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**Editorial****URBAN HEALTH ISSUES IN INDIA- NEED OF THE DAY****Kantharia SL**

Across the globe around there is a steady increase in people residing in urban area, about one third of these urban dwellers, which amount to nearly one billion people, majority of them live in urban slums, informal settings or sidewalk tents. In addition to rapid population growth, India is also witnessing an explosive growth in the population residing in the urban areas. It is estimated that of the nearly 30 % of India's population or about 300 million people live in towns and cities.<sup>1</sup> Mathematical modeling reveals that this population may up to reach 534 million by 2026. In India in line with rest of the world, more rapid growth of population residing in slums is also witnessed. Nearly one-third of India's urban population or nearly 100 million live in slums which are characterized by overcrowding, poor hygiene and sanitation and the absence of proper civic services.

Health of the urban poor is as worse as the rural population. While the characteristics of each city may vary by local context, common urban health and social challenges include: overcrowding; air pollution; rising levels of risk factors like tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol; road traffic injuries; inadequate infrastructure, transport facilities, poor solid waste management systems, and insufficient access to health facilities in slum areas. Most of these cities also face various health challenges of communicable diseases, non communicable diseases, maternal and child health problems, natural calamities and threat of reemerging and emerging diseases. As per the UHRC-India one in every ten children in slums do not live to see their fifth birthday.<sup>1</sup> Only 42 % of slum children receive all the recommended vaccinations. Over half (56 %) of child births take place at home in slums putting the life of both the mother and new born to serious risk. Poor sanitation conditions in slums contribute to the high burden of disease in slums. Two-thirds of urban poor households do not have access to toilets and nearly 40 % do not have piped water supply at home.<sup>1</sup>

Health system in India is more focused towards the rural areas having a organizational structure right from grass root to tertiary care and are managed by dedicated staff. However there is a huge deficiency of any such health care structure in the urban areas. To add to this a very rapid growth of urban population has over burdened existing health care system. Majority of health care in urban area is served by the private sector but its costing, distance and many other factors make private sector facilities out of reach of most urban poor residents.

A debate is presently generated on ways to improve the Urban health scenario, one of the emphasis made by Director General of WHO<sup>2</sup> on eve of World Health Day 2010 was improved urban health governance matters, in developing countries, the best urban governance can help produce 75 years or more of life expectancy. Good urban health governance helps ensure that opportunities and advantages are more evenly distributed, and that access to health care is fair and affordable. WHO has appealed for helping the Urban health matters, in critical ways, for more and more people and has requested support for promoting urban planning for healthy behaviors and safety; improvement of urban living conditions; ensuring participatory urban governance; building inclusive cities that are accessible and age friendly; and, making urban areas resilient to emergencies and disasters.

As a researcher there is an urgent need to take up quality research to generate and systematize knowledge to address the many existing information gaps like potential advantages of urbanization and urban growth; the inequities of health disaggregated by intra-urban area; the effectiveness of proactive approaches to deal with health inequity in cities; and, the importance of involving all citizens in the decisions that affect their habitat and their health.

Also needed is to maintain this momentum of creating clean, green and healthy cities to live in and Urban health advocates should identify successful city experiences/models to be shared as menus of policy options and models of good practice.

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2. [www.who.org](http://www.who.org)

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**Guest Editorial****HIV Counseling and testing - entry point for prevention and care: Gujarat Experience.**Kadri AM<sup>1</sup>, Kumar Pradeep<sup>2</sup>

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National AIDS Control Organization (NACO) under the Ministry of Health and Family Welfare (GOI) is implementing the HIV/ AIDS control program in the country and in Gujarat the program is implemented by Gujarat State AIDS Control Society (GSACS) formed by H & FW Department of Government of Gujarat.

India had an estimated 2.3 million HIV positive persons with adult HIV prevalence of 0.34%; same figures for Gujarat are 1.38 lakhs and 0.38 percent respectively (2007). National AIDS Control Program in its ongoing phase III (NACP III) (2007 – 11) aims to detect all these positives and put them on anti retro viral therapy (ART). NACP-II (1999-2004) evolved upon the investments made in NACP I (1992-1999), for slowing the spread of HIV and reducing the morbidity, mortality and impact of HIV/AIDS. NACP –III aims to halt and reverse the HIV epidemic by 2012. Accordingly National AIDS Control Organization (NACO) is focusing on the scaling up of testing and treatment services and ensuring their maximum uptake by the target population. The idea is to detect every HIV positive whether he/ she belongs to high risk group (HRG) or a pregnant woman or a patient of tuberculosis or reproductive tract infection (RTI) approaching the health system for health needs and refer him to nearest ART centre. NACP Phase III is making substantial progress in scaling up of the various services for preventing new HIV infections and in lowering the annual number of AIDS related deaths in India. The two namely testing and treatment facilities are complimentary to each other and testing services are rightly considered as the gateway to the treatment facilities.

**Evolution of Counseling and testing Services**

It is important that an HIV-infected individual becomes aware of his/her status as otherwise he/she could unknowingly transmit the virus to others. Thus knowing of HIV status enables an individual to initiate/maintain several behaviors to prevent acquisition or further transmission of HIV, gain early access to HIV-specific care, treatment and support, access interventions to prevent transmission from mothers to infants, better cope with HIV infection, plan for the future. Also it helps community at large by reducing the denial, stigma and discrimination that surround HIV/AIDS and mobilizing support for appropriate responses.

Counseling and testing services were started in 1997 as Voluntary Counseling and Testing Centers (VCTCs) and became first ever tangible service to the people under the Program. Its journey began with medical colleges, moved to the District Level Hospitals. Its reach and role remained limited till Anti Retroviral Treatment (ART) was included in NACP in 2004. With expansion of ART services creation of wider network of counseling and testing services also gained momentum. In 2005, the screening of ante natal care (ANC) cases for HIV and covering positive mother and newborn with single dose Anti Retroviral Drug for Prevention of Parent to Child Transmission (PPTCT) is included in counseling and testing services. To support the densing of the ART network, two scale-up drives for counseling and testing services were carried out in the year 2006-07 and 2008-09. Gujarat had 49 centers in 2005 – 06 which increased to 190 (2006 – 07) and 314 (2008 – 09). These centers include dedicated fully supported VCTC general, PPTCT and integrated – providing both services and facility integrated (with partial support in terms of kits, training etc at PHC, UHC and private or trust run hospitals (under PPP model). By the end of March 10 Gujarat has total 480 centers which include 290 fully supported dedicated centers and 190 as FICTC at PHC/ UHC (103) and at trust/ private hospitals (183). These centers have evolved at all levels of the public health-care system and established themselves an independent service than merely a supportive laboratory services.

Testing services have back up of ART services as they act as feeders to the latter. ART services started in the state in 2005 with only 1 ART center (ARTC) at BJ Medical College, Ahmadabad and the number by March 2010 has gone up to 14 ARTC, 23 Link ART centers (LAC) and 12 Community Care Centers (CCC). Today, more than 14,900 persons with HIV/ AIDS (PLHA) are availing free first line ART while a total 41,395 positives are registered at various ART centers (pre / ART registration. This number is a quantum jump from was only around 1208 and 1714 respectively in 2005 – 06 with only one centre in the state. This shows that two services go hand in hand and while addressing the felt needs of PLHAs complement each other.

**Shift in approaches and philosophy in NACP III:**

The challenge before us has been to make all HIV-infected people in the state aware of their status. But

still it is believed that at the most only 60 percent of the people living with HIV/ AIDS (PLHA) know their HIV status. This can be said on the basis of the fact that the estimated PLHAs in Gujarat as per the NACO estimates have been 138000 in 2007 while the cumulative PLHAs detected by March 2010 has been around 80000 with some unavoidable duplication. At the country level, NACP-III, it is planned to have 22 million clients counseled and tested every year. An equal number of clients are to be counseled and tested in the private and “not-for-profit” health sector. The reach of PPTCT services is also to be expanded to provide access to 7.5 million pregnant women every year. Keeping this in mind in 2007 operational guidelines was rewritten.

#### **Integrating VCTC & PPTCT services:**

The earlier Voluntary Counseling and Testing Centers (VCTCs) and facilities providing Prevention of Parent-to-Child Transmission of HIV/AIDS (PPTCT) services are now remodeled as a hub to deliver integrated services to all clients under one roof and renamed as “Integrated Counseling and Testing Centers” (ICTCs). This change is brought in during NACP III upon huge scaling up the services at sub district hospitals and Community Health Centers. Rationally behind is that, looking to the work load at sub district level no separate two centers are required at same premises. Further instead of two counselors (one male & one female), at sub-district level under ICTC only one counselor is provided in anticipation of lower workload. Thus this modification has reduced the human resource requirement from total 2 - 3 counselors & 2 laboratory technicians to only one counselor and one laboratory technician. However provision is kept for increase on additional staff on rational work load on case to case bases. This is a good example of rationalizing the resources and thus ensuring the optimum utilization of the counseling & testing services in a cost effective manner. Gujarat state has gone one step further which also speaks about its integration with general health system. Many Community Health Centers (CHCs) with ICTC have several other lab technicians (LT) from other programs such as RCH, Malaria, RNTCP etc. The workload at such places do not justify hiring of multiple LTs. Therefore, it is decided to have only one LT from any of the department and a LT from NACO for ICTC purpose is given only when justified by the in charge of the centre. In other words, a LT is trained to perform all duties of ICTC, Malaria, TB and RCH.

#### **Provider Initiated HIV testing:**

Another major shift in the philosophy of counseling and testing services in NACP III is the thrust on Provider Initiated Counseling and Testing (PICT). Here patients are referred from medical providers such as those with tuberculosis, STIs as well as

pregnant women and actively screening irrespective of their risk behavior. This shift is based on the guideline recommend by the WHO in 2007. These measures not only strengthen the prevention and control of HIV/AIDS but also lead to clear benefits to the health outcome of PLHAs. In NACP III as a policy and strategy, HIV Counseling and Testing (C&T) services for High Risk Groups (HRGs) are as well as screening of all STI, TB & ANC client for early identification HIV infected is being encouraged under Provider Initiated HIV Counseling and Testing.

#### **Shared Confidentiality:**

The third major shift in the philosophy of the counseling and testing services adopted is shared confidentiality, where HIV positive status of the client can be shared with health care providers; hence the better medical care like chemoprophylaxis for opportunistic infections (OI), TB treatment etc can be rendered. This became essential after expansion of the PPTCT services and the roll out of intensified HIV TB package in the state from April 2009 whereby every case of tuberculosis has to be screened for HIV and every HIV positive shall be referred to TB facility for the screening. This cross referrals essentially required to share the HIV status with people from RNTCP. This sharing became also essential if the PLHAs are to be extended certain other benefits such as travel assistance to PLHAs for taking ART services or for taking financial support as nutritional assistance. Consequent to shared confidentiality within health sectors provide the opportunity to other health providers to work with HRG population and PLHAs which in long run reduces the stigma and discrimination prevailing (against PLHA) in all sections of society with no exception to health department.

#### **Community based HIV Testing:**

In 2010, NACP has decided to expand counseling and testing services from four walls of the clinics to the people. Community based HIV testing is the latest strategies evolved under which by “whole blood finger prick method” screening of pregnant women for HIV will be carried out at field level. ANM and staff nurses during their “Mamta Diwas” and “direct walk in labor” respectively shall administer the test in the field, and based on the result the suspected positive mother will be sent for confirmation of HIV at nearest ICTC for counseling and testing in laboratory. Gujarat had target of starting 110 Facility Integrated (FICTC) at 24 X 7 PHCs in 2009 – 10 and could start 107. This year the target is to start 388 such facilities but we are hopeful to go beyond this by including all PHCs. While Ahmedabad district has already done it for its all 33 PHCs (data started arriving for Mar 2010), other districts are also on the way.

### Testing Performance Gujarat Scenario:

**ICTC-General:** ICTCs (General) focus at clients with at high risk of contracting HIV infection, mainly the people with high risk sexual behavior, STI cases, TB cases and suspected AIDS cases. In the year 2002, in Gujarat total 45911 people were tested for HIV which increased to 508266 in 2009-10 against the target of 400000. The HIV positives detected also increased by more than 10 times from 3,436 (2002) to 15038 (2009 -10).

**ICTC-PPTCT:** Parent to Child Transmission is the most significant route of HIV transmission in children (< 15 years). The chance of HIV transmission from infected mother to child is 30-40 %, which can be reduced to 7% by early identification and administration of Nevirapine at the time of delivery. In Gujarat in 2005, total 22193 pregnant women were counseled and tested yielding 173 pregnant women found as positive while Nevirapine could be administered to 83 mothers and baby MB pairs). Coverage in 2009 – 10 has increased to 388824. Out of this 931 pregnant women were found positive and 68 underwent MTP. Out of total live births, 505 MB pairs were given. MB pair coverage has increased from 42.2% (2002) to 58.5% (2009-10). This improvement is not acceptable as the goal is to ensure the administration of MB pair to all positive pregnant women with institutional delivery. Similarly the coverage of only 3.88 lakhs pregnant women against 1.2 – 1.3 million annual pregnancies (30 %) in the state is another area which needs attention.

**HIV-TB Coordination:** Tuberculosis is the commonest opportunistic infection reported in AIDS cases in India and also leading cause of death in AIDS patients. To pick up the early AIDS Cases and reducing the mortality in the AIDS cases due to TB, in the state HIV-TB coordination is initiated, in the year 2006-07. In the first year total 3231 clients were crossed referred and total 430 people were identified as co-infected. In the year 2009-10, total 63,634 people are crossed referred and 1237 (till Feb 10) were identified as co-infected. However, the current estimate of such co infected cases will be between 3600 – 4000. Our aim in 2010 - 11 is to provide the F-ICTC type facility at every Designated Microscopy Centre (DMC) under RNTCP to pick up the rest of co infected cases as well.

**ICTC ART Linkages:** In Gujarat with presence of 14 ART centers (3 more to start within month) and almost 500 testing facilities this linkage is showing the improvement. It is strongly emphasized with ICTC staff to ensure the referral of every positive person to the nearest treatment facility. The scheme of Project “Jatan” by state government for providing travel assistance to PLHA to reach at ART centre has also been helpful. This referral percentage for newly

detected HIV positives has been between 89 – 93 percent in various quarters of 2009 – 10.

### Formation of DAPCU:

Till 2008 – 09, NACP did not have any district structure and thereafter a small structure called District AIDS Prevention and Control Unit (DAPCU) was created in 10 including 6 A category (Surat, Navsari, Mehsana, Dahod, Surendranagar) and 4 B category (Ahmadabad, Vadodra, Rajkot, Bhavnagar) districts of Gujarat. DAPCU comprises of one District Program Officer, one District Supervisor, three divisional assistants and one helper and works under the chairpersonship of Chief District Health Officer (CDHO) in District Health Society. Looking to the special disease load and epidemiological factors of HIV in Surat city, a special unit called Surat AIDS Prevention and Control Unit (SAPCU) has been created with the support of Surat Municipal Corporation – another example of mainstreaming and integration with main system and local ownership. Later on in 2009-10, DAPCU like mechanism was created in all other C and D category districts where one officer from District Health Team was assigned additional responsibility. This opportunity is best used for developing the system in district over and above continuing the efforts mentioned previously. The success so far achieved especially in the area of testing has been possible by mainstreaming the services with General Health System which has been possible largely through operationalization of DAPCUs and SAPCUs.

### Challenges faced:

Counseling and testing services in the state started way back in the year 2002, but with two spells of huge expansion and changes in the strategies as well as thrust areas lots of challenges came/coming in maximizing the benefits of these services. Few of the important challenges faced are listed here..

- Demand generation and acceptance by the community.
- Owning of the ICTC services by CHC or hospital authorities.
- Making availability of separate counseling room with audio-visual privacy.
- Preventing unnecessary testing at counseling and testing centers (routine pre operative testing).
- Ensuring quality of counseling.
- Ensuring coverage of mother & baby through Nevirapine.
- Follow up of Infant for HIV testing up to 18 months of age.
- Integrating the services with Primary Health Care.
- Back up of wider network of care, support and treatment services
- Stigma and discrimination to HIV positive person within health sector.

- Expansion of the counseling and testing services in Private facilities and ensuring its protocol in the private sector.

### **Gujarat's Response**

Counseling and testing services is expanded below the district and now NACO is harboring an ambition to have a community based HIV screening program Presently National AIDS Control Program was having no district structure till year 2008-09 and subsequently a small structure at selected 10 Districts (Category – A & B districts). The success so far attained could be attained by mainstreaming the services with General Health System and various innovative approaches.

#### **Before DAPCU formation:**

- All awareness materials printed, activities linked with counseling and testing services were carried out centrally from GSACS.
- For first two year of scaling up Centers /districts were given grant for local awareness about availability of service centers.
- Sensitization meetings of the ICTC in-charges, district health official.
- Quarterly Regional review by senior officials of GSACS (APD or JD) under the chairpersonship of Regional Deputy Directors (senior official looking after 5-6 districts) where presence of ICTC in charge was mandatory.
- A senior pathologist/microbiologist was identified as District Nodal Officer (ICTC) for monitoring and providing technical support to all ICTCs in the district. They are working at the district hospitals – medical colleges an having experienced as an VCTC in charge since year 2002
- Peer Support Group (PSG): A group of 36 senior counselors were identified and trained to provide technical support to fellow counselors, especially new and poorly performing centers.
- Regular field visits by GSACS officials

#### **After formation of DAPCU**

- Capacity Building of DPOs and District Supervisors.
- Scope of HIV-TB coordination meeting (held on every 7<sup>th</sup> of the month) is expanded to Monthly ICTC review meeting from year 2008-09 which is further expanded to C & D districts in the year 2009-10.
- A structured format for the review is developed.

- All officials from the ICTC Division attend monthly review meeting at different districts in rotation.
- Line Listing of ANC is stringently implemented for PPTCT services.
- Line listing for PLHA is developed for ART linkages and spousal-child testing.
- Developing coordination mechanism with Targeted Intervention of the districts, like implementation of TI-ICTC coordination form and participation of TI representative in monthly ICTC review meeting.
- Tracking of HIV testing through HRG line listing at TI project.
- Coordination with STI is improved at the institutes where a STI clinic is present.
- Implementation of the Intensified HIV TB Package in two phases, (in category A & B in year 2008-09 and in category C & D in year 2009-10).
- Post of PPTCT Out Reach Workers (ORWs) sanctioned for high prevalent districts are relocated to high prevalent Talukas (blocks) of other districts. However, now this scheme has been discontinued from march 2010.

#### **Future steps.**

- In Category C & D districts, support for the District Supervisor and 2 PPTCT Outreach Workers (for each districts) is sought for the year 2010-11 in the state PIP.
- Community Based HIV screening of pregnant women by ANM through whole Blood Finger Prick method.
- Establishing F-ICTC in all remaining CHC and primary health centers in phased manner over three years. In first year priority will be given PHCs with Designated Microscopic Center (DMC).
- Inclusion of the PPTCT related fields in the Mother & Child Health (MCH) software being prepared under RCH for tracking HIV positive mothers and exposed babies.

Over the time period, journey of the counseling and testing centre has moved from the Medical college to community doorsteps, from “opt in” to “opt-out”, from voluntary to provider initiative, from diagnosis to prevention. It is an uphill task but coordination, collaboration, innovation and integration are the pillars on which the edifice of the program can grow, consolidate and sustain successfully.

**Original Article****PERCEPTIONS ON VEHICULAR FUEL CONSERVATION AMONG SELECTED RESPONDENTS IN SURAT CITY****Bansal Neha<sup>1</sup>, Bharodiya Pareshbhai<sup>2</sup>, Hirapara Ketan<sup>2</sup>, Thakar Girish<sup>3</sup>, Jariwala Ruchita<sup>2</sup>**<sup>1</sup>7th Semester B.E. (Electrical Engineering Student, Government Engineering College, Surat, <sup>2</sup>Intern, Dept. of Community Medicine, Surat Municipal Institute of Medical Education & Research, Surat – 395010, Gujarat, <sup>3</sup>Regional Deputy Director, Health & Family Welfare Department, Govt. of Gujarat, Surat.**Correspondence:** nbansalsurat@gmail.com**ABSTRACT**

The study explores community notions on the need to conserve vehicular fuel usage with context to global warming among 100 randomly selected men of the age group <20 years in Surat city. Findings reveal a high degree of awareness on climate change, global warming and Greenhouse effect, however these were perceived as issues requiring state attention and not as an individual public health concern. The study explores individual and public transport system utilization patterns, advantages and constraints therefore and measures to deal with important issues to promote public transport utilization and contain global warming.

**INTRODUCTION**

The consensus of the overwhelming majority of scientists that climatic changes, global warming and 'Greenhouse Gases' constitute one of the greatest contemporary global challenges highlights the imperative necessity to focus on immediate ameliorative conservation measures. Escalating population, rapid urbanization and industrialization translates into rapidly increasing motorization and transportation needs. Our road transportation system in line with that of many others is almost entirely based on petrol and diesel use with recent induction of CNG and LPG and negligible electric driven vehicles with a large fleet of self owned and private commercial vehicles and the marked absence of an efficient public transport system in many cities worldwide.<sup>1-3</sup> Indeed our public transports suffer from several deficiencies and can no longer respond to the needs of the day.<sup>4</sup> Further non-motorized facilities such as separate lanes are inexistent and unplanned with consequent discouragement and hazards to non-motorized facilities.<sup>5-6</sup> Problems of poor vehicle and road maintenance, traffic congestion and consequent increased fuel requirements compounds the existing problem with monetary and grave environmental concerns.<sup>7-9</sup> Indeed it would be prudent to limit and contain fossil fuels usage in our transport systems, else we stand to face the most catastrophic consequences that will affect us all and hence the global call to reduce carbon emissions and change our lifestyles.

**MATERIAL AND METHODS**

The study explores the notions on the need to conserve vehicular fuel among 100 randomly selected men of the age group <20 years, belonging to predominantly middle class households, in the city of Surat with context to global warming, fossil fuel supply limitations and the need to modify their current practices for promotion of sustainable development. They were administered an interview

schedule with their informed consent. The study sites comprise of the offices at Mahidharpura, Ashwini kumar, Varachha, Katargam, Mini bazaar, Adajan.

**OBSERVATIONS AND DISCUSSION**

The findings revealed that 93% respondents were aware of the overall notions of climate change, global warming and the Greenhouse effect consequent to human activities such as aforestation; industrialization and increased vehicular use. However, only 72% perceived this as a public health issue requiring immediate concern and just over half (58%) agreed to address this issue at their individual level. This observation points to the fact that all public health issues are not viewed as pressing health needs requiring public action. Discussions with them revealed that when it comes to action many are unwilling even to agree to the notion to take action at an individual level rather they tend to perceive this issue as requiring attention by the authorities (100%). Their perception is that this issue does not impact them directly and that they hardly contribute to the overall problem of global warming (85%). Therefore taking actions at individual level without local supports such as absence of a public rapid transport system in place would cause much inconvenience to them (87%) and that their individual contribution towards mitigation of the problem would be negligible (70%) in the absence of governmental efforts.

Besides, some had even argued the fact that the developed nations are responsible for this sorry state of affairs and hence they must own the cleanup measures rather than the citizens of developing nations. These findings point to the need for creation of increased awareness among the general population. When specially inquired as to the steps to be taken at individual level for the containment and mitigation of this problem they were aware of the need for promoting greater use of public transport (27%); minimizing use of their vehicles and pool vehicles

(14%); encouraging of others also to minimize individual vehicular use (11%); regular servicing of vehicles and or correct tyre pressures (8%); and discouraging use of plastic bags (3%). The steps at local or Gujarat state level include growing more trees (30%); promoting greater use of solar energy (28%); education & awareness programmes (21%); good public transport facility (12%) and lastly proactive pollution control boards (9%).

