

Prevention and Control of Pandemic Influenza A (H1N1) in India

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The 2009 flu outbreak in humans, known as Pandemic Influenza A (H1N1) is popularly recognized as “swine flu.” This is due to a new strain of influenza A virus subtype H1N1 that contained genes most closely related to swine influenza. The influenza virus has characteristics of antigenic variation due to antigenic shift and drift. Swine (Pig) acts as reassortment vessel in which various viruses can be mixed together and a new type of virus emerges. H1N1 is an outcome of mixing of swine flu, American flu, avian flu and human flu. The human race does not have immunity against this new reassorted and novel virus that is why it has potential to spread worldwide. Few cases of influenza like illnesses reported in Mexico on 18 March 2009 spread across the world within two months. On 22nd May 2009, the first case of swine influenza was reported from India in a Non-Resident Indian. By the end of December 2009 more than 622482 cases were reported and 7800 deaths were reported. On 29 December 2009, there were 12220 deaths were reported from 208 countries whereas 25572 were tested positive for H1N1 in India alone and out of these, 898 died. Till 29 December 2009, Delhi has reported 8306 cases of which 69 died. However, case fatality rate is the highest in Rajasthan.

Swine influenza virus transmission from pigs to humans is not common but properly cooked pork poses no risk of infection. When transmitted, the virus does not always cause human influenza and often the only sign of infection is the presence of antibodies in the blood, detectable only by laboratory tests. The main route of transmission is through direct contact between infected and uninfected hosts. These close contacts are particularly common during animal transport or during intensive farming in which pigs are raised in very close proximity to each other. The direct transfer of the virus probably occurs either by pigs touching noses or through dried mucus or kiss. Airborne transmission through the aerosols produced by pigs' coughing or sneezing is also an important means of infection.

Humans who work with swine are at risk of getting influenza infection from an infected swine. Other professionals at particular risk of infection are veterinarians and meat processing workers although the risk of infection for both of these groups is lower than that of farm workers.

In pigs, influenza infection produces fever, lethargy, sneezing, coughing, difficulty in breathing and decreased appetite. In some cases, the infection can cause abortion. Although mortality is usually low (around 1-4%), the virus can produce weight loss and poor growth causing economic loss to farmers.

The 2009 outbreak has shown an increased percentage of patients reporting diarrhoea and vomiting. A *suspected case* is defined as a person with acute febrile respiratory illness (fever $\geq 38^{\circ}\text{C}$) with onset within 7 days of close contact with a person who is a confirmed case of swine influenza A (H1N1) virus infection or within 7 days of travel to community where there are one or more confirmed swine influenza A (H1N1) cases, or resides in a community where there are one or more confirmed swine influenza cases.

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A probable case is defined as a person with an acute febrile respiratory illness who is: a) positive for influenza A, but unsubtypable for H1 by influenza Real Time-PCR or reagents used to detect seasonal influenza virus infection, or b) positive for influenza A by an influenza rapid test or an influenza immuno-fluorescence assay (IFA) plus meets criteria for a suspected case and c) individual with a clinically compatible illness who died of an unexplained acute respiratory illness who is considered to be epidemiologically linked to a probable or confirmed case.

A confirmed case is defined as a person with: a) An acute febrile respiratory illness with laboratory confirmed swine influenza A (H1N1) virus infection at WHO approved laboratories by one or more of the following tests: real time PCR, viral culture and four-fold rise in swine influenza A (H1N1) virus specific neutralizing antibodies.

If swine flu is suspected, clinicians should obtain a nasopharyngeal or throat swab for swine influenza testing and place it in a refrigerator (not a freezer) but transport within 24 hours; if not, then store at -70°C . Once collected, the clinician should contact their state or local health department to facilitate transport and timely diagnosis at a state public health laboratory.

