female literacy level in the country^[5]; recruitment policy etc. Recruitment criteria for ANMs have also been changed over the years.

Present study revealed that all ANMs were trained which is better than findings of Ameen et al in Nigeria^[6] who had found only 64% health workers were trained on immunization. Moreover, 3/4th ANMs were last trained within 1 year. Therefore it was not surprising that a high proportion of ANMs had good knowledge on aspect of vaccine carrier, expiry date, reconstitution time writing on vaccine vial, open vial policy, no massaging of vaccination site and no recapping of needle after vaccination, contraindication to vaccination, appropriate dose, route, site and age of administration etc. This might be related with the fact that vaccine management topics such as vaccine carrier and handling and vaccine administration were often discussed in CME and training workshops on immunization service delivery.

Present study reported that only 69.3% ANMs had correct knowledge on stages of VVM which was similar to Chandigarh study^[7]. This study also showed that only half of the ANMs correctly knew three freeze sensitive vaccines and aware about shake test as a means to detect freeze sensitivity which was corroborating with 67.8% found by Ameen et al in Nigeria^[6]. Diluent name of BCG, Measles and JE vaccine were known to only 68.8%, 23.8% and 7.9% ANMs respectively in this study. There are four key messages of vaccination which are mandatory to be advised to caregiver. Present study revealed that 77.2% ANMs were aware about four key messages which was slightly better than Patel et al^[8] finding in Gujrat. This indicates proper intermittent reorientation training on VVM, shake test and key messages is required to ensure safe immunization.

This study revealed that knowledge among ANMs regarding AEFI was poor which is corroborating with the findings of a WHO and NIHFW collaborative report in 2009 (53%)^[9]. This is one of the neglected areas of routine immunization and thus specific, focused training on AEFI is the need of the hour.

Present study had reported that knowledge level of ANMs had statistically significant association with

education ($p = 0.001$). Amrit Bairwa et al^[10] also found similar findings. It may be hypothesized that higher the education level, greater may be the knowledge of ANMs regarding immunization safety.

Current study revealed that training on routine immunization had statistically significant association with knowledge of the ANMs ($p=0.00$) contrary to Madhusudan Swarnakar et al^[11] findings of non-significant negative correlation with previous training. This might be postulated that regular training can have influence on knowledge level of the health workers.

Strength of this study lies in the fact that it was conducted in a subdivision area comprising all ANMs of the selected blocks and targeting all components of immunization safety. In spite of that, if ANMs of all seven blocks of the subdivision were interviewed that might give more comprehensive result.

Conclusion:

ANMs being the main service provider at the sub-centre level, their knowledge are very much pertinent for immunization safety. Despite being trained on immunization their knowledge regarding various components of immunization safety in the study area was still sub-optimal. Also, knowledge of ANM was statistically significantly associated with education level and last training status.

Recommendations:

There is need for periodic on the job training, retraining and supportive supervision by local and district health authority to improve knowledge among routine immunization service providers especially on AEFI, key messages, waste disposal.

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Declaration:

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Conflict of Interest: Nil

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A Cross Sectional Study Regarding Menstrual Hygiene Practices and Myths among Rural Adolescent Girls

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Abstract:

Introduction: Menstruation, though a natural process, is still regarded as unclean/dirty in Indian society, clouded by taboos and socio-cultural restrictions resulting in adverse health outcomes. This poses a serious problem for adolescent girls of low and middle-income countries, directly/indirectly influencing Sustainable Development Goals affecting their and nation's overall development. **Objective:** To find out the prevalent menstrual hygiene practices and myths in rural adolescent girls. **Method:** A cross sectional study was conducted, with a pre-tested, pre-designed questionnaire among 180 girls aged 13 to 16 years of a secondary school in the rural field practice area for 6 months. **Results:** The mean age of menarche was $12.5 \pm 2(0.85)$ years. 76% of the girls were aware about menstruation before its onset and mothers (85%) were the source of information. 78% girls used commercial sanitary pads, while 22% used cloth/napkin and half of them changed pad twice daily while 1/3rd thrice daily. External genitalia were cleaned once (51%), using water (56%) and 64% preferred using a separate underwear during periods. Following were their complaints in the last 6 months: 59% white discharge per vagina, 32% itching in private parts, 16% burning micturition. Almost half weren't involved in religious activities and abstained from household chores. Around one third were restricted from playing, absented from school, barred from entering kitchen, slept in isolation and ate from separate utensils. **Conclusion:** Awareness on correct menstrual hygiene practices and demystifying related myths can improve rural adolescent's health.

Key Words: Adolescent, Menstrual hygiene, Myth

Introduction:

Menstruation, though natural process is still a taboo in rural India with stigma not permitting discussion or even information seeking.^[1,2] Women spend several days of their lifetime in this phase and practically there are more needs to be addressed during this period. But due to associated shame, superstitions, myths related with this biological phenomenon their capability to address this basic need of menstrual hygiene remains unnoticed. This impacts into poor menstrual hygiene hence poor women health.^[1] Adolescent girls constitute a vulnerable group, particularly in India where female child is neglected one.^[2] Among adolescent girls and women menstruation is a key indicator of vitality.^[1]

Adolescent girls constitute 1/5th of total female population in the world.^[3] This indicates roughly, 1 in every 6 persons is adolescent. They are the future of nation forming the major demographic and economic force. They have specific needs and they face challenges like and one of them is lack of access to adequate knowledge, safe environment and healthcare services. In view of this Government of India launched its first comprehensive programme for adolescents, 'Rashtriya Kishor Swasthya Karyakram', during January 2014.^[4] Of the 1.2 billion adolescents aged 10-19 years worldwide, 243 million that is around 20% live in India.^[5] India's 113 million adolescent girls are particularly vulnerable at the onset of menarche which occurs between 11-15 years.^[1] The menarche is one part of the

maturation process, but it is often, culturally defined as the indicator of girl's maturity and readiness for marriage and sexual activity.^[6]

Menstrual hygiene is an issue that is insufficiently acknowledged and has not received adequate attention in the reproductive health and water, sanitation and hygiene (WASH) sectors in developing countries including India and its relationship with and impact on achieving many Millennium Development Goals (MDGs) is rarely acknowledged.^[3] Adolescent girls of low and middle-income countries, directly/indirectly influencing Sustainable Development Goals affecting their and Nation's overall development.

Access to safe menstrual hygiene practices is their right which most of them are not able to avail. Menstrual practices among adolescent girls varies due to population diversity and cultural practices in Indian context.^[7]

An adolescent girl having better knowledge regarding menstrual hygiene and safe practices will be less vulnerable to Reproductive Tract Infections and its consequences in near future. Therefore, increased knowledge about menstruation right from childhood may escalate safe practices and may help in mitigating the suffering of millions of women.^[2]

These younger generations are tomorrow's parents. The reproductive health decisions that they make today will affect the health and wellbeing of their upcoming generations and their community. Even though all initiatives took place, by government of India, a major section of the adolescent girls do not have a prior awareness about the menstrual cycle and its hygienic practices leading to poor menstrual hygiene.^[8]

In view of this, the study was conducted with the following objectives:

1. To find out the prevalent menstrual hygiene practices in adolescent girls.
2. To study myths associated with menstruation.

The data obtained from this study will be beneficial for planning awareness program which can

improve their menstrual hygiene practices. This will help improve the quality of life in rural adolescent girls.

Method:

A cross sectional study was conducted, with a pre-tested, pre-designed questionnaire among 180 girls aged 12 to 16 years of a secondary school in the rural field practice area for 6 months. This Cross-sectional study was conducted at rural field practice area of the teaching medical institute run by Municipal Corporation. There was only one Government school situated in that area and hence convenient sampling method was used for data collection. The permission to carry out the research was obtained from school authorities. The school had classes from 1st to 10th standards. All adolescent girls who had attained their menarche and were above age of 13 years were considered after taking valid informed consent. Their participation was purely voluntary and they were also assured that the study will not have any detrimental effect on the participant. They were assured that any information, thus obtained will be treated with utmost confidence.

The study duration was from June 2018 to November 2018. A predesigned, pretested semi structured questionnaire was used encompassing of Part 1- where personal information such as age, family size, family income was enquired; Part 2 - menstrual history like duration of menstrual cycles, menarche, dysmenorrhea etc; Part 3 - menstrual hygiene practices like use of sanitary pads, their disposal, washing of external genitalia were asked and Part 4 - myths related to menstruation like restrictions in sleeping, playing, using of washroom, household chores etc were enquired.

Results:

Age group of all 180 participants was from 12 to 16 years with mean age of $13.90 \pm 2(0.97)$ years. Most of them belonged to middle and upper middle socioeconomic class according to modified B. G. Prasad classification.^[9] Mean age of menarche was $12.5 \pm 2(0.85)$ years.

Table 1: Distribution of participants according to menstrual history

Details		Frequency n (%)
Duration of Bleeding	< 3days	19 (10%)
	3-5 days	83 (46%)
	>5 days	78 (44%)
Duration of Cycle	<28days	35 (19%)
	28-30 days	90 (50%)
	>30 days	55 (31%)
Painful	Yes	107 (59%)
	No	73 (41%)
Regularity	Regular	130 (72%)
	Irregular	50 (22%)

As per table-1, 46% of the participants had duration of menstrual bleeding for 3-5 days followed by more than 5 days and less than 3 days i.e. 44% and 10% respectively. Duration of menstrual cycle for the period of 28-30 days was present in 50% of the participants, followed by 31% of the participants had more than 30 days cycle and 19% had less than 28 days cycle duration. 59% of the participants had painful menstruation and 72% had regular menstruation.

Out of 180 participants 137 (76%) were aware about menstruation before its onset. Maximum i.e. 85% of them had received the information from their mother followed by from elder sister (14%) and friend (1%).

78% of the participants used commercial sanitary pads as an absorbent during menstruation while 22 % used cloth. Most of the participants i.e. 44% changes absorbents twice per day followed by thrice and more than thrice among 32% and 13% respectively. 92% of the participants uses cloth repeatedly. Bathroom (72%) is the most preferred place for drying of cloth followed by under the sun (28%). Majority (77%) of the participants stored unused sanitary pads or cloth in bedroom followed by bathroom (18%) and schoolbag (05%). (Table-2)

Sanitary pads were disposed of in dustbins by 86% participants while 11 % burn it and 3% flushed it

into the toilet. Majority (95%) of the participants clean external genitalia. 53% clean external genitalia once per day followed by twice, thrice and more than three times among 36%, 08% and 03% respectively. Only water is the most preferred (56%) material used for cleaning, followed by soap and water (34%) and antiseptic solution (10%). Two third of the participants use separate underwear at the time of menses. (Table-2)

In last 6 months, 58% had history of pain in abdomen, 16% had burning micturition, 32% itching sensation near groin area and 59% had white or other coloured discharge per vaginum.

56% of the participants were restricted from attending religious places like temple, touching religious material (56%), sleep separately (30%), eat separately in separate utensils (22%), restricted from doing household works (48%), playing outside (39%). only 70% were allowed to go to school, 47% were restricted from eating food items like fish, chicken, etc. while 35% participants were not allowed to enter the kitchen.

Maternal education was not associated statistically with mother being the source of information or any religious restrictions at the time of menstruation. (Table-3). H/o cleaning of external genital region and h/o burning micturition was strongly associated statistically. (Table-4). H/o

Table 2: Distribution of participants according to menstrual hygiene practices

Details		Frequency n (%)
Use of absorbents	Commercial sanitary pad	141 (78%)
	Cloth	39 (22%)
Changing frequency of pads per day	Once	20 (11%)
	Twice	79 (44%)
	Thrice	57 (32%)
	More than three times	24 (13%)
Repeated use of same cloth	Yes	36 (92%)
	*No	03 (08%)
Drying of cloth	Under the sun	10 (28%)
	Inside the bathroom	26 (72%)
Storage of unused sanitary pads or cloth	Bedroom	139 (77%)
	Bathroom	32 (18%)
	Schoolbag	09 (05%)
Disposal of Sanitary pad	# Throw in dustbin	155 (86%)
	Burn it	21 (11%)
	Flush in toilet	4 (3%)
Cleaning of external genitalia	Yes	171 (95%)
	No	09 (05%)
Frequency of cleaning per day	Once	91 (53%)
	Twice	62 (36%)
	Thrice	13 (08%)
	More than three times	05 (03%)
Materials used for cleaning	Only water	100 (56%)
	Soap and water	62 (34%)
	Antiseptic solution	18 (10%)
Use of separate underwear at the times of menses	Yes	116 (64%)
	No	64 (36%)

* 3 of them used new cloth every time during menstruation. # 39 of them had multiple response.