The respondents listed even more ways that can be taken at the national level namely growing more trees and decrease forest cutting (37%); promoting research for other sources of energy (17%); use of locally made products (13%), development of recycling plants (13%); search for better technology which reduces pollution (11%); telecasting documentary films on global warming (2%). An interesting finding was that all of the respondents agreed that improved and widened roads with good traffic management system can do much to reduce the traffic congestion and thereby save precious time, money and help abate pollution. Studies have revealed that sustainable urban energy-environment management with multiple objectives including reduction of urban traffic congestion around 10% energy savings is possible in Delhi, with consequent emission reductions of lead (33%), CO (24%), HCs (21%), SPM (17%), SO<sub>2</sub> (12%), NO<sub>x</sub> (10%), and CO<sub>2</sub> (10%).<sup>10</sup> Despite their views to encourage public transport system, 50% preferred private vehicles with only 17% agreeing to use public transport system, though 33% agreed to share vehicles, commonly in educational and employment settings where their colleagues reside nearby. Some of the hurdles identified towards vehicle sharing were poor time management by the persons sharing vehicles and other complications associated with differing timings, ego clashes, perception as an unfashionable trend among youth and restriction with freedom to come and go. The respondents favouring own vehicles did so for saving time (63%), comfort (29%) and unsatisfactory public transport system (8%). Those favouring public transport systems listed 27 reasons such as fuel saving (62%); decreased pollution (23%); and traffic minimization (15%).

Suggestions to minimize personal vehicles use included utilization of public transport (44%); pooled vehicles (34%); cycles (11%) and walking (11%). Suggestions to improve fuel efficiency included regular service and proper tyre pressure (47%); improved fuel (42%); and regular changing of air filter (11%). When specifically asked 90% respondents agreed that cycling should be promoted to decrease fuel consumption with 170 responses comprising of educating people on global warming (47%) and on advantages of cycling (45%); inspiring people by cycle rallies (5%); and construction of separate lane for cycling (3%).

More than half (56%) of respondent were unaware about hybrid cars, 33% were aware of cars which use gas and electricity and the remaining 11% were aware of cars which use electricity and solar energy. When specifically quizzed, the majority agreed to promote battery driven cars (89%) and solar driven cars (83%) to decrease fuel consumption and global warming. These 89 respondents listed 153 ways to promote use of battery driven cars, namely decreased to nil taxation (99%); education and demonstration (50%); lower cost (40%) and importing technology (5%). The 83 respondents listed 144 ways to promote use of solar driven cars alike those for battery driven cars. These 83 respondents gave 218 reasons for promoting use of solar driven cars, namely prevention of pollution (37%); fuel conservation (33%); and ample availability of sunlight in our country (30%) and similar views were expressed for promoting use of battery driven cars. Studies have revealed that that monetary incentives or differential taxation of drivers can modify the choice of car fuel type, especially for those driving long kilometers using logit model with correction for possible selectivity bias and confirmed by structural models.<sup>11</sup>

Almost all (98%) of the respondents agreed that fuels are often adulterated either when supplied by the petrol outlets or by the three wheelers with Kerosene in areas where CNG is not used and that cleaner fuels will imply lower environmental pollution, however only (35%) had ever taken any step in their lifetime to help ensure cleaner fuels. Majority (82%) of the respondents had some preferred fueling station(s), which was perceived by them to supply clean fuel. These perceptions were related to Petrol and Diesel supply only. In the case of CNG adulteration was not perceived as an important issue as the respondents perceived that this fuel cannot be easily adulterated. In the case of CNG supply they went to the nearest fueling station. Though 5% respondents mentioned that CNG supplied by different companies did give varying mileage per Kilolitre, however CNG suppliers in a city are usually fixed and not much choices are available in many cities.

Interestingly these 100 respondents had possessed a total of 148 petrol driven two wheelers, predominantly for office use (58.8%); regular/ mixed use (33.8%); and domestic use (7.4%). These observations point to the fact that there is ample scope for promotion of LPG vehicles in India. Studies in India have revealed that with the use of LPG in spark ignition four stroke outboard engines specific fuel consumption and CO emissions are much lower without noticeable power loss.<sup>12</sup> The maximum numbers (43.2%) were getting their vehicles serviced at an interval of 6 months and 58.1% of these were motor cycles. Alike the two wheelers the majority (68.7%) were getting their cars serviced at an interval of 6 months. The importance of regular servicing

cannot be over emphasized as studies have clearly documented the association between poor vehicle maintenance and air pollution.<sup>13</sup>

The studied respondents also possessed 67 cars, predominantly CNG driven cars (44.8%); petrol cars (34.3%); LPG cars (13.4%) and Diesel cars (7.5%). Alike the two wheelers these were mainly used for office work (58.2%). However instead of mixed/regular use the second category comprised of domestic use (22.4%), as some preferred a two wheeler for regular use. Here again we can find the preponderance of petrol driven cars compared to CNG powered cars highlighting the fact that still there is ample scope for fuel substitution and perhaps we ought to promote companies to have built in CNG kits as opined by the respondents. Studies have reported that in general, LPG is a 'cleaner' fuel than unleaded petrol, although in most cases, the differences were not statistically significant owing to the large variations between emissions from different vehicles.<sup>14</sup> Further, Sulfur content in diesel fuels has been documented as one of the main factors in worsening local air quality<sup>15</sup> and current taxation mechanisms favour Diesel vehicle for motorists with long kilometers requirements. This aspect ought to be seriously studied in environmental context.

From the study we conclude that nearly all of the respondents were aware about the problem of climate change, global warming and the Greenhouse effect. They had opined that global warming could be reduced and could suggest steps at individual, state and the national level. They were also aware of the need for promoting greater use of public transport, albeit without translation into practice due to perceived inefficient public transport system. Multiple vehicular ownership implies the accompanying need to curb inefficient fuels and avoidable use. The awareness was lower as relates to hybrid cars and that is understandable given its virtual absence in India. The study reveals that people seem to be responsive to ideas like greater cycling; use of public transport systems; pooling of vehicles; hybrid cars provided such types of acts are facilitated. From the study we surmise that rather than awareness generation, we need to move into the era of facilitation.

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## Original Article

## POST-FLOOD PROFILE OF LEPTOSPIROSIS CASES AT TEACHING HOSPITAL OF MUNICIPAL MEDICAL COLLEGE IN SURAT CITY

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**ABSTRACT**

This study reports the clinical profile, pattern of organ involvement and the case fatality of 112 cases of Leptospirosis admitted during an outbreak in the post flood period from August to September 2006 in Surat city. The study reveals the necessity for early detection of cases in an epidemic situation, chemoprophylaxis of those exposed and prompt referral and management with excellent ICU support for decreasing the mortality associated with the disease.

**Key words:** Leptospirosis, post-flood period, case fatality, clinical profile, organ involvement.

**INTRODUCTION**

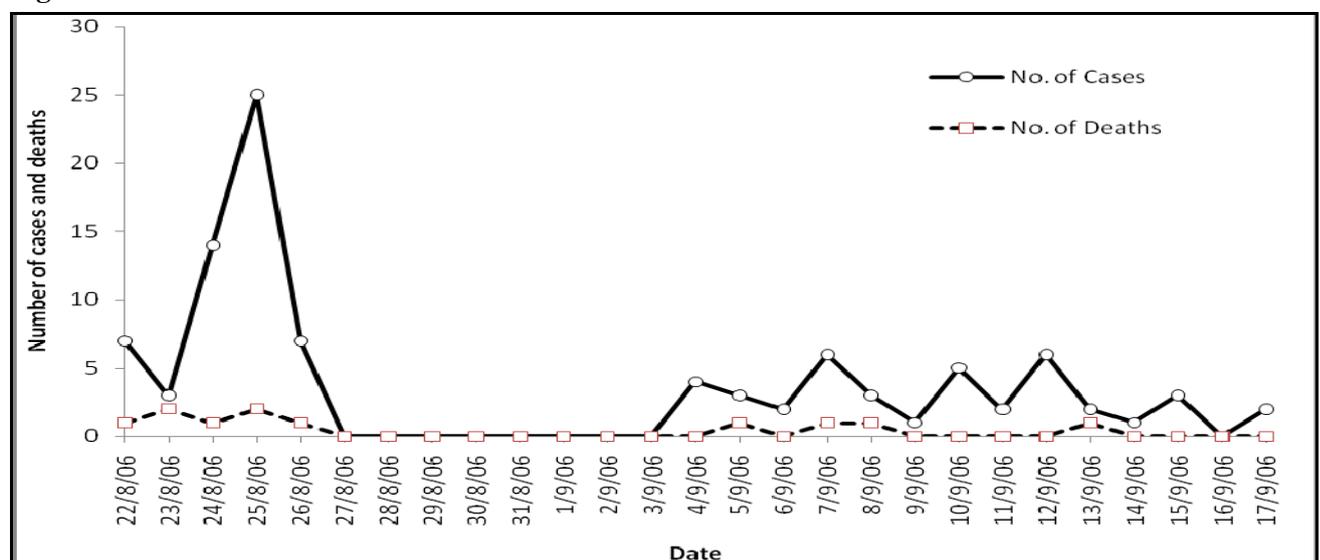
Leptospirosis according to core epidemiological determinants has various forms rural, urban, recreational and those associated with natural disasters. Since 1990 interest for this disease was rekindled and was started considering as an emerging disease on global scale with reported epidemic among general population especially after floods<sup>1</sup>. In India it posed as a public health problem from 1980 onwards, though isolated cases were reported earlier also<sup>2</sup>. It is characterized by acute febrile illness with biphasic course, excellent prognosis, low suspicion index, protean, non-specific manifestations and unavailability of adequate diagnostic facilities in many areas<sup>3</sup>. In South Gujarat region, increasing incidence of leptospirosis has been witnessed for the last few years<sup>4</sup>. In India outbreaks occur characteristically between August–September/February–March, mostly in coastal regions i.e. Gujarat, Mumbai, Kerala, Chennai and

Andaman Islands.<sup>5-6</sup> The primary lesion is damage to the endothelial lining of small blood vessels with the resultant ischemic damage to liver, kidneys, lungs, meninges and muscles<sup>7</sup>. Its epidemiology is extremely complex and dynamic. Death results mainly from renal, hepatic or myocardial failure which can be reduced by providing excellent ICU support.

**MATERIAL AND METHODS**

In this prospective study all 112 patients who were line- listed according to NICD case definition,<sup>8</sup> were admitted at Surat Municipal Institute of Medical Education & Research (SMIMER), subsequent to the unprecedented floods coupled with sewage backflow in Surat city from 7<sup>th</sup> -9<sup>th</sup> August 2006 and have been included in this study. These patients were followed up for the period of total duration of stay in the hospital and their clinical profile, organ involvement and the outcome has been analyzed.

**Figure 1: Date wise cases and deaths**

**RESULT**

The first case of Leptospirosis was reported on August 22<sup>nd</sup> i.e. 15 days after exposure to the contaminated flood waters, corresponding to its incubation period, and the last case was reported on 23<sup>rd</sup> September. A total of 179 confirmed cases from Surat city tested IgM positive over a period of 30 days. Out of these 179 cases, 112 (62.6%) were admitted at SMIMER. The maximum cases were in the age group of 16-30 years (53.5%) with a male preponderance (79.5%). Age and sex distribution was found to be similar to some studies<sup>4</sup> while male predominance was not seen in other studies<sup>5</sup>. The maximum of the cases belonged to the East zone of Surat city as this is the major catchment area of the

hospital. Time distribution of the cases shows that maximum number of the cases occurred in first week of the epidemic only and also the maximum mortality among the patients was also observed in first few days.

The average stay in the hospital seven to eight days with 46.5%, 43.5%, 10.2% being admitted in the hospital for <5 days, 5-14 days and >15 days respectively. Readmission was necessary for 2 cases. Important clinical presentations were fever, vomiting, bodyache, myalgia, headache, dyspnoea, enlarged lymph node, icterus, jaundice, abdominal pain, conjunctival hemorrhage and haemoptysis.

**Table 1 Clinical Profile of the patients of reported Leptospirosis in comparison to other study**

Clinical profile	Number (%)	Peurto Rico <sup>9</sup> 1963, n=208	Hawaii <sup>10</sup> 1999, n=353	Brazil <sup>11</sup> 1999, n=193	India <sup>12</sup> 2002, n=74
Fever	101 (93.5%)	-	-	-	-
Vomiting	72 (66.7%)	69%	73%	-	-
Body ache	69 (63.9%)	-	-	-	-
Myalgia	50 (46.3%)	97%	91%	94%	68%
Headache	44 (40.7%)	91%	89%	75%	92%
Dyspnoea	36 (33.3%)	-	-	-	-
Enlarged lymph node	32 (29.6%)	24%	-	-	15%
Icterus	34 (31.5%)	-	-	-	-
Jaundice	31 (28.7%)	49%	39%	93%	34%
Abdominal pain	27 (25%)	-	51%	-	-
Conjunctival hemorrhage	23 (21.3%)	99%	28%	28.5%	35%
Haemoptysis	19 (17.6%)	9%	-	-	35%

We can observe that the clinical picture observed here is alike other studies, however the prevalence of headache and myalgia was lower while that of conjunctival suffusion, lymph nodes enlargement and abdominal pain was higher than other studies.<sup>9-12</sup>

**Table 2: Pattern of Organ Involvement and Case Fatality Rates**

Organs Involved	N=112	Case fatality rate
Single Organ Involvement		
Lung	13	2 (15.4%)
Liver	9	0 (0.0)
Kidney	5	0 (0.0)
Heart	1	0 (0.0)
Total	28	2 (7.1%)
Multiple Organ Involvement		
Lung and Liver	11	3 (27.3%)
Liver and Kidney	4	2 (50%)
Kidney and Lung	4	0 (0.0)
Heart & any other	4	0 (0.0)
One organ	28 (25%)	2 (7.1%)
Two organs	23 (20.5%)	5 (21.7%)
Three organs	7 (6.3%)	4 (57.1%)
None	54 (48.2%)	0 (0.0)

One or more organ involvement was found in 58 (51.8%) cases and the overall Case Fatality Rate (CFR) was 9.8% as shown in the table. The Bombay epidemic had reported liver as the commonest organ

involved in 71.1% instances, whereas lung was involved maximally in the Surat outbreak. Also the CFR observed here is lower than the South Gujarat rural area<sup>3</sup>, the Guyana epidemic and the Bombay epidemic. The CFR was zero in cases with no organ involvement and increased significantly with the number of organs involved. Among single organ involvement the highest CFR was observable with lung involvement alike that for the sporadic cases observed in Surat district<sup>3</sup> and the Bombay epidemic. Clinically fever and muscle involvement were present in all cases.

## DISCUSSION

The morbidity and mortality profile leptospirosis reveals the necessity for early detection of Leptospirosis cases during an outbreak situation as well as early referral and prompt management at a specialized centre. Early diagnosis of mild and uncomplicated leptospirosis cases is difficult, except during epidemics, as this disease is sporadic and fever cases are common during this season. The preventive strategy includes clearing water logged areas as early as possible because strategies centered on decreasing human and animal contact were found to be difficult to actualize in this epidemic. Thus the mantra for mortality reduction appears to be early and prompt management coupled with provision of excellent ICU

support. It is quite possible that the chemoprophylaxis with doxycycline and amoxicillin administered to fever cases and risk groups during the present outbreak could have led to milder form of the disease observable among the patients and could have lowered the CFR as observed in the Surat study.<sup>22-23</sup>

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**Original Article****STI PROFILE AND TREATMENT SEEKING BEHAVIOUR OF STREET CHILDREN IN SURAT****Patel NB<sup>1</sup>, Bansal RK<sup>2</sup>**<sup>1</sup>Assistant Professor, <sup>2</sup>Professor and Head, Dept. of Community Medicine, Surat Municipal Institute of Medical Education & Research, Umarwada, Surat - 395010 (Gujarat) India.**Correspondence:** drnbpatel@yahoo.in**ABSTRACT**

This cross-sectional study among 326 street children using a pre-tested interview schedule reveals that 50.5% of children with a history of having had sex, had a history suggestive of STI infections during the past six months with the commonest symptom was a painless single ulcer (29.1%). All of them had sought treatment, albeit irregular and incomplete, even in personally supervised conditions, owing to reasons as external relief from symptoms with significantly improved medical care behaviours consequent to repeatedly cajoling. was sometimes construed as cure by the street children, for instance after one or two injections, these children get so much relief that they feel that they have been cured and then they do not come for the remaining treatment. When many of these children perceive that their disease has cured, they desist from further treatment even when they are informed that the treatment that they have received is incomplete and that they are still suffering from the disease till they take the full course of treatment. Some of them eventually do heed to repeated cajoling, for instance, one child who had tested positive for HIV now takes regular treatment from New Civil Hospital, Surat. The majority seek treatment at Public facilities where though the cost of treatment is less the behaviour of the staff is often unsatisfactory and the children feel stigmatised and ashamed and this along with some additional reasons prompts them to seek medical care from chemists and not qualified allopathic doctors ignorant in proper STI management with serious concerns. The study reveals important insights into their concepts of cure, choosing of treatment venues and counselling received during treatment.

**Keywords:** Street children, STI, health care seeking behaviour, stigmatization**INTRODUCTION**

"Street children" was first used by Henry Mayhew in 1851 and gained prominence in national and international scenarios since 1980s.<sup>1-2</sup> For the purpose of this study street children have been taken as 'children off the street' or the street based 'children who spend most days and nights on the street' and are functionally without family support.<sup>3</sup> Estimates vary widely due to estimation difficulties and definition employed with around 100 to 150 million street children globally<sup>4</sup> and upto 47 million in India.<sup>5</sup> Street children in India are a highly vulnerable and deprived group, whose rights are constantly violated. Their life is devoid of love, affection and care which are fundamental rights of every child and which enables them to become responsible citizens. Poverty and illiteracy are the 'Tombstone' of this tale of misery. Other reasons being dysfunctional families; child abuse and neglect; death of parents and foster parents; disasters; famines; physical and sexual abuse; exploitation; urbanization; industrialization and orphaning due to diseases as HIV/AIDS.<sup>6</sup>

Studies report of early sexual activeness among street children.<sup>3</sup> They are very vulnerable to sexual abuse and STIs and may also engage in "survival sex" for money, food, clothing, and shelter with adults. Their sexual exploitation and coercion into the sex trade may start as early as the age of seven years. With their peers sex is for pleasure, comfort and power dominance or a ritualised gang rape. Sex under the influence of drugs, anal sex, and same sex encounters

are common. Teenage pregnancy is almost universal among street girls, and over 25% of them report of illegal abortions. Over 85% of the sexually active street children might have been treated for a STI.<sup>7-9</sup> The present study explores their morbidity profile with respect to complaints suggestive of suffering from sexually transmitted diseases and also explore pertinent variables thereof in order to identify their unmet needs and attempt to identify mechanisms to improve and strengthen their health care seeking behaviour with respect to STIs.

**MATERIALS AND METHODS**

This cross-sectional study reports of interviews of 326 street children using a pre-tested interview schedule prepared with inputs from key stake holders to garner information on study variables. These questions were simple and largely close ended. The interview language was largely Hindi as the street children are comfortable with the usage of this language. The information thus collected was entered on a excel spreadsheet and was analysed with the help of SPSS software. Appropriate statistical tests for significance, often percentages and means have been applied. Considering the theoretical and policy significance of the theme, the study adopts both the quantitative and qualitative approach.

The concentration points of street children in Surat city are the railway platforms; areas near and around the railway station like foot-paths, railway tracks, slums, garnalas, bus depots, signal lights, parks, and gardens and therefore these were the key areas for

data collection. Street children were contacted either at their work place or where they were residing; and, upto 5 to 20 repeat visits were necessary for gaining their confidence before they came out with truthful answers on sexual history. These children gave their informed consent only on the assurance of firm and irrevocable confidentiality and even then their identities have been concealed from the investigators, to the extent feasible and not recorded on the response forms. All of the children were provided with treatments free of cost on the spot by the investigators, through medical camps and at hospitals affiliated to Medical Colleges and at the Municipal Urban Health Centres for their health complaints. The study has received ethical clearance from the ethical committee of the Surat Municipal Institute of Medical Education and Research and no conflicts of interest have been declared.

### OBSERVATIONS AND DISCUSSION

Half of street children (50.5%) had a history suggestive of STI infections during the past six months among the 95 children who had a past history of having had sex, suggesting that these children do engage in risky sexual practices, though lower than other studies<sup>7,9,10-12</sup> as the time frame in the study for past suggestive history was limited to the past 6 months only. Discussions with the street children revealed that they do not use condoms while having anal sex. Whatever be the reason, their high vulnerability to HIV and AIDS cannot be overstressed. Similarly, the risk to their partner is equally high unless condoms are always used during sex. The importance of condoms needs to be explained to these children; otherwise their life and the life of those who are near and dear to them would be fraught with hazards. It is discerning to note the emergence of paediatric HIV infection in India.<sup>13</sup> These children had various symptoms suggestive of STIs, such as painless single ulcer (29.1%); painless

ulcer with slough (27.1%); heavy urethral discharge (16.6); mild urethral discharge (12.5); and, painful multiple ulcers (14.7) and this is indeed a very high STI infection load.

It was observed that all of these 48 children who were suffering from symptoms suggestive of STIs had reported of having sought treatment, however they had stated that their treatment seeking behaviour was irregular and that they do not always complete treatment. Another important observation was that even with free and personal supervised treatment provision they were irregular in coming to the medical care facilities, for instance, during the course of this study, five children with such complaints were given personally supervised treatment at SIMER for STIs free of cost and without standing in any queue, yet it was observed that despite reminders only three children regularly turned up for treatment and follow up, whereas the remaining two children once and were investigated and given injection Penidura and later stopped coming regularly for treatment despite repeated health education attempts and they had to be cajoled repeatedly in order to bring them to the hospital.

Another observation was that external relief from symptoms was sometimes construed as cure by the street children, for instance after one or two injections, these children get so much relief that they feel that they have been cured and then they do not come for the remaining treatment. When many of these children perceive that their disease has cured, they desist from further treatment even when they are informed that the treatment that they have received is incomplete and that they are still suffering from the disease till they take the full course of treatment. Some of them eventually do heed to repeated cajoling, for instance, one child who had tested positive for HIV now takes regular treatment from New Civil Hospital, Surat.

**Table 1: Various treatment providers for STI infection**

Rx provider	Number	Remarks
New Civil Hospital Surat (Govt.)	35 (73.0)	These children are very shy to acknowledge their treatment seeking till it becomes unbearable and then often may confide in their best friend for opinion on what to do.
Private Practitioner	10 (20.9)	They are very receptive to perceived feelings of being stigmatized at the place of treatment.
SMIMER, Surat (Surat Municipal Corporation)	02 (4.1)	These children are often aware that the best place for treatment for STIs are the bigger government hospitals, yet may seek other providers and often feel insecure, stigmatized and they have to go to many counters in the medical care process, so many people come to know about their problems. Whereas, confidentiality is maintained with chemists and private providers and there is no stigmatization as sympathetic one are known from experience of others.
Chemists	01 (2.0)	Often when the children are not cured then these children go to the government medical facilities.
Total	48 (100)	All providers should be trained on treatment modalities for STIs.

Table 1 reveals that majority of these children seek treatment for STIs at Public facilities. Discussions with the street children revealed that they were aware of the fact that for treatment of these infections one has to go to a big government hospital. A matter of serious concern are those children who have received treatment from the chemists, who are not trained on patient care and their role is to dispense medicine, yet they were taking a cursory history and giving

treatment without any detailed history taking; physical examination; investigations, including testing for HIV. Many of these children had received medical care from the so called private practitioners, who are not qualified allopathic doctors and experiences of workers active in this area in Surat city have pointed out to the need to train these doctors in the proper management of STIs.

**Table 2: Whether STIs were cured or not**

Status	Number	Remarks
Cured	46 (95.8)	Children equate external relief as cure; relief by treatment of chemists and private practitioners can be short lived and after some time the same complaint again arises, the problem of reinfection has not been discounted in all cases. It also needs mention that these children are very irregular in their treatment or simply stop coming to the provider once they get external relief, as they think that they are now cured.
Not Cured	02 (4.2)	Treatment from chemist with cursory history taking and no physical examination; and, a private practitioner who also took cursory history taking, however physical examination was done. In both instances no laboratory investigations for STIs and HIV were advised and no health education was imparted, nor aspects like contact tracing or partner treatment discussed.
Total	48(100)	Education on the components and necessity of proper and complete treatment is imperative

The table reveals that nearly all of the respondents had reported of having been cured by the treatment and only two reported as being uncured. Yet upon insistence of their physical examination, five of such children were still found to be suffering from STIs.

When these children were told they still have an STI (N=5), they replied this has been a recent reinfection after our first visit (60%) or that they feel ashamed to admit about having STIs (40%).