Prevention of swine influenza has three components: prevention in swine, prevention of transmission to humans and prevention of its spread among humans. Methods of preventing the spread of influenza among swine include facility management, herd management and vaccination. The transmission from swine to human is believed to occur mainly in swine farms where farmers are in close contact with live pigs. Although strains of swine influenza are usually not able to infect humans, this may occasionally happen. So, farmers and veterinarians are encouraged to use a face mask when dealing with infected animals. The use of vaccines on swine to prevent their infection is a major method of limiting swine to human transmission. Risk factors that may contribute to swine-to-human transmission include smoking and not wearing gloves when working with sick animals. Influenza spreads between humans through coughing or sneezing and people touching something with the virus on it and then touching their own nose or mouth. Swine flu cannot be spread by pork products since the virus is not transmitted through food. The swine flu in humans is most contagious during the first five to seven days of the illness although some people, most commonly children, can remain contagious for up to ten days. Diagnosis can be made by sending a specimen collected during the first five days for analysis.

If a person becomes sick with swine flu, anti-viral drugs can make the illness milder and make the patient feel better faster. They may also prevent serious flu complications. For treatment, antiviral drugs work best if started soon after getting sick (within 2 days of symptoms). Besides anti-viral, palliative care at home or hospital helps in controlling fever and maintaining fluid balance. As swine influenza is rarely fatal to pigs, little treatment beyond rest and supportive care is required. Instead veterinary efforts are focused on preventing the spread of the virus throughout the farm or to other farms. Vaccination and animal management techniques are most important in these efforts. Antibiotics are also used to treat this disease although they have no effect on the influenza virus. But they do help in preventing bacterial pneumonia and other secondary infections in influenza.

Viruses so far characterized have been sensitive to Oseltamivir and zanamivir; resistant to amantadine and rimantadine. 75 mg dose of Oseltamivir is given daily twice for 5 days. Patients should be managed symptomatically in suspect cases and treatment with Oseltamivir should only be started if there is high probability of infection, in serious conditions or confirmed status of H1N1. This will reduce development of resistance. Aspirin for fever and high dose of corticosteroid should be avoided. Chemoprophylaxis of Oseltamivir 75 mg should be administered daily once for 10 days to close contacts of a confirmed case and health care personnel coming in contact with the confirmed case.

Immunoprophylaxis or vaccine is available in the US and other western countries but it is under process of field-testing in India. Non-pharmacological measures are more effective and long-lasting for the prevention of influenza. Respiratory etiquette, keeping distance, avoiding hand shake and crowded places, social distancing and use of universal precautions by health care professionals are very effective methods of prevention.

The on-going outbreak of novel influenza A (H1N1) continues to expand internationally. CDC expects that more cases, more hospitalizations and more deaths from this outbreak will occur over the coming days. CDC continues to take aggressive action to respond to an expanding outbreak caused by novel H1N1 flu. CDC recommends that testing and anti-viral treatment be prioritized for those with severe respiratory illness and those at the highest risk of complications from seasonal influenza. This includes children younger than 5 years old, pregnant women, people with chronic medical conditions and weakened immune systems, and people 65 years and older. In addition, CDC has provided information for the public on what to do if they develop flu-like symptoms. The World Health Organization (WHO) has raised its pandemic alert level to Phase 6 and declared it as Public Health Emergency of International Concern. All supports are extended to the member countries to tackle the pandemic.

The Ministry of Health and Family Welfare, Government of India has stepped up many preventive measures. Inter Ministerial Task Force (IMTF) and Joint Monitoring Group (JMG) monitoring the situation. Surveillance at all international airports has been enhanced to detect entry of disease into India at the earliest and contain the same. Recently, this exercise is halted because of reported indigenous cases. Travel advisory has been issued to defer non-essential travel to the affected countries. Tracking of persons travelled to India from affected countries is on place. States have been alerted to heighten the level of preparedness. IDSP focal points have been set-up in States to look for and report clusters of Influenza Like Illnesses (ILI) and that of pneumonia. Central and State rapid response teams (RRTs) have been alerted to investigate and manage suspected outbreaks. Labs have been identified at the National and State levels to test clinical samples of the novel virus. Guidelines have been issued to States on clinical management, infection control practices, and laboratory support. These guidelines are also available on MOHFW website. Availability of drugs at all the health institutions has been ensured where suspected cases are screened. Availability of Personal Protective Equipment (PPE) has been increased. Use of a special type of mask (N95 mask that has 95 per cent efficiency in filtering out particles greater than 0.3 micron under normal rate of respiration) is advocated.