Cleaning external genital and complaints in last 6 months were not associated statistically. Since both the histories were subjective, we need to find out in depth reasons of above-mentioned complaints.

Discussion:

In the present study, the mean age of menarche of the study participants was $12.5 \pm 2(0.85)$ years while

it was 15.5 years by K. V. Phani, Andhra Pradesh,^[3] 11.95 years by Yasmin in west Bengal^[10] and 13.2 years in Rajasthan in 2005 by Khanna et al.^[11] Differences in geographical, environmental, nutritional, socio-economic factors and general health status of the study subjects causes differences in the findings. The age of menarche is determined by

Table 3: Association of Maternal education with mother being the source of information and any religious restrictions

Maternal Education	Source of Information as Mother	Source of Information as sister/ friend	Total	Test of significance
Primary	7	2	9	Chi Square value (X ²)= 3.47 P Value= 0.17 Degree of freedom=2 Not Significant
Secondary, Higher Secondary	106	16	122	
Graduation, Post Graduation	37	12	49	
Maternal Education	Any Religious Restrictions during menstruation		Total	Test of significance
	Yes	No		
Primary	1	3	4	X ² =1.73 P Value= 0.41 Df=2 Not Significant
Secondary, Higher Secondary	69	56	125	
Graduation, Post- Graduation	30	21	51	

Table 4: Association of h/o cleaning of external genital region and h/o Burning Micturition

H/o cleaning of external genital region	H/o Burning Micturition		Total	Test of significance
	Present	Absent		
Present	24	149	173	χ ² =6.57 P Value= 0.0051 Df=1 Significant
Absent	04	03	7	
Total	28	152	180	

many factors such as general health, genetics, socioeconomic and nutritional status. Due to improvement in their nutritional status and general health, it has started appearing earlier in many populations.^[7]

In the present study, almost three fourth of the participants were aware about menarche but study by K. V. Phani, et al,^[3] Deo et al^[12] reported only half of their participants knew about menstruation before menarche. Mother was the first informant among more than three fourth participants. 93% of mothers

were educated. Hence, mother as a primary source of information for more than three fourth of the participants. A. Dasgupta, West Bengal ^[2] found mother as a first informant only in case of 35% of the girls This show good awareness at the current rural community level regarding menstruation as it is the field practice area of the teaching institute.

More than 5 days duration of blood flow was found among 25% by K. V. Phani,^[3] and Chinta K. et al, Andhra Pradesh^[13] and it was 44% in present study. In the present study regular cycles were observed in

72% which was in agreement with that of rural Puducherry study by Priya HS^[8] i.e. 68%. But 91% had regular cycles by Chinta K. et al, Andhra Pradesh.^[13] This difference can be due to geographical and nutritional factors.

Half of the participant had duration of cycle of 28-30 days in the current study which is in concordance with Chinta K. et al, Andhra Pradesh,^[13] and study by Priya HS in rural Puducherry.^[8] The finding of nearly two-third of the participants had painful menses was similar to that of Chinta K. et al, Andhra Pradesh.^[13]

In this study 78% of the participants used commercial sanitary pads as an absorbent while only 48% used in study by Nandini Gupta, Uttar Pradesh.^[14] The increased use of sanitary pads in present study can be due to awareness by media, concession rate by state government. Half of the participants clean their genitalia with soap and water and or antiseptic solution in this study. Similar findings were found Nandini Gupta, Uttar Pradesh^[14] and Parmaswari et al.^[15] This shows good level of awareness.

Burning was used as the way of disposal of used sanitary pads by 11% in current study while it was 92% by Chinta K. et al, Andhra Pradesh.^[13] This contrast can be due to more availability of incinerator by local or state authority. 86% throw used sanitary pads in dustbin, similarly 92% by study by Shantanu Sharma, Delhi.^[16] Similar findings regarding frequency of cleaning external genitalia were found in current study with that of a study conducted by Vidya V. Patil, Karnataka.^[17]

There was more than one restriction at the time of menstruation put by the family members in the current study among the study participants. These findings were in agreement with Vidya V. Patil, Karnataka^[17] and Tanoja Bachloo, Haryana, 2016.^[18] Half of the study participants were not allowed to attend religious places and touching religious materials. As found in Vidya V. Patil^[17] study but almost all were not allowed in Tanoja Bachloo, study from Haryana.^[18] Our findings on other restrictions on food consumption, entry in to kitchen and playing

were equivalent to study by Vidya V. Patil.^[17] These findings suggest more awareness regarding positive attitude about menstruation in the study area. Majority of the girls followed one or the other restrictions during menstruation among which avoiding holy places and not to work/play outside was more.

Conclusion:

Mean age of participants was $13.90 \pm 2(0.97)$ years and mean age of menarche was $12.5 \pm 2(0.85)$ years. Three fourth of the participants were using sanitary pads as an absorbent while more than three fourth were cleaning their external genitalia at least once or twice a day. History of cleaning of external genital region and history of burning micturition was strongly associated statistically. Still most of them were having more than one symptom in last 6 months which should be evaluated to rule out reproductive tract infections. Almost all participants responded that they maintain menstrual hygiene but more than half were suffering from white discharge per vagina or itching in groin region and burning micturition. In spite of all mothers of the participants being educated, all above mentioned symptoms were not addressed as the participants did not consult any health seeking facilities. In depth study need to be conducted to find out the reasons, factors affecting menstrual hygiene practices at the rural community level.

Recommendation:

Vigorous awareness on correct menstrual hygiene practices and demystifying related myths can improve rural health. The school is a place where behaviours can be shaped, skills developed and correct information is provided. The trained school teacher can create awareness among rural adolescent girls in the school regarding maintenance of menstrual hygiene.

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Declaration:

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Trend and Epidemiological Profile of Dengue Fever/Dengue Haemorrhagic Fever in Ahmedabad City, Gujarat, India

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Abstract:

Introduction: Dengue fever is an acute viral disease of public health importance having the potential of causing large scale outbreaks. Recently Dengue cases are increasing alarmingly in various parts of the country and Gujarat is one of them. **Objective:** The study was conducted to know the trend and epidemiological profile of Dengue cases and deaths. **Method:** In this record based study, month and year wise data including a number of suspected cases, confirmed dengue cases admitted or treated at various government and corporation run health facilities and reported number of deaths for the period of 2010-2016 for the Ahmedabad Municipal Corporation was collected. A descriptive analysis was done. **Results:** Incidence of Dengue were 16.3 per 1,00,000 population and maximum rate (26.2) was seen in children up to the age of 14 years followed by 15-44 years (17.3). There was no significant difference in the rate of Dengue among males and females ($p>0.05$). A substantial increase in the incidence was seen in the year 2015 and 2016. Case fatality rate was less than 1% and proportion of deaths was maximum (57.89%) in children up to the age of 14 years. Seropositivity showed a declining trend. **Conclusion:** Dengue is showing increasing trend and found to be high in pediatric age group and males. The peak number of cases was found in mid-September. Overall case fatality was less but the proportion of deaths was high in the pediatric age group. Although cases showed an increasing trend, the seropositivity showed a declining trend. Active participation of the community by sensitization for integrated vector control programmes is required to tackle the challenges of vector control in fast developing urban area.

Key Words: Deaths, Dengue, Incidence, Seropositivity, Trend

Introduction:

Dengue fever is a disease of public health importance caused by arbovirus and transmitted by *Aedes* mosquitoes both in urban and rural areas.^[1] Dengue Fever/Dengue Haemorrhagic Fever is an acute viral disease having the potential of causing, large scale outbreaks. The risk of dengue has shown an increase in recent years due to rapid urbanization, life style changes and deficient water management including improper water storage practices in urban, peri-urban and rural areas, leading to a proliferation of mosquito breeding sites. In recent years Dengue cases are increasing alarmingly in various parts of the country including rural areas.^[2] Dengue is endemic in 35 states/UTs of India. After 1996

outbreak upsurge of cases were recorded in 2003, 2005, 2008, 2010, 2012 and 2013. Gujarat is one of the most affected regions. In Gujarat State, there has been an increase in the number of dengue reporting units during the past few years due to the improved surveillance system including private hospitals and availability of serodiagnostic facilities at different centres in the state. The number of cases reported is increasing, probably because of the availability of IgM detection kits produced and distributed by National Institute of Virology through NVBDCP and better reporting.^[3] Epidemiological studies carried out in rural and urban areas of Gujarat and in Ahmedabad district, in particular, have shown the predominance of Dengue Virus-2 serotype.^[4]

Reported cases from Ahmedabad Municipal Corporation Area are also showing increase with passing years. The current study was carried out with the objectives (i) To study the trend of Dengue cases and death (ii) To study the epidemiological profile of Dengue cases and deaths.

Method:

Study area: Ahmedabad city is located in the Gujarat state of India. This city is the largest city and former capital of Indian state of Gujarat and is spread over an area of 466 sq.kms covering the population of 55,77,940. The city is having a density of 11,948/sq.km. Ahmedabad Municipal Corporation (AMC) is divided into six zones (East, West, South, North, Central and New-West) and has 64wards.^[5] Ahmedabad has a hot, semi-arid climate (Koppen climate classification: BSh),^[6] having marginally less rain than required for a tropical savanna climate. There are mainly three seasons. The summer season is from March to June. The rainy season starts from June end or July and ends in September. The winter season follows from November to February.

Study design: It was a record based cross-sectional study.

Data Collection: Dengue is a notifiable disease under (Integrated Disease Surveillance Programme) IDSP. This was a record based study. Secondary data was collected from the Malaria Office, NVBDCP Programme, AMC.

Ahmedabad Corporation Area has Government of India identified one Apex Referral Laboratory and two Sentinel Surveillance Hospitals for Dengue and Chikungunya. Three hospitals are also there which are run by Corporation catering to the population of Ahmedabad City. The information related to the confirmed cases of dengue from the two sentinel surveillance hospitals and other three hospitals goes to the health department of the Municipal Corporation through e-mail. Data were validated as the health inspector of Ahmedabad Municipal Corporation personally visits the household of the confirmed case of Dengue through the details

provided in the line-listing of cases. Confirmed cases of Dengue reporting to these hospitals from outside Ahmedabad were excluded. All the suspected cases reporting to these hospitals are tested by either IgM Elisa test or NS1 antigen test for confirmation.

Data analysis: Data was entered, processed and analyzed using MS Excel 2010. Descriptive analysis was done to know the average incidence of Dengue in various age groups and gender. Denominator for the calculation of rates was calculated by using census data of Ahmedabad Municipal Corporation^[7] and applying arithmetic progression method. The population for the year 2010 was calculated using growth rate of the census data of the year 1991 and 2001. The population for the period of 2011 to the year 2016 was calculated using the growth rate of the census data of the year 2001 and 2011. Standard age groups were used for carrying out person analysis. Analysis was done by collecting the information related to the number of cases in each age group and denominator for each age group was calculated by using proportion of population of each age group. We calculated the average incidence for different age groups, Case fatality rate and seropositivity rate. Seropositivity rate was calculated by division of the laboratory confirmed cases by clinically suspected cases.

Ethical Permission: The permission of administrative authorities of Malaria department of Ahmedabad Municipal Corporation office was obtained for data collection and publication of information.