**Table 3: Cost of treatment for STIs borne by street children**

Cost	Number	Remarks
< Rs. 50	13 (27.1)	Even at new civil hospital, which is a government facility, these children were sometimes prescribed medicines which had to be purchased from outside.
Rs. 51 to Rs. 100	22 (45.9)	Levying of user charges should be abolished for street children, particularly for STI treatments. Planning and policy is needed to ensure that these children receive scientific treatment by qualified SVD specialists, which is currently a universal policy.
Rs.101 to Rs.150	8 (16.6)	User charges for STI treatment at all municipal medical care facilities should also be abolished.
Rs. 151 to Rs. 200	5 (10.4)	Since past few years the Surat Municipal Corporation (SMC) has introduced treatment for STIs at all of its urban health centres and maternity homes. The medical officers of these centres have the authority to waive the user charges and the treatment at these urban health centres is free under the PSH project and the facilities of a full time counselor is available at these centres.
Total	48 (100)	Very recently SMC has also introduced free scientific testing for HIV at all of these centres.

It can be observed from the table that the treatment costs for STI infections for the maximum numbers of children were ranging from Rs. 51 to Rs. 100. Even the children who had visited the government run health facilities were prescribed external medicines and some user charges also do exist. These charges are more at Municipal medical care facilities. All such user charges need to be abolished for this highly marginalized and vulnerable section of the society

and it should be ensured that these children receive all medicines and investigations free of charge. Their health education should also be accorded high priority.

It can be observed that nearly all of the street children (95.8%) were satisfied with the treatment that they had received. These satisfaction levels were strongly influenced by factors as initial cure rates, lower costs, convenience, nearby location, convenient timings and

in the presence of patient provider knowledge asymmetry might not reflect a true picture of satisfaction levels due to ignorance. This does not appear to be an informed opinion by this largely ignorant and discarded group of the society, as we can observe that children in whom recurrences occurred after initial relief also stated that they were satisfied with the treatment received. There is a strong need to ensure that these street children receive enough information of STIs so as to enable them to make informed choices about the places to seek medical care, take treatment regularly and completely, and be able to express informed decisions on their cure and satisfaction levels with the treatment that they have received. Another important feature here is that the health care providers need to

understand to be non-judgmental while providing treatment for STIs and that this vulnerable section does not feel stigmatized, otherwise they do not come to treatment to appropriate providers or do not complete their treatment.

As regards the venue of treatment for STI infections, the majority (79%) had chosen the concerned place of their own volition, followed by 17% who had heeded the advise of their friends and for the remaining 4% it was as per the advise of NGOs. Our discussions revealed that it would auger well in case these children could be motivated to seek the help and advice of NGOs as Navsarjan trust, as then these children receive free treatment from the SMC and the full assistance of the trust as well and the follow up would be improved.

**Table 4: Behaviour of staff during STI treatment as Perceived by street children**

Behaviour	Number	Remarks
Good	17 (35.5)	Relates mainly to the chemists and the private providers and also with the doctors of the government facilities and often excludes the behaviour of other hospital staff.
Not good	31 (64.5)	Relates mainly with the paramedical workers of Govt. facilities and to Govt. doctors to a limited extent.
Total	48 (100)	The behaviour of the staff of a healthcare facility is closely related to its use and since government health services are funded from the tax payer money its all the more important to ensure that their staff is polite and optimal functioning of a facility is important as most of the expenditures of a facility are constant whether or not the facility is utilized. Besides health has been declared as an essential good for the basic development of any country.

It is a pity that almost two-thirds of the street children had opined that the behaviour of the staff of the health care facility where they had gone to seek care for STI infections was not good. Since the New Civil Hospital is the major care provider, therefore they need to be sensitized on this aspect, more so as concerns the trainee doctors and the other hospital workers.

79.2% had reported of feeling stigmatised while seeking medical care for STI and had stated that “the feeling of stigmatization prevents us from utilizing a centre even if services are good or the centre has a reputation of providing good cure.” “In government hospitals first we have to go to the case issue counter where we have to state the department where we want to seek care. The moment they say “Gupt rog”, the word commonly in vogue in their milieu, the person manning the case issue counter stops their work and look at us accusingly and we feel embarrassed.” A suggestion that was offered was to state that you want to go to a “chamari ka doctor” and then you would not feel embarrassed. However, this concept has to be introduced in their culture. “We face similar experiences while going for investigations or to drug issue counter. We feel most ashamed while interacting with female nurses. Some embarrassing questions as Kaisi gandi jageh jate ho, kahan gaye thhe are posed to us by numerous persons like

doctors, trainee doctors, compounders, technicians and nurses. It is too much for us to withstand such shame, we would rather seek treatment somewhere else.”

20.8% had not experienced the feeling of stigmatization, these were those seeking care from chemists and private providers. They had stated “While seeking care from chemists and private providers we only have to tell one person and we can wait till we are alone and they do not ask embarrassing questions nor make embarrassing comments.” In the contemporary era of community participation and primary health care, there can be no ground for justification of stigmatization in any form whatsoever. Today we talk of protection and cherishing of the rights of the underprivileged and the adoption of the “risk approach”. Among children, the street children are definitely the most vulnerable. It has long been established that victimization is a forgone concept in the era of HIV and AIDS. It is high time that our government pays heed to health care reforms towards an equitable health care delivery system. It has been aptly stated that non-judgmental services are the cornerstone.

The table basically reveals that the counselling received was qualitatively and quantitatively insufficient. It was observed that the majority

(56.2%) of these children did not share the information that they had received during counselling while undergoing treatment for STIs. One of the main reasons that they had stated was that they did not want the other children to know that had suffered from this disease. There are also some children who did report that they had shared the information that they had received, with or without acknowledging the fact that they had received this education while being

treated for STIs. They reported that even in their milieu, though having sex is acceptable, sufferings from "Gupt rog" are not acceptable and do carry stigma. Some of the children have reported that they have shared information and also discussed this information among themselves, when the source of this information was an outreach worker of trust and NGOs like the Navsarjan trust.

**Table 5: Was counselling done while street children received treatment for STIs**

Counselling done	Number	Remarks
Counselled	45 (93.8)	Counselling is commonly done by the government doctors, NGOs and the health staff and they may or may not touch various aspects. The doctors explain in a better manner as compared to the other staff. However, the children had opined that in no case was exhaustive counselling performed.
Not counselled	03 (6.2)	Chemists never counsel and private practitioners also rarely counsel and that too very briefly.
Total	48 (100)	Counselling is an essential component of STI treatment.

The study reveals that the street children face unacceptably high load of STIs and that urgent attention had to be focussed on the provision of care to them by the public health services to ensure that they have a hassle free, non-judgemental and pleasant experience for containing the contraction and transmission of STIs, including HIV and AIDS.

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## Original Article

## INITIAL HOMOSEXUAL EXPERIENCES OF MSM IN SURAT CITY

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**ABSTRACT**

This cross-sectional study among 200 Men having sex with men in Surat City explores their initial MSM experiences. Our findings reveal that MSM are sexually active with slightly more bisexual than homosexual. Over half had their first homosexual attraction and relationships before the age of 14 years commonly while playing with friends, though some were forced or raped into their first MSM experience by cousin, friend or elders and care takers. 94% the second homosexual encounter had occurred within 3 months of the first homosexual encounter. These two initial MSM experiences play an important role in future MSM inclinations and highlight the need to ensure that children do not enter into such early relationships before the age of consent. What merits special attention is that these experiences invariably occur during adolescence and their impression makes a lasting effect on their psyche and sexual inclination lifelong. Receptive anal sex emerges as the most common sexual act (89.5%) and as the commonest reason for continuing with MSM relationships (26.5%). Friends are the main source (99.5%) of entry into an MSM group.

**Keywords:** Men having sex with Men, initial homosexual experiences, HIV and AIDS

**INTRODUCTION**

The word homosexual comes from the Greek word “homo” meaning same and the Latin word “sexus” meaning sex. Homosexuality was first introduced as a medical term in the second half of 19<sup>th</sup> century to describe erotic desire for same sex.<sup>1</sup> Homosexual behaviour has existed throughout history including ancient India with mention in texts like Rig-Veda dating back around 1500 BC and in sculptures and vestiges. Hindu religious texts are largely silent on the matter of homosexuality, barring a few references. Vatsyayan author of “KAMA SUTRA” briefly treat in his treatise the techniques by which men have sex with other men. On July 2, 2009 The Delhi High Court decriminalized homosexuality considering fundamental rights to personal liberty, Article 21, Article 14 and Article 15. National AIDS Control Organization (NACO) has stated that Men Having Sex with Men (MSM) populations are not just “highly infected and affected” by HIV but comprise one of the four core groups requiring urgent and focused attention, a pragmatic shift based on evidences from sentinel surveillance data. MSM are not just invisible to health infrastructure, rather are stigmatized and criminalized under Indian law. So the government had to “search and hunt” for these populations. It also had to face the demand for recognition from these communities and authorities across the globe.

MSM may indulge in unprotected anal sex globally, attributed to their faulty perceptions of not being high-risk, non-availability of suitable anal condoms, an Indian cultural milieu wherein anal sex is not viewed as sex and rather viewed as Masti with serious concerns of STIs, and HIV with poor visibility.<sup>2</sup> The NFHS (1998-99) estimates an approximately 2.35 million vulnerable MSM who

predominantly engaged in anal sex with significant risks of contraction of HIV infection. Estimates of MSM in India practicing anal sex are about 45-55% and of these only 5% to 20% use condoms; have multiple partners, reportedly between 11 and 28 casual partners per month; have poor health-seeking behaviour, with only 20-30% of MSM going for STI check-ups. In 2006, the first sentinel surveillance among hijras was done at Mumbai’s Sion Hospital and shocking 26% were HIV-positive. In Delhi, the sentinel surveillance among hijras at the NGO Sahara found 43% positivity. In 1999-2000, Humsafar Trust found that 13.8% of all baseline samples were positive. In fact, HIV prevalence in various surveys has rarely been less than 10%. Given that any prevalence above 5% is seen as ‘hyper-endemic’, this was a public health disaster.

Next to South Africa and Nigeria, India has the third largest number of person living with HIV/AIDS in the world.<sup>3</sup> According to NACO, adult HIV prevalence in India is approximately 0.36 percent, amounting to between 2 and 3.1 million people.<sup>4</sup> It is also estimated that 85% of HIV transmission is through sexual route. Through the prevalence HIV/AIDS among MSM in India was officially set 5.69% in 2006.<sup>4</sup> It is felt by the researchers that this was an underestimation, especially since global estimate suggest that 5 to 10 percent of HIV prevalence is attributable to sexual transmission between men.<sup>3</sup> The reliability of HIV infection data among MSM is influenced by: (i) lack of knowledge and understanding of MSM behavioural patterns as many MSM do not have a conscious identity/orientation; (ii) reluctance to consider reporting on their same sex behaviour even when asked; (iii) failure to identify their sexual behaviour as MSM since their partners are not perceived as men; (iv) reluctant to identify as MSM to health care

providers, fearing stigma, discrimination and exclusion.

Males are often easier to access for sex as compared to females and are also less expensive than female sex workers. Without a welfare system and with significant levels of unemployment and low levels of incomes, male sex work can be a way out in terms of supporting self and family. This is not to imply that males involved in sex work do not enjoy sex with other males. Often they may also have a regular male partner, and or a wife or a girlfriend. Thus the MSM is a very high risk group act as a bridge in transmission of sexually transmitted disease to the general population. There is definitely an insensitive attitude towards this population leading to their social exclusion and deprivation of service provision, treatment and care. Again, an underestimate of the number of at risk MSM in any given population apparently leads to lack of resources to support HIV intervention programs exclusively for this vulnerable population. Thus it is not surprising that these people live in a world of their own with misconception and wrong notions regarding sexually transmitted disease especially HIV/AIDS with little access to health education regarding these issue.<sup>5</sup>

## MATERIALS AND METHODS

This cross-sectional study interviews 200 Men having sex with men (MSM), by oral interview technique using a pre-tested and semi-structured questionnaire, developed through participatory approach of key stake holders, to elicit information on the important variables affecting their health, morbidity, quality of life, etc. as set out in the aims and objective spread over 21 month period commencing from January 2008 up to September 2009 in the city of Surat. Initially 15-20 visits paid to the different Drop-in-Centres of the Lakshya Trust, an important partner of Partnership for Sexual Health project, of Surat city. The information was entered on excel and analyzed with SPSS software. Appropriate statistical tests for significance, invariably percentages and means have been applied. Considering the theoretical and policy significance the study adopts both the quantitative and qualitative approach. Prior to the data collection, personnel from the Lakshya trust accompanied the investigators to explain to MSM about the aims and objectives of the study and assure them on confidentiality and ethical issues. The study explores the initial homosexual experiences of MSM in Surat City and the situations under which these occurred and also their impact on future sexual inclinations. The study has received ethical clearance from the ethical committee of the Surat Municipal Institute of Medical Education and Research and no conflicts of interest have been declared.

## OBSERVATION AND DISCUSSION

The age of our respondents varied from 18 to 58

years with the mean age of  $27.8 \pm 7.1$  and somewhat higher than reported from Kolkata and Mumbai.<sup>5-6</sup>. Our findings do reveal conclude that this group does belong to a sexually active age group. It has been documented that people belonging to the sexually active age groups and indulging in homosexual practice are at a higher risk of contraction of various STIs including HIV and AIDS and therefore warrant appropriate preventive strategies to decrease risk vulnerability.<sup>7</sup> In India, young people in the age group 15 - 24 years comprise almost 25% of the country's population; however, they account for 31% of the AIDS burden as per NACO.<sup>4</sup> This implies that they are at a higher risk of contraction of HIV/ AIDS and therefore merit special attention.

**Table 1: Age at First Homosexual Relationship**

1 <sup>st</sup> Homosexual Relation	Numbers
10-14 years	103 (51.5)
15-19 years	53 (26.5)
<10 years	22 (11.0)
>20 years	22 (11.0)
Total	200 (100.0)

Our discussions revealed that slightly over half (53%) MSM were bisexual followed by 47% who engaged solely in homosexual relationships in line with varying patterns of homosexual and bisexual relationships globally with either former or the latter as predominant preferred mode.<sup>8</sup> Though many of the respondents had reported of heterosexual attraction, the majority perceived themselves as feminine and felt attraction towards males. We would like to state that many of the MSM had realised their sexual inclinations after marriage and some were forced into heterosexual marriages by their parents and therefore their bisexual inclinations.

52%, 35.5% and 12.5% respondents had their first homosexual attraction between 10-14 years, >15 years and <10 years consistent with others who reported that the average age at which awareness of attraction for another male first occurred was 12.5 years for gay men and 14.8 for bisexual men.<sup>9</sup> The mean age of experience of first homosexual relationship was  $14.1 \pm 5.2$  years, earlier than 16.6 years as reported by Deb et al. in 2009<sup>5</sup> highlighting a teenage experience and the fact that these relationships occurred before the legal consenting age for having sex.

The majority (57%) had reported of their first homosexual encounter while playing with friends, resembling the findings of Deb et al in 2009<sup>5</sup>, which reported that a male friend was the first sexual partner in majority of the cases (50.9%) among the MSM. An important finding is that many were forced or raped into their first MSM experience by cousin, friend or elders and care takers.

**Table 2: First Homosexual Partner**

First Homosexual Experience	Number
With friend while playing	114 (57.0)
With a known person of same village	21 (10.5)
With unknown person in a public toilet	13 (6.5)
Forced by cousin or a friend	10 (5.0)
With a relative while sleeping in his house	8 (4.0)
With a cousin while playing or sleeping together	8 (4.0)
With his uncle	7 (3.5)
With a friend while watching a pornographic movie	7 (3.5)
With school teacher or hostel manager	5 (2.5)
With an unknown person while roaming	4 (2.0)
Raped by tribals in a forest	1 (0.5)
With a sadhu of gurukul	1 (0.5)
By the police officer while serving at his residence	1 (0.5)
Total	200 (100.0)

**Table 3: When Did You Have Your Second Homosexual Encounter?**

Second Encounter	Numbers
1 week to 1 month	90 (45.0)
< 1 week	85 (42.5)
≥3 three months	13 (6.5)
1 month to 3 Months	12 (6.0)
Total	200 (100.0)

The table reveals that in 94% the second homosexual encounter had occurred within 3 months of the first homosexual encounter. The majority (69.5%) respondents had realized their homosexual inclination only after they had experienced their first homosexual encounter and then they continued with the same practices, whereas all of the remaining (30.5%) respondents had realized this after their second homosexual encounter. This again highlights the crucial issue of forced initial homosexual encounters.

When specifically inquired as to whether their first sexual encounter had occurred with their consent or otherwise, 13% had reported of having experienced forceful first homosexual encounter. Interestingly many of them had not come out with this fact without specific inquiry. This finding needs to be viewed against the backdrop of their tender and young age and points to the need to ensure mechanisms to prevent occurrence of such incidents. Davies et. al. in 1999<sup>10</sup> had reported of consensual first homosexual experience among 98% respondents,

whereas Martindale et al in 1996<sup>11</sup> had reported of forceful same sex experience, though not in specific context of their first sexual experience.

Nearly all (97.5%) respondents are having maximum sexual gratification in homosexual relationships only. There were 2 individuals who felt more gratification with heterosexual relationships, yet continued with their homosexual relationships as well due to problems as difficulty in finding a female partner, ease of finding a male partner. They had reported that they might cease with homosexual relationships or decrease their frequency once they get married and have access to a female partner on a regular basis.

The most common sexual act reported by the respondents was receptive anal sex (89.5%), followed by oral sex (86.5%), body romance (70.5%) and insertive anal sex (25%). Our findings resembles with the findings of others<sup>5</sup> who had reported that the most preferred sexual act was receptive anal sex (83.3%) followed by oral sex 44.4%.

**Table 4: Sexual Activity Performed with partners**

Sexual Activity	Number
Receptor anal sex	179 (89.5)
Oral sex	173 (86.5)
Body romance	141 (70.5)
Kissing	87 (43.5)
Masturbating one's partner	78 (39.0)
Insertive anal sex	50 (25.0)
Being masturbated	12 (6.0)

Similar findings were also reported in another study in Hang Zhou Province, China<sup>12</sup> in which 40.7%

**Table 5: Cause of Continuing Homosexuality**

Cause of Continuing Homosexuality	Numbers (%)
Love anal sex	53 (26.5)
Love oral and anal sex with male	36 (18.0)
Like sex with male	35 (17.5)
Sex with fun and enjoyment with male is my weakness	29 (14.5)
Like sex with male and enjoyed different size of penis	11 (5.5)
Sex with male is free of cost and lesser chance of STI	10 (5.0)
Feel like female and enjoy sex with male	9 (4.5)
Sex with male only satisfied me	7 (3.5)
Love to have sexual relation with older male	5 (2.5)
Enjoyed first homosexual encounter	5 (2.5)
Total	200 (100.0)

preferred anal sexual behaviour, 62.99% oral sex, 74.11% masturbation and 3.66% oral-anal touch. The potential for injury is exacerbated by the fact that the intestine has only a single layer of cells separating it from highly vascular tissue, that is, blood, therefore, any organisms that are introduced into the rectum have a much easier time establishing a foothold for infection than the wound in a vagina.

The end result is that the fragility of the anus and rectum, along with the immunosuppressive effect of ejaculate, make anal-genital intercourse a most efficient manner of transmitting HIV and other infections. Male homosexual behaviour poses greater health risks not only because of promiscuity but also because of nature of sex, which is not simply either active or passive, but may involve penile-anal, mouth-penile, hand-anal, or mouth-anal sexual contact for both partners.

Our findings by and large reflect the pleasure which men derive from having sex with men in line with the study by Deb et al (2009),<sup>5</sup> wherein 40% of the study population had sex with men for pleasure, 28% felt it was because of increased sexual urge while 22% thought they could not resist their sexual urge. Almost all (99.5%) respondents reported that a friend was the main source to join a MSM group, whereas some respondents (14.5%) also reported internet as one of the source to enter in MSM group. Only one respondent (0.5%) reported of newspaper as his source of entry. Internet is gradually emerging as an important source, whereas in developed countries it is a main source as revealed in the study by Garofalo et. al. (2007),<sup>13</sup> wherein 48% had reported of having sexual relations with a partner they met online.

While surmising it can be observed that the initial homosexual relationships often emerge with consent among close friends or against consent with cousin, friend or elders and care takers and the first two initial MSM experiences play an important role in future MSM inclinations. What merits special attention is that these experiences invariably occur during adolescence and their impression makes a lasting effect on their psyche and sexual inclination lifelong, though any conclusions on this would require an indepth validation.

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**SEXUAL PROFILE OF TRUCKERS IN SURAT DISTRICT**Upadhyay Ashutosh<sup>1</sup>, Pawar AB<sup>2</sup>, Bansal RK<sup>3</sup><sup>1</sup>Tutor, <sup>2</sup>Associate Professor, <sup>3</sup>Professor and Head, Dept. of Community Medicine, Surat Municipal Institute of Medical Education & Research, Umarwada, Surat-395010, Gujarat.**Correspondence:** dr\_ashu30@yahoo.com**ABSTRACT**

This cross sectional study among 200 truck drivers in Surat city reveals that premarital and extramarital sex, often unprotected, is entrenched in their milieu. Furthermore they have multiple sexual partners and therefore this group is at a high risk of contracting and transmitting STIs and HIV and need urgent attention.

**Key words:** Truck drivers, sexual profile, Surat

**INTRODUCTION**

Transportation plays crucial role in economic development and trucks are a major means of transporting of industrial, agricultural and household products from one place to another in India. Long distance truck crew are often away for long periods from home and are rarely able to visit their home as trucks owners are unwilling to leave their trucks idle in their absence and take care on a new driver, if their driver asks for leave. Consequently, these drivers indulge on pre-marital and extramarital sexual encounters on the highway, commonly with commercial sex workers (CSW) and often indulge in unsafe sex.<sup>1-4</sup> HIV/AIDS awareness and condom use has been found to be poor among them<sup>3,5-6</sup>. Many of them become victims of sexually transmitted infections and HIV/AIDS. NACP III, in 2006 has stated that truck drivers are a critical group because of their 'mobility with HIV' and inadequate access to treatment for sexually transmitted infections aggravates their risk of contracting and transmitting the virus and thus they play an important role in the spread of the infection in community i.e. bridge population.

**MATERIAL AND METHODS**

This cross sectional study interviews 200 truck drivers, with their informed consent, using a pre-tested and largely open ended questionnaire so as to elicit information on important sexual variables with context to their risk of contraction and transmission of STIs, including HIV and AIDS in Surat city. The period of information collected was spread over 21 months period commencing from January 2008 up to September 2009 and all truck drivers that could be interviewed during this period have been included in the study. Subsequent to the interview process they were imparted health education on importance of safe sex, proper method of condom use, early signs, symptoms and treatment of various STIs from qualified doctors, HIV/AIDS, risks of having multiple sex partners, concept of bridge population, etc.

**OBSERVATIONS AND DISCUSSION**

21.5% truckers had reported of having a history of premarital relationship, studies have revealed that

premarital sexual relationship is significantly associated with lower educational attainments and the same was also brought out in the study. Our discussions revealed that extra marital relationship is quite an accepted norm in the milieu of these drivers and 14.5% had reported of having atleast one sexual partner on the highway. Further they had opined that it is still widely spreading amongst them and this sometimes leads to divorce or break up of their families. Studies have documented that extra marital relationships and unprotected sex lead to STIs including HIV/AIDS.

Most of the truck crew indulge in sexual encounters, commonly on the highway, in spite of being aware of the risks involved. Many of them had reported that they are a mobile group of the society and are away from their home for long periods of time and therefore their sexually promiscuous behaviour and STI profile, in line with other studies, Shreedhar (1995)<sup>7</sup> had reported that India's long distance truck crew has on an average 200 sexual encounters per year and at any given time 70% of them have STDs, Baishalibal et. al. (2007)<sup>6</sup> had reported that about 67% of the truck drivers visit sex workers.

Their partner profile reveals that 82.8%, 13.8% and 3.4% of the 29 truck drivers who had reported of having indulges in sex had 1-2, 3-4, > 5 sexual partners on their routine travel routes. Thus it can be safely inferred that truck drivers do indeed have multiple partners and are therefore vulnerable to contraction and transmission of STIs including HIV and AIDS as reported by others<sup>5</sup> with alarming consequences. Studies elsewhere have also reported that premarital and extramarital sex is common among truck drivers, often with CSWs.