IEC activities have been initiated in print and visual media. 24X7 Controlroom has been activated. Daily press briefings are done by concerned authorities. Administrative action has been stepped up at the state levels. Meeting under the Chairmanship of Chief Secretary with all the concerned departments/agencies is also being done. Liaison with State Disaster Management Authority for preparedness in sectors other than health has also been taken up. Screening at international airports and assisting airport health officers and airport authorities are strengthened. Isolation/quarantine space at the airports or nearby hospitals has been created. Provision of ambulance for shifting patients to identified hospitals has been made. Wearing of masks by all the staff including airport staff and immigration staff has been ensured. DHS is also monitoring and holding meetings and consultations with all the major hospitals in cities with international airports.

AWARENESS OF HIV/AIDS AMONG SCHOOL ADOLESCENTS IN BANASKANTHA DISTRICT OF GUJARAT

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ABSTRACT

Awareness of HIV/AIDS among school-going adolescents and their knowledge and perception about it were assessed in Banaskantha district of Gujarat. The study under the Intensive Rural AIDS Awareness Programme revealed that only 35 per cent of the sample subjects had known the expanded form of the abbreviation HIV/AIDS. Very few of the respondents (20%) knew that females are more vulnerable to infect HIV/AIDS than males. Majority of them had the knowledge with regard to the mode of transmission. A fair number of adolescents (55-65%) were aware of the various methods for prevention and treatment of HIV/AIDS. The study findings reflect that though a considerable number of adolescents had correct knowledge about HIV/AIDS but they lacked details about the disease which advocates the need of properly formulated awareness campaigns on HIV/AIDS for schools.

Key Words: Awareness, Knowledge, School Adolescents, HIV/AIDS, Transmission.

Acquired Immuno Deficiency Syndrome (AIDS) caused by Human Immuno-deficiency Virus (HIV) is posing a serious challenge to the conceptual foundations and the practice of development planning worldwide. Nearly half of the new HIV infections are occurring in young people¹. HIV/AIDS is retarding economic growth by destroying human capital by mainly affecting the young adults in the age group of 15–24 years who are in their most productive ages of life.

India having a large population with low literacy levels leading to a low level of awareness of HIV/AIDS, the disease is posing an alarming threat on the public health scenario. At the same time, discussing sex has been a taboo in the Indian societal set-up. Adolescence is shrouded in myths and misconceptions about sexual health and sexuality. With the influence of infotainment media and the breakdown of traditional family structures, sexual

behaviour among adolescents is in flux. In the absence of any organized institution for imparting sex education, young people tend to learn about sexual and reproductive health from unauthorized and unreliable sources resulting in perpetuation of myths and misconceptions about puberty, masturbation, night emissions, sexual intercourse, safe sex, reproductive health, sexually transmitted diseases (STDs), etc.

Unprotected sexual practice among young adults can cause serious consequences, particularly in adolescent girls through unwanted pregnancy, maternal mortality due to early-age pregnancy and abortions. Moreover, immature reproductive tracts of young people make them more susceptible to HIV/AIDS.

Only during the last decade, there has been an increasing realization of the importance of adolescent behaviour.

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The challenge lies in developing programme to induce behavioural changes among the young as well as the adult population. At the state level, different organizations are actively working to spread awareness in schools, colleges and communities, particularly in rural areas. The School Adolescent Education Programme and Integrated Rural AIDS Awareness Programme for rural people are two such programmes to create awareness of HIV/AIDS; inform adolescents, young and adults about the dangerous consequences of unsafe sex and encouraging them to use condom to avoid the problems.