Results:

The overall incidence of dengue was 16.3 per 1,00,000 population. Maximum incidence was seen in children up to 14 years of age group (26.2 per 1,00,000 population) followed by 15-44 years age-group (17.3 per 1,00,000 population). The proportion of deaths was maximum (57.9%) in children up to the age of 14 years followed by 15 to 44 years age group in which the proportion of deaths was 36.84%. The incidence of dengue among males was higher than females however the difference was

Table 1: Age and Gender wise distribution of Cases of Dengue and Deaths due to Dengue from 2010 to 2016

Age group (in years)*	Number of cases	Population**	Incidence(per 1,00,000 population)	Deaths No. (%)
0-4	546	457369	17.1	10 (26.32)
5-14	1779	971204	26.2	12 (31.58)
15-44	3589	2964431	17.3	14 (36.84)
45-60	384	807455	6.79	01 (02.63)
≥60	136	451723	4.30	01 (02.63)
Gender	Number of cases	Population	Incidence (per 1,00,000 population)	Death No. (%)
Male	3725	3002827	17.7	25(65.79)
Female	2709	2643708	14.6	13(34.21)
Total	6,434	56,46,535	16.3	38 (100.00)

Figures in parenthesis shows percentage

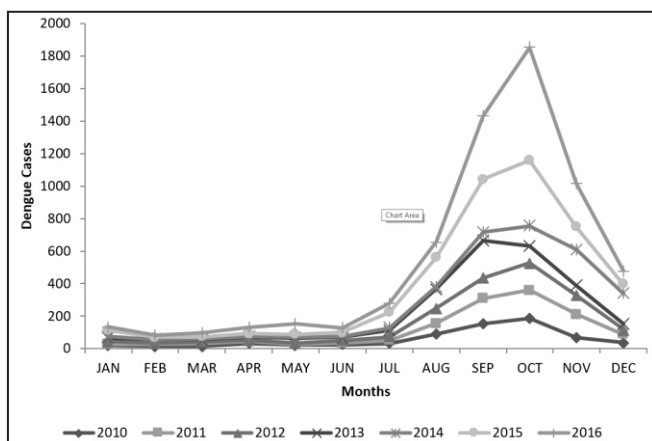
* As Dengue affects both gender and all ages, we have used the standard age groups

** Age group proportion was taken from the report published on Health Statistics, 2013-14 by Comissionerate of Health, Medical Services, Medical Education and Research Gujarat State Gandhinagar on August 2014.

not statistically significant ($p > 0.05$). Proportion of death was higher among males (65.79%) then females. (Table1)

The median age of dengue cases was 18 years and it was almost same from 2010 to 2016. Month wise distribution of dengue cases shows that the number of cases started increasing from July and peak was observed in the mid-September. (Figure 1)

Figure 1: Month-wise distribution of dengue cases from 2010 to 2016



Cases of Dengue were almost same till the year 2014 but the substantial increase was seen in the year 2015 and 2016. The number of cases in the year 2015 and 2016 was more than 2 SD of the average number of cases $\{ > 751.1 (668 + 2x (41.55)) \}$ in the previous five years (2010 to 2014). Case fatality rate was below 1% in all the years except for the year 2012. Even though the incidence of Dengue was high in the year 2015 & 2016 but CFR was less. (Table 2)

There was a substantial increase in the clinically suspected dengue cases across 2010 to 2016 but seropositivity is showing a declining trend. (Figure 2)

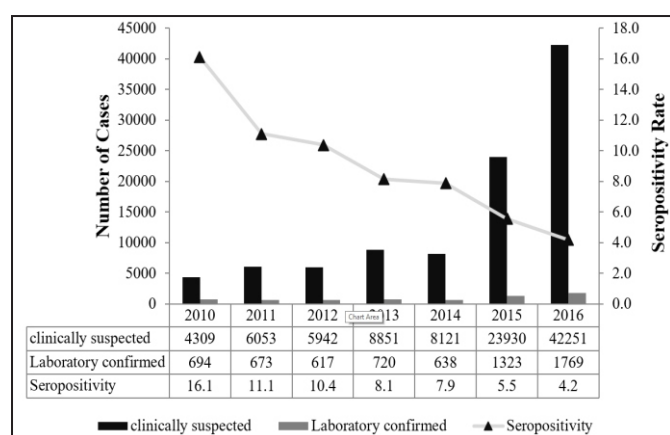
Discussion:

Dengue is currently the most important mosquito-borne, a human viral disease in terms of both the number of cases and number of deaths. The public health importance of dengue in India has been acknowledged.^[8] In India, dengue is widespread and endemic in most major cities.^[9] Since the mid-1990s, epidemics of dengue in India have become more

Table 2: Number of DF/DHF cases and deaths reported from 2010 to 2016

Year	No. of cases	Cases/1,00,000 population	No. of deaths	Deaths/1,00,000 population	CFR %
2010	694	16.84	5	0.12	0.72
2011	673	11.92	5	0.09	0.74
2012	617	10.54	7	0.12	1.13
2013	720	11.88	3	0.05	0.41
2014	638	10.19	0	0.00	0
Average of 2010-2014	668	12.27	4	0.08	0.60
2015	1323	20.45	6	0.09	0.45
2016	1769	26.50	12	0.18	0.68

Figure 2 : Seropositivity Rate of Dengue cases from 2010 to 2016



frequent, especially in urban zones and have quickly spread to new regions where it was historically non-existent.^[10] During the last two decades, India experienced sustained, high levels of dengue transmission, with large epidemics every 2-3 years.^[8] It is now estimated that India has become hyper-endemic.^[1]

The risk of dengue has shown an increase in recent years due to rapid urbanization, lifestyle changes and deficient water management including improper water storage practices in urban, peri-urban and rural areas, leading to proliferation of mosquito breeding sites.^[2] Dengue in Ahmedabad continues to increase in magnitude and poses a challenge. Ahmedabad being a fast developing city is expanding rapidly. As a result of development, the

conditions favourable for dengue transmission are generated. *Ae.aegypti* breeds almost entirely in domestic man-made water receptacles found in and around households, construction sites and factories. Vector control measures in such a scenario become a challenge. Dengue affects all races and both sexes. Dengue affects people of all ages. In South East Asia, where dengue is hyperendemic, DHF usually affects children younger than 15 years.^[11] Although the age distribution of dengue has changed from predominantly paediatric disease to one that affects all age groups but patient age is a risk factor for severe dengue disease. In the present study, the cases was high in less than 15 years age group. In a study conducted by Gupta et al^[12] and Dar et al^[13] on outbreak of Dengue Haemorrhagic fever in Delhi, maximum number of seropositive cases was in the 5-20 years age group.

Cases among males were higher than females. This may be explained by the difference in the health seeking behaviour and outdoor activities. More males as compared to females may be reporting to the hospital for illness. In the majority of reports of dengue outbreaks in India, the male to female ratio was found to be high. Studies conducted in Delhi^[13,14] showed high male to female ratio.

Dengue being a vector borne disease, the growth and development of dengue vector is climate

dependent. The ecological and climatic factors influence the seasonal prevalence of both the vector and the dengue virus.^[15] The seasonality of transmission of dengue with increased severity has been observed in the post monsoon season.^[12] The cases peak after monsoon and it is not uniformly distributed throughout the year. However, in the southern states and Gujarat, the dengue transmission is perennial.^[3] In this study, cases started increasing from July and peak was seen in mid-September confirming the active transmission period is during monsoon and post monsoon period every year suggesting that preventive measures should be in full swing at the very onset of monsoon.

Throughout the country, the occurrence of widespread epidemics has been found followed by the endemic/hyper-endemic prevalence of all the four serotypes of dengue virus. The epidemiology of dengue virus and its prevalent serotypes has been ever changing.^[8] High incidence of dengue in the year 2015 and 2016 is attributed to the occurrence of the outbreak in the Ahmedabad Corporation Area and due to changing serotypes. DEN-2, DEN-3 and DENV-4 have been isolated from the cases in Ahmedabad City. Dengue has a wide spectrum of clinical presentations often with unpredictable clinical evolution and outcome. While most patients recover following a self-limiting non-severe clinical course, a small proportion progress to severe disease, mostly characterized by plasma leakage with or without haemorrhage. Children are at higher risk of severe dengue. Young children, in particular, may be less able than adults to compensate for capillary leakage and are consequently at greater risk of dengue shock.^[16] Although the number of dengue cases has shown a steady rise with every passing year, the mortality has reduced.^[9] The present study shows that CFR remained below 1% throughout a span of seven years which could be probably the result of cumulative effects of better patient management, increased diagnostic capabilities and better reporting. The proportion of deaths was high in the children up to the age of 14 years as DHF is considered to affect

primarily children under 15 years of age and is an important cause of hospitalization.

For an alert system to trigger actions, the surveillance system needs to be: (a) sensitive in predicting or detecting an outbreak in a timely manner; and (b) specific to avoid unnecessary false alerts. When the sensitivity of an alarm signal increases, the specificity decreases and vice versa, but the optimal level of sensitivity/specificity is unclear.^[17] Although clinically suspected cases showed an enormous increase during the year 2015 and 2016 but the seropositivity showed a declining trend. Over the period of seven years that is from 2010 to 2016, clinically suspected cases showed an increase and corresponding increase was also seen in the laboratory confirmed cases. The explanation for declining seropositivity rate could be attributed to the higher sensitivity of the surveillance system due to increased awareness among healthcare professionals of the need to report clinically suspected dengue cases. But at the same time standard case definitions should also be used to increase the specificity of the surveillance system.

Conclusion:

The present study shows that the trend of Dengue Fever is increasing. Incidence of dengue is high in pediatric age group and males. The peak of cases was found in mid-September. Incidence was high in the years when an epidemic occurred. Overall case fatality was less but the proportion of deaths was high in the pediatric age group. Although case showed an increasing trend but seropositivity showed a declining trend. Until the community actively participates in vector control measures the control is difficult. However it is important to observe the trend further to confirm the upsurge in Dengue cases by doing further studies.

Limitations of the Study:

As the source of information of Dengue is Passive Surveillance system it is likely to underestimate the extent of Dengue virus transmission due in large part to the often mild, non-specific presentation of the

disease and also because of cases going to the private health care providers.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Perceptions of Dental and Unani Students towards Reproductive and Sexual Disorders Management in Western UP Districts of India

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Abstract:

Introduction: Correct perceptions of young Dental and Unani students towards Reproductive and Sexually Transmitted Infections (RTIs and STIs) Management are not only essential; for the prevention of Occupational Exposures to RTIs and STIs(including HIV/AIDS) to them from their Clinical Practice, but also for effective management of such cases in their future clinical practice as evident from their Improper attitudes currently existing in literature. **Objective:** To understand In-depth about perceptions towards RTI and STI Management among Dental Students and Unani Medical College students in their colleges study curriculums. **Method :** A Cross sectional Bi-centric Study was done at 2 Institutions on 1000 Students (500 Dental(BDS) and 500 Unani(BUMS) students of all batches for 7 months from Jan 2018 to July 2018. The Students Qualitative data was obtained by Semi-structured E-questionnaire sent to them via emails. Key RTIs and STIs were included in this study such as: HIV, Hepatitis B, Hepatitis C, Human Pappiloma Virus (HPV), Chlamydia, Gonorrhoea etc. The data were analyzed by software Epi-info(version 7.2.2.2). **Results:** The Dental students of (BDS) had significantly better knowledge and attitudes as to compared Unani (BUMS) students($p < 0.001$) in both the understanding of importance of socio-cultural factors in RTI/STI causation and key diseases management strategy towards RTI/STI in their respective setups. **Conclusion:** RTI and STI management needs priority both in BDS as well as BUMS courses. However BUMS-Unani students needs improvement knowledge and proper attitudes towards RTI/ STI management from their Study Curriculum. This attitude issue needs more consideration in their clinical teaching.