73.5% truck drivers had reported of being unaware of the fact that STIs are preventable. In our study, most of the truck crew had made an attempt to change themselves after they were imparted health training on the prevention of STIs and HIV/AIDS, however it was half hearted and usually not sustained. When asked to state their perceptions as to the impact of these trainings on their colleagues, they had reported that many of them either do not seriously attempt to

modify their behaviour after receiving health education or don't want to attend such trainings or do not take it seriously. Whatever the reason the fact that they do not seriously contemplate subsequent behavioural modification is amply clear and highlights the need for sustained IEC efforts in this regard.

NACO interventions are aimed at controlling the spread of HIV and STI through information about their transmission and prevention, aimed at promoting safe sex through use of condoms. They also facilitate easy access to condoms, treatment for STI, counseling and testing services. Our discussions revealed that few of the truck crew don't even bother to receive information about prevention of STIs facilities like condom promotion, syndromic approach etc. It needs mention that Syndromic management is a powerful tool in prevention and control of STI.

58.6% of them had reportedly engaged in extra-marital relationships as they are away from home for prolonged periods; 27.6% to ease the stress of daily routine; and 13.8% just for pass their time, commonly on the truck stations. During our study some of the truck drivers stated that mental tension and stress of various factors like family problems, social problems, financial deficit, unpleasant arguments with the truck owners, etc. 59.5% had reported of not using condoms while having sexual intercourse with their wives, as they believe in natural sex; where as 40.5% respondents reported using condoms during sex with wife. Various researchers have stated condom usage to range between a mere 3%<sup>8</sup> upto 70%.<sup>9</sup>

In the context of condom usage with their spouse, 83.3% stated that they use condom for contraception; 14.1% use the condom for the protection of wife from HIV/AIDS, while 2.6% used condom for the first time to experience condom usage. Few condom users, having children of less age group stated that their condom use is completely on the basis of contraception. Further they stated that they have come across the advertisements regarding benefits of condom in fields of contraception and STIs prevention and, this why they use condoms. The observed condom usages are higher than that reported by others.<sup>10</sup>

While stating the reasons for non-usage of condoms, 35.3% do not use condom while sex with the wife as they believe in natural sex without any barrier, 30.3% said that condom interferes with sexual pleasure, 16.4% do not use condom as they are not interested in sex now because of approaching to old age, 14.8% do not use condom as they seem to be costly for them and they are not willing to use condoms in government supply. Barstad S (1993)<sup>11</sup> had also reported of scepticism among truck drivers towards condom use in Tanzania. There are multiple factors for non use of condoms among truck drivers,

particularly education, socio-economic status and their social milieu.

In our study, few of the truck drivers stated that they don't use condom at all as they don't feel any requirement of sexual encounters even with their wife, as the feeling of old age is created within them. In spite of not being in capable for sex, this feeling is generated by driving. According to a study by Bashkireva et. al. (2007)<sup>12</sup> Russia, premature ageing of physiologic parameters in automobile drivers is proved to be only "risk indicators", whereas prolonged length of service in driving is a real risk factor accelerating ageing process.

A worrisome observation was that 67.0% of the drivers did not possess a correct knowledge of condom use and furthermore they did not volunteer to acquire this knowledge even during our discussions. 69.3% truckers purchase condoms from shops, whereas the remaining 30.7% use Government supplied condoms. During 2008-09, condom use was promoted and condoms were provided at all ICTCs, ART Centres, and STI clinics. In the same year, 7.5 Lakh condoms were sold through 8500 condom vending machines. NACO has scaled up the female condom programme in Andhra Pradesh, Tamil Nadu, Maharashtra and West Bengal to saturate the entire female sex worker TIs. During 2008-09, 15 Lakh female condoms were procured. While concluding it would be safe to surmise that the sexual profile of truck drivers reveals that this group is at a high risk of contracting and transmitting STIs and HIV and needs urgent attention.

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**Original Article****AVAILABILITY OF SERVICES AND FACILITIES AT PRIMARY HEALTH CENTRES IN AHMEDABAD DISTRICT, GUJARAT****Shah Rakesh<sup>1</sup>, Bhavsar BS<sup>2</sup>, Nayak Sunil<sup>3</sup>, Goswami Mihir<sup>4</sup>**

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**Correspondence:** rrshahad1@yahoo.co.in**ABSTRACT**

This cross sectional study conducted among 10 randomly selected PHCs of Ahmedabad district in 2006 revealed existence of vacant staff deficits ranging from 11.3% to 30%; significant staff residing >30 Kms away from the facility; inadequate public transport system for patients; inadequate supplies, POL and functional PHC vehicle; and, bed paucity. The study reveals the necessity for suitable strengthening of these PHCs in line with their envisaged role in health care delivery in line with our national guidelines.

**Key words:** Primary health centers, paucity of supplies and manpower**INTRODUCTION**

India is largest democracy in the world, with the population of over 1027 million (2001). Over 74% of population lives in rural area. Manpower is the critical resource in a labour intensive industry such as health. It is an organic element among the resources needed for overall national health plan, aimed at improving the quality of life of the entire population<sup>1</sup>. Health is on one hand a highly personal responsibility and the other hand a major public concern. It thus involves the joint efforts of the whole social fabric, viz. the individual, the community and the state to protect and promote health<sup>2</sup>.

The first all round Community Development Programme was launched in the country in October 1952. It was then proposed to establish one Primary Health Centre (PHC) for each community development block; covering population of 80,000 to 1,00,000<sup>3</sup>. Subsequently, over the last many years the health services organization and infrastructure have undergone extensive changes and expansion in stages following the recommendation made by a number of expert committees. India became signatory to the Alma Ata declaration of 1978 and committed to attaining the goal of 'Health for all' by the year 2000 AD through Primary Health Care.

Years ago, the World Health Organization defined primary health care as essential care at the nucleus of the health care system. It is the first level of contact of individuals, the family and the community with the national health care system bringing health care as close as possible to where people live and work and constitutes the first element of a continuing health care process<sup>4</sup>. Primary Health Care addresses the main health problems in the community, providing promotive, preventive, curative, supportive and rehabilitative services accordingly.

**MATERIAL AND METHODS**

A study on medical care facility was carried out in 10

randomly selected PHCs in 2006. 10 PHCs were randomly selected one from each Talukas from the list of PHCs functioning in the district except the City Taluka which was not included in the study because of its proximity to Ahmedabad city & also difficulty in defining the areas precisely. A pre designed & pre tested questionnaire was used for the study. The questionnaire was formed of various questions related to human resources including current positioning, technical information regarding various equipments and instruments existing in the PHC. The available information was compiled, tabulated and analyzed to develop a profile of all studied medical care facilities in Ahmedabad District. Data obtained through Performa were entered into computer with Epi Info package to establish co-relation.

**RESULTS**

The position of medical care providers at the studied health care facilities is shown in Table 1. It was observed that post of medical officer was filled in 80% PHCs while in 20% PHCs the post was vacant, post of compounder and nurse were filled in 70% PHCs while post of ANM/FHW were filled in 88.7% PHCs.

**Table 1: Staff position at PHC**

Designation	Filled	Vacant	Total
Medical officer	08(80.0)	02(20.0)	10(100.0)
Compounder	07(70.0)	03(30.0)	10(100.0)
Nurse	07(70.0)	03(30.0)	10(100.0)
ANM/FHW	55(88.7)	07(11.3)	62(100.0)

(Figures in the parenthesis indicate percentages)

It was observed that distance of residence of doctors was more than 30 kilometers in 70% cases, while only 30% were residing within 5-20 kilometers from PHC. Among compounder, 25% were residing within 5 kilometers from PHC while 25% were coming from more than 30 kilometers from PHC. Among nurse

57.1% were residing within 5 kilometers from PHC while 14.3% were coming from more than 30 kilometers from PHC. 30 % Medical officers were using bus, 50% using their own vehicles while 20% were using train to reach health facility. Among compounder 50% were using bus, 37.5% using their own vehicles while 12.5% were using train for reaching PHC. Among nurses, all were using bus for reaching PHC (Table 2).

**Table 2: Distance of residence and way of transportation of staff**

Distance of residence of staff from PHC			
Distance (km)	Medical officer	Compounder	Nurse
Within 5 km	01(10.0)	02(25.0)	04(57.1)
5-10	01(10.0)	01(12.5)	00(00.0)
10-20	01(10.0)	01(12.5)	02(28.6)
20-30	00(00.0)	02(25.0)	00(00.0)
>30	07(70.0)	02(25.0)	01(14.3)
Transportation used by PHC staff for reaching PHC			
Bus	03 (30.0)	04 (50.0)	07 (100)
Own vehicle	05 (50.0)	03 (37.5)	00(00.0)
Other(Train)	02 (20.0)	01 (12.5)	00(00.0)

(Figures in the parenthesis indicate percentages)

It was observed that only 3 (30%) PHC had 6-7 indoor beds facilities, 3 (30%) health facilities had 3-5 beds while 2 (20%) health facilities had no indoor beds. It was interesting to note that at 30% PHCs, Medical Officers were utilizing the indoor facilities while at 70 % PHCs; they were not admitting the patients. The responsibility of health facility increases when patient is admitted and the presence of staff are also essentially required.

Drug supply was adequate and regular in all PHC with estimation of drug done by all health facilities. The medicines were procured 5-8 times per year depending upon the requirement of PHC. Storage of drug was done properly in screw-capped jars. The bottles of medicines were arranged haphazardly. Compounder in all PHCs gives instruction for use of drug orally.

Stock book and card was available in 60% PHCs while 40% PHCs had no stock book and card. Stock was maintained in 70% PHCs. Dressing, injections service was provided by pharmacists in 60% PHCs while 40% pharmacists were dispensing drugs only. In 40% PHCs drug was given to patients apart from OPD time while 60% PHCs were dispensing drug during OPD time only.

Hemoglobin estimation and blood group facilities were available in 80% PHCs, Urine examination and Peripheral smear examination for MP was carried out in all PHCs. While sputum for AFB was done in only 20% PHCs. ESR facility is available in 2 PHC out of

10, but they were not doing the test. Stock of slides & reagents was adequate and regular & slides were reused after washing them with detergent solution (Table 3).

**Table 3: Facilities available at Health centres**

Availability of Facilities (N=10)	Available	Not available
Stock book & card	06 (60.0)	04 (40.0)
Stock maintained	07(70.0)	03(30.0)
Other activities done by pharmacist as dressing, injection etc.	06(60.0)	04(40.0)
Drug distribution time of 9:00 To 5:00	04(40.0)	06(60.0)
Hemoglobin estimation	08(80.0)	02(20.0)
Blood grouping facility	08(80.0)	02(20.0)
Peripheral smear for malarial parasites	10(100.0)	00(00.0)
Urine examination	10(100.0)	00(00.0)
Sputum for acid fast bacilli	02(20.0)	08(80.0)

(Figures in the parenthesis indicate percentages)

As regards the vehicle availability, 8 (80 %) of the PHCs had their own vehicle. Of these the vehicle was in working order in 7 (87.5%); fuel supply was adequate in 4 (50%); absence of a permanent driver in 100%; absence of a daily wages driver in 2 (25%) of these PHCs. These vehicles were employed in 37.5% cases for transferring patients to higher centers in emergency situations.

## DISCUSSION

Primary Health Care should use an integrated approach of preventive, promotive, curative and rehabilitation services for the individual, family and community. Primary health care is the point of entry for the individual to the national health system<sup>5</sup>. Functions of primary health centers are medical care, MCH including family planning, safe water supply and basic sanitation, prevention and control of locally endemic diseases, collection and reporting of vital statistics, education about health, National health programme, referral services, training of health guides, health workers, local dais and health assistants, basic laboratory service<sup>2</sup>.

The present study focuses on Medical Care facility provided by Primary Health Centers in Ahmedabad district. Study<sup>6</sup> carried out among six PHCs in Pondicherry region of Pondicherry State showed that post of medical officer was filled in 80% PHCs and 88.7 % posts of ANM/FHW were filled. The availability of medical care providers mainly Medical officer at health care facility during emergency attracts the people to avail services, help to establish a good rapport with the community and also increase

utilization of government health facility. In the present study the medical officers and other staff was coming to PHC from variable distance ranging from 5 Kms to 30 Kms. This indicates that none of PHC staff is residing at head-quarters and in emergency usually their services were not available to the people. In a study carried out by Francis in Kerala reported that doctors were available round the clock in the PHCs. In a study<sup>7</sup> carried out in PHCs of Ahmedabad district in 1998, 77% respondents said that the Medical officer was always available.

The staff used various types of transport facility to reach the PHC. For those utilizing the public conveyance system, the timings and regularity of conveyance system affects the timely attending duties and increase the waiting time of patients in OPD creating dissatisfaction among users. This also affects adversely the utilization of services.

Indoor beds are provided at health care facility to treat serious patients. In the present study 20% health facilities had no indoor beds. Only 30% PHCs Medical Officers were utilizing the indoor facilities. The responsibility of health facility increases when patient is admitted and the presence of staff are also essentially required. Hence usually indoor admissions are not carried out at health facility.

For the purpose of supervision, monitoring of activities in PHC jurisdiction, transport facility, adequate POL, driver etc. are essentially required. It was found that 8 PHCs had their own vehicle, of that 7 were in working condition, 4 PHC had adequate provision of POL. In emergency, this vehicle can be

used as ambulance for transferring patient to higher centers.

## RECOMMENDATION

The continuous availability of good quality curative services satisfies people and motivates the community for preventive and promotive services. Incentives should be given to work at remote places and all the post of medical and paramedical workers should be filled up as early as possible.

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**Original article****INVESTIGATION OF AN EPIDEMIC OF HEPATITIS IN AHMEDABAD CITY****Sheetal Vyas<sup>1</sup>, Sonal Parikh<sup>2</sup>, Rachna Kapoor<sup>2</sup>, Vaibhavi Patel<sup>3</sup>, Anand Solanki<sup>3</sup>**<sup>1</sup>Professor and Head <sup>2</sup>Associate Professor <sup>3</sup>Assistant Professor, Department of Community Medicine, AMC MET Medical College, Maninagar, Ahmedabad**Correspondence:** Email: drvaibhavipatel@yahoo.co.in**ABSTRACT**

This study explores geographic distribution, clinical profile of Hepatitis cases and confirms the strain serologically. The investigation was conducted by the rapid response team of the Smt. NHL Municipal Medical College in the Hirawadi area of North Zone of Ahmedabad following reporting increased numbers and clustering of jaundice cases during routine survey by the link and health workers of Ahmedabad Municipal Corporation. Re-survey of the affected area was carried out and occurrence of new cases in the areas was noted along with collection of blood samples. Assessment of water distribution system and correction of faults was carried out simultaneously by the engineering department of AMC. A total of 377 houses were surveyed and it had total population of 2039. Total jaundice cases reported were 94. Age profile was assessed among the population of 1245 and the age cut-off was taken as 12 years so as to make epidemiological distinction between two types of water borne Hepatitis based on the survey data before the reports of laboratory are available. Sex wise distribution of population and cases showed male preponderance. Overall ratio of jaundice cases among <12 years versus >12 years age category was 1:15.25. Households having turbid water supply had significantly more number of cases. Overall attack rate was 5.22% with significantly higher attack rate in population over 12 years. Total 44 blood samples were taken and 33 (75%) of samples were positive for Hepatitis E whereas 5 (11%) samples were positive for both hepatitis A and E. HEV was confirmed as the major etiological agent in this outbreak and contaminated drinking water was identified as the source of infection.

**Key words:** Epidemic investigation, faeco-oral route, hepatitis E, serological examination, water borne transmission.

**INTRODUCTION**

Acute viral hepatitis is caused by six distinct types of viruses A,B,C,D,E and G. Hepatitis E, Hepatitis E virus, consists of small, 32- to 34-nm diameter, icosahedral, nonenveloped particles with a single-stranded, positive-sense, 7.5-kb RNA. Hepatitis E virus (HEV) is the agent largely responsible for epidemic as well as sporadic hepatitis in the developing countries. The virus is transmitted by the feco-oral route, often through contaminated water. Primarily a self-limiting disease, it produces chronic sequelae. The epidemic investigation was carried out to explore area wise distribution and epidemiological parameters of the affected persons and area; to serologically confirm the strain of the Hepatitis virus; and, to make hypothesis about the agent, probable source, route of transmission, susceptible hosts and suggest actions and preventive measures

**MATERIALS AND METHOD**

The city of Ahmedabad is divided into six zones by Ahmedabad Municipal Corporation (AMC) for the purpose of provision of health and other services. The health department of AMC reported increase in number and clustering of cases of jaundice during their routine survey by the link and health workers in the Hirawadi area of North Zone.

Rapid Response Team was formed from Smt. NHL Municipal Medical College for investigating the epidemic. The team comprised of the faculty and residents from the Department of Community

Medicine, Microbiology and Medicine Departments along with lab. technicians and other support staff. Information about the affected areas was obtained from the Health Staff of AMC in the north zone. A rapid house to house survey of the areas was carried out by survey teams for detection of cases of jaundice and collecting basic information about the cases and important epidemiological parameters. During the survey investigation reports of the jaundice cases were also seen and those having high SGPT levels and/ or yellowish discoloration of sclera were examined serologically for confirmation of strain of the Hepatitis virus. Re-survey of the affected area was carried out and occurrence of new cases in the areas was noted along with collection of blood samples. During the survey other things observed were like physical quality of drinking water as perceived by the respondents, food history of the affected persons, and history of contact with the case of jaundice at home or at work place, symptoms of the cases etc. Other activities which were carried out were treatment of the affected persons, distribution of chlorine tablets, health education of the respondents etc. Simultaneously teams from engineering department of AMC were detecting the source of contamination of water supply and correcting the same. AMC authorities also went for super-chlorination of water in the affected area.

**OBSERVATIONS AND RESULTS**

Total 377 houses were surveyed from the affected

areas in the first four days. On the fifth day 179 houses were re-surveyed from the same areas. The area had a total Population of 2039. The average family size was 5.4. The total jaundice cases reported were 94 as in Table 1.

**Table 1: Population/ houses covered**

Date	Houses covered	Population Covered	Jaundice cases reported
12-4-09	152	794	29
13-4-09	108	660	20
14-4-09	48	200	30
15-4-09	69	385	0
16-4-09	179	Re-survey	15
Total	377	2039	94

Age and sex profile was assessed among the population of 1245 which was surveyed from 13-4-09 onwards. It was observed that out of total, 303 (24.34%) were below 12 years of age and 942 (75.66%) were above 12 years of age. The age cut-off was taken as 12 years so as to make epidemiological distinction between two types of water borne Hepatitis namely A and E, based on the survey data before the reports of laboratory are available. Sex wise distribution of population showed that males were 670(53.8%) and females were 575 (46.2%), with M:F ratio of 1.17:1.

**Table 2: Age and sex profile**

Age profile	Male			Female		
	Affected	Not affected	Total	Affected	Not affected	Total
<12 years	4	170	174	0	129	129
> 12 years	31	465	496	30	416	446
Total	35	635	670	30	545	575

As far as age and sex profile of cases is concerned 65 cases of jaundice were reported from the foresaid 1245 population. Out of that, 35 (53.84%) cases occurred in males and 30 (46.16%) in females hence the M: F ratio of cases was 1.17:1. The age wise distribution of cases amongst males showed a ratio of 7.75:1 between those who are more than 12 years versus less than 12 years whereas in females all cases occurred in the age group more than 12 years. Overall ratio among >12 years versus < 12 years age category was 15.25:1. This indicated that in current epidemic majority of those affected were adolescents and adults. (Table2)

Age and Sex specific attack rates were calculated for the affected area. Overall attack rate was 5.22%. Attack rate among males and females was 5.22% and 5.21% respectively. There was no significant difference in the attack rates between males and females indicating the equal exposure and risk for both the sexes. Attack rate among males of less than

12 years of age was 2.3% and same in more than 12 year age group males was 6.25%. Attack rate among females of more than 12 years of age was 6.72% and there were no cases among females less than 12 years of age hence attack rate was 0%. When the attack rate in the age group less than 12 years was compared with that of more than 12 the difference was statistically highly significant ( $z=5$ ,  $p<0.01$ ). This showed that adolescents and adults had significantly more number of cases as compared to children indicating the nature of epidemic in favour of Hepatitis E. (Table3)

**Table3: Age and Sex-wise Attack Rate (%)**

Age (years)	Male	Female	Total	p value
<12	2.3	0	1.32	<0.01
>12	6.25	6.72	6.47	Highly
Total	5.22	5.21	5.22	Significant

Out of the total 377 houses which were surveyed, 80 (21.22%) had cases of jaundice. There were more than one cases of jaundice in 10 households with average number of jaundice cases per affected household as 1.175. 213 (56.5%) households gave the history of supply of turbid water which they call "Dolu Pani" in their local language. It was observed by the investigating team that many of the affected households had installed the electric motor system directly in the municipal water supply system as the pressure of the water was low during the supply hours. Out of 213 houses where the history of turbid water supply was positive, cases of jaundice were present in 35.7% whereas out of 164 houses where there was no history of turbid water supply the cases of jaundice were present in 2.4% of houses. When the rate of presence of hepatitis is compared

between houses having turbid water supply versus clear water supply, the difference was statistically highly significant ( $z=9.5$ ,  $p<.001$ ). Hence clear association was observed between turbid water supply and occurrence of cases of hepatitis; with households having turbid water supply having significantly more number of cases. However odds ration was 22.2 indicating very high strength of association between dirty water supply and hepatitis. (Table 4)

Team from microbiology department collected blood samples for confirmation of strain of Hepatitis virus and samples were transported to the laboratory of VS General Hospital under cold chain system. Total 44 blood samples were taken from the cases of jaundice (high SGPT levels and/or yellowish discolouration of sclera). All the blood samples were subjected to testing for HEV IgM, HAV IgM and H Bs Ag and Hepatitis C.

**Table 4: Water quality and hepatitis cases**

Water quality	Number of houses with Case/Cases of hepatitis		Total
	Present	Absent	
Turbid	76 (35.7)	137 (64.3)	213 (56.5)
Clear	4 (2.4)	160 (97.6)	164 (43.5)
Total	80 (21.22)	297 (88.78)	377 (100)

Out of total 44 blood samples, 33 (75%) samples tested positive for Hepatitis E and 5 (11%) tested positive for both hepatitis A and E indicating thereby mixed infection with both the types of water borne hepatitis viruses. None of the samples were positive for Hepatitis B, C and Hepatitis A alone. Six samples tested negative for all the tests. (Table5)

**Table5: Collection and analysis of blood samples**

Type of Hepatitis	Number (%)
Hepatitis E	33 (75)
Hepatitis E and A	5 (11)
Hepatitis A	Nil
Non reactive to A, B,C and E	6 (14)
Hepatitis B	Nil
Hepatitis C	Nil
Total	44 (100)

## DISCUSSION

Total population of 2039 was covered in house to house survey and 94 cases of jaundice were detected giving the overall attack rate of 4.61%. Male: Female ratio was 1.17:1 in the present investigation survey with males outnumbering females. This finding is similar to finding by P. Sarguna et al<sup>1</sup> during epidemic investigation in Hyderabad. Male: female ratio was 2.8:1 in another study by A. Bhagyalaxmi et al.<sup>2</sup> Majority of cases occurred in the age group more than 12 years both amongst males and females with few cases amongst younger age group indicating there by clear cut epidemiological evidence in favour of hepatitis E which is further supported by statistically significantly higher attack rate among the age group more than 12 years. This finding is also similar to finding of several other studies<sup>1,2,3,4</sup>. In the present study households having contaminated water supply had statistically significantly higher number of jaundice cases than the households having clean water supply indicating a clear association of cases with dirty water supply. 44 blood samples were tested from the cases of Hepatitis and 75% samples were tested positive for Hepatitis E and 11% for both hepatitis A and E. None of the samples were positive for Hepatitis B,C and Hepatitis A alone. Hepatitis E virus (HEV) was the causative agent in 47.4% of the cases of viral hepatitis in a study by M. Beniwal et al.<sup>5</sup> In study by Sarguna et al hepatitis E was the major cause of the outbreak (78.57%). And mixed infection of HEV-HAV (5.31%).<sup>1</sup>

## CONCLUSIONS

Based on the above observations, it was concluded that the present epidemic had water borne mode of transmission and the strain of virus responsible was identified as hepatitis E as majority of cases occurred in adolescents and adults which goes in favour of epidemiological age pattern of Hepatitis E. Serological examination also proved Hepatitis E as the cause of current epidemic. The cause of the outbreak was contamination of water during distribution because of repair works on the roads and suction from the motors installed by the households.