MATERIALS AND METHOD

The state of Gujarat has 25 districts and Banaskantha district was selected for the study under the Intensive Rural AIDS Awareness Programme. Banaskantha has 12 talukas. A cluster sampling design was used with selection of clusters proportionate to the population size. A complete list of all the villages with their population (as per the Census 2001) under different PHCs in all the talukas of Banaskantha district was obtained from the CDHO. Based on the population of each village, a cumulative population of the villages was prepared. 30 clusters were identified through cluster sampling technique. Each cluster represented a different village of the district. A total of 755 students (559 boys and 196 girls) of 9th, 10th and 11th standard from all the schools of 29 districts were taken for the assessment of knowledge regarding HIV/AIDS through self-administered questionnaires. One school refused to be a part of the study because of the impending board examination.

A pre-tested and self-administered questionnaire was used to collect data.

The questions were semi-structured with close-ended questions. The respondent students were assured of confidentiality. Data collected were entered into the computer using Epi-Info (version 3.2) software. Data were checked for any discrepancy and rectified accordingly.

FINDINGS

Profile of Adolescents

As mentioned in methodology, adolescent students in the age group of 10-19 years from IX, X and XI standard were included in the study. Of the total 755 respondents from 29 schools, 559 were boys and the rest were girls. Around half of them belonged to the mid-adolescent group (14-16 years); approximately one-fourth belonged to early adolescent years (12-14 years) while the rest one-fourth belonged to the late adolescent years. The median age for both the boys and girls was found to be 15 years.

Knowledge and Perception Regarding HIV/AIDS

Knowledge about the Etiology: Findings in Table 1 show that approximately 35 per cent of the respondents knew the full form of HIV and AIDS correctly. About half of the adolescents felt that both the sexes are equally vulnerable to HIV/AIDS. Only 35 per cent of them were aware that HIV and AIDS are not synonymous. Almost half of the students knew that AIDS disease has its signs and symptoms in the infected patients. Only a very few (20%) of them had the correct knowledge regarding the vulnerability of the female sex to HIV/AIDS.

Knowledge about Mode of Transmission: It was encouraging to

note that 91 per cent of the students had correct knowledge about vertical transmission of HIV from infected mother to baby, 94 per cent had knowledge that it could transmit through contaminated blood transfusion (94%) while 91.7 per cent of them knew that HIV could be transmitted through contaminated needles and syringes and 73 per cent had the knowledge that it can transmit through indiscriminate and unsafe sexual relations.

Belief about Communicability: 44 per cent of the students had a false notion that a healthy person can't transmit the disease. 58 per cent of the boys and 49 per cent of the girls knew that a healthy person can also transmit the disease. Approximately one-fourth of them believed that mosquito bite may transmit the disease. 9.8 per cent of the male respondents and 12.3 per cent of the girls believed that the disease could be transmitted through casual contact like sharing a meal or by staying with infected persons.

Knowledge on Prevention and Treatment: It was found that a large number of the respondents (around 64%) knew that HIV/AIDS is preventable. Similarly, when asked about the ways to prevent the disease; majority of them replied that abstinence is best to prevent while 57 per cent of them felt that HIV/AIDS can be prevented if sex is involved with a single, uninfected and faithful partner. Majority of the adolescents (63%) had the knowledge that HIV/AIDS could be prevented with the use of only sterile/disposable syringes and needles. More than half of them knew that screening of blood sample for HIV/AIDS is a way to prevent the disease and a majority of the students had the knowledge that HIV/AIDS is not curable. Approximately 40 per cent of the boys and around one-fourth of the girls were aware of

the existence of HIV testing facility in their district (Table 1).

Adolescents' Attitude towards HIV/AIDS Infected People: 23.6 per cent of the adolescents that there were HIV/AIDS infected people in their district. One-third of them knew that some people died of HIV/AIDS in their district. Findings in Table 2 show that while 55 per cent of the respondents showed their willingness to play with HIV/AIDS infected people, 67 per cent were ready to shake hand with HIV/AIDS+ people and 74 per cent of them had no hesitation to eat food with HIV/AIDS infected people. The acceptability of HIV/AIDS infected persons was slightly more for boys than girls.