Key Words: Deaths, Dengue, Incidence, Seropositivity, Trend

Introduction:

According to World Health Organization (WHO), more than 1 million people every day suffer from sexually transmitted infection (STI) globally. WHO estimates that 500 million new cases of one of four curable STIs (chlamydia, gonorrhoea, syphilis and trichomoniasis) occur each year worldwide.^[1] The irony is that a large proportion of new STIs occur amongst adolescents and young adults who may not be aware that they are infected, which has a negative impact upon their future sexual and

reproductive health.

Sexually transmitted infections and reproductive tract infections (STIs/RTIs) are important public health problems in India. Studies suggest that 6% of the adult population in India is infected with one or more STIs/RTIs and the prevalence of these infections is considerably higher among high risk groups ranging from 20-45%.^[2] Individuals with STIs/RTIs have a significantly higher chance of acquiring and transmitting HIV. Moreover, STIs/RTIs are also known to cause infertility and reproductive

morbidity. Controlling STI/RTIs helps decrease HIV infection rates and provides a window of opportunity for counselling about HIV prevention and reproductive health.

Currently, the available data from the STI/RTI control and prevention programme suggests a significant decline of bacterial STI (syphilis, gonorrhoea). Chancroid is almost on the verge of disappearance. On the other hand, viral STI (herpes, genital warts, hepatitis B) are showing an increasing trend. There is a significant burden of lower RTI (trichomoniasis, bacterial vaginosis and candidiasis) among women with no evidence to suggest a decline in their prevalence, thus affecting the quality of their reproductive health.^[3]

Adolescence is a period of life ranging from age 10 to 19 years as per WHO Criteria. Currently there are more than 1.2 billion adolescents aged 10–19 years in the world accounting for more than 18% of the world's population. Reproductive health is an important area of concern in adolescent health especially among girls and is intimately connected with the issues such as RCH; population control, and HIV/AIDS prevention. It is also a sensitive area due to socio-cultural taboo of discussion about sexuality and reproduction in the Many societies across the Globe including India.^[4]

Adolescents are at a significant risk of RTIs and STIs due to lack of knowledge on such issues and it has been reported that there is poor level of knowledge regarding STIs including HIV/AIDS in rural areas among Adolescents.^[5] It has also been found from many studies^[6-14] across the globe (e.g. Bangladesh, Ethiopia, Uganda, Thailand, Saudi Arabia and Italy) that knowledge regarding transmission and prevention of the RTI and STIs are not sufficient among students.

The Indian Adolescents and Young Women scenario is also not very good. One study^[15] in Urban Slums of India revealed that even among Women very few people know about the STIs other than HIV.^[15] Researchers have also shown that oro-dental hygiene is an important component of general health and also

a factor in sexual health. Oral inflammation controlling and regular dental check-ups in which both men and women are attending, particularly prior to conceiving, appears to be helpful in enhancing reproductive ability.^[16]

Although the scenario of Medical and Dental students knowledge of RTIs and STIs is better as compared to Non- Medical students.^[6-7,9-13,17,18-22] However study^[23] from India reveals that although Dental students had adequate knowledge about HIV/AIDS and their attitude towards management HIV+ people was significantly negative. Another Study^[17] in India on Medical and Allied Professionals emphasize the need and scope to provide correct and detailed information on HIV/AIDS for new entrants for helping them acquire adequate knowledge and develop appropriate attitudes towards HIV/AIDS.

Moreover many dental professionals think that even dealing with an infected person at the dental and Unani Clinics, they are safe from contracting a sexually transmitted disease (STD) there. The Infections can also occur to them through exposure to an infected person's blood, which can occur through splashes to unprotected eyes, nose or mouth, as well as percutaneous injuries. In the case of HSV2 and HPV, infections can occur through exposure to an infected person's saliva. In addition, Dentist may sustain exposure to many viruses including the other human herpes viruses (there are eight in all), influenza and Epstein-Barr.^[24] Study^[25] in Indian Context on Medical students has also emphasized that Effective measures needs to be taken to improve preventive practices of the students to prevent them from risk of Hepatitis transmission. Mandatory vaccination against Hepatitis B needs to be implemented. So there is a need for interventions to improve safe work practices, hepatitis B vaccination, HBV post-immunization serology and use of protective barriers. Also appropriate policies and procedures are needed for reporting and managing exposures.^[21]

Moreover level of exposure and risk of acquiring such infections among Unani students are also not

evident clearly from existing Literature. Therefore studies specifically exploring and comparing the the perceptions of Dental and Unani Medical students towards RTIs and STIs Management carry a special importance.

Method:

Research question:

What are the comparative perceptions of Dental Students of Subharti University and Allama Iqbal Unani Medical College students in Muzaffarnagar as part of continuation of Problem Solving for Better Health (PSBH) Bi-centric Project towards RTI and STI Management in 2 colleges?

Objective: To understand In-depth about perceptions towards RTI and STI Management among Dental Students and Unani Medical College students in their colleges study curriculums.

Ethical approval

First approval of Ethical Committees of the Institutions were sought from both Subharti Medical College and Allama Iqbal Unani Medical College in Muzaffarnagar followed by U.G. Students consent for their participation in study followed by their final enlisting. The consent of all Dental(U.G) as well as Unani (BUMS)Medical students were taken only after explaining the future importance of this study.

Working Definition for RTI/STI^[2]

Reproductive tract infection(RTI) is a broad term that includes sexually transmitted infections as well as other infections of the reproductive tract that are not transmitted through sexual intercourse. In women, RTI includes infections of the outer genitals, vagina, cervix, uterus, tubes, or ovaries. In men, RTI involves the penis, testes, scrotum, or prostate. RTI are caused by bacteria, viruses, or protozoa that person gets either through sexual contact or by non-sexual route.

The term "Sexually Transmitted Infections" (STI) is a term used to indicate that infections caused by microbes may not manifest as symptoms and do not always result in a disease.

Study design: Our was a a Cross sectional Bi-centric Study at 2 Institutions

Duration of study:

1st Jan 2018 to 31st July 2018 (7 months) -as per study protocol approval.

Place of study

The study was done on 500 Dental Students of Subharti Dental College under Subharti University and 500 Allama Iqbal Unani Medical College students in Muzaffarnagar district of state Uttar Pradesh (India) in 2018. The respective Colleges were chosen for this study-because the RTI/STI Cases were seen both by dental and Unani UG students as per part of their Study curriculum. The E-questionnaire was first Pretested and pre-validated before sending them via email to respective Principals of Dental and Unani Medical College. All the Students were then given E-questionnaire to fulfil this and return it within 6 Months of Participating in the study.

Quantitative data in our study data collection in our study was done through Semi-structured E-questionnaire. The E- Questionnaire consisted of two parts:

Part A -To know Socio-Demographic-Cultural profile data of Dental Students (learning Dental Surgeries) and Unani (BUMS students) both Studying RTI/STI Management as per their respective study curriculums.

Part B -Questions on Perceptions about RTI/ STI Management via semi-structured interviews.

Sample Size calculation criteria for Quality Check and Representativeness

Due to no clear-cut availability of prevalence of Perceptions towards RTI/ Management among dental and Unani students in India , in our study setting it was assumed that at least 50% DENTAL STUDENTS as well as 50% Unani Medical Students may be Knowing RTI /STI Management as per WHO guidelines. This was done to ensure that sufficient

students had got incorporated in terms of minimum sample size for this study.

Sample Size Calculation method:

$$N = \frac{Z^2 PQ}{L^2} = 4PQ/L^2$$

P=50% (assumed prevalence as per Biostatistics criteria)^[26]

$$Q = 50\% (100 - P)$$

$$L = \text{Allowable error (10\% of P)} = 5$$

$$\text{So, } N = 400$$

But we Assumed that 25% rate of Non-response/ Attrition from study may occur as data collection was done via electronic mode and to get better representativeness for this study this criteria has also been indicated in literature.[27]

The Desired Sample size taken was: $N + 25\%$ of $N = 400 + 100 = 500$.

So for both Colleges it was: $N \times 2 = 500 + 500 = 1000$

So Final Sample Size was: 1000

Sampling Technique:

The study was done in 2 colleges i.e Subharti Dental College (Meerut) as well Allama Iqbal Unani Medical College in Muzaffarnagar simultaneously at same time by sending E questionnaire to 500 Dental Students (100 students from each year sampled randomly out of 5 Years BDS course) and 500 Unani Medical Students (100 students sampled randomly from each year out of 5 and half years BUMS Course). The Consent was taken in Mass from Respective year students via help of Principals of Respective College.

Inclusion Criteria:

Only students who were willing to participate in RTI and STI study were enrolled so that their follow up remains good. As more than 30 identified pathogens can transmit RTI/STIs but important ones such as syphilis, gonorrhoea, chlamydia, trichomoniasis, human immunodeficiency virus (HIV), human papilloma virus (HPV), herpes simplex virus (HSV), and hepatitis B virus (HBV) have the greatest incidence of illness.^[3] Therefore key RTI and

STI were Included in this study such as : HIV, Hepatitis B, Hepatitis C, Human Pappiloma Virus (HPV), Chlamydia, Gonorrhoea, and Knowledge of students for above diseases management keeping in view of existing Syndromic management of RTI/ STI guidelines of NACO (India) were sought.^[3]

Data Analysis:

The e -questionnaire data from students were first checked for completeness and accuracy and was finally analyzed by appropriate statistical software such as Epi-info (version 7.2.2.2) for 3 months from Aug 2018- Oct 2018 and results were given the shape of present article in next 2 months from Nov-Dec 2018.

Results:

The majority of Dental and Unani students belonged to 18-20 years (52.1%), male students (51.3%), General Caste (83.6%), Hindu Religion (51.9%) and belonged to Socio-economic class 1 (85.7%).

Majority of students from both Dental (BDS) and Unani (BUMS) colleges had good knowledge of modes of HIV causation [needle sharing (99%), Men having sex with Women (89%), HIV prevention by Condoms use (85%) but all these students were most confused in responding birth pill role in protection from HIV infection (39%, 32% and 29%) and Mother to baby transmission (62%, 24% and 14%) [table 1].

Majority of students from both Dental (BDS) and Unani (BUMS) colleges had good understanding of modes of Presentations of STIs such as no obvious symptoms in Men (82%) and Women (73%), but regarding causes and cure of STIs students responses were very varied with weak understanding of causes of specific STIs in majority of them (Chlamydia (26%), Gonorrhoea (65%) and Genital warts (53%) only (table 2).