In endemic areas, infection with HEV may be seen in association with other hepatotropic viruses (HAV) as observed in the present study. The actions suggested were superchlorination of drinking water, distribution of chlorine tablets, constant monitoring of free residual chlorine levels, health education and correction of the faults in water supply system.

**LIMITATIONS:** The present study was carried out at the beginning of the epidemic so the progress and termination of epidemic could not be studied. Estimation of free residual chlorine levels in water was carried out by the workers of AMC in the morning and same could not be repeated during the rapid survey by the investigating team.

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**Original Article****EDUCATIONAL INTERVENTIONS TO INCREASE KNOWLEDGE OF LEPTOSPIROSIS IN NAVSARI DISTRICT****Vasava Bipin<sup>1</sup>, Kavishvar Abhay<sup>2</sup>, Patel PB<sup>1</sup>, Patel Sushil<sup>3</sup>, Panchal Shaishav<sup>3</sup>**<sup>1</sup>Assistant Professor, Department of Community Medicine, SMIMER, Surat <sup>2</sup>Associate Professor, Department of Community Medicine, Government Medical College, Surat <sup>3</sup>Resident, Department of Community Medicine, SMIMER, Surat**Correspondence:** b\_cvasava@yahoo.com**Abstract**

This study was conducted to create awareness about Leptospirosis, an important zoonotic disease, in two villages of Navsari district using street play and poster exhibition. The pre-intervention assessment revealed poor knowledge scores on various aspect of leptospirosis which significantly improved after intervention ( $p < 0.05$ ). Street play in local language and pictorial posters are effective health educational tools amongst illiterates and repeated use, before the transmission season, for maximum impact.

**Key words:** Leptospirosis, Street play and poster exhibition, awareness levels**INTRODUCTION**

Leptospirosis, an infectious disease that affects human and animals, is considered as the most common zoonosis in the world.<sup>1-2</sup> The organisms enter the body when mucous membrane or abraded skin comes in contact with contaminated environmental sources.<sup>3</sup> Infected wild and domestic animals pass leptospirosis causing shedding of bacteria in urine. People get leptospirosis by contact with fresh water, wet soil, or vegetation contaminated by the urine of infected animals.<sup>1-2</sup> The infection causes a systemic illness often leads to renal and hepatic dysfunction.<sup>4</sup> Occupational exposure accounts for 30-50% of human cases; farmers, veterinarians, and field agricultural workers being the main group at risk.<sup>5</sup>

After a first case reported in Valsad district during 1994, leptospirosis emerged as an important public health problem in Gujarat.<sup>6</sup> Initially the cases were concentrated only in Valsad district but in 1997 cases reported from Surat district which became the epicenter of disease later on. The disease gradually also spread to Navsari district of south Gujarat.<sup>7-8</sup>

Awareness regarding the disease is very important in prevention and control of the disease. Knowledge of clinical features and complication also play an important role to decrease morbidity and mortality. Due to lack of risk perception, many a time people ignore the fever of leptospirosis and delay treatment. Late referral to higher centre was one of the main reasons behind the majority of deaths.<sup>7</sup>

Most of the villagers working in agriculture are illiterate. In such Cases Street plays in local language was thought to be a good media for communication. This study was conducted to measure the effectiveness of health communication media like street play and poster display to increase knowledge regarding the leptospirosis disease among the selected villages.

**MATERIAL AND METHODS**

This is an interventional study conducted in Dhanori and Pipaldhara village of Navsari district during the year 2005. All the residents of both villages aged 18 to 60 years were included in the study. Mostly these people are involved in agricultural work and so at risk of leptospirosis. A pretested questioner was used to assess knowledge of participants. Information regarding cause, mode of transmission, prevention, control, symptoms etc. was obtained by conducting house to house visit.

After the completion of pre interventional survey, knowledge was imparted using street plays and poster exhibition in local language. Street play was of 30 minutes long and was performed by 10 personnel in Gujarati language with local pronunciations. The same play is repeated twice in each village by the same performers at different location during the month of august 2005. After the street play poster showing information regarding leptospirosis were displayed for about an hour on the same place. The street play and poster mainly covers the cause, mode of transmission, preventive measures and symptoms of leptospirosis disease.

Two month later, in October 2005, a survey was conducted to re-assess the knowledge of villagers regarding the leptospirosis. The same questioner was used to assess the knowledge. The data were analyzed using epi info 2002 software. Chi square test was used to establish statistical significance among the variables and the difference was said to be significant when p value is less than 0.05.

**RESULT AND DISCUSSION**

During the pre intervention and post intervention survey 610 and 532 (87.2%) persons were interviewed to assess knowledge on leptospirosis. The October month is cultivation season in both

villages which might be the reason for less participation despite repeated home visit in post intervention study.

Agriculture was the main occupation for most of the participants (87.43%). Ninety four percent of the female participants use to milk animal regularly. Table 1 shows awareness level of participants regarding various facets of leptospirosis before and after the IEC interventions. In both the villages, every

year more than one cases of leptospirosis were reported, still only 44 percent of participants had heard of leptospirosis. However after two month of street play and poster exhibition 91 percent were remembered of leptospirosis. Before intervention only 23 percent aware of leptospirosis case in their village which increase to 87% after giving information.

**Table 1: Pre and post intervention awareness**

Awareness	Pre intervention (n=610)	Post intervention (n=532)
1. Heard of Leptospirosis	268 (43.93)	486 (91.35)
2. Cases of leptospirosis in their village	140 (22.95)	463 (87.03)
3. At risk group		
Farmer	50 (8.20)	402 (75.56)
Agriculture laborer	125 (20.49)	398 (74.81)
Animal handler	14 (2.30)	156 (29.32)
4. Animals spread leptospirosis		
Rat	84 (13.77)	320 (60.15)
Cow	33 (5.41)	96 (18.05)
Buffalo	31 (5.08)	108 (20.30)
Dog	4 (0.66)	46 (8.65)
5. Mode of transmission		
Working bare foot in farm	87 (14.26)	257 (48.31)
Working bare foot in animal shed	62 (10.16)	163 (30.64)
Contact with contaminated water	12 (1.97)	246 (46.24)
Milking animal without gloves	2 (0.33)	56 (10.53)
6. Symptoms		
Calf muscle pain	58 (9.51)	132 (24.81)
Fever	55 (9.02)	386 (72.56)
Conjunctival suffusion	25 (4.10)	79 (14.85)
Oliguria	18 (2.95)	136 (25.56)
Jaundice	5 (0.82)	264 (49.62)
7. Need referral if above symptoms	55 (9.02)	150 (28.20)
8. Preventive measures		
Use of gum boot in farm	59 (9.67)	188 (35.34)
Use of gum boot in animal shed	36 (5.90)	178 (33.46)
Use of gloves during milking animal	1 (0.16)	42 (7.89)

(Figure in parenthesis indicate percentage)

Agriculture work was the main occupation in both villages but very few people were perceiving risk of leptospirosis in initial survey. Only one fifth of respondent feel that person involve in agriculture work can get leptospirosis and only two percents see milking animal as risk factor for leptospirosis. Risk perception is very important indicator of felt need. Those who perceive that they are at risk had greater felt need and seek preventive and curative care more often than others. In the study street play and poster

exhibition were proven very effective ( $p < 0.001$ ) to realize risk of leptospirosis.

To impart knowledge regarding the animal spreading leptospirosis is one of the issues covered in the IEC activities which significantly increase awareness regarding various animals like rat, cow, buffalo and dog responsible for spreading the disease.<sup>9</sup>

Knowledge regarding the various mode of transmission was very poor ranging from less than one percent for 'milking animal without gloves' to 14% for 'working bare foot in farm'. Better

knowledge on mode of transmission of leptospirosis help person to avoid undue direct or indirect exposure to contagious material of infected animal. Methods used to give information were very effective to increase it.

Many cases of leptospirosis develop serious life threatening complications within a week of appearance of first symptom. Early recognition of symptoms and early referral is vital in such cases to decrease mortality of disease. Awareness of various symptoms was found to be poor in initial survey ranging from less than one percent for 'jaundice' to 9.5 percent for 'calf muscle pain'. Post intervention survey after two months revealed that IEC intervention significantly increased awareness of participants ( $p < 0.001$ ). However awareness found in post intervention survey still needs to be improved for higher rate of early referral.

No hospitalization facility available in any of the village. This fact augments the importance of early referral of leptospirosis cases to save lives. However, only nine percents felt the need of hospital referral in case of symptoms suggestive of leptospirosis in initial survey. Importance of early referral was emphasized in the street play which improved awareness regarding early referral.

Knowledge of preventive measures was found to be less in first survey which improved significantly ( $p < 0.01$ ) after street play and poster exhibition.

#### **CONCLUSION AND RECOMMENDATION**

The study reveals that community awareness in both villages regarding leptospirosis was very poor. Street play in local language and pictorial poster exhibition can serve as very effective communication tool to

provide health education particularly when the large segment of community is illiterate. However such activities should be carried out frequently at regular interval to keep awareness level high. IEC campaign at every year before the transmission season would be more effective.

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**Original Article****AN ANALYSIS OF ROAD TRAFFIC COLLISIONS ON ROADS OF SABARKANTHA DISTRICT OF GUJARAT****Patel Mitesh K<sup>1</sup>, Kartha GP<sup>2</sup>**<sup>1</sup>Assistant Professor, Community Medicine Department, B.J. Medical College, Ahmedabad <sup>2</sup>Professor, Community Medicine Department, C.U. Shah Medical College, Surendranagar**Correspondence:** drmiteshpatel@yahoo.co.in**ABSTRACT**

This study on road traffic accidents in Sabarkantha district conducted from January to December 2002 among National and State Highways and town/ village roads examines the pertinent epidemiological variables thereof. Of the 512 event of road traffic accidents 81.6% were non-fatal and 18.4% were fatal with domination of pedestrian accidents (37.8%). The highest events (40%) took place on National highway followed by State highways (31.4%) and town/village roads (28.5%) and events like “vehicle head on”, “vehicle hit from back”, “vehicle hit from side” and “run off the road” were higher on National highway. The study point to the need for proper traffic management at all levels starting from the village and town roads to the State and National highways to control the avoidable morbidity and mortality associated with road traffic accidents.

**Key words:** Road traffic accidents, non-fatal and fatal events.**INTRODUCTION**

Accidents today are among the leading causes of death. Thus, while medical science has conquered the ravages of many communicable and non-communicable diseases, accidents are now emerging as a new “epidemic” of increasing public health importance calling for concerted efforts to prevent and control this problem. It was precisely due to these reasons that the World Health Organization recognized this problem and made it as a theme for the WHO day 2004-2005, namely “Road Safety”. Motor vehicle accidents claim the largest toll of life and tend to be of a more serious nature.

Rapid urbanization, modernization and industrialization have all exacerbated and accentuated the pre-existing problem of traffic congestion and road traffic accidents. Motorization refers to the influx of motor vehicles, including high performance cars, trucks, and motorcycles, without concomitant changes in roads, pedestrian patterns and traffic enforcement capabilities. Although bicycle continues to be world’s leading vehicle for transportation, the global increase in automobiles has been truly staggering.<sup>1-2</sup> The road network in India is divided in to two categories (urban & non-urban) with the non-urban roads being further divided in to three main classes-national highway, state highway and village roads. In India the traffic on highways or on urban road is heterogeneous and includes fast moving vehicles like trucks, buses, cars, scooters and slow moving vehicles like bicycles, bullock-carts, camel-carts and also cattle and pedestrians. Not only that, but also the growth of number of vehicles playing on roads has outpaced the growth of roads which has increased the traffic problems resulting in congestion, delays and accidents.<sup>3</sup> There is no panacea to prevent all road traffic accidents and organized teamwork by people in many disciplines such as educators,

engineers, medical practitioners, psychologists and enforcement officers, is necessary for effective prevention.<sup>4</sup>

**MATERIALS AND METHODS**

The present study of epidemiological variables of road traffic accidents was carried out in Sabarkantha district. According to the 2001 census the population of Sabarkantha is 20,38,416, which comprises of 4.12% of total population of Gujarat state. National highway No.8, namely Delhi & Mumbai highway passes across this district and state highways connect the district with the historical places of Ambaji and Shamlaji. Consequently the roads of Sabarkantha district bear heavy passengers and goods load. The study area included the national highway, two state highways and town/ village roads. The study was spread over a one year period from January 2002 to December 2002 and during this period a total of 512 road traffic accidents were recorded. A pre designed and pre-tested Performa was used and details about road traffic accidents were collected from FIR, case record file and interviews of the investigating police officers of concerned police stations.

**RESULTS**

Table 1 shows that out of total 512 events, 81.64% of events were non-fatal and 18.36% were fatal. Analysis also shows that highest number of events (40.04%) took place on National Highway followed by State Highways (31.83%) and town/village roads (28.13%).

If analyze a non-fatal and fatal accidents separately for each road category, than highest number of fatal accidents took place on National Highway(73.65% non-fatal and 26.34% fatal) followed by State Highway (84.05% non-fatal and 15.95% fatal) and town/village roads (90.28% non-fatal and 9.72% fatal). Table shows that the difference between non-

fatal and fatal events that took place on different roads is significant.

**Table 1: Fatal and Non fatal events of road traffic accidents according to Road category**

Road Category	Events of Road Traffic Accidents		
	Non Fatal	Fatal	Total
	No. (%)	No. (%)	No. (%)
Village/ Town Roads	130 (90.28%)	14 (9.72%)	144 (100%)
State Highway	137 (84.05%)	26 (15.95%)	163 (100%)
National Highway	151 (73.66%)	54 (26.34%)	205 (100%)
Total	418 (81.64%)	94 (18.36%)	512 (100%)

( $X^2=16.42$ ;  $df=2$ ;  $P<0.05$ )

Table 2 shows that out of 512 events of road accidents, highest number of events (40.04%) took place on National Highway followed by State Highways (31.45%) and town/village roads (28.52%). Comparing the accidents between town/village roads, State and National highways, than it is seen that there was not much more difference in Hit pedestrian

event, whereas some other events (Vehicle head on, Vehicle hit from back, Vehicle hit from side and Run off the road) were high on National highway than other road category. It is also seen statistically that there was no significant difference in the types of accidents on different road category except "vehicle hit from back" type of collision in which the rate was significantly higher on highways.

**Table 2 Distribution of types road traffic accidents on different Road category**

Types of Accident	Events of Road Traffic Accidents							
	Town/Village Roads		Highways				Total	
			State		National			
	No.(%)*	%	No.(%)*	%	No.(%)*	%	No.	%
Hit pedestrian	68(35.23)	46.58	65(33.68)	40.37	60(31.09)	29.27	193	37.70
Vehicle head on	40(29.85)	27.40	29(21.64)	18.01	65(48.51)	31.71	134	26.17
Vehicle hit from back**	9(13.24)	6.16	25(36.76)	15.53	34(50)	16.59	68	13.28
Vehicle hit from side	6(16.22)	4.11	14(37.84)	8.70	17(45.93)	8.29	37	7.23
Over Turn	17(35.42)	11.64	17(35.42)	10.56	14(29.17)	6.83	48	9.38
Vehicle hit fixed object	3(33.33)	2.05	3(33.33)	1.86	3(33.33)	1.46	9	1.76
Run off the road	0(0)	0	8(40)	4.97	12(60)	5.85	20	3.91
Other	3(100)	2.05	0(0)	0	0(0)	0	3	0.59
Total	146(28.52)	100	161(31.45)	100	205(40.04)	100	512	100

\*\*SEP=2.76, Z=3.60,  $p<0.05$ , between village roads and highways \*(row percentages)

## DISCUSSION

Of the 512 events of road traffic accidents, 81.6% were non-fatal and 18.4% were fatal. The maximum number of events took place on the national highway (40.04%) followed by state highways (31.45%) and lastly, the town /village roads (28.52%). Result also suggests that pedestrian accidents dominated the town/ village roads and state highway. Analysis revealed that two vehicle-involved events (vehicle head on, vehicle hit from back, vehicle hit from side) were more on national highway as compared to other road categories. This difference could be due to greater high speed and long distance vehicles passing through the national highway, as revealed from discussions, however this was not specifically measured in the study. The relatively lower number

of events on the village roads suggests that the overall speed of vehicles is slower on these roads, a fact also brought out in our discussions.

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## Original Article

## HEALTH SEEKING BEHAVIOUR OF PERI-URBAN COMMUNITY OF CHANDKHEDA

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## ABSTRACT

The study conducted in peri-urban area, reveals that utilization of government health care facilities was poor in the study area compare to national level surveys. Utilization of public health care facilities was significantly higher in lower socio-economical class. Large number of poor families presently utilizes the services provided by private health providers for a multitude of reasons like Long waiting period (53.8%), distance location (50.2%) and inadequate facilities (25.4%) etc, the majority of which can be rectified with minimal resources input.

**Keywords:** health care facilities, peri-urban area, socio-economical class

## INTRODUCTION

Medical care for treatment of illnesses has been recognized as an essential public good required for the development of any country. Recognizing this fact, most of the developed nations across the globe guarantee their citizens access to medical care provisions either as free of charges state provided care such as in U.K. or through an insurance system as in The Netherlands. In the event of an illness, individuals do need to seek curative care. Some of them may not actually take treatment as they do not perceive the illness severe enough to warrant medical attention, may not have adequate resources to afford treatment. The choice of curative health care provider depends upon the severity of illness, availability of various health-care facilities, access to services, and economic condition of household and a host of socio-economic factors.<sup>1</sup>

Health care in most developing countries has been visualized as a basic right for the individual. This perception has over the years manifested itself through the emergence of extensive publicly supported health care systems with unlimited access at zero or little cost to the user. However utilization of public health care facilities remains low over the years, even by the poorest of the community. This study was carried out to know the health seeking behaviour of the community and to know reasons for not utilizing a government health care facility if it is so.

## MATERIAL AND METHODS

The study is carried out in Chandkheda area, which is a peri-urban area near Ahmedabad city and is the serving area for the Rural Health Training Centre attached to NHL Medical College during the year 2005.

448 households were selected from 12364 households of Chandkheda area (Census 2001)<sup>2</sup> using the formula  $n=2zP(1-P)/(d2(1-\alpha/2))$  as per the WHO manual,<sup>3</sup>

considering population proportion 0.05, precision 0.02 and confidence interval 95%. The Households were selected by Population Proportion to Size (PPS) sampling for each nine political ward and taking sampling interval of 25. The first household was selected randomly using random number table. The head of the family were interviewed using pretested questioner to collect information on health seeking behaviour of family.

## RESULT AND DISCUSSION

Out of surveyed 448 household, 173 (38.62%) families were using different government and semi-government facilities like community health centre, civil hospital, primary health centre, hospitals and referral centers of Ahmedabad municipal corporation for treatment and other health care services. Remaining 275 (61.38%) families were availing health care services from private clinics, private hospitals, trust hospitals etc. Bi-variate analysis reveal that use of public health care system declines as socio-economic status improves ( $\chi^2$  76.38, df 4,  $p < 0.001$ ).

**Table 1: Usage of Health Care Facilities by various Socio-Economic Classes**

SE Class (CPI 2005 - 496) <sup>4,5</sup>	Families using Public Health care Facilities	Families using Private Health care Facilities	Total
Class I	8(13.56)	51(86.44)	59
Class II	23(19.83)	93(80.17)	116
Class III	34(33.66)	67(66.34)	101
Class IV	85(62.50)	51(37.50)	136
Class V	23(63.89)	13(36.11)	36
Total	173(38.62)	275(61.38)	448

Share of public health services was found to be 52%, 69% and 63% in national level surveys like NCAER 1991<sup>6</sup>, NCAER 1992<sup>7</sup> and NSS 1994<sup>8</sup> respectively. All these studies were covering proportionally large rural area<sup>6,7,8</sup> which might be one of the reasons for

higher share of public provider. Study conducted in urban area reports 47% share of public health services for treatment<sup>9</sup>. These finding reveals that utilization of public health care facilities is poor in urban area and poorer in pri-urban area.

Free availability services (73.33%) and close location of facilities (68.33%) were important reasons for using public facilities, however none of the respondent mentioned good quality services or quickness of services as a reason.

Faith in doctor (76.83%), quickness of services (69.81%) and good behaviour of clinic staff (47.56%) were important reason for availing private health facilities. These may be the reasons which attracted 36% and 38% of class-IV and V families (table 1) to avail private facilities which are far more expensive.

**Table 2: Reason for not using government health care facilities**

Reasons (N=275)	Number (%)
Long waiting period	148 (53.8)
Away from home	138 (50.2)
Inadequate facilities	70 (25.4)
Unclean premises	50 (18.2)
Harsh behaviour of clinic staff	38 (13.8)
No faith in government doctor	28 (10.2)
Harsh behaviour of doctor	14 (5.1)
Other	15 (5.4)

Table 2 reveal that long waiting period was stated as the most common reason for not preferring government health care facilities. Person visiting government facilities for treatment has to stand in a long queue for every service provided like case registration, consultation of doctor, injection, dressing, laboratory services, medicines etc.

Even though government facilities were available within 3 km area of all surveyed area, half of the respondent using private facilities feel that it is away. Availability of private health care facility at the door step might be one of the reasons for giving preference to it. Other common reasons include inadequacy of facilities/services available at government setup and unclean premises. Harsh behaviour of staff and doctors toward patient and their relatives and lack of faith in government doctors were some of the other reasons cited for not adopting public health care facilities.

## CONCLUSION

It can be seen that a large number of poor families presently utilize the services provided by private health providers, despite the high costs of care associated with the same, over the free/ subsidized care provided by the governmental health care services for a multitude of reasons, the majority of which can be rectified with adoption of good behavioural practices by the government health care staff or with minimal resources input. Since health has been widely recognized as a public good essential to the development of a country and India has an extensive public health care system already in place, it would be prudent to ensure that it is optimally utilized by the populace.

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**Original Article****PRELIMINARY STAR RATING SYSTEM FOR FOUR WHEELERS OWNERS IN SURAT CITY****Patel Sushil A<sup>1</sup>, Bansal Neha R<sup>2</sup>, Jariwala Vishal<sup>3</sup>, Panchal Shaishav J<sup>1</sup>**<sup>1</sup> Resident, <sup>2</sup> Ex-Intern Surat Municipal Institute of Medical Education & Research, Umarwada, Surat, <sup>2</sup>7th Semester B.E. (Electrical Engineering Student, Government Engineering College, Surat.**Correspondence:** sushdr3@yahoo.com**ABSTRACT**

This cross-sectional study among 100 owners of four wheelers, using a pre-tested interview schedule, explores pertinent variables on various aspects relating to the fuel consumption patterns of their vehicles with the objective of developing a preliminary star rating systems for the vehicles & the practices adopted by their owners. The aim of the study is to inform consumers on potential fuel consumption of vehicles in order to encourage practices which lead to consumption of less fuel and promote adoption of environment friendly practices and technologies on the long run.

**Keywords:** Star rating system, four wheelers, fuel consumption, environment friendly practices, Surat city.**INTRODUCTION**

Studies point out that automobiles alone are responsible for significant (>10%) Greenhouse gas emissions, produce other harmful pollutants and these can be reduced by observing small tips by the vehicle owners which would also reduce its fuel consumption.<sup>1</sup> This issue assume grave significance in view of the increasing global concerns on the need for curtailing Greenhouse gas emissions and the need for sustainable development versus the increasing industrialization, urbanization and affluence observable in India, which is enabling an ever increasing number of four wheelers on the Indian roads.

**MATERIALS AND METHODS**

This cross-sectional study was conducted among purposively selected 100 owners of four wheelers, using a pre-tested interview schedule prepared with the active involvement of various stake holders with the objective of developing a preliminary star rating systems for these vehicles.