Perception of Reproductive Health: 58 per cent of the adolescents had already participated in School Adolescent Education Programme earlier. Hence, their perception about reproductive health was quite fair for their age. Majority (50-70%) of the adolescents were aware of the reproductive organs except for a few organs like fallopian tube, testis, scrotum and sperms. 46.1 per cent of the respondents had a misconception that menstruation is bad blood while 34.6 per cent of the adolescents had a blind belief that masturbation affects married life. 33.1 per cent of the students had a misconception that sex of the child is determined in the womb. Such misconceptions were more prevalent among girls than boys (Table 3).

DISCUSSION

HIV/AIDS infection is rapidly spreading in India. Unfortunately, even in the 21st century, awareness of people about the disease is still low. The current study assessed the awareness level of the adolescents about HIV/AIDS in

TABLE 1
KNOWLEDGE AND AWARENESS OF ADOLESCENTS ABOUT HIV/AIDS (N=755)

	Correct Knowledge		Incorrect Knowledge	
	N	%	N	%
Knowledge regarding etiology and mode of transmission				
Full form of HIV/AIDS?	262	34.7	493	65.3
Is there any difference between HIV+ve and AIDS?	271	35.9	484	64.1
Do AIDS infected people have signs and symptoms?	418	55.4	337	44.6
Can be transmitted through contaminated needles and syringes	692	91.7	63	8.34
Can be transmitted through contaminated blood transfusion	711	94.2	44	5.8
Can be transmitted from pregnant mother to foetus	686	90.9	69	9.1
Can be transmitted through indiscriminate sexual relations	550	72.8	205	27.8
Beliefs about communicability				
A healthy person can transmit HIV/AIDS	422	55.9	333	44.1
Eating in the same utensils can lead to transmission	681	90.2	74	9.8
HIV can be transmitted through mosquito-bite	579	76.7	176	23.3
Staying with infected person	662	87.7	93	12.3
Knowledge about prevention and treatment				
HIV/AIDS is preventable	480	63.6	275	36.4
HIV/AIDS is curable	516	68.3	239	31.7
Can be prevented through abstinence	574	76	181	24
Can be prevented through uninfected faithful partner	432	57.2	323	42.8
Can be prevented through screened blood for HIV/AIDS	408	54	347	46
Facility for HIV/AIDS testing is done in the district	267	35.4	488	64.6

TABLE 2
BELIEFS AND ATTITUDES OF ADOLESCENTS TOWARDS HIV/AIDS+ve PERSONS (N=755)

	Yes		No	
	N	%	N	%
Do you know any HIV/AIDS+ve person?	178	23.6	577	76.4
Do you know any person died of HIV/AIDS?	227	30.1	528	69.9
Would you play with an HIV/AIDS infected person?	412	54.6	343	24.4
Would you shake hand with or hug an HIV/AIDS infected person?	503	66.6	162	33.4
Would you eat with an HIV/AIDS infected person?	558	73.9	198	26.1

TABLE 3
PERCEPTION OF ADOLESCENTS ABOUT REPRODUCTIVE HEALTH (N=755)

	Yes (%)	No (%)	Don't know (%)
Ever participated in SAEP	58.1	35.8	6.1
Menstruation is bad blood	46.1	27.5	26.4
Masturbation affects marital life	34.6	43.7	21.7
Donating blood causes weakness	22.6	68.6	8.7
Sex of the child is determined in the womb	33.1	47.9	18.9

Banaskantha district of Gujarat. The study also measured the knowledge level of the school going adolescents about HIV/AIDS and their perception about reproductive health and reproductive organs.