Majority of Dental (BDS) and Unani (BUMS) students although had good understanding of modes of Presentations, but they had weak understanding of causes of Hepatitis B(73%). The majority of these students responses were also poor

Table 1: Knowledge about Modes of transmission of Main STI (HIV- AIDS) among Students[N=1000]

Opinions about HIV - AIDS Management [Multiple Responses] (In No. and %)	Do not Know	No	Yes
Could a person get HIV (the AIDS virus) by sharing a needle and syringe with someone when injecting drugs?	01(10)*	09(90)	990(99)
Could a woman gets HIV (the AIDS virus) through having sex with a man?	10(1)	100(10)	890(89)
If someone with HIV coughs or sneezes near other people could they get the virus?	70(7)	850(85)	80(8)
Could a man get HIV through having sex with a man?	90(9)	110(11)	800(80)
Could a person get HIV from mosquitoes?	100(10)	820(82)	80(8)
If a woman with HIV is pregnant; could her baby become infected with HIV?	240(24)	140(14)	620(62)
Could a person get HIV by hugging someone who has it?	70(7)	880(88)	50(5)
Does the pill (birth control) protect a woman from HIV infection?	320(32)	390(39)	290(29)
Could a man get HIV through having sex with a woman?	60(6)	100(10)	840(84)
If condoms are used during sex does this help to protect people from getting HIV?	40(4)	110(11)	850(85)
Could someone who looks very healthy pass on HIV infection?	110(11)	190(19)	700(70)

*Values in Parenthesis indicate Percentages

Table 2: Knowledge about Myths and Transmission modes of Common STIs among Students [N=1000]

Opinions about cause of STIs [Multiple Responses] (In No. and %)	TRUE	FALSE	Do Not Know
A man can have a sexually transmissible infection without any obvious symptoms?	820(82)*	140(14)	40(4)
A woman can have a sexually transmissible infection without any obvious symptoms?	730(73)	200(20)	70(7)
Apart from HIV, all sexually transmissible infections can be cured	320(32)	500(50)	180(18)
People who always use condoms are safe from all STIs	590(59)	350(35)	60(6)
Opinions about Cause of Common STDs [Multiple Responses] (In No and %)	TRUE	FALSE	DO NOT KNOW
Chlamydia is a sexually transmissible infection that affects only women	260(26)	340(34)	400(40)
Chlamydia can lead to sterility among women	230(23)	370(37)	400(40)
Gonorrhea can be transmitted during oral sex	650(65)	190(19)	160(16)
Genital warts can only be spread by intercourse	530(53)	290(29)	180(18)

*Values in Parenthesis indicate Percentages

Table 3: Knowledge about Modes of transmission and treatment of Hepatitis and HPV Infection among Students [N=1000]

Opinions about management of Hepatitis Band C	TRUE	FALSE	DO NOT KNOW
Hepatitis C has no long-term effects on patients health	270(27)*	490(49)	240(24)
It is possible to be vaccinated against hepatitis C	400(40)	280(28)	320(32)
Hepatitis C can be transmitted by tattooing and body piercing	490 (49)	270(27)	240(24)
Hepatitis B can be transmitted sexually	730(73)	70(7)	200(20)
All people who have hepatitis C can be cured	240(24)	260(26)	500(50)
Hepatitis C can be transmitted by sharing razors or toothbrushes	160(16)	370(37)	470(47)
Opinions about HPV Infections	TRUE	FALSE	DO NOT KNOW
Using condoms when you have sex gives complete protection against HPV?	510(51)	300(30)	190(19)
You can tell if you have HPV?	250(25)	440(44)	310(31)
Being infected with HPV always leads to cervical cancer?	500(50)	300(30)	200(20)
Vaccinating young people against HPV would encourage them to become sexually active?	180(18)	530(53)	290(29)
The vaccination won't work if a person is already sexually active?	140(14)	530(53)	330(33)
The vaccine gives you HPV?	250(25)	420(42)	330(33)
A person can get infected with HPV from:	TRUE	FALSE	DO NOT KNOW
(1) Sexual contact	830(83)	169(16.9)	01(0.1)
(2) Genital skin to genital skin contact	600(60)	130(13)	270(27)
(3) Skin to skin contact e.g. fingers/feet	420(42)	270(27)	310(31)
(4) Blood transfusions.	480(48)	140(14)	380(38)
(5) Toilet seats.	290(29)	200(20)	510(51)
Opinions about HPV Infection	TRUE	FALSE	DO NOT KNOW
1. Affects Only or mainly men	100(10)	410(41)	490(49)
2. Only or mainly women	320(32)	270(27)	410(41)
3. Both men and women	460(46)	170(17)	370(37)
4. HPV is the virus that causes genital warts	270(27)	320(32)	410(41)
5. HPV is an infection associated with cervical cancer in women.	660(66)	170(17)	170(17)

*Values in Paranthesis indicate Percentages

in terms of causation, modes of transmission and preventive steps for Hepatitis C virus (49% and 24% respectively) and HPV virus (27% and 51% respectively) (table 3).

The knowledge of Dental students of (BDS) were significantly ($p < 0.05$) better than Unani (BUMS) students not only in role of socio-cultural factors in

RTI/STI causation [Unprotected Sex (51.8%) and Entertainment from Films and TV (54.8%) but also regarding key diseases (HIV(67.5%), Gonorrhoea, Chlamydia-53% each) treated in Syndromic management RTI/STI in their respective setups (table 4)

Table 4: Comparative knowledge of Modes of Causation of RTI and STI among Dental and Unani Medical Students [N=1000]

Types of Student	Responses on role of Socio-cultural factors in causation of RTIs and STI							
	Entertainment (Films/TV) (n=290)		Unprotected Sex (n=370)		Kissing (n=201)		Lack of Knowledge (n=139)	
	No.	%	No.	%	No.	%	No.	%
Dental Students (n=500)	159	54.8	192	51.8	98	48.7	51	36.6
Unani Students (n=500)	131	45.2	178	48.2	103	51.3	88	63.4
TOTAL	290	29.0	370	37.0	201	20.1	139	13.9
Chi- Square test: $\chi^2=13.2$, d.f= 3 , p=0.004 (<0.05) Significant								
Knowledge of key diseases treated in Syndromic Management of RTIs and STIs as reported by Students								
Type of Students	CHLAMYDIA Infection (n=280)		Gonorrhoea Infection (n=360)		Hepatitis Band C (n=200)		All other STDs (including HIV (n=160))	
	No.	%	No.	%	No.	%	No.	%
Dental Students (n=500)	149	53.2	192	53.3	51	25.5	108	67.5
Unani Medical Students(n=500)	131	46.8	168	46.7	149	74.5	52	32.5
TOTAL	280	28.0	360	36.0	200	20.0	160	16.0
Chi- Square test: $\chi^2=70.3$, d.f= 3 , p=0.00001(<0.05) Significant								

Discussion:

Majority of students in our present study from both Dental (BDS) and Unani (BUMS) colleges had good knowledge of modes of HIV causation and these results were almost similar to findings to other studies^[6,12-14,18-19,25] on female adolescents across the whole world.

On same level of questions the Dental (BDS) and Unani (BUMS) students understanding of pills role in protection from HIV infection was weak and they had also less understanding of Mother to baby transmission (this was more in entry level students of 1st and 2nd year). This reflects that despite presence of RTI and STI management in their course they are not understanding RTIs and STIs management (even at level of 4th or 5th Year students) as also indicated by few studies^[8,10-12,17,23] on

poor attitudes of Adolescent female students as well as women towards understanding of RTIs and STIs.

Literature also points towards these mixed issues existing across many countries of the world from many studies.^[8-15] Study in Uganda on Adolescents has found that there was a serious gap in knowledge and understanding of ‘dual protection’ against sexually transmitted diseases, including HIV/AIDS, and against pregnancy.^[8] Study in Thailand on young people reveals that current programs for adolescent sexual and reproductive health focus on education and counselling and do not provide appropriate privacy or clinical care.^[9] Study in Saudi Arabia reveals that STDs knowledge was inadequate among non-medical university students and School education, peer groups, internet and mass media are the main ways of learning about STDs.^[11] Study among

non-medical students in Thailand indicates that they need more information on STDs. Their attitudes have shown many misconceptions regarding these issues, although many have shown a positive attitude toward learning more about STDs.^[12] Study from Nigeria also reveals that although the majority of the students had an objective knowledge on STIs transmission and prevention and overall attitude was positive but their practices were not satisfactory, especially for the males and Females were more careful and health conscious than their male counterpart.^[13] Study^[10] on female adolescents in Saudi Arabia although reveals unsatisfactory knowledge, inadequate hygiene practices, but focus is required to improve adolescents' knowledge regarding Reproductive Health issues and also involve their parents and teachers to provide appropriate education related to this issue. Study^[14] in Italy has also revealed that knowledge about human fertility and legal rules regulating assisted reproduction is rather poor among University Students, regardless of sex and type of education.

In our present study although majority of students from both colleges had good understanding of modes of Presentations of STIs such as no obvious symptoms in Men and Women, but regarding causes and cure of STIs students responses were very varied with weak understanding of causes of specific STIs such as Chlamydia, Gonorrhoea and Genital warts due to HPV infections. This might be happening due to Poor attitudes towards learning Management of RTIs and STIs in their studies. This aspect was similar other studies^[24-28] carried out in different parts of world. Study In Malaysia has found the no association of Dental students' knowledge was with their attitude towards HIV Management as well as no association was found between age and knowledge and between age, gender, or ethnicity and attitude towards HIV Management.^[24] The results of another study in Pakistan however indicates that there is a also lack of knowledge about HIV, especially about the modes of transmission and prevention techniques.^[25] Another study in India indicates that active student's collaboration for treatment compliance of HIV/AIDS

patients should be directed towards comprehensive training in the dental colleges.^[26]

Majority of students from both Dental(BDS) and Unani(BUMS) colleges although had good understanding of modes of Presentations of causes of Hepatitis B(73%) but in majority of them the responses were poor in terms of causation, modes of transmission and preventive steps such as less understanding of causes and cure of Hepatitis C virus and HPV virus this Indicates that Indepth Knowledge of Dental and Unani students is lacking. This finding was similar to the other studies[16, 23-30] in literature. Study of Shaghaghian S (2015) also reveals that Blood and body fluid exposure in dental setting is common and a lot of them are not reported. To reduce the hazards of these exposures, infection control authorities should design interventions especially for mentioned high-risk conditions. They should change dental students' behavior especially regarding not recapping injection needles and using eyewear. Dental schools seem to need a management center and a standard protocol for following up the exposures.^[20]

The significantly better knowledge of Dental students of (BDS) as compared Unani (BUMS) students($p < 0.001$) not only in terms of role of socio-cultural factors in RTI/STI causation; but also in terms of understanding key diseases(such as HIV Gonorrhoea, Chlamydia) Syndromic management approach towards RTI/STI in their respective setups indicates that RTI STI Management is not an important priority in BUMS courses. This may be due to the fact that the good socio-demographic, economic and disciplinary factors of Dental students might be operating in good understanding of RTI and STI management.

Conclusion:

Both, Unani and Dental students need to focus more on positive attitude towards Sexual and reproductive health disorders management related to their course. They must understand the importance of management of sexual and reproductive health problems of their patients. They

must also know how to get rid of Occupational Exposure risk of RTIs and STIs in their future Clinical Practice. Moreover, there is also a need and scope to provide correct and detailed information on all Major STIs for both dental and Unani student from their respective courses. The key shapers of students' such as Dental and Unani faculties, also needs to provide better training and knowledge on RTI and STI-related topics.

Recommendations:

Unani Medical Students need regular interactive workshops and seminars, besides teaching sessions, focused lectures on positive attitudes towards all major RTIs as well as STIs such as HIV/AIDS, Gonorrhoea etc. This can form a basis for provision of appropriate, optimal dental and Unani care improving oral and Sexual cum Reproductive health related Information.

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Assessment and Comparison of Perception of Female Foeticide among the Medical and Nursing Students: A Cross-sectional Study from the Uttarakhand State

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Abstract :

Introduction: Gender discrimination is an important social context and it starts in the nuptial stage of female foetus death before its arrival in the outside world. Thus, awareness level assessment of health functionaries is must so as to curb female foeticide. **Objective:** To assess and compare the percept of medical and nursing students about female foeticide. **Method:** The total medical (n=279) and nursing students (n=438) were studied in the present study and information was collected using predesigned pretested questionnaire. **Results:** Overall, more than 90% students were aware about female foeticide and television was the greatest source of information in 83.7% (medical) and 67.5% (nursing). **Conclusion:** Gender, age, type of nursing course and different semesters of MBBS students does not effect/influence the awareness of female foeticide.

Introduction:

In India, female infanticide has been practiced for centuries with the earliest evidence being provided by Sir Jonathan Duncan in 1789.^[1] In India, female infanticide in recent decades has substantially been reduced but this progress has been counter-balanced by the commencement of induced female foeticide after fetus sex detection with the help of modern medical technologies since the mid 1980s.^[2]

The overall sex ratio in India has increased to 940 as per 2011 census against 930 as given by 2001 census. However, the area of grave concern is that the child sex ratio plummeted to 914 from 927 in 2001.^[3] Sex ratio at birth is an indirect measure of female foeticide.^[4] The worsening of the country's hugely skewed sex ratio is largely due to misuse of prenatal diagnostic techniques despite stringent laws banning their use for sex selection and consequent increase in cases of female foeticide.^[5]

About 5.75 lakh females go missing every year due to practice of female foeticide.^[6] India is a secular, democratic and a republic country with a population of 1.2 billion.^[7] It has made tremendous advancements in scientific, social and economic fields, yet certain social evils like female foeticide continues to be practiced in our country. National Girl Child Day is observed every year on Jan 24th with year 2017 theme "Beti Bachao Beti Padhao" to spread awareness about the inequalities faced by the female gender.