These vehicle owners were interviewed at four petrol pumps situated opposite the Railway station, Lambe Hanuman road, Chaupati and Adajan Road. The vehicle owners were explained about the impending necessity to encourage practices which lead to consumption of lesser fuel by the four wheelers in order to promote adoption of environment friendly practices and technologies on the long run to prevent global warming, Greenhouse gases and promote sustainable development.

**OBSERVATIONS AND DISCUSSION**

Studies point out that automobiles alone are responsible for significant (>10%) greenhouse gas emissions, produce other harmful pollutants and these can be reduced by observing small tips by the vehicle owners which would also reduce its fuel consumption.<sup>1</sup> Table 1 reveals that many of the car owners are already adopting environment friendly practices, though these could be further improved

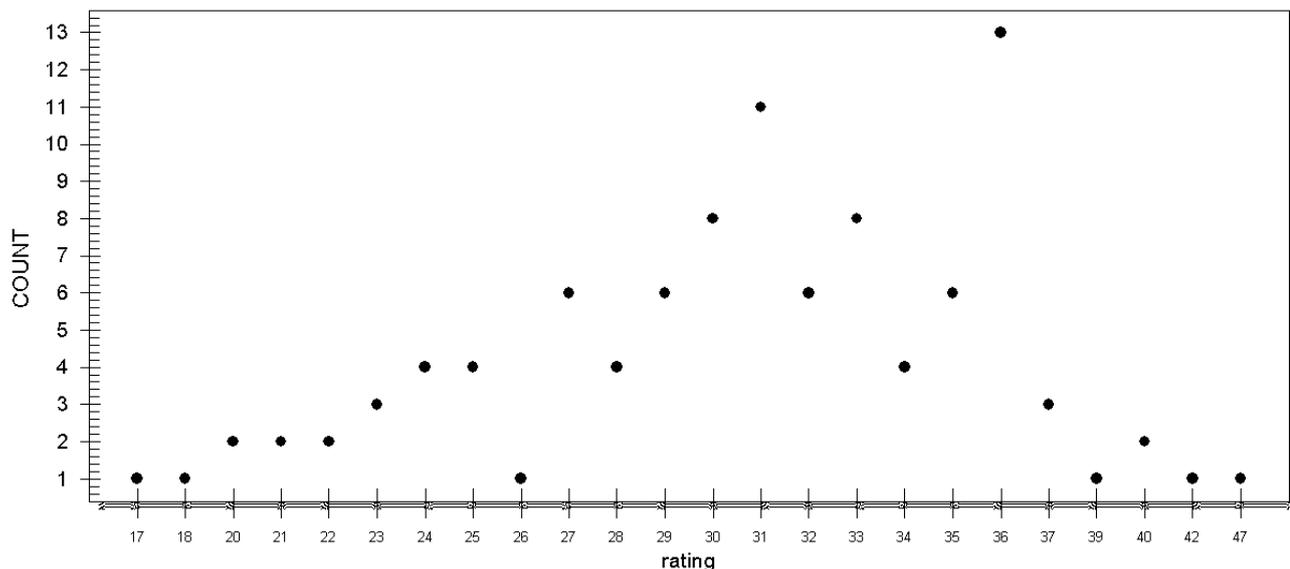
upon, for instance 15% owners had professed to carrying dead weight along simply for laziness or postponement of transferring of objects from the car to the residence or the workplace. It has been stated that reducing dead weight and wind drag (unused roof racks) will lower your fuel consumption.<sup>1-2</sup> Discussion with the vehicle owners had revealed this was quite feasible.

Similarly, only 34% vehicle owners were always switching of their vehicle's engines at traffic signals where their vehicle would remain stationary for periods >15 seconds. It needs mention that there are traffic signals and crossroads where vehicles remain stationary for minutes at a time. This observation clubbed with the need to maintain smooth driving without frequent breaking and accelerating and speeding can lead to significant mileage improvements. It also needs mention that frequency meter displays for vehicle running speed versus fuel consumption are already in existence<sup>3</sup> and their use should be promoted. Similarly the association of regular engine oil change, regular servicing through authorized workshops, regular tyre pressure check and refilling preferably with Nitrogen, wheel alignment with mileage has been well established. Similarly, electric energy powered vehicles and the relative advantages of electric, CNG and LPG driven vehicles over petrol and diesel vehicles has also been established.<sup>1-6</sup>

Figure 1 reveals the overall scores of the 100 automobiles and the practices adopted by the automobile owners and from the same on an arbitrary basis on a scale of 12 to 48, we could assign 1 star, 2 star, 3 star, 4 star and 5 star rating to those in the score pattern of 17-26 (20 vehicles & owners), 27-30 (24 vehicles& owners), 31-33 (25 vehicles& owners) and > 37 (8 vehicles& owners). This scale needs validation, also this scale is inclusive of the practices adopted by the owners, therefore logically the practice component would need to be delineated from the vehicle part.

**Table 1: Rating as per individual parameter**

1 to 4 Star Rating as Per Parameter					
Rating	Parameter	Number	Rating	Parameter	Number
1. Fuel			7. Speed in city		
4	CNG/ Electric	21	4	< 45Kmph	70
3	LPG	24	1	> 45Kmph	30
2	Diesel	23	8. Speed on highways		
1	Petrol	32	4	< 45Kmph	17
2. Air pressure check			1	> 45Kmph	83
4	Weekly	14	9. Dead weight		
3	Fortnightly	20	4	No	85
2	Monthly	56	1	Yes	15
1	> 1 month	10	10. Make of car ( fuel consumption )		
3. Servicing period			4	>15 Klms/L	48
4	< 1 Month	5	3	10-15 Klms/L	23
3	1 to 3 months	15	2	5-10 Klms/L	25
2	3 to 6 months	52	1	< 5 Klms/L	4
1	> 6 months	28	11. PUC		
4. Wheel balancing/ alignment			4	Yes	80
4	< 5000 kms	45	1	No	21
1	> 5000 kms	55	12. Changing of oil ( period )		
5. Air Inflation			4	10000 Kms/L/Yrly	56
4	Nitrogen	10	1	>10000 Kms/L/Yrly	44
1	Air	90			
6. Switching off engines at red signals					
4	Always	34			
3	Often	24			
2	Sometimes	29			
1	No	13			

**Figure 1: Overall score of automobiles****REFERENCES**

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**Original Article****PREVALENCE OF HYPERTENSION AMONG ELDERLY WOMEN IN SLUMS OF SURAT CITY****Pawar AB<sup>1</sup>, Bansal RK<sup>2</sup>, Bharodiya Paresh<sup>3</sup> Panchal Shaishav<sup>4</sup>, Patel HB<sup>3</sup>, Padariya PK<sup>3</sup>, Patel GH<sup>3</sup>**<sup>1</sup>Associate Professor, <sup>2</sup>Professor and Head, <sup>3</sup>Intern, <sup>4</sup>Resident <sup>4</sup>Intern Department of Community Medicine, SMIMER, Surat.**Correspondence:** shaishjp2005@yahoo.com**ABSTRACT**

This screening study conducted among 105 elderly women residing among the slums of Surat city revealed the virtual absence of screening programmes for hypertension in the vulnerable segment as witnessed by detection of new and undiagnosed case of hypertension in over one thirds of those screened. The universal absence of awareness of the need for regular treatment and follow up and absence of informed decision making is indeed distressing.

**Keywords:** Hypertension, screening, elderly women, urban slums**INTRODUCTION**

Economic development in wealthy countries was accompanied by the emergence of NCDs as the predominant health problem. As a result, NCDs are often referred to as 'diseases of affluence'- a misleading term. A more accurate label is 'diseases of urbanization'.

Chronic non communicable diseases (NCDs) contributed to 35 of the 58 million deaths (60.3%) in the world in 2005.<sup>1</sup> 80 per cent of these deaths occurred in low and middle income countries. Based on available trends, by 2020 NCDs are predicted to account for 73% of deaths and 60% of disease burden. In India, NCDs were responsible for 53 per cent of deaths and 44 per cent of disability adjusted life years lost.<sup>2</sup>

Hypertension is the commonest cardiovascular disorder, posing a major public health challenge to population in socioeconomic and epidemiological transition. It is one of the major risk factor for cardiovascular mortality, which accounts for 20-50% of all deaths.

Developed countries are considering it as a leading cause of death but even developing countries do not lag behind in being affected by it.<sup>4</sup> In a meta-analysis of 34 epidemiological studies from rural and urban populations of India, it was observed that hypertension is emerging as a major public health problem in India and is more prevalent among urban people compared to those of rural area.<sup>5</sup>

Demographic trends show that while the urban average growth rate stabilized at 3% over the past decade (1991-2001), the slum growth rate doubled. Projections suggest that while the urban population will double in the next 10 years, the urban poor will double in just 5 years.<sup>6</sup>

It is evident that the urban poor living in slums and slum like areas have the worst of both worlds- they adopt a more urbanized lifestyle which places them at a higher risk for NCDs and have poor access to healthcare, partly related to their poor purchasing

ability. Lack of knowledge about the morbidity, complications and the method of control of hypertension contributes to a large percentage of undetected and untreated hypertensive subjects in the community.<sup>7</sup>

This study attempts to find out extent of hypertension among elderly women in slums of Surat city.

**METHODOLOGY**

This study was carried out from 15<sup>th</sup> November 2009 through 27<sup>th</sup> December 2009. In total, 105 women of age > or = 60 years living in urban slum areas of Surat city were selected for the study. A person was labeled as hypertensive if the systolic BP  $\geq$  140 mmHg and/or diastolic BP  $\geq$  90 mmHg as per the JNC-VII criteria. We also included those already having hypertension based on history or clinical reports.

**RESULTS AND DISCUSSION:**

The majority (63.8%) were of the age group of 60 to 65 years; Hindu (51.4%); house wife (31.4%) or house maids (28.6%); widowed (61.9%); per capita income of <Rs. 500 per month (62.6%); normal BMI (38.1%) or undernourished (21.9%); illiterate (78.1%) 10(9.5%), 18(17.1%), 34(32.4%), 43(41%) of the respondents had normal, pre HT, stage I HT, stage II HT respectively.

It is shocking to find that 77 out of 105 respondents were found to be suffering from hypertension and only 37 of these had been diagnosed earlier and were on treatment. Thus on screening it had been possible to diagnose 40 more respondents, i.e. over one thirds of the total sample to have undiagnosed hypertension in our study.

The total prevalence of hypertension was found to be 73.3% and the new case detection rate was found to be 38%. Further, it is surprising to observe that merely 3 out of 95 hypertensive women had family history of hypertension, though it needs mention that 22 of these respondents did not know about any history of hypertension or otherwise in their family. Also what is most concerning was the absence of

informed decision making in all of the 100% already cases and the absence of the importance of regular follow up and treatment.

Chronic non-communicable diseases like hypertension, diabetes are recognized to exist in slums A Faridabad study had reported 15.8% prevalence of hypertension among women in slums.<sup>8</sup> However, our study included women more than 60 years leading to high prevalence. In a study a higher prevalence of 69% was recorded among elderly populations aged sixty and above in the urban areas during 2000.<sup>9</sup> It is evident from a Chennai based study that prevalence of hypertension among low income group people of age  $\geq 40$  was 54%.<sup>10</sup>

Looking at the growing urban population and almost one third contribution of slum population in cities, the higher prevalence of hypertension and non-communicable diseases is a matter of concern to national and local level health authorities.

### CONCLUSION

Higher prevalence of undiagnosed hypertension points out the need to devise comprehensive strategy for early identification and prompt treatment of hypertension to prevent its end-stage complications. This could reduce burden on health systems for their management at tertiary care institutes.

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**Original Article****TRAFFIC CONGESTION AND FUEL WASTAGE DUE TO IDLING VEHICLES AT CROSSROADS****Bansal Neha<sup>1</sup>, Patel Sushil<sup>2</sup>, Panchal Saishav<sup>2</sup>**<sup>1</sup>7th Semester B.E. (Electrical Engineering Student, Government Engineering College, Surat- 395 001, <sup>2</sup>Post Graduate Residents, <sup>3</sup>Intern, Dept. of Community Medicine, Surat Municipal Institute of Medical Education & Research, Surat, Gujarat**Correspondence:** nbansalsurat@gmail.com**ABSTRACT**

This study carried out at among a very busy signal point of Surat city reveals that the congestion of two wheelers, three wheelers and four wheelers is indeed very high at peak traffic hours and the movement of vehicles is very slow. The vehicle problem is much accentuated by the bicycles and the pedestrians which results in a very slow traffic movement even when the traffic lights switch green, especially for the lanes from SMIMER to Sahara Darwaja and vice versa. The snail like pace of vehicles prompts the impatient vehicle owners to leave their engines idling so as to zealously seize any opportunities for small advancements, leading to colossal fuel wastage and health hazards associated with exhaust fumes. The study points to the need for appropriate siting of overbridges and proper traffic management at such busy sites to help conserve precious petroleum imports and preserve our environment.

**Keywords:** Traffic congestion, cross roads, fuel wastage**INTRODUCTION:**

In developing countries like India, rapid urbanization and industrialization coupled with rapid population growth has led to explosion in the number of vehicles in recent years. At the same time our roads infrastructure and our traffic management system has not been designed to cope with such a heavy vehicular load, leading to heavy traffic congestion at busy signal points in big cities as Surat. This problem is further exacerbated in areas where large commercial industries establishment are also housed, such as the textile markets near Sahara Darwaja, as in these areas a large number of commercial vehicles ply round the clock and the large number of workers associated with these industries combinedly clog the roads. All of these factors cumulatively lead to a situation of heavy traffic congestion at traffic signals and intersections. This results in a very slow traffic movement even when the traffic lights switch green, especially for the lanes from SMIMER to Sahara Darwaja and vice versa. The snail like pace of vehicles prompts the impatient vehicle owners to leave their engines idling so as to zealously seize any opportunities for small advancements, leading to colossal fuel wastage.

An idling vehicle is guilty of using up valuable fuel, not only unnecessarily wasting this expensive resource, but also causing danger to the environment and a risk to the health of many others.<sup>1</sup> Idle cars produce emissions that have been found to negatively affect respiratory health.<sup>1</sup> Idle vehicles emit pollutants like carbon dioxide. An engine that idles for 10 minutes yields 90 grams of this gas and consumes 0.14 liters of fuel.<sup>1</sup> Eliminating idling would cut about 196,000 metric tons of carbon dioxide from passenger cars and trucks alone, calculated from Environmental Protection Agency estimates and Bureau of Motor Vehicles statistics.<sup>2</sup> There is a recognized need for more efficient control of traffic at

intersections. Efficient traffic control is becoming an urgent necessity that affects vehicle owner's stress, vehicle energy consumption, and vehicle pollution due to unnecessary vehicle idling and travel time. These consequences, when cumulated by the gross number of cars, contribute to nationally significant financial costs, environmental pollution and energy consumption figures.<sup>3</sup> There is the need to measure the amount of idling at various traffic junction, so that the cumulative magnitude of the problem of idling can be established and steps taken to prevent vehicle idling. It needs mention that countries as India are dependent on oil exports, which account for a major chunk of exports. Therefore, oil conservation efforts would also mean rich dividends for our country in terms of conservation of foreign currency reserves. The purpose of the study is to assess the idling profile of vehicles at Sahara Darwaja, an extremely busy traffic junction of Surat city and highlight measures to prevent the same. .

**MATERIALS AND METHODS:**

This observational study was conducted at Sahara Darwaja cross-roads, one of the most busy traffic point in Surat city, during morning (9:30-10:30 am) and evening (8:30-9:30 pm) peak hours. The four lanes at this cross roads, Railway Station to Sahara Darwaja, SMIMER hospital to Sahara Darwaja, over bridge at textile market to Sahara Darwaja and textile market to Sahara Darwaja have been considered in the study. We have categorized vehicles in three major categories: Four wheelers, three wheelers and two wheelers, with sub-categorized accordingly. The number of stationary vehicles before the junction, number of vehicles passing cross roads at one signal change, time duration for stationary vehicle standing last to pass the junction, percentage of stationary vehicles with their ignition on and time duration of green and red signal of each lane was observed and recorded.

**OBSERVATION:**

The Sahara Darwaja junction is situated near textile market with peak traffic hours being 9:30-10:30 a.m. and 8:30-9:30 p.m., though traffic can be quite high during the day timings as well. It can be seen from the figures as given in the table that heavy vehicular congestion was relatively more on the lanes which comes towards the textile markets during the morning peak hours, and in the evening peak hour heavy vehicular congestion was seen on the opposite direction, i.e. the lane which comes from the textile

market and also on the lane from SMIMER hospital towards Sahara Darwaja. The considerable vehicular congestion was seen in other lanes also during these peak hours. This leads to idling of vehicles at the cross road junction, and it leads to wastage of gallons of petroleum. In India, estimates are not readily available, however, the American Trucking Association states that one hour of idling per day for one year results in the equivalent of 64,000 miles in engine wear when adding up all the contributing factors.<sup>4</sup>

**Table 1: Number of Stationary Vehicles at Crossroads in the Concerned Lane**

Time	Lane	4 wheelers				3 wheelers		2 wheelers			Total vehicle
		To Sahara Darwaja	Small size	Medium size	Large size	Truck/bus	Autos	Goods tempo	Motor cycle	Scooty	
Morning	Station	2	2	1	0	46	3	45	5	0	104
	SMIMER	4	3	4	7	35	5	48	8	3	117
	Overbridge	15	6	2	0	15	3	58	8	2	109
	Textile market	3	0	1	1	55	3	10	3	0	76
Evening	Station	2	0	1	0	27	2	10	2	0	44
	SMIMER	5	3	2	2	30	2	38	7	4	93
	Overbridge	4	5	1	2	15	1	19	18	3	68
	Textile market	4	1	0	3	30	4	60	6	3	111

A favourable finding was the fact that the duration of the Green signal was higher for the lanes which were witnessing the maximum traffic and these timings

were variable throughout the day depending upon the expected flow for various lanes during the concerned timings as seen in table 2 and 3.

**Table 2: Number of Vehicles Passing Crossroads during Signal Change**

Time	To Sahara Darwaja	Four wheeler	Three wheeler	Two wheeler	Total vehicles
Morning	Station	8	63	58	129
	SMIMER	19	56	110	185
	Overbridge	32	19	68	119
	Textile market	6	58	15	79
Evening	Station	3	40	14	57
	SMIMER	24	52	82	158
	Overbridge	13	18	44	75
	Textile market	8	39	76	123

This was reflected by a greater number of vehicles clearing the junction as compared to the number of vehicle congested in the lane during the red signal, despite the continuous flow of vehicles in the lane. The table also reveals the traffic profile of the vehicles passing the traffic signal pattern at Sahara Darwaja. It can be observed that the maximum vehicular rush is on the lane from SMIMER hospital

to Sahara Darwaja. Many a times, there is traffic mismanagement when vehicles continue to ply even after the Green signal turns Red or some vehicles sneak by when the traffic cop is not vigilant or engaged in discussion with a vehicle. This consequently leads to traffic jam with stationary or very slow vehicle movement and idling of vehicles due to the heavy vehicular rush.

**Table 3: Time duration of traffic lights at signal point (in seconds)**

Time	Lane	Green signal	Red signal
Morning	Station	60	242
	SMIMER	79	81
	Overbridge	128	201
	Textile market	66	221
Evening	Station	25	120
	SMIMER	76	112
	Overbridge	111	142
	Textile market	80	137

There is a need to ensure that such lapses in traffic management system are prevented especially during

peak hours. The vehicle problem is much accentuated by the bicycles and the pedestrians which clog these

traffic junctions and are simply unmanageable, resulting in a very slow traffic movement even when the traffic lights switch green, as compared to the actual number of vehicles would could have cleared the junction had the pedestrians been managed more efficiently, say through a overhead foot bridge.

There is a long waiting period for vehicles at the red signals during peak hours, this leads to idling of

vehicles at cross roads. The American Trucking Association states that one hour of idling per day for one year results in the equivalent of 64,000 miles in engine wear when adding up all the contributing factors.<sup>4</sup> If idling of one bus can reduce for 60 minutes per day, then it saves 90 gallons of fuel per year.

**Table 4: Time duration for vehicle standing last to clear the cross road (seconds)**

Time	Lane	4 wheeler	3 wheeler	2 wheeler
Morning	Station	140	130	114
	SMIMER	148	136	140
	Overbridge	106	102	128
	Textile market	150	156	160
Evening	Station	98	88	96
	SMIMER	110	120	115
	Overbridge	130	126	98
	Textile market	125	106	87

Table 4 reveals that such a long waiting time leads to colossal wastage of fuel and man time. The waiting period for the vehicle is more on the lane from SMIMER hospital to Sahara Darwaja, in line with the

findings of the earlier tables, revealing the need to extend the opening exit of the overbridge from Sahara Darwaja to New Bombay Market for the incoming traffic headed from Udhna Cross roads.

**Table 5: Percentage of vehicles with running engines while waiting at red signals**

Time	Lane	4 wheeler	3 wheeler	2 wheeler
Morning	Station	80	71.4	56.6
	SMIMER	88.9	87.5	84.7
	Overbridge	73.9	94.4	58.8
	Textile market	100	77.9	61.5
Evening	Station	66.6	80.6	41.6
	SMIMER	100	93.4	77.6
	Overbridge	83.3	93.8	75
	Textile market	100	94.1	87

Table 5 reveals that 80% to 100% of 4 wheeler & 3 wheeler owners keep their engines switched on while waiting at red signals. Similarly 50% to 80% of 2 wheeler owners also keep their engines switched on while waiting at red signal. This idling of engines leads to heavy avoidable fuel wastage, vehicular engine damage, respiratory problems, release of Greenhouse gases and contributes towards global warming.<sup>5</sup> It has been documented that the exhaust fumes released during idling from gasoline and diesel engines contain harmful pollutants including nitrogen oxides, carbon monoxide, volatile organic compounds, and fine particles leading to much more respiratory infections and chronic bronchitis, and trigger asthma attacks, as compared to switched off and restarted engines.

The study reveals unacceptable patterns of vehicular idling and slow traffic movement at Sahara Darwaja traffic intersection and needs rectification through appropriate traffic management, encouraging lane driving, restricting pedestrians traffic to the footpaths, construction of overhead footbridge and extending

the opening exit of the overbridge from Sahara Darwaja to New Bombay Market for the incoming traffic headed from Udhna Cross roads. All the traffic points should be provided with the digital timer for red and green signal, so that people can know the waiting period at the traffic points, so that they can turn off their vehicles. There is strong need for the general public education regarding the traffic rule and importance of switching off their vehicles at the time of idling.

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## Original Article

## FACTORS AGGRAVATING OR PRECIPITATING ACNE

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**ABSTRACT**

This cross-sectional study was conducted from 11<sup>th</sup> March to 11<sup>th</sup> April 2010 among 100 consecutive prospective patients attending the clinics of a renowned dermatologist for the treatment of Acne in the city of Surat. The study identifies variables such as consumption of spicy foods, pickles, mango, fast food, fried food; stressful situations mainly examinations, financial constraints and family disputes; sun exposure; excessive oiling of hair; pre-menstrual exacerbation; washing of face with soaps as triggers and aggravating factors as perceived and self reported by respondents. The study recommends a relook on the pertinent variables, especially the dietary ones. The study also brings out the need to formulate strategies to enable adolescents and young adults to effectively deal with the perplexing issue of Acne.

**Keywords:** Acne Vulgaris, Dermatologist, Isotretinoin, Aggravating factors

**INTRODUCTION**

Acne Vulgaris a disease unique to humans, is considered to be the most common disease of skin, occurring during the life time of individuals.<sup>1-2</sup> It has been stated that 90% of individuals between puberty to 30 years of age experience some degree of acne.<sup>3</sup> What is particularly worrisome or an often accompaniment are psychological effects like anxiety, depression, low self esteem and self confidence, embarrassment, shame, social inhibitions following or accompanying acne. These also lead to teasing and stigmatization and sometimes suicidal ideation.<sup>4</sup> Acne is said to be typically vacillating in its course.<sup>5</sup> Various triggers and aggravating factors have been identified, which may be accountable for periodic flares. Increasing pubertal age, seborrhea, the premenstrual phase, mental stress, and sweet and oily foods have been reported as risk factors for moderate to severe acne.<sup>6</sup> It is also equally true that studies are divided on issues such as the role of diet in acne. This study attempts to explore such triggers and aggravating factors as perceived by 100 patients attending the clinics of a renowned dermatologist for the treatment of Acne in the city of Surat.