Scientific knowledge about HIV/AIDS is essential for the adolescents leading them to take rational decisions regarding sexual life and how they can protect themselves against HIV infection. In the current study, only 35 per cent of the respondents were aware of the full form of HIV/AIDS. Majority of them knew that HIV/AIDS is preventable. This might be due to the reasons that mass media and various voluntary agencies; particularly in urban areas are actively involved in HIV/AIDS awareness campaigns. Manju et al has reported similar awareness levels among adolescent girls². In a similar study, it was found that majority of the adolescents had correct knowledge about HIV/AIDS³.

Majority of the adolescents had correct knowledge about the modes of HIV/AIDS transmission. Considering the age group of the study subjects in the current research who are most vulnerable to drug abuse; awareness campaigns and mass education about AIDS and safe blood is the need of the hour. These programmes could protect the vulnerable sections of the society from falling prey to this dreaded disease. A similar study in Calcutta

found that only 13.45 per cent of the higher secondary students were aware of the AIDS disease⁴. Nearly one-fourth of the adolescents thought that HIV/AIDS could be transmitted by mosquito bite. Removal of such misconceptions among adults, youth and the general population is very important. Or else, it might lead to create a phobia among the masses. Discrimination of HIV/AIDS patients in the society has a negative impact on various health care programmes. Similar degree of misconception has been reported by Neeru et al in a study among first-year graduation students⁵. Moniko SM et al reported that discrimination of HIV infected people is on the decline as a large number of people are infected with HIV in the country⁶. Almost similar observations have been reported by F.S. Vaz et al⁷.

The reaction on menstruation depends on awareness and knowledge about the subject. It was observed that 42 per cent of the adolescents viewed menstruation as a bad thing and a girl during menstruation should be prohibited to enter the kitchen. It proves their low level of knowledge about puberty and menstruation. It is evident from other studies as well that menstruation is still considered as something unclean or dirty in the Indian society⁸. This might be due to the reasons that issues associated with reproductive health is not taught in schools in details and whatever

information about these adolescents get; that passes from one generation to another with the related societal taboos associated with it.

The study findings stress on the need of a clearly formulated adolescent health education and AIDS awareness programmes targeted at school students. The young adolescents come in the high-risk group because of their propensity to indulge themselves in risky sexual activity and drug abuse. Hence, it is felt that programmes should also be directed towards parents to apprise them of the existing knowledge/beliefs of the adolescent children about sexual and reproductive health issues so that parents can play a more active role in protecting their children from unsafe and unwanted sex. The misconception of the adolescents regarding menstruation as well as their reproductive health needs to be recognized and addressed.

CONCLUSION

The research findings reveal that though a considerable percentage of adolescents had correct knowledge about HIV/AIDS; yet they lacked in-depth knowledge about the disease. This result emphasizes the need of school adolescent education programmes in the country so that this high-risk group is properly informed about this disease and they would act accordingly. This study also corroborates the findings of some other studies regarding the need of sex-education or adolescent education in schools to facilitate the adolescents with correct scientific knowledge on sexuality and puberty related concerns. Inclusion of specific chapters on HIV/AIDS will also help in preventing the spread of this pandemic to a large extent.

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HEALTH SEEKING BEHAVIOUR FOR RTIs/STIs: STUDY OF A RURAL COMMUNITY IN DEHRADUN

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ABSTRACT

Reproductive Tract Infections/Sexually Transmitted Infections (RTIs/STIs) are a major public health problem and a leading cause of morbidity among men and women in developing countries^{1,2}. The sample in this study consisted of 960 respondents and 88 symptomatics of STD in the age group of 15–49 years. They were residing in a rural community of Dehradun district who were interviewed to find out their health seeking behaviour concerning RTIs/STIs. The study findings revealed that majority (76.9%) of the respondents had shown their willingness to be treated by quacks and/or other healers like jharphuk, spiritual (tantrik) and traditional healers whereas 55 per cent of the STD symptomatics opted to be treated by qualified allopathic doctors. This proves that the individuals suffering from RTIs/STIs actually knew that they need to be treated by a qualified allopathic doctor. These symptomatic, probably, had already wasted their time and hard-earned money in seeking treatment from these spiritual and traditional healers. They had become more aware of futile outcomes by consulting unqualified doctors. This difference in preference of health care provider for seeking treatment for RTIs/STIs between respondents and STD symptomatics was found to be statistically significant ($p < 0.001$).