Because of more opportunity to contact with community during their postings so they can spread message about female foeticide awareness, prevention and its harmful effects, it is the need of the time to explore the gaps in the mindset of future young health functionaries (medical and nursing students) about their percept for female foeticide.

Table 1: Percept of students about dangers and measures for stoppage of female foeticide

Dangers of Female Foeticide*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Increase in sexual and social crimes against women	155 (35.4%)	105 (37.6%)
Increase in prostitution, sexual exploitation	24 (5.5%)	45 (16.1%)
Increase in sexual transmitted infections (STIs) including HIV/AIDS	27 (6.2%)	42 (15.1%)
Affect the women's health because of repeated pregnancies & forced abortions	200 (45.7%)	223 (79.9%)
Don't know	81 (18.5%)	15 (5.4%)
Methods for Stoppage of Female Foeticide*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
By increasing awareness by doing nukkad natak, puppet shows, rallies	37 (8.4%)	43 (15.4%)
By telling our parents, grandparents and neighbours	7 (1.6%)	19 (6.8%)
By giving Punishment to people/doctor conducting illegal ultrasound	47 (10.7%)	54 (19.4%)
By giving equal opportunities to girls in education/jobs	8 (1.8%)	24 (8.6%)
By enforcing strict laws like ban on prenatal sex determination	7 (1.6%)	85 (30.5%)
By discouraging dowry system in society	6 (1.4%)	30 (10.8%)
All of the above	291 (66.4%)	195 (69.9%)
Did not attempt	51 (11.6%)	6 (2.2%)

*Multiple Responses

Objectives:

Primary objectives

a) To assess the knowledge of students (medical & nursing) about female foeticide, its dangers and corrective measures for its prevention.

b) To find the association of awareness of female

foeticide with some of the selected variables
Secondary objective:

c) To know their perception towards gender preferences and family size and family composition.

Method:

Study design: Cross-sectional

Study subjects: Medical & nursing students

Study Place: Government medical college and three private nursing colleges of block Haldwani, District Nainital

Study period: November 2013-April 2014

Sample size : Complete enumeration that is available at the time of data collection that is n= 279 medical students and n= 438 nursing students.

The medical students were MBBS students of different academic years studying in the Government Medical College, Haldwani, Uttarakhand. The information from medical students was obtained by the investigator in the lecture hall through pretested semi-structured questionnaire and the intern students posted in the community medicine department were also approached. The nursing students that were enrolled in the study were studying in 3 private nursing colleges of Haldwani Block, district Nainital i.e Pal college (n=142), Dronh college (n=152) and Nancy college (n=146). The investigator approached the nursing tutors for the collection of filled questionnaires by the students. All of them were ready to participate in the study who were present on the day when the questionnaire was administered to them.

Statistical analysis: Frequency tables were prepared and percentages were calculated and inferential statistics using chi square/fisher exact test is carried out. Analysis was done with the help of MS excel and SPSS version 18.

Ethical approval: The study being approved by the institute ethical committee approval.

Results:

The socio-demographic profile of the students in the current study is as follow.

The Bsc nursing students were in higher percentage of 52.3% among the nursing students studied followed by GNM of 44.3% and ANM of 3.4%. The percentage of medical students was 1st year MBBS, Batch 2013 (20.4%), 2nd year MBBS, Batch 2012 (22.2%), 3rd year MBBS, Batch 2011 (33.7%),

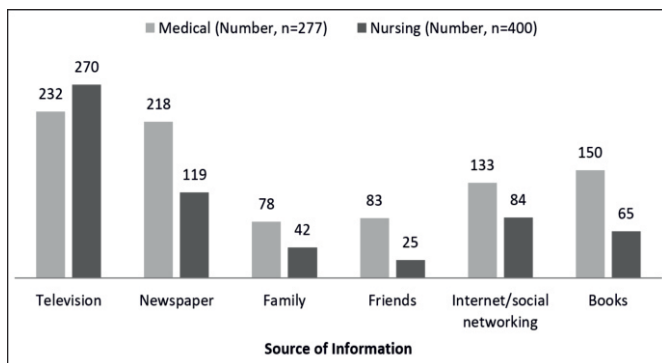
4th year MBBS, Batch 2010 (17.6%) and only 6.1% intern female MBBS students, Batch 2009 posted in the department.

There were n=2 fathers amongst nursing students who were expired. The mean age of the medical students is comparatively greater than that of nursing students (21 versus 19 years). Female students outnumbered the males with 92.7% (n=406) in nursing and 60.6% (n=169) in medical students. Majority of them were hindus in both nursing (91.1%, n=399) with (67.4%, n=295) of them belonged to the general caste and medical (88.2%, n=246) with (70.6% , n=197) of them belonged to the general caste. The relative percentage of literates fathers in nursing and medical students was 80% & 85.7% respectively. Whereas, the corresponding percentages of literate mothers were 78.1% & 76.7%, respectively. The mothers of most of these students was housewives in nursing (71.7%, n=314) and medical (64.5%, n=180). The fathers of these students who were in government jobs was 54.4%, n=237 in nursing and 63.8%, n=178 in medical. The combined percentage of their fathers who were farmer was 21.5% (n=82).

Among the 11 professional fathers in nursing students, 2 of them were engineers, 1 was dentist and rest were teachers in school and the 3 professional mothers were teachers. Among the 45 professional fathers in medical students, 14 were doctors, 17 were engineers, 4 were advocates, 2 did MBA, 3 did Phd, 1 was police officer and 4 were teachers. While among 19 professional mothers in medical students, 3 were doctors, 2 were advocates, 13 were teachers and one did MBA/CA.

Figure 1 shows that nine out of ten students in nursing (91.3%, n=400/438) and almost nearly 100% students in medical (99.2%, n=277/279) had heard about female foeticide. Mass media (Television and newspaper) was the major source of information in amongst nursing and medical students. The percentage of television and newspaper was higher in medical (83.7% versus 78.7%) than in nursing (67.5% versus 29.7%) respectively.

Figure 1: Sources of information about female foeticide



***Multiple Responses**

Regarding the percept of students about the dangers of female foeticide, maximum students of nursing & medical with 35.4% (nursing) and 37.6% (medical) were aware about the increase in sexual and social crimes against women. There were 4.8% (nursing) and 1.8% (medical) students who were unaware about the dangers of female foeticide.

All the listed measures for the stoppage of female foeticide consisting of increasing awareness by doing functions/rallies, educating parents/grandparents, giving punishment for illegal actions, giving equal opportunities to girls, by enforcing strict laws, by enforcing ban on prenatal sex determination and by eliminating dowry system, was given according to 66.4% (nursing) and 69.9% (medical) students.

Only less than 10 % (8.7%) amongst nursing students were aware about the PCPNDT Act as compared to 44.4% in medical students. In medical students who are aware (n=124), the 26.6% said yes but no further explanation and 20.2 % said yes with year of implementation/amendment of the act was given. While nursing students said yes with no further explanations in 81.6%. Amongst those who were aware about PCPNDT, the 10.5% (n=4) nursing students said it is for the stoppage of female foeticide vis a vis in 8.1% (n=10) medical students. According to 40.3% (n=50) medical students, the act is meant for the prohibition of sex determination with none of the nursing students held this view and while 2.4% (n=3) medical students said it is for determining genetic defects. The view of giving punishment under this act

to persons conducting illegal ultrasound was held by 5.3% medical students. Also, the 2.6% (n=1) nursing vis a vis 2.4% (n=3) medical students said for the full form of the act.

Almost more than nine-tenth of the students in both nursing and medical were of the opinion that female foeticide is a harmful practice and it should be stopped. There were 16.9% (nursing) and 7.2% (medical) students who have not been educated about female foeticide in the school.

The comparatively more number of medical students (99.3%) were aware about female foeticide than nursing (91.3%) and this difference in proportion is significant statistically. Also, out of the total nursing students (n=438), pertaining to their course of study, the higher BSC nursing (94.3%) were more aware about female foeticide than ANM/GNM (88%) with statistically significant difference seen. But in context to medical students, no significant difference was found in their awareness level of female foeticide as per their course of study.

The gender and age of the students (n=729) does not have any significant effect seen regarding their awareness about female foeticide.

Maximum nursing (80.5%) and medical (78.8%) students had preferred that boys carries name of the family followed by the reason of taking care of parents respectively as the viewpoint in 11.4% nursing and 18.9% medical students. There were 1.8% nursing students who remained with unspecified reasons for male preference whereas amongst 3.2% medical students said that no dowry issue problem with male gender. The other reasons like trends/superstitions/safety issues was given in higher percentage (68.2%) amongst nursing students on asking about the female gender not preferred as against 13.6% medical students said for potection/ male dominant society/ Indian mentality. There was more preference towards family composition with one boy & one girl in 74.4% nursing and in 62.3% medical students. Figure 2 shows that regarding their percept for family size, more students had given viewpoint for having 2 children in family as

Table 2: Awareness of students about PCPNDT (Preconception Prenatal Diagnostic Technique) Act and various statements given for the act and opinion of students about some aspects of female foeticide

Aware about PCPNDT Act	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	38 (8.7%)	124 (44.4%)
No	400 (91.3%)	155 (55.6%)
Different statements given by those who aware	Nursing (n=38) Number (%)	Medical (n=124) Number (%)
Said yes with no further explanations	31 (81.6%)	33 (26.6%)
Said yes with year given	0%	25# (20.2%)
For foeticide provision	2 (5.2%)	0%
It is preconceptional antenatal diagnostic technique	1 (2.6%)	0%
Act used to stop the female foeticide	2 (5.3%)	10 (8.1%)
Punishment is given under this act to people/doctor conducting illegal ultrasound	2 (5.3%)	0%
Banned sex determination for increasing sex ratio	0%	2 (1.6%)
Misuse of diagnostic technique for sex selection	0%	7 (5.6%)
Prohibition of sex determination/selection	0%	41 (33.1%)
It is regulation of prenatal diagnostic technique (PNDT)	0%	3 (2.4%)
It is regulation of PNDT for genetic defects	0%	3 (2.4%)
Is Female foeticide harmful for society	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	371 (84.7%)	270 (96.8%)
No	67 (15.3%)	9 (3.2%)
Whether educated about Female Foeticide in school	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	364 (83.1%)	259 (92.8%)
No	74 (16.9%)	20 (7.2%)
Female Foeticide Practice should be stopped	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	372 (84.9%)	270 (96.8%)
No	66 (15.1%)	9 (3.2%)

Among these medical students there n=7 who had given wrong year about the implementation/amendment of PCPNDT Act i.e 1994/1996.

according to 77.2% nursing and 83.1% medical students.

Discussion:

Although curbing of female foeticide is a herculean task and medical and nursing students are the future health workforce in whom the knowledge has to be imparted right from the undergraduate level since the impact is life long, our study is an

attempt to reveal the medical and nursing students perception about female foeticide.