**MATERIALS AND METHODS**

This cross-sectional study was conducted among 100 consecutive prospective patients attending the clinics of a renowned dermatologist in the city of Surat for the treatment of Acne Vulgaris. The study period was spread over a 31 day period from 11<sup>th</sup> March to 11<sup>th</sup> April 2010. The respondents were interviewed using a semi structure questionnaire after obtaining their informed consent. The questionnaire was developed with the inputs of various stakeholders and suitable pre-tested. The inclusion criteria comprised of all of the consecutive patients with complaint of Acne who had agreed to participate in the study during the period of data collection. It was observed that all of the patients had agreed to participate in the study and

hence there was no exclusion due to non-consenting patients.

The exclusion criteria comprised of patients of Acne with a co-associated skin disorder or a psychiatric problem, however since there were no patients during the time period of the conduction of this study, hence there were no exclusions due to this criteria. All of the studied patients were quizzed for identification of various triggers and aggravating factors, which the patients had identified as being associated with flare ups of Acne in their instance. Data analysis was done using chi-square test and independent t-test.

**OBSERVATIONS AND DISCUSSION**

The general profile of the patients revealed that 62% comprised of females and 38% of males. The mean age of the patients was  $25.28 \pm 9.10$  years. The mean age was higher for males ( $26.91 \pm 9.34$ ) as compared to females ( $22.60 \pm 8.13$ ). The characteristics of the majority of the respondents were belonging to Hindu religion (93%); with a university degree (70%); unmarried (60%); having a high socio economic class (54%). The aforementioned observations are in line with the clinic settings and the expected clientele. The mean age for onset of acne was found to be  $17.67 \pm 7.54$  years. The mean age for the onset of Acne was found to be higher for females ( $19.17 \pm 7.77$ ) as compared to males ( $15.74 \pm 5.86$ ). This finding is contrary finding to the observations as reported by earlier studies, which had reported an earlier onset of Acne in females. However, this finding can be ascribable to the fact that this study does not study the prevalence of Acne in a defined population, rather it is based on selective profile of clinic attendees.

It was observed that 50% of individuals had been suffering from acne for a period of less than 5 years. 32% had acne since 5-10 years, and 18% had acne since more than 10 years. According to dietary pattern, 51% were pure vegetarian and 49% were

having mixed diet and amongst them 53% were eating eggs once in a week, 33% twice in a week and others were having eggs more than two times in a week.

Earlier studies have reported that Acne is said to be typically vacillating in its course,<sup>5</sup> and the same feature of Acne was reported by varying percentages of the respondents in this study with flares associated with various triggers and aggravating factors. The vast majority (85%) of the respondents in the study had reported that consumption of spicy foods led to flares and/or aggravated the pre-existing acne in their instance. In fact this emerged as the major aggravating factor as identified and perceived by the respondents in this study. Similarly more than half of the respondents had reported of having experienced flare up of acne with pickle (54%) and with fast food (51%). Over one-thirds (37%) had experienced flares of Acne with consumption of fried food.

It has already been pointed out earlier that literature is somewhat divided on the role of diet in Acne. From the earlier stance that diet has no role in Acne, there have been concerns of the quality of data which had led to these edicts. The IAA Consensus Document as published in the Indian Journal of Dermatology, Venereology and Leprology in 2009 had reported that while spices and oils may not directly cause acne, the repeated exposure to oil vapours during cooking may lead to Acne.<sup>5</sup> This raises a crucial issue, as to whether we agree with the possible role of diet in Acne or otherwise. It is quite likely that even the statement that the repeated exposure to oil vapours during cooking may lead to Acne may not hold true, atleast in all instance. For example some of the respondents may not be there in the house when the cooking is done, as for instance males and females engaged in occupations due to which they may not be at home during the time when food is cooked in their house, and/ or the fact that these respondents and others self report of explicit flare ups of Acne with consumption of fried/ fast or oily foods.

A study has nicely brought out the fact that in last 50 years, while reviewing 250 trials of acne therapy only a single controlled study could be found in which diet was even mentioned.<sup>7</sup> Relative intake of  $\omega$ -6 and  $\omega$ -3 poly unsaturated fatty acid have been stated to influence inflammatory process. As the vegetable oils are rich in  $\omega$ -6 fatty acid, foods processed with these vegetable oils, like in India, pickles, fried foods etc. can promotes proinflammatory cytokines and eicosanoid profile that leads to development of inflammatory disorders like acne.<sup>7</sup> This study also reports of other dietary flare ups with consumption of other food stuffs such as mango (44%); chocolates (31%); butter (24%); Chinese food (14%); cheese (10%) in descending order. What we observe here is that again these food items are associated with either oils or the process of frying, which has already been

discussed, with the exception of mangoes. It needs mention that mangoes are known to lead to Acne like conditions as per our cultural beliefs and the concept of sourness of Ayurveda. Another fact is that harmful agents are often used for the ripening of mangoes and it is quite possible that these agents could sometimes lead to Acne flare ups. Also, our cultural beliefs are replete with the association of consumption of oils and Acne. In any condition the self reporting as observed in the study, our cultural beliefs and the paucity of data on which the current dietary recommendations are based point to the need to have a relook on the dietary association and Acne based on sufficient scientific data.

Experiencing of Acne flare-ups in stressful situations was another important observation of this study with 81%, 63% 54% of respondents giving a history of having experienced flaring up of acne during stressful situations as examinations, during financial constrains and during family disputes. Other stressful situations combinedly were reported by 35% respondents as leading to Acne exacerbations. These finding of acne flares up in stressful conditions, including psychological and emotional stress has been supported by earlier researchers.<sup>4,9,10</sup>

Excessive sun exposure often leads to skin damage and leads to acne in weeks after exposure.<sup>11</sup> In the study, only one respondent was using a two wheeler, whereas all the remaining respondents were using either four wheelers or were using public transport system in almost equal distribution. The ample availability of private four wheeler usage was reflected among these respondents by the lower usage of sunscreen (30%), predominantly by those using the public transport system. An important finding among those using sunscreen was the predominant usage of cosmetic brands (70%) with only 30% using sunscreens as prescribed by their treating doctors, leaving aside the issue of possible advantages of better tolerance of water based sunscreens over those oil based.

Excessive oiling of hair has been reported to lead to exacerbation of the acne condition,<sup>12</sup> and among the 71 respondents using oil, 55% had reported of having experienced Acne flares after oiling hairs. These comprised mainly of females (61.5%). Despite having experienced the problem of flare-ups, these respondents had continued with oil usage mainly because they found it difficult to manage hairs without oil usage and many of them continued with this practice, despite the advice of their treating doctor. Out of these 71% using oil, the vast majority (85.9%) were oiling their hairs less than three times a week and the remaining 14.1% were oiling their hairs more than three times a week due to the same hair management issues.

In the study, 19% of female had experience of premenstrual exacerbation of acne. These figures are

quite low as compared to the premenstrual flaring up of acne among 60-70% of females suffering from Acne patients<sup>2,5,13</sup> and needs further exploration. The currently accepted hypothesis states that the pilosebaceous duct becomes smaller between 15 to 20 days of menstrual cycle and the blockage leads to premenstrual acne.<sup>1,5</sup>

In our study, almost all (93%) of respondents were in the habit of washing their face only with plain water as they had experienced flaring up of their Acne with usage of soaps and over the period of time had become comfortable with the idea of plain water usage. The remaining 6% and 1% were using soaps and face wash respectively. Proper washing of face and skin care have been stated to help remove bacteria and oils which cause acne. This study points to a need for further evidence based research on the possible factors which lead to flare ups in Acne in Indian context and recommends formulation of strategies to enable adolescents and young adults to effectively deal with the perplexing issue of Acne.

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## Original Article

## A STUDY OF DEPRESSION AMONG AGED IN SURAT CITY

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**ABSTRACT**

This cross-sectional study interviews 105 elderly belonging to different socioeconomic and varying demographic groups of Surat city as per predefined inclusion and exclusion criteria with their informed consent in compliance with 'Ethical principles for medical research involving human subjects' of Helsinki Declaration, employing a probability sample technique. The data was analyzed using SPSS-15 and the results were recorded as frequencies, means  $\pm$  standard deviations and p-values. Tables and figures were used for comprehensive viewing of the results. Chi-square test was used for categorical variables. A p-value of  $<0.05$  was taken as the criteria of significance. The study explores depression and important correlates thereof.

**INTRODUCTION**

It has been documented that elderly are more prone to psychological problems and depression is the commonest geriatric psychiatric disorders. In fact the elderly in India face a multitude of psychological, social, and physical health problems. As age advances there is increased morbidity and functional loss, also presence of a variety of depressive factors and occurrence of varying life events, greatly impact on one's psychological status, making them more prone to depression. Ageing is a universal process. In the word of Seneca "old age is an incurable disease", however as Sir James sterling commented "you do not heal old age, you protect it, you promote it and you extend it." These are in fact the underlying principles of Preventive Medicine.

The Bhore Committee<sup>1</sup> had perceived that patients requiring psychiatric institutional treatment would be 2 per 1000 in the country. In 1966, the Mental Health Advisory Committee to Govt. of India suggested a prevalence rate of mental illnesses of 20 per 1000 population with 14 per 1000 in rural areas (Elnagger MN et al)<sup>2</sup> Depression is among the commonest psychiatric disorder among elderly manifested as major or minor depression characterized by a collection of depressive symptoms<sup>3</sup>. Many studies have indicated severe under-recognition and under-treatment of depression in the elderly, even in developed countries.<sup>4-6</sup>

The expectancy of life at birth in 2011-16 is projected to be 67 and 69 years respectively for males and females. Between the years 2000 and 2050, the world wide proportion of persons over 65 years of age is expected to more than double, from the current 6.9% to 16.4%.<sup>7</sup> Around 60% of the 580 million older people in the world live in developing countries, and by 2020, this value will increase to 70% of the total older population.<sup>8</sup> As health care facilities improve in countries, the proportion of the elderly in the population and the life expectancy after birth increase accordingly. This is the trend which has been seen in

both developed and developing countries<sup>9</sup> It has been suggested that urbanization leads to households becoming more nuclear in developing countries.<sup>10</sup> Industrialization, urbanization, education, and exposure to Western life styles are bringing changes in values and life style. Mason has suggested that urbanization is likely to erode the family's ability to care for elderly as well as decrease co-residence of adult children with the elderly<sup>11</sup> Old age is not a disease in itself, but the elderly are vulnerable to long term diseases of insidious onset such as cardiovascular illness, cancer, diabetes, musculoskeletal and mental illnesses. A study conducted in Udaipur Rajasthan had 42% elderly had psycho-social problems, in which 21.05% males and 27.3% females.<sup>12</sup> In a study by ICMR<sup>17</sup> (1987) it was reported that prevalence of mental morbidity among elderly was 20.2 per thousand persons.<sup>13</sup> The goal of this study is to explore the magnitude and risk factors of problem of depression in elderly people residing in the old age homes and among those living at home in both, affluent and slums of Surat city.

**MATERIAL AND METHODS**

This cross-sectional study was conducted among elderly belonging to different socioeconomic and varying demographic groups of Surat city. A total of 105 elderly people were interviewed, comprising of 35 people each from the elderly living in the old age homes, those living in the affluent areas and those living in the slums of Surat city. This sample size was determined according to the number of the aged that could be studied in one month spread over 1<sup>st</sup> to 30<sup>th</sup> August 2010. The inclusion criteria comprised of all consenting subjects, aged  $\geq 60$  years, and who were permanent residents of Surat city. The exclusion criteria comprised of subjects who refused to give informed consent for participating in this study (10 persons), those who were not comfortable with the interview process conducted in Gujarati, and English Language (4 persons) and those in whom we could not complete the interview process (3 persons) and those who could not hear and speak (3 persons). In

this manner 20 persons were excluded from participating in this study. The majority of the non-responders were females.

A probability sample was obtained by approaching all the subjects in a consecutive manner. The subjects were interviewed using were conducted by senior medical students. The interview schedule was administered in the residential settings after obtaining informed consent. The study was conducted in compliance with 'Ethical principles for medical research involving human subjects' of Helsinki Declaration, after deliberating possible ethical issues.

The questionnaire was divided into two parts. The first part comprised of socio-demographic information covering a diverse set of parameters as age, sex, marital status, education, living conditions and the type of family. The second part comprised of a scale known as the "Back Depression Inventory," used for measuring depression in the elderly, standardized by the American Psychiatry Association. Its Gujarati version was developed, pretested and made ready for use by Dr. Ritam Bhara Mehta, Professor and Head of the Department of Psychiatry at New Civil Hospital, Surat, as we did not expect the majority of the elderly subjects to be comfortable with English language usage. Pre-testing was carried out on five elderly subjects to screen for potential problems in the questionnaire. As no significant changes were deemed necessary based upon the pre-testing, the results of the pre-test were discarded. The interviewers discussed the questionnaire thoroughly before data collection, to decrease interviewer bias and variability.

The data was analysed using SPSS-15 and the results were recorded as frequencies, means  $\pm$  standard deviations (SD) and p-values. Tables and figures were used for comprehensive viewing of the results. The Chi-square test was used for categorical variables. A p-value of  $< 0.05$  was taken as the criteria of significance for all purposes. In our study we took the different variables like age, sex, Marital Status, Education, Co morbid medical Condition (HT/DM/Arthritis/IHD/Skin disorders /Others), Past illness (Depression/Other Psychiatric illness/ Medical illness) and different habits (Tobacco chew /Alco/smoking), Back depression Score (0-4 = None, 5-8 = Mild, 9-16 = mode and  $> 16$  = sever).

## RESULTS

Our respondents comprised of a total of 105 elderly people. The majority (80.8%) of the subjects were in the age range of 64–76 years. The mean age of the subjects was  $69 \pm 8.84$  years.

### Table 1: Depression as per general profile

43 (41%) were males and 62 (59%) were females and 36.5% females and 63.5% males were aged  $>70$  years

Variable		Depression		p- value
		Absent	Present	
Age	$<70$	39 (68.4)	18 (31.6)	0.088
	$>70$	25 (52.1)	23 (47.9)	
Gender	Male	28 (65.1)	15 (34.9)	0.4685
	Female	36 (58.1)	26 (41.9)	
Education	Illiterate	22 (73.3)	8 (26.7)	0.1016
	Literate	42 (56.0)	33 (44.0)	
Marital status	Married	54 (81.8)	12 (18.2)	0.0000*
	Unmarried	10 (25.6)	29 (74.4)	

and the remaining were aged  $<70$  years. Table 1 reveals the association between the back depression score with various variables.

Table 2 reveals the depression in different socioeconomic-demographic groupwise, we get that overall 39.04% of depression in city. In which 20% aged in severe depression need institutional treatment. Severe depression old age is more in affluent area and old age home and it is twice that of slum area, though a statistically significance depression in particular group was not observable.

### Table 2: Depression according to area of residence

Area	Depression	
	Absent	Present
Affluent area	23 (65.7)	12 (34.3)
Old age home	19 (54.3)	16 (45.7)
Slums	22 (62.9)	13 (37.1)
Total	64 (61.9)	41 (39.0)

### Table 3- Depression according literacy and area of residence

Literacy	Area	Depression	
		Absent	Present
Illiterate	Affluent area	7 (87.5)	1 (12.5)
	Old age home	5 (71.4)	2 (28.6)
	Slums	10 (66.7)	5 (33.3)
	Total	22 (73.3)	8 (26.7)
Literate	Affluent area	16 (59.3)	11 (40.7)
	Old age home	14 (50.0)	14 (50.0)
	Slums	12 (60.0)	8 (40.0)
	Total	42 (56.0)	33 (44.0)

Table 3 reveals depression according literacy and area of residence. It was observed that illiterates have a much lower rate of depression (26.6%) than literates (44%). This association was not observable in the slum area, however those residing in the affluent areas and in the old age homes had a higher rate of severe depression among the literates. In our study 14.3%, 6.7% and 10.5% individuals were chewing tobacco, smoking tobacco and consuming

alcohol respectively and only 2 (1.9%) were habituated to all of these three.

## DISCUSSION

The prevalence of depression was moderately high (39.04%) among the elderly in our study population and it was observed that several important socio-demographic variables had shown a significant association with depression in the elderly. Studies have revealed that the prevalence rates for depression in community samples of elderly in India vary from 6% to 50%<sup>14-15</sup>. The prevalence of depression in Caucasian elderly populations in the West vary from 1% to 42%<sup>16</sup>. We found that those aged who are severely depressed and who require an institutional treatment are more in old age homes (25.71%), followed by those living in the affluent areas (22.8%) and those living in the slums (11.4%). Studies reveal that the prevalence of cases of mental disorders needing institutional treatment is around 67 per 1000 population.<sup>17</sup>

The prevalence of depression according to marital status was found to be significantly higher in the elderly who were single (never married), widowed, divorced or separated. Several studies have found these as risk factors for depression in the elderly<sup>18-19-20</sup>. In our study 74.35% singles have a depression. Death of a spouse renders them vulnerable to mental stress. Indeed, widowhood has been found to be strongly associated with depression in several instances<sup>21-22</sup>. The absence of a caregiver was deduced to be a possible risk factor for depression. However, we did not find any significant association with depression in our study. One possible reason for this finding could be that we did not ask the number of caregivers or who the caregiver was. There was a higher rate of depression in literates, mainly because of a higher life expectancy amongst them. There were no significant differences which could be attributed to gender.

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**Original Article****STUDY ON GLOBAL WARMING AND FUEL CONSERVATION IN SURAT CITY****Neha Bansal<sup>1</sup>, Hormaz Garda<sup>2</sup>, Ghanshyam Padmani<sup>2</sup>**<sup>1</sup>Final Year B.E. (Electrical) Student, Govt. Engineering College, Surat, <sup>2</sup> Interns, Department of Community Medicine, Surat Municipal Institute of Medical Education & Research, Umarwada, Surat.**Correspondence:** nbansalsurat@gmail.com**ABSTRACT**

The study reveals that though middle and upper middle class of people in Surat city are aware of global warming, contributory reasons and containment measures, yet remain insensitive in terms of practices. The paper points to the need to increase their collective consciousness and responsiveness to this issue through intense awareness campaigns and rallies to promote measures as pooling of vehicles, cycling, hybrid cars and efficient rapid public transport systems through institution of measures at individual, community and government levels to ameliorate hindrances to the adoption of environment friendly practices as reported in the observations.

**Key Words:** Global warming, fuel conservation**INTRODUCTION**

Earth as an ecosystem is changing faster now than in any period, largely attributable to globalization and mankind with more carbon dioxide in the atmosphere than in the past 650,000 years. This carbon stays in the atmosphere, acts like a warm blanket, and holds in the heat and hence the name 'global warming.' From 1906 to 2005, global temperature has warmed by 0.74 C, and since 1961, sea level risen by 2 mm per year with declining Arctic sea ice levels by 7.4% per decade and diminishing snow cover and glaciers. The UN Intergovernmental Panel on Climate Change predicts that in 90 years, average global temperatures and sea level will increase between 1.8 C- 4.0 C and 18 and 59 cms respectively with extremes of the hydrologic cycle as floods and droughts and 2% to 3% of global deforestation each year.<sup>1-2</sup> The reason we exist on this planet is because the earth naturally traps just enough heat in the atmosphere to keep the temperature within a very narrow range - this creates the conditions that give us breathable air, clean water, and the weather we depend on to survive. Human beings have begun to tip that balance by overloading the atmosphere with heat-trapping gasses from our cars and factories, power plants and so on. We need to address this problem now itself or face its catastrophic consequences.<sup>3-4</sup>

**MATERIAL AND METHODS**

This study was conducted among purposively selected 200 persons who made use of vehicles on a regular basis, whether; private or public, in the city of Surat. This group comprised equally of 100 males and 100 females. The study subjects comprised of 50 college going students aged  $\pm 18$  years of V.T. Chowksi Law College and another 50 of M.T.B. Arts College (25 males and 25 females respectively) and another 100 subjects (50 males and 50 females) belonging to the middle and higher middle strata from the general population residing in the residential areas of Ghod-Dod Road, City light, Dumas and office

areas of Varaccha, Rustampura and Rampura. These subjects were administered an interview schedule.

**OBSERVATIONS AND DISCUSSION**

The observations revealed that significant percentage of respondents were aware about the basic concept of global warming, higher in males (91%) compared to females (87%). Major information sources were newspapers and television and friends and family members. Remaining harboured misconceptions on this issue. Genderwise perceptions on causes of global warming revealed that males mostly attributed it to automobile exhaust emissions (52%), followed by industrial emissions (34%), cooking emissions (12%) and deforestation activities (2%). Females held a similar view with 61% ascribing it to vehicle emissions, 34% to industrial emissions, 20% to increasing population and household gaseous emissions and 1% to deforestation activities. Studies have amply documented the role of these activities towards Greenhouse effect.<sup>3-4</sup>

When quizzed upon how global warming would their lives, more than half of males (51%) and females (56%) perceived that it would lead to a rise in summer and winter temperatures, 21% males and 17% females perceived that it would lead to serious and frequent calamities like drought and floods, 21% males felt that it would necessitate crop changes. The remaining women perceived that changes in vegetation had already occurred such as changes in the taste, size or colours of the vegetables they buy from markets or the flora and fauna that surrounds us. Remedial measures reveal that majority, 59% males and 41% females perceive that ameliorative measures could be manifold however the onus of implementation lay with the Government. 22% and 14% of males and females respectively felt that reforms should start from an individual basis as government is helpless unless the citizens themselves show initiativeness. 4% males and 6% females stated that we must do as the developed nations do. 9% men and 39% women could not come with an immediate

conclusion. The vast majority of males (93%) and females (88%) felt that insufficient efforts are being made to deal with global warming. A mere 6% males and 2% females were satisfied with the present efforts as they feel that several organizations had spawned up these days to deal with these issues and the media is also profusely reporting of this problem, the remaining did not offer an opinion.

Private vehicles were preferred means of transport (47%), followed by shared vehicles (25%) and public transport (18%) with respect to global warming. The concept of shared vehicles was viewed as feasible, however, when it came to practice their personal preference of vehicles irrespective of environmental concerns, remained private vehicles owing to comfort with private means of transport and the only "door-to-door" means of transport (63%), faster transportation as compared to public transport as no waiting time was required for the arrival of buses and the speed of private vehicles is much faster than public buses (23%), accidents happen while using public transport systems due to poor facilities and condition of these buses.

When asked to suggest ameliorative measures 37% suggested greater utilization of public transport, followed by plying of zero emission vehicles (21%), cycling to work (17%), regular monitoring of the 'PUC' certification of vehicles (14%). When asked to suggest the single most measure to improve the fuel efficiency of vehicles, some listed a single reason, whereas others perceived that a combination of measure are equally important. The majority (45%) felt that regular servicing of vehicles, followed by good fuel quality supply (29%), changing of filters after appropriate periods (15%), driving in economy range (15%), appropriate tyre pressure (14%), clocking of vehicular speed on speed radar (5%), sensitization of drivers on this issue (2%), good quality tyres (0.5%).

Only 14% reported of routinely turning off their engines while waiting at traffic signals, whereas 13% never do so as they have to kick start their motor-bikes or inconvenience in case of scooties and requirement of air-conditioning in cars even when stationary. Majority (73%) reported that sometimes they turn off their engines or not for no specific reason. The owners of four wheelers were getting their vehicles serviced earlier with 16%, 26% and 55% getting servicing done at an interval of  $\leq 2$  months, 2-4 months, 4-6 months, while others were getting servicing done only if a problem arose in their vehicle. The corresponding figures for two wheelers were 8%, 15%, 33% and 44% respectively.

As regards the fuel used for four wheelers, the majority (53%) had either got a C.N.G. gas kit installed or their vehicle had both options inbuilt at the factory level. CNG preference was due to economy reasons and not environmental reasons.

CNG was followed by petrol (29%), diesel (13%) and lastly both petrol and L.P.G. (5%). When the respondents were asked about their opinion on the probable hindrances to the use of zero emission cars, 32% perceived that such cars are made of materials which would not withstand challenges of uneven roads and harsh weather encountered in our country, 25% perceived difficulties and higher costs associated with spares and numerically few service stations familiar with such vehicles across the country, 18% perceived them as 2-seaters not suitable for a family, a similar number perceived them as slow cars and 5% as too expensive.