Key Words: Health Seeking Behaviour, Health Care Provider, Respondents, RTIs/STIs, Symptomatics.

Reproductive Tract Infections/Sexually Transmitted Infections (RTIs/STIs) are a major public health problem and a leading cause of morbidity among men and women in developing countries^{1,2}. They are a group of 'Social Diseases' i.e. besides increasing the physical sufferings, they also affect the social life of the person who is infected with these diseases. This is because of the social stigma attached to these diseases.

It is generally observed that due to social stigma, the infected person is expected to follow a peculiar health seeking behaviour for the treatment of Sexually Transmitted Diseases (STDs). The infected person suffers

from a mixture of guilt, denial and fear; and first tries to conceal his/her illness thinking that it would subside by itself. To add to his confusion and misery, he/she finds many advertisements in local newspapers/magazines or even some wall writings about the inexpensive and confidential ways to get rid of this illness completely by so-called 'sexologists' who are literally quacks. His/her friends/peers also do not have enough knowledge to guide him/her. After wasting his precious money and time, he/she finally goes to the rescue of a qualified STD specialist, probably with complications developed with the passage of time.

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Topographically, the land area of Uttarakhand covers plains as well as hills with far flung villages and scattered population. According to the National Baseline Behavioural Surveillance Survey (BSS), the prevalence of STDs among the general population for the state of Uttar Pradesh (Uttarakhand being part of it) which was conducted by NACO in the year 2001 was 8.1 per cent as compared to the national figure of 10-14 per cent³. Apart from this, no other such study has been conducted in Uttarakhand.

ICMR has quoted an unpublished survey by UNICEF where 5 per cent of the sexually active adults in India were found to be suffering from an STD, and another survey involving 21000 urban and rural men and women showed 7.3 per cent of prevalence rate for STDs in the general population⁴. In a study carried out in South India, nearly 70 per cent of the women have been found to be suffering from one or the other RTI and about 10 per cent of it was due to STDs⁵. Similarly, another study in two tribal villages of Maharashtra reported that 92.2 per cent of the women had a gynaecological morbidity; 50 per cent of whom had RTIs such as bacterial vaginitis counted for 62.19 per cent, Candida for 34.1 per cent, Trichomonas vaginitis for 14 per cent and Pelvic Inflammatory Disease (PID) for 24.1 per cent whereas only 8 per cent of them sought treatment⁶.

Although Information, Education and Communication (IEC) and counseling do play a significant role in the STDs/RTIs control strategy but most important of all is active community participation at all stages of the management process for STDs/STIs control. IEC should be sensitive to broader context of people's lives and prevalent epidemiological findings in the community and explore critical linkages between perceptions

and health seeking behaviour. Critical concerns such as sexuality, sexual behaviour and gender power relations should also be taken into consideration while planning STDs/RTIs control programmes⁷. While IEC may create demand generation through health seeking behaviour; social marketing may promote the use of condom as well.

STDs are a major public health problem in India. No in-depth studies have been carried out in the state of Uttarakhand with regard to STDs. Therefore, the present study is aimed at knowing the related health seeking behaviour in a rural community of Dehradun district.

METHODOLOGY

The present cross-sectional descriptive study was carried out in the area of Community Development Block, Doiwala, Dehradun. Dehradun is the capital of Uttarakhand with a total population of 12,79,083 of which 49.7 per cent is rural area. There are six blocks in Dehradun district namely- Chakrata, Kalsi, Sahaspur, Vikasnagar, Doiwala and Raipur. Doiwala Block was chosen for the study since it is the field practice area of the Department of Community Medicine, Himalayan Institute of Medical Sciences, Dehradun and it is the central functioning unit of Uttarakhand.