In the studies conducted on medical students and on interns by Nath A et al in Delhi and Avachat et al in Maharashtra revealed less than half proportion of female that is 43% and 40.5% respectively. [8,9] Our study showed greater percentage of female gender in both medical (60.6%) and nursing students (92.7%). This finding corroborates with the study done on

Table 3: Association of awareness of female foeticide in context to gender, age wise, course of study and medical/nursing students

	Medical (n=279)	Nursing (n=438)	Odd ratio	Inferential test
Aware Female foeticide	277 (99.3%)	400 (91.3%)	13.158	Chi sq is 20.496 df=1 P is 0.001
Not aware female foeticide	2 (0.7%)	38 (8.7%)		
	Male (n=142)	Female (n=575)	Odd ratio	Inferential test
Aware female foeticide	133 (93.7%)	544 (94.6%)	0.842	Chi sq is 0.194 df=1 P is 0.660
Not aware female foeticide	9 (6.3%)	31 (5.4%)		
	Age (≤ 20 years) (n=424)	Female (> 20 years) (n=293)	Odd ratio	Inferential test
Aware female foeticide	404 (95.3%)	273 (93.2%)	1.480	Chi sq is 1.463 df=1 P is 0.226
Not aware female foeticide	20 (4.7%)	20 (6.8%)		
	ANM/GNM (n=209)	BSC (n=229)	Odd ratio	Inferential test
Aware female foeticide	184 (88%)	216 (94.3%)	0.443	Chi sq is 5.448 df=1 P is 0.020
Not aware female foeticide	25 (12%)	13 (5.7%)		
	1st/2nd year MBBS (n=209)	3rd/4th/MBBS/interns (n=229)	Odd ratio	Inferential test
Aware about female foeticide	117 (98.3%)	160 (100%)	-	P is 0.181 #

fisher exact test

Table 4: Gender and family composition preferences among the students

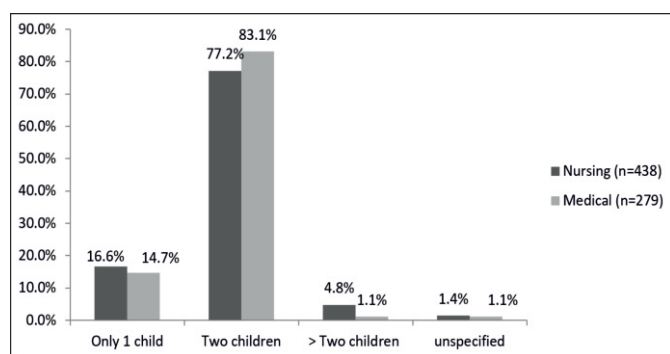
Reasons for male preference*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Carries name of family	353 (80.5%)	220 (78.8%)
Takes care of parents	50 (11.4%)	53 (18.9%)
Boys are more strong	3 (0.68%)	10 (3.6%)
Burden on family	61 (13.9%)	48 (17.2%)
Dowry	97 (22.1%)	111 (39.7%)
Cant take care of parents	11 (2.5%)	11 (3.9%)
All the above	72 (16.4%)	123 (44.1%)
#Others/non specified	8 +299 (1.8% + 68.2%)	9+38 (3.2% + 13.6%)
Percept for family composition*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
One boy & one girl	326 (74.4%)	174 (62.3%)
Only boys	6 (1.4%)	14 (5.01%)
Only girls##	13 (2.9%)	7 (2.5%)
Can be anyone	91 (20.8%)	90 (32.2%)
Unspecified	8 (1.8%)	0 (0%)

Multiple Responses

The number before plus sign indicates non- specified and the number after plus sign indicates others like safety issues/trends/ superstitions / protection /male dominant society/ Indian mentality

one student in medical said son is son till he gets wife and daughter is daughter through her life

Figure 2: Perception of students for ideal family size



nursing students by Devi Simmayee in Odisha where 70% were female.^[10]

Regarding the awareness about female foeticide, more than 90% students in amongst nursing and medical in the current study was aware about female foeticide. In a study by Devi Sinmayee on nursing

students in Odisha has also found that 94% students were aware about the female foeticide.^[10] In another study also, on non-medical/non-nursing adolescents by Anjana Ramesh et al in Mangalore, it was revealed that 89.3% of them knew about female foeticide.^[11]

In our study, the 81.5% medical and 94.5% nursing students knew about the dangers of female foeticide. While in study by Sidhu et al in their study conducted among medical students reported that lesser respondents (43%) knew about the dangers of female foeticide.^[12] And Nath et al found that slightly more than 60% male and female interns knew about implications of declining sex ratio as increase in crime and 52% reported that there will be effect on women's health.^[8]

To curb FF, legislative efforts (PCPNDT Act 2013) along with IEC measures in raising the status of women is helpful in this direction. Nath et al found that majority of interns (77.2%) stated that creating awareness about declining sex ratio is an effective measure while 62.2% opined strict implementation of law is necessary to deal with this issue.^[8] A study by Shubhadaavachat et al on 79 medical interns in Maharashtra found that a total of 61 interns opined that creating awareness is the effective measure to combat declining sex ratio while 49 interns thought that legislative measures are the useful means and 51 said that ban on sex selection practices should be practiced.^[9] Whereas in the present study, more than 50% students in both medical (69.9%) and nursing (66.4%) had opined for the usual measures for the stoppage of female foeticide like increasing awareness, giving punishment to wrong doers, giving equal opportunities to girls, enforcing strict laws with ban on prenatal sex determination and eliminating dowry system.

The studies done on general public (married women) by S Puri and on pregnant women by Vadera et al has also revealed the thought of deep rooted male preference. It may be due to continuation of family name, old age support and societal responsibilities.^[13,4] Regarding the gender preferences in the family, the present study observed that 62.3% medical and 74.4% nursing students had preferred for one boy and one girl. Overall, very few students had opined for only boys that is 6.4% and only girls that is 5.4%. The thought of disfavouring only girl child in the family is revealed from the current study. Same thought is seen in the study carried on medical undergraduates in Mumbai by Patil et al where only 7% opined to have one daughter as ideal number of children and none of them preferred to have both daughters.^[14] Unlike 62.3% medical students preference for one boy and one girl in the family, the study by Sidhu TK et al among medical students has found higher respondents (75%) supported the view of one male and one

female child as ideal number of children.^[12] However, the study by Anjana Ramesh et al in Mangalore on school going adolescents, majority (92.3%) had opined for one girl and a boy.^[11]

Conclusion and Recommendation:

More than 90% students of nursing and medical were aware about female foeticide with television the greatest source of information in 83.7% (medical) and 67.5% (nursing). The reasons for female gender discrimination given were safety issues in 68.2% (nursing) and dowry issue in 39.7% (medical). However, more than 50% students (both medical & nursing) had preferred for one boy and one girl presence in the family. Very few percentage (6.6%) of students lacked awareness about the dangers of female foeticide. Majority of them knew about the common measures to stop the female foeticide, but, however, their awareness about PCPNDT act was less than 50%. Gender, age, type of nursing course and different semesters of MBBS students does not affect/influence the awareness of female foeticide. However, in the study, overall medical students had higher odd than nursing students in context to their awareness of female foeticide. Thus, the study concludes that as the awareness level of medical and nursing students about female foeticide, it's dangers and prevention methods is proportionately better than about PCPNDT act perception. Hence, the study recommends for the strict implementation of legal measures to tackle female foeticide, there is a need to create awareness among medical and nursing fraternity along with their active involvement.

Limitations: There is lack of generalization of the findings of the study to the medical and nursing students of the Haldwani block because sample size has not been calculated.

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Declaration:

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Conflict of Interest: Nil

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Epidemic Investigation of Water Sources as Cause of Acute Watery Diarrhoea Outbreak in District of Mathura, India

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Abstract :

Introduction: Cholera is one of the most important diarrheal diseases in India and continues to be an important health problem in India. Cholera is an acute intestinal infection caused by toxigenic strains of *Vibrio cholera* serogroups O1 and O139. *V. cholerae* O1 belonging to the El Tor biotype is the most common serogroup in India. Recently there was an outbreak of acute watery diarrhea in Mant and Nauhjheel Blocks of Mathura district, in May 2017. **Objectives:** To determine the cause, source and extent of the acute diarrheal disease outbreak in district of Mathura by conducting environmental and microbiological investigations **Method:** The study was carried out in the department of Microbiology, S.N. Medical College, Agra in association with Department of Community Medicine, S.N. Medical College, Agra. This study was conducted on the water and stool samples collected from Mant and Nauhjheel blocks of Mathura district. Water samples from 2 ice candy factories and 7 Stool samples from suspected cases were collected from areas reporting the maximum number of cases of acute watery diarrhoea, and tested for diarrhoeagenic pathogens in the laboratory. Isolation and identification of pathogen was done according to the standard methodology. **Results:** Of the 2 water samples and 7 stool samples tested 2 stool samples were found to be positive for *V. cholerae*. The major reason for the outbreak was traced to be consumption of contaminated water. **Conclusion:** Provisions of better sanitation and safe drinking water with adequate knowledge of proper hygiene is necessary to avoid recurrence of outbreaks due to cholera. Also continuous surveillance of the outbreak is necessary to avoid the spread of transmission.

Keywords: Acute Watery Diarrhoea, Outbreak, *Vibrio cholerae*.

Introduction:

Cholera is one of the most important diarrhoeal diseases in India and a major illness of public health importance is an acute infectious disease caused by toxigenic strains of *Vibrio cholera*.^[1] The disease poses a lesser threat to developed countries which have appropriate standards of hygiene while it remains a challenge in India and other developing countries where access to safe drinking water and adequate sanitation facilities are often limited.^[2] Cholera, essentially being a disease of poor sanitation, is linked to consumption of water and

food from unsafe sources, such as, drinking water from tube-wells or river, drinking or bathing in lakes.^[3] Although in humans, several pathogens may be responsible for causing acute diarrhoea, it is essentially important to investigate *vibrio cholerae* as the causative agent, because it can be fatal, causing severe dehydration and death within several hours and it is highly contagious.^[4] Recently there was an outbreak of acute watery diarrhoea in Mathura district, during late October-November 2016, involving more than thousand people. We conducted an environmental and microbiological investigation to

determine the cause, source and extent of this outbreak. As contaminated water plays an important role in the transmission of pathogens associated with acute watery diarrhoea, the current study mainly aimed to detect these diarrhoeagenic pathogens in water collected from various public water sources, which could be responsible for the diarrhoea outbreak.

Method:

The study was carried out in the Department of Microbiology, S.N. Medical College, Agra in association with Department of Community Medicine, S.N. Medical College, Agra. This study was conducted on the water and stool samples collected from Mant and Nauhjheel blocks of Mathura district. In May 2017 on instructions of CMO, Mathura, a team of Integrated Disease Surveillance Project (IDSP) along with local healthcare professionals visited the affected villages. The Mant and Nauhjheel block is having population of 31,000 and 40,000 respectively. Epidemiologist IDSP Mathura and state IDSP team along with local healthcare workers searched actively for cases door to door in the villages under outbreak of acute watery diarrhea. They collected personal history including symptoms from cases and created a line listing by using predesigned proforma.

A case of diarrhoea was defined as the occurrence of more than 3 watery stools a day. This case definition was consistent with the case definition of the IDSP in India.^[5] The incidence was calculated by age and sex using population denominators collected during the house to house search. An epidemic curve was constructed to describe the distribution of cases overtime. Ice candy factories and nearby tanks were visited to inspect and review the water supply and sanitation.

Water samples were collected from Ice candy factories in the affected locality of Mathura district, following an outbreak of acute watery diarrhoea. Stool samples were collected from suspected cases

having acute watery diarrhoea and tested for diarrhoeagenic pathogens. Isolation and Identification of diarrhoeagenic pathogens was done according to standard methodology.

Water samples were collected in 500 mL bottles and transported immediately to the referral lab of microbiology department of SN Medical College, Agra for analysis. From each water sample, some water was directly poured into Mac Conkey broth and alkaline peptone water, respectively for enrichment. Mac Conkey broth was incubated for 18-24 hrs and alkaline peptone water for 4-6 hrs at 37°C.