Almost all (99%) were aware of alternatives to the conventional fossil fuels and 66% had seen battery operated cars, 29% were aware of hybrid solar cars and 4% of cars run on hydrogen. Their opinion was divided on promotion of cars utilising alternative energy sources. Majority (41%) perceived that solar cars should be promoted over others, as solar energy is abundantly available in our country and battery-powered cars carry environmental hazards of used battery disposal. 32% favoured battery-powered cars as sunlight is not always unavailable. 27% felt that this should be left to individual choices. No one stated a combination of both methods.

When specifically asked as to what steps could prompt them to purchase zero emission vehicles, 40% stated that they need to be low priced, 24% felt improved technology as higher speeds and more spaciousness were essential, 16% had never given a serious thought or were indifferent to this issue and 3% stated that an absolute ban on vehicles running on fossil fuels was essential. The remaining 17% stated a multitude of responses as special loan provision and tax rebates, increased and improved servicing facilities, IEC in line with ameliorative measures listed earlier in context of hindrances. 98% were in the favour of promotion of cycling and stated measures such as IEC efforts of health benefits (41%), strict restriction on use of vehicles by teenagers (40%), organizing of environment and cycling rallies (17%).

When inquired as to who will suffer the most from global warming, the vast majority of males (72%) and females (83%) perceived that the poor and the marginalised would be most severely affected as compared to those richer, males (8%) and females (4%). 20% males and 13% females had opined that global warming will affect the poor and the rich equally.

When inquired as to why they were not actively taking environment friendly measures to prevent global warming. 31% males and 35% females stated that they did not know from where to start, or the possible approaches and steps. 27% males and 27% females reported that they had no time left after work.

42% males and 33% females stated that they had made some efforts such as regular servicing of their vehicle, maintaining of proper tyre pressure, maintaining of a cruising speed of around 40 kilometres per hour.

The study reveals that quite a sizable proportion of the middle and the upper middle class of people in Surat city are quite aware of the problem of global warming, contributory reasons and various measures to contain the same. However, their awareness needs to be translated into action by goading increase their collective consciousness and responsiveness through intense media glare campaigns and rallies to culminate into environment friendly practices such as vehicles delivering more mileage, pooling of vehicles, cycling, hybrid cars and improvement of rapid public transport systems. This would require institution of measures to be addressed at individual, community and government levels in line with

amelioration of hindrances to the adoption of environment friendly practices as reported in the observations.

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## Short Communication

## MORBIDITY PROFILE OF ELDERLY PEOPLE IN SLUMS OF SURAT CITY

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## INTRODUCTION

The United Nations has identified the top three socio-economic issues, the world is facing in the 21<sup>st</sup> century namely- global warming, global terrorism and global ageing.<sup>1</sup> Broadly speaking, the ageing of a population has been defined as “an increase in the proportion of the aged vis-à-vis a decrease in the proportion of the young.” Old age in India begins at 60 years of age.<sup>2</sup> Currently, there are 580 million people in the world who are aged 60 years or older; around 355 million live in developing countries. By 2020, this number will reach more than 1,000 million worldwide, over 700 million of them in developing countries. Average life expectancy has increased dramatically in the 20<sup>th</sup> century as mentioned below.<sup>3</sup> Physicians have been interested in the problems of ageing from the earliest times. The elderly have their own mortality indices and special problems of disease, disability and need for support.<sup>4</sup> This study was carried out to explore morbidity conditions of elderly people in slums.

## METHODOLOGY

This cross-sectional study carried out in urban slums of Surat city included people of the age 60 years and

above. The study subjects were interviewed using a pretested interview schedule prepared with the inputs from them. These slums are in proximity to the Surat Municipal Institute of Medical Education and Research (SMIMER). The interview schedule contained important variables affecting the health and wellbeing of the study subjects. The questions, validated before preparing interview schedule, were simple and largely close ended. The period of information collected was spread over twenty one months, commencing from January 2007 up to September 2008.

The complete enumeration technique with random sampling was used for selection of the study subjects. The study was conducted among 400 people (60 years and above). Interviews were conducted after obtaining their informed consent, and building rapport with the respondents to ensure their co-operation.

## OBSERVATIONS AND DISCUSSION

To lead morbidity conditions, more than half of the females and around one third of the males were having arthritis. This difference is found to be statistically highly significant.

**Table1: Gender-wise distribution of morbidity conditions**

Morbidity	Number (Percentage)		P value by $\chi^2$ test
	Male	Female	
Arthritis	44 (32.35)	143 (54.16)	P<0.001**
Dimness of vision	56 (41.17)	91 (34.46)	P>0.05
Hypertension already detected and taking treatment	10 (7.35)	32 (12.12)	P>0.05
Hypertension detected during the study	21 (15.44)	37 (14.01)	P>0.05
Diabetes mellitus already detected and taking treatment	11 (8.08)	9 (3.40)	P<0.05*
Diabetes detected during the study	16 (11.76)	22 (8.33)	P>0.05
Bronchial Asthma	19 (13.97)	14 (5.30)	P<0.05*
Chronic Bronchitis	3 (2.20)	13 (4.92)	P>0.05
Ischemic heart disease	4 (2.94)	6 (2.27)	P>0.05
Tuberculosis	4 (2.94)	3 (1.13)	P>0.05
Piles	7 (5.14)	1 (0.37)	P<0.05*
Impaired hearing	53 (38.97)	106 (40.15)	P>0.05

\* Statistically significant \*\* Statistically highly significant

This might be due to the post-menopausal osteoporotic changes among females. This finding is supplemented by revealing of higher prevalence (68.18 %) of restricted mobility among females as

compared to prevalence among males (44.11 %), statistically being a highly significant difference. Padda A. S. et al<sup>5</sup> and C.K.Purohit,<sup>6</sup> had reported the prevalence of arthritis 60.6 per cent and 25.4 per

cent among elderly, respectively. Mobility handicap accounted for 17.6 per cent of the surveyed elderly in a study by Irudaya.<sup>7</sup> A study by Moharana found that, 37.0 per cent of respondents were having osteoarthritis.<sup>8</sup> A study in Chandigarh reported 45.7 per cent prevalence of musculoskeletal and connective tissue disorders.<sup>9</sup>

### CONCLUSION

High prevalence of arthritis suggests the need for physical rehabilitation services to be incorporated in our health care set up.

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**Short Communication****STRESS PROFILE OF POST GRADUATE MEDICAL RESIDENTS IN WESTERN INDIA**

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**Keywords:** Stress, medical residents

**INTRODUCTION**

The last few decades are witnessing an era of increased specialization among doctors along with an increased demand for specialized medical care globally. The post graduate residents play a crucial role in the medical care delivery of the multi-specialty hospitals attached to the teaching medical colleges. These residents are often invariably assigned duties exceeding 24 hours at a time. In the initial first year of residency, residents sometimes are on call for more than a week at a stretch and are under great stress due to sleep deprivation. Combined with other factors such as less stipend, abuses faced at the workplace often affects their mental health and also has a profound impact while dealing with patients. This study aims to explore the stress levels among post-graduate resident doctors and important variables affecting the same in this contextual background

**METHODOLOGY**

The study reports of interviews of 50 Post Graduate (P.G.) residents each from medical colleges of three cities of Gujarat, namely, SMIMER (municipal medical college) and GMC, Surat (government medical college); GMC, Baroda (government medical college); PSMC, Karamsad (self financed medical college) with their informed consent from 6<sup>th</sup> August 2008 to 16<sup>th</sup> September 2008. The interview schedule was developed with the active involvement of the stake holders so as to cover the study objectives and was suitably pre-tested.

**OBSERVATION & DISCUSSION**

44%, 32% and 24% respondents belonged to the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year of residency. Highest self reported feeling was stress was by the first year of residents (77.3%), followed by 3<sup>rd</sup> year residents (58.3%) and lastly 2<sup>nd</sup> year residents (52.1%). It was observed that maximum stress feeling was reported by the 1<sup>st</sup> year residents (77.3%) followed by 52.1% among the 2nd year and 58.31% among the 3rd year students. These levels are higher than that reported in Spain<sup>1</sup> wherein 42% residents had reported of high stress levels and 21% had reported that stress interfered with family relationships. Genderwise, significantly higher stress levels were reported among females (72.9%) as compared to males (59.3%) in line with the Canadian study<sup>2</sup> findings wherein 40% females had reported of stress as compared to than 27% males. Specialty wise, differential stress levels were observable with the

maximum number (86.7%) of pediatrics P.G residents reported of stress and the least stress (28.6%) was reported among the anesthesia P.G residents. Differential stress levels have been reported in other studies as well. According to Tulane University, USA study<sup>3</sup> at Department of Orthopedic Surgery, residents reported considerable burnout, showing a high level of emotional exhaustion and depersonalization and an average level of personal achievement. Hill JD et al had found levels of burnout among academic otolaryngology residency training program using Maslach Burnout Inventory-Human Services Survey (MBI-HSS).<sup>4</sup>

When asked as to specific reasons that might be contributing to their high stress levels, the majority (66.7%) had perceived that was due to work overload, inadequate sleep and rest time; 32% to misbehavior and unpleasant interactions with their seniors, colleagues and other working staff; 25.3% to their absence of a social life, political pressures, less stipend and improper management; 14.7% due to the need to study continuously despite their heavy workload; and, lastly 12% to inadequate staff and less number of residents and other manpower as compared to the actual need.

The residents had reported that taking of adequate sleep and rest was the main way to relieve their stress (68%); followed by listening to music or watching a movie or playing some game (53.3%); consuming of tobacco products or smoking or taking sleeping pills, shouting at patients and doing of yoga and meditation (36%); and lastly talking or chatting with family members, sharing their thoughts with colleagues or friends

Fixed working hours and leave, proper division of work and giving of appropriate work was listed as the foremost way (73.3%); followed by recruitment of adequate medical and paramedical staff, increasing of P.G residents (49.3%); and, lastly other facilities such as increasing of their stipend/ fellowship, improved management and promotion of better relations (46.7%).

The vast majority (89.3%) had opined that their high stress levels affect their quality of work in line with findings of other studies describing multiple adverse effects of sleep loss and fatigue on learning and cognition; job performance, including professionalism and task performance; and personal life, including personal well-being and relationships

with spouse or significant other and family. Only 16% of the sample scored within the "normal" range on the ESS; 84% scored in the range for which clinical intervention is indicated.

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**Short Communication****NEED FOR INCORPORATING ANTICIPATORY GUIDANCE ON ANIMAL BITES AND PREVENTION OF RABIES IN SCHOOL CURRICULUM**Pawar AB<sup>1</sup>, Bansal RK<sup>2</sup><sup>1</sup>Associate Professor, <sup>2</sup>Professor and Head, Dept. of Community Medicine, SMIMER, Surat-395 010, Gujarat.**Correspondence:** drabpawar@yahoo.com**INTRODUCTION**

Rabies has plagued mankind since ancient times. Rabies is a 100 per cent fatal disease, which can be very effectively prevented by timely and proper wound management and immuno-prophylaxis. Water acts as a barrier to rabies. Australia, China (Taiwan), Cyprus, Iceland, Ireland, Japan, Malta, New Zealand, the U.K. and the islands of Western Pacific are all free of the disease. The Liberian peninsula and Finland, Norway and Sweden are also rabies free.<sup>1</sup> In India, Union Territory of Lakshdweep and Andaman and Nicobar islands are free of the disease.<sup>2</sup> Since our topographical location would never permit eradication of rabies, we would have to rely on education of public on animal bites and its management.

**MATERIALS AND METHODS**

We had carried out a cross-sectional study in slums of Surat city among 222 subjects who had a history of animal bite in the past one year, in the first quarter of the year 2007. This study was carried out to know the treatment seeking behavior for dog bites among this population.

**RESULTS**

It is clearly evident from the findings from the below mentioned table that more than half of the victims were less than 20 years of age. As revealed from earlier work, the overwhelming numbers of victims in India belong to the age group of 1-24 years.<sup>2</sup>

**Table 1: Age of the animal bite victims**

Age (Yrs.)	Number (%)
1-10	49 (22.1)
11-20	64 (28.8)
21-30	52 (23.4)
31-40	29 (13.8)
41-50	15 (6.7)
51-60	12 (5.4)
61-70	0 (0.0)
71-80	1 (0.45)
Total	222 (100.0)

**DISCUSSION**

In India most of the human rabies cases have resulted from dog-bites. Children less than 15 years of age are more likely to provoke a dog resulting in a bite. Younger children may not realize that their playful actions may cause an angry or defensive reaction from a dog. Others speculate that behaviors gradually regarded as provocation may be interpreted by a dog as an invasion of their territory and may incite an attack.

Since young children are more prone to provoke a dog resulting in bite, they should be the natural recipients of anticipatory guidance by parents and teachers. There is a need to sermonize kids right from their pre-primary stage on how to behave with dogs, and in primary or secondary classes on how to deal with dog bites. This is particularly imperative considering the extremely fatal nature of rabies. Education department needs to draw attention towards incorporating of this vital issue in school curricula.

Furthermore, infants and young children should never be left unsupervised around any dog, no matter how friendly the dog may appear. Very often children are seen fondling with their pet dogs. Hugging and kissing a dog expresses a sense of submission to the animal, which is confusing, because the animal is used to viewing humans as being in charge.<sup>3</sup> This confusion may lead to a more aggressive behavior by the animal.

Dogs have a tendency to chase a moving object. Therefore, children need to learn to avoid running and screaming in the presence of dogs. Also, dogs should not be greeted by presenting an outstretched hand. It is helpful not to pet a dog without letting it sniff you first.

**CONCLUSION**

There is a need for incorporating anticipatory guidance on animal bites and prevention of rabies among school going children through a phased manner in curricula.

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**Short Communication****KABP STUDY OF MALARIA IN THE RURAL AREAS OF UTRAN, SURAT**Verma Anupam<sup>1</sup>, Bansal RK<sup>2</sup>, Thakar Girish<sup>3</sup>, Modi Krishna<sup>4</sup>, Munshi Ankit<sup>4</sup>, Nagarsheth Mansi<sup>4</sup><sup>1</sup>Associate Professor, <sup>2</sup>Professor and Head, <sup>3</sup>Regional Deputy Director, Health & Family Welfare Department, Govt. of Gujarat, <sup>4</sup>Ex-Interns, Dept. of Community Medicine, SMIMER, Surat- 395010, Gujarat.**Correspondence:** anupamver@gmail.com**INTRODUCTION**

Malaria an important public health problem affects all age groups and it is responsible for considerable morbidity and mortality in South East Asia and the Indian subcontinent.<sup>1-2</sup> Incidence of malaria worldwide estimated to be 300-500 million cases each year, out of which about 90 percent occurring in Sub-Saharan Africa and India<sup>3</sup>. Like India, malaria problem in the Gujarat state has also remained quite local and focal as per the current epidemiological situation<sup>4</sup>. Malaria kills between 1.1 to 2.7 million people worldwide each year and indirectly contributes to illness and death from respiratory infections, Diarrhoeal diseases and malnutrition<sup>3</sup>. Malaria is related with demographic and socio-economic development of individuals. Housing also plays an important role in its epidemiology of and ill-ventilated houses provide an ideal indoor resting place for malaria<sup>3</sup>. Epidemics occur mostly in the rainy season<sup>3</sup>. The study explores this important public health problem in our rural area as this problem has become pronounced with the emergence of chloroquin resistance and increasing transmission of plasmodium falciparum in Surat. People living in tribal and rural areas are vulnerable to the transmission of malaria due to lack of awareness, poor infrastructure and poor environmental management policies among others. Consequently malaria can be associated with outbreaks or significant morbidity or mortality in such areas.<sup>5</sup> The present study addresses such concerns.

**METHODS AND MATERIALS**

This study was conducted, in the months of July and August 2005, by the face-to-face interview technique in the villages of Kosad, Chhaprabhatha, Variyav, Naana Varachha, Utran covered under Utran PHC Surat city by using a pretested and semi-structured interview schedule developed with inputs from various stake holders. The total population of Utran primary health centre was stratified according to its 5 sub-centers and twenty five households were randomly selected from each sub-center by using a simple random sampling procedure. The questions were asked to the head of the household and a total of 125 household were thus interviewed.

**OBSERVATIONS AND DISCUSSION**

The study revealed that only 43.2 percent of the people knew that malaria is spread through mosquito bite, with 27 (21.6%) harbouring misconceptions such as spread through water borne and food borne routes (37.7%), other insects and flies (37%) and environmental pollution (22.2%). The majority (77.6%) were unaware of the breeding sites of

mosquitoes or harboured misconceptions thereof and only 22.4 percent knew their breeding places. Only 44% of the respondents were aware of the concept of intradomestic resting places.

54.3 percent were aware of fever as a symptom of malaria and 27.2 percent as fever with chills. Knowledge regarding other symptoms was relatively scant and another problem was the mentioning of other symptoms in the absence of the symptom of fever. Other symptoms listed were headache (16%), vomiting (13.6%), bodyache (10.4%), backache (4.8%), vertigo (4.8%) and anorexia (3.2%) or symptoms related with other co-infections, yet construed as that of malaria such as cough (6.4%) or conjunctivitis (4%). These could be differentiated somewhat on detailed history taking. This fact reveals that despite malaria being endemic and epidemic in the region the awareness among the population regarding all of the aforementioned aspects is poor and the public awareness needs to be increased through various IEC means. Encouragingly 74.4 percent of them had sought treatment at government healthcare facilities. However, only 24.8 percent had sought treatment within a day of the commencement of the symptoms of malaria. The remaining 58.4%, 14.4%, 1.6%, 0.8% had sought treatment after 1 to 2 days, 3 to 4 days, five to ten days and more than 10 days. This observation is worrisome as it can lead to enhanced morbidity and mortality and such a delay in treatment seeking behaviour urgently needs to be corrected in order to prevent avoidable malaria deaths.

82.4 percent had completed their advised treatment, though the advised treatment had not always included taking of the radical treatment. The remaining (17.6%) gave reasons as relief of symptoms (78.9%) or drugs too hot for their body (10.5%) or to save drugs for future bouts (10.5%) for not taking the completing the full course of the treatment. The lack of the receiving of radical treatment is a matter of grave concern. What was striking was the fact that the lack of taking the radical treatment was appreciably very high in the instances that the respondents had sought treatment from the private providers, highlighting the fact that the private providers need to be sensitized on the imperative necessity to ensure that their patients actually receive the radical treatment.

Only 36.8 percent of the respondents believed in undertaking proven personal protective methods for the prevention of malaria and of these 21.6% were undertaking effective measures such as use of mosquito nets (16.8%) and chemoprophylaxis (4.8%).

Others were resorting to measures such as use of mosquito repellent coils and creams, sleeping under fans, cleaning their houses and closing all the windows and doors at dusk time. Surprisingly, not even one respondent had listed screening of doors and windows as an effective method and also none of the respondents were using impregnated bed nets. The concept of bioenvironmental control was totally alien to all studied people which is proven malaria transmission control strategy.<sup>6</sup> Almost all (96%) believed that malaria is curable and only 10.4 percent had opined that it leads to deaths.

The above profile among rural people as regards breeding places of mosquitoes; transmission and symptoms of malaria; low adoption of personal protective methods; and absence of bioenvironmental control is alarming and detrimental to the objectives of National Anti Malaria Programme and points to the need for effective health promotional measures. An encouraging finding is the higher utilization of the government health care facilities compatible with

implementation of rationale malaria treatment guidelines.

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## Short Communication

## DATING PATTERNS AMONG YOUNG ADULTS

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## INTRODUCTION

Dating by adolescents and young adults is of recent genesis in India. In Gujarat dating during Navratri is emerging as a convenient event among youngsters, owing to social convenience and relaxation of deadlines for returning home by liberal. Media has highlighted reports of increased condom sales during Navratri and increase in unmarried girls seeking abortions, leading to increasing concerns among parents. This issue assumes gravity owing to implications of unsafe sex, teenage pregnancies, abortions and sexually transmitted infections and violence among adolescents and young adults coupled with inadequate access to sexuality counselling, family planning services, or STI services.<sup>1</sup> This study aims to explore some such issues pertinent to dating.

## METHODOLOGY

This study reports of interviews of 300 respondents, comprising of 213 males and 87 females aged >18 yrs in Surat. The study sites comprised of residents of Umra, Piplod, Varachha, Bhatar, Udhna, Bhagal Chowk, Katargam, Parle point areas and educational institutions as Surat Municipal Institute of Medical Education and Research, S.P.B College, P.T. Science

College, K.P. Commerce, Sarvajnik College of Education Trust (SCET), Sardar Vallabhbhai National Institute of Technology, Navyug College and also employees of different firms.

## OBSERVATIONS AND DISCUSSIONS

It was observed that a total of 194 (64.6%) respondents have ever been on a date, being significantly higher in males 164 (77%) as compared to females 30 (34.5%). Further 44.7% had dated during Navratri, again being significantly higher in males 55.4% as compared to females 18.4%. Significantly, a far larger number of respondents, 70.4% males and 27.6% females, intended to date during the coming Navratri. 70.4% males and 65.5% females had opined that Navratri is a proper timing for dating, implying that more females might actually date during the coming Navratri without explicitly declaring do. The perception that Navratri is a proper time to date emanated largely from social convenience as opined by 59.7% respondents. 82.3% males and 85.1% females had perceived that it is proper for young people to date again revealing the schism between the fact that though most of the females consider dating proper, they do not date or do not admit to doing so.

Table 1: During Navratri Which Type Person Would You Date?

Category	Male (%)	Female (%)	Total (%)
Friend	85 (39.9%)	26 (29.9%)	111 (37.0%)
Good looking stranger	75 (35.2%)	10 (11.5%)	85 (28.3%)
Net/chat friend	24 (11.3%)	6 (6.9%)	30 (10.0%)
Colleague	10 (4.7%)	18 (20.7%)	28 (9.3%)
Persons living in Neighbourhood	12 (5.6%)	12 (13.8%)	24 (4.7%)
Friend & Person living in Neighbourhood	5 (2.3%)	6 (6.9%)	11 (3.7%)
Friend & Colleague	2 (0.9%)	9 (10.3%)	11 (3.7%)
Total	213(100%)	87(100%)	300(100%)

Table 1 reveals the necessity to ensure that respondents who are not averse to dating good looking strangers and net/chat friends do so safely. Studies reveal that approx. 31% of U.S. adults use online dating service.<sup>2</sup> Navratri is construed as a convenient event for dating mainly due to the opportunity to meet many persons of the opposite gender, more receptiveness of females, social laxity, permissiveness and convenience to dating and consequently 88% males and 12% females had dated during this period. The opposing of Navratri for dating stemmed from religious grounds and the fact that females often perceived this as cheating their parents. Dating multiple partners was commoner in males (85.4%) as opposed to females (14.6%). Morris

in 1959 had reported that men are more flirtatious as compared to females.<sup>3</sup>

Significantly, the majority had not informed their parents about dating, males (65.2%), females (82.8%), as they were apprehensive that their parents will not accept it else they simply did not wish to disclose about their dating patterns. An important finding is that 13.8% males perceived that their parents were unconcerned about their dating behaviour whereas all females perceived that their parents were much concerned about the same, reflecting the gender discrimination attitude in the parents. Wearing Good Dresses (males-56.3%; females- 57.5%) and perfumes (males-9.4%; females-12.6%) were employed by the respondents to improve

their chances of a date and females additionally wore good ornaments were also worn by females (13.8%).

Female respondents kept in regular touch with their date of past Navratri (55.2%) in opposition to mere 2.3% males. More than half (51.8%) females reported of facing a problem with their past dating incident as opposed to 7% males. 89%, 58.7%, 79% respondents were aware of the problem of unwanted pregnancy, sexually transmitted infections, and about HIV associated with unsafe sex. An important observation was that only 72.7% respondents knew what safe sex meant while the remainder had false notions of this concept. 24%, 25.7%, 7.3%, 3%, 3% respondents had rated their overall dating experience as very good, good, average, bad and very bad, whereas 37% had withheld their opinion. The awareness regarding emergency pills was significantly higher in females (55.2%) as compared to males (18.8%). 59.3% males & 40.7% females perceived that Government should

relax the Navratri event timings until early morning for greater fun (58.3%) and dating (28.3%) in context of adolescents and young adults.

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