Rest of the water sample was divided into two parts equally and each part was filtered through 0.22µm filter papers separately. The membrane filters were then enriched in 50 ml of modified MacConkey broth at 37°C for 18-24 hrs and alkaline peptone water (APW) (pH 8.4) at 37°C for 4-6 hrs, respectively and then cultured on selective media.^[6] Thiosulphate citrate bile salt sucrose (TCBS) agar was used as selective media and subculture was also done on blood agar and MacConkey, incubated at 37°C for 18 to 24 h and processed for isolation of bacterial pathogens. Cultures were preliminarily screened by Hanging drop technique and colony morphology and the colonies with the characteristic appearance of *V. cholerae* were confirmed by biochemical tests as per the standard methods.^[2] We interviewed the various persons like health workers and food safety department regarding information of water supply, drainage system and any recent events of watery diarrhoea.

Results:

Total 527 cases were reported from Block Mant and 589 cases from Block Nauhjheel. Age wise male female distribution of cases in affected villages of block-mant and Nauhjheel are given in Table 1 and 2 respectively.

Table 1: Age wise Male-Female distribution of cases in affected village in block-Mant (Mathura)

Age in Years	Male	Female
1-10	90(33%)	99(39%)
11-20	62(23%)	45(17%)
21-30	30(11%)	23(9%)
31-40	28(10%)	29(11%)
41-50	23(8%)	20(8%)
51-60	22(8%)	23(9%)
61-70	16(6%)	17(7%)
Total	271	256

Table 2: Age wise Male-Female distribution of cases in affected village in block-Nauhjheel (Mathura)

Age in Years	Male	Female
1-10	109(33%)	88(34%)
11-20	71(21%)	67(26%)
21-30	48(14%)	30(12%)
31-40	37(11%)	18(07%)
41-50	24(07%)	22(08%)
51-60	22(07%)	18(07%)
61-70	20(06%)	15(06%)
Total	331	258

The data shows that in block mant, both, male and female are equally affected. In block Nauhjheel 331 males and 258 females are affected. In both blocks most common age group affected is 1-10 yrs followed by 11-20 yrs. In Mant block 33% males and 39% females are affected in 1-10 yrs followed by 23% males and 17 % females 11-20 yrs age group. In Nauhjheel block 33% males and 34% females are affected in 1-10 yrs followed by 21% males and 26 % females 11-20 yrs age group. Figure 1 and 2 shows

the time-wise distribution of cases in both Mant and Nauhjheel block. There was an initial case on 18 May 2017 and the last case was on 03 June 2017. The curve shows that the peak cases were reported on 19 May 2017.

Figure 1: Time-wise distribution of cases in block Mant, District- Mathura

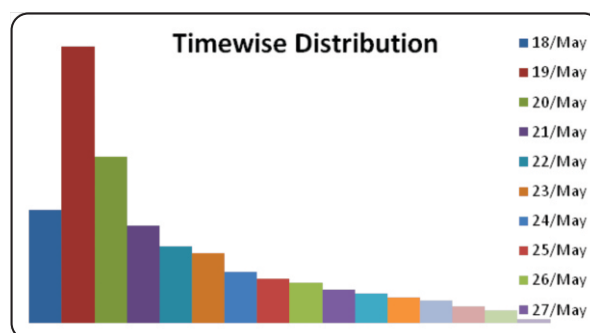
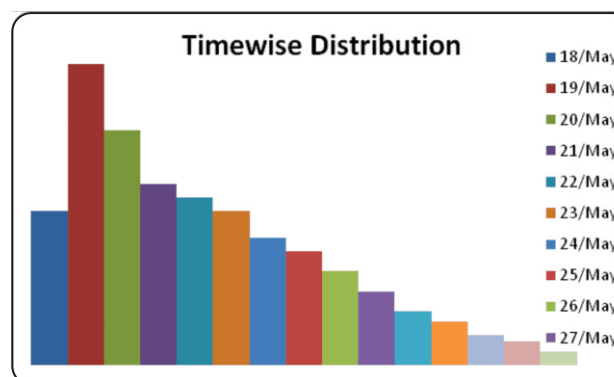


Figure 2: Time-wise distribution of cases in block Nauhjheel, District- Mathura



Discussion:

In this study overall males were more commonly suffered from cholera as compared to females, as evident from previous studies^[7,9-10]. Both genders and all age groups were affected by cholera as comparable with the findings of Chander J et. Al.^[8]

Of the 7 stool samples tested, 2 were found to be positive for V. cholerae. The diarrhoea cases were clustered around and using the water sources that have been found positive for V.cholerae in the present study, thus suggesting that, contaminated water from these public water sources played an important role in the transmission of this pathogen, leading to an

outbreak of cholera in Mathura district. Ranjbar et al, also stated in their study that an outbreak of cholera occurred due to contaminated well water as all the patients had consumed well water before the onset of outbreak and the cultures of stool also yielded *V. cholera*.^[3] Mahanta et al, in their study, reported a cholera outbreak due to consumption of the contaminated water of piped water supply, along with inadequate sanitation as 94.6% were practicing open field defecation and later spot mapping of cases was done and about 120 suspected cases were line listed.^[11] Similarly, in the study of Kaistha et al, contaminated water of the public water sources, such as hand pumps, was an important source of cholera outbreak in the affected area which was confirmed by culture of faecal specimens from acute gastroenteritis cases and simultaneously water samples from the areas reporting the maximum number of cholera cases, both of which were positive for *V. cholerae*.^[1] Bhunia et al. also reported an outbreak of cholera that affected a high-risk slum supplied by an old piped water supply with no regular chlorination and the probable source of infection was contaminated municipal piped water supply that had sucked the nearby sewage been contaminated by an index case-patient suffering from cholera.^[12] In the present study, we also feel that recent outbreak of acute watery diarrhoea probably by *V. Cholerae* (As evidenced by clinical history but not confirmed microbiologically as *V. cholerae*) is due to contamination of water supply by sewerage system, as all the water supply and sewerage arrangement in this holy place was quite old and there was no regular chlorination of water as it was supplied by the tube wells. As a result of our investigation, the local authority closed the tube wells for water supply. Therefore, water sources and sanitation need to be improved and proper management of the excreta is necessary to avoid contamination of water sources. Low level of personal and domestic hygiene may have also led to extensive environmental contamination, resulting in contamination of these water sources.

Conclusion:

Our findings demonstrated that water supply of the public water sources, possibly contaminated by the nearby sewerage system, was the probable cause of acute watery diarrhoea outbreak in district of Mathura and the etiological agent was found to be *V. cholerae*. Cholera is a serious public health threat, especially in a highly populated urban setting like Mathura district, where poor water and sanitation conditions are favorable for transmission of *V. cholerae*.

Limitation of the study: Water samples were not collected from the hand-pumps and public wells as well as toilets. This research was conducted in resource limited setting, due to which we could not use serological and molecular methods to confirm our results.

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Declaration:

Funding: Nil

Conflict of Interest: Nil

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Attitude of Media towards Doctor in Public Health Emergencies

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Public health emergencies are medical emergencies in which a large number of people suffer from a disease as well as disease have high mortality. This scenario of having public health emergencies in India is an iceberg phenomenon as majority of times the hidden portion of iceberg is not appreciated by anyone except public health professionals. Media has developed a habit of making a hue and cry whenever there are multiple mortalities due to a single disease confined to a region. In this scenario, doctors are the softest target for media as they don't have any control over infrastructure, material and man power. In a country like India where the health care delivery system comes under state responsibility, it is no wonder that the system is crippling in these kind of scenarios and the Government doctors who always work under resource starved conditions becomes easy prey to media as well as to public. On the one end the media portrays doctors as the person responsible for all ills in the system and the public becomes violent and start battering the doctors. This has happened every now and then in all states of our country. The question which comes to the mind is "who is responsible?" for this mess. The answer is both simple and complex. Primarily responsibility lies with the National and State Government as they are responsible for providing all resources required for providing healthcare to people. Public health professionals, planners, members of planning commission/NITI AYOGE are also equally responsible for this. For example to provide effective healthcare to its people WHO has recommended that 5% of GDP must be spent on health but the stark reality is that at present India spent only 1.25 % of GDP on health. Secondly, none of the government either in past or present has made any sincere efforts towards controlling population of our country which is going to become largest populated country in world in future. So we are living in situation where there is only one purse and numerous mouths to feed which is impossible for any country/system. Thirdly if you

look at the best indicator of health for developing countries like India, it is Infant Mortality Rate. In India 8,02,000 infants died in 2017 which is roughly equal to 2197 infant deaths in a day about which nobody is talking because of fear of severe backlash from media as well as people. This kind of statistics must be brought in forefront by professional bodies like IAPSM, IPHA, IMA, IAP, FOGSI etc . Only than the perception of media and public might change towards Doctors in India. Last but not the least the biggest ill facing the healthcare delivery system of our country is an absolute incoordination between Department of health, Department of Medical Education and MCI(NMC). If the right hand does not know what left hand is doing one can very well imagine condition of the body. So in my personal opinion a following measures are required urgently to improve the health care delivery system in India :-

- Department of Health and Medical education must be merged into one.
- There should be formation of All India Medical Cadre.
- Health should be brought from state to central responsibility
- GDP must be increased to minimum of 5% .
- Professionals and professional bodies must be given the responsibility of planning and implementation of all National Health Programs and missions.
- Futuristic planning must be done so that burden of increasing population can be efficiently met.
- There should be stringent law for control of population throughout the country.

A lot more would be required for which like-minded people, politicians, and professionals must come together to work in unison and solve the ills facing health and health care delivery system of our country. This will result in changing the attitude of media as well as public towards Doctors, still a noblest profession in the world.

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Journals: Mehta MN, Mehta NJ. Serum lipids and ABO Blood group in cord blood of neonates. Indian J Pediatr.1984; 51:39-43.

Book: Smith GDL. Chronic ear disease. Edinburgh: Churchill Livingstone; 1980.

Chapter in the Book: Malhotra KC. Medicogenetics. problems of Indian tribes. In: Verma IC, editor. Medical genetics in India.vol. 2. Pondicherry: AuromaEntrprises; 1978. p. 51-55.

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આયુષ્માન ભારત અંતર્ગત હેલ્થ એન્ડ વેલનેસ સેન્ટર ગુજરાત



વ્યાપક પ્રાથમિક આરોગ્ય સંભાળ પૂરી પાડવા માટે એક પગલું યુનિવર્સલ હેલ્થ કવરેજ તરફ



આયુષ્માન ભારત અંતર્ગત હેલ્થ એન્ડ વેલનેસ સેન્ટરખાતે ઉપલબ્ધ સેવાઓ હાઈપર ટેન્શન, ડાયાબીટીસ, કેન્સર, ઓંખ, કાન, ગળા, માનસિક આરોગ્ય, ડેન્ટલ સહિતની ૧૨ આરોગ્ય સેવાઓ.

- પેટા આરોગ્ય કેન્દ્રો ખાતે કોમ્યુનીટી હેલ્થ ઓફિસર ધ્વારા પ્રાથમિક કક્ષાની સારવાર અને સંદર્ભ સેવાઓ.
- ૧૩૫ જાતની દવાઓનું નજીકના હેલ્થ અને વેલનેસ કેન્દ્ર ધ્વારા વિનામૂલ્યે વિતરણ.
- પ્રા.આ.કેન્દ્ર ખાતે ૧૯ લેબોરેટરી તપાસ અને પેટા આરોગ્ય કેન્દ્ર ખાતે ૭ જાતની લેબોરેટરી તપાસ વિનામૂલ્યે.
- યોગા, પ્રાણાયામ, ધ્યાન, તંદુરસ્ત ખોરાક, તંદુરસ્ત જીવન શૈલીની જાણકારી.
- તરુણ-તરુણીઓ, વૃદ્ધ લોકો અને બિન સંચારી રોગોની તપાસ અને સારવાર.
- ૩૦ વર્ષથી ઉપરની તમામ વ્યક્તિઓની હાઈપર ટેન્શન, ડાયાબીટીસ, મુખ કેન્સર, સ્તન કેન્સર, ગર્ભાશયના મુખનું કેન્સરની તપાસ

“ Lets join hands together for Healthy Gujarat- Yes Together we can make a difference”