The study was carried out over a period of one year from May 2005 to April 2006. Sample size was calculated by the given formula⁸ $n = PQ / (E/1.96)^2$. Where P is maximum expected prevalence rate i.e. 10%; Q = (100-p); E= is the margin of sampling error tolerated= (2%). Thus, the sample size, $n = 10 \times (90) / (2/1.96)^2 = 865$.

Total population of Doiwala Block was divided into 30 clusters using the 30 cluster technique described by WHO⁹.

Each cluster was again divided into four sectors on the basis of natural landmarks such as lanes, by lanes, street and other local demarcations. From each sector, 8 persons that included 4 males and 4 females from different households in the age group of 15-49 years were selected as sample respondents. One individual from each selected household was interviewed and in the household with more than one respondent; randomization criteria was adopted to collect the relevant information. Thus, from each cluster, 32 persons were studied. The first household in each quadrant was selected randomly and subsequently,

interviewer moved to the next house and continued the same till the desired sample size was obtained.

A pre-designed and pre-tested survey schedule was used to collect the relevant information from the study population. During the course of the survey, to ensure the quality of the work, the information collected was randomly verified by the supervisors on the field. The information and findings of the symptomatics were entered in Epi Info, SPSS (Version 10.0) and Microsoft Excel programme. Thus, proportions and Chi-square were calculated.

TABLE 1
DISTRIBUTION OF RESPONDENTS BY SEX AND AGE

Sex	Male (n=480)		Female (n=480)		Total (n=960)	
Age (Yrs)	No	%	No	%	No	%
15-19	101	21	57	11.9	158	16.5
20-24	103	21.5	98	20.4	201	20.9
25-29	97	20.2	107	22.2	204	21.2
30-34	60	12.5	68	14.3	128	13.4
35-39	44	9.2	76	15.8	120	12.5
40-44	40	8.3	36	7.5	76	7.9
45-49	35	7.3	38	7.9	73	7.6
Total	480	100	480	100	960	100

FINDINGS AND DISCUSSION

Table 1 shows that majority of the respondents (21.2%) belonged to 25-29 years age group. Median age of the respondents was found to be 25.4 years. Most of the male respondents (21.5%) belonged to 20-24 years age group while majority of the females (22.2%) were found to be in the age group of 25-29 years.

The discrepancy in the population distribution by gender in the age group of 15-19 years (more men), 35-39 years (more women) needs an explanation.

Even after repeated visits, the females could not be contacted as they mainly go to forests for collection of woods and leaves for cattle and cooking at the time of survey.

Socio-demographic profile of the respondents as given in Table 2 shows that most of the respondents (82.8%) were Hindus followed by Muslims (9.2%) and Sikhs (8%). 60.7 per cent of the respondents belonged to general castes. Maximum numbers (24.6%) of the respondents were educated upto secondary level whereas only one respondent had education upto

graduation and 127 had education of post-graduation or above. Majority of the respondents (67.5%) were married while 37.2 per cent of the women were homemakers. Majority of the respondents (36.7%) belonged to IV class in the socio-economic status (upper lower class). 58.6 per cent of

the respondents belonged to nuclear families and 41.4 per cent were living under the joint family system.

It can be observed from Table 3 that most of the respondents (76.9%) said that they would like to have their treatment for RTIs/STIs from either quacks and/

TABLE 2
SOCIO-DEMOGRAPHIC PROFILE OF RESPONDENTS

Socio-Demographic Profile	Total (n=960)	
Religion	No	%
Hindu	795	82.8
Muslim	88	9.2
Sikh	77	8
Caste	No	%
SC/ST	242	25.2
OBC	135	14.1
Others/General	583	60.7
Education	No	%
Illiterate	157	16.4
Just Literate	68	7.1
Primary	175	18.2
Secondary	236	24.6
Intermediate	196	20.4
Graduate	1	0.1
Post-Graduate and above	127	13.2
Marital Status	No	%
Currently Married	648	67.5
Unmarried	306	31.9
Widow	4	0.4
Separated	2	0.2
Occupation	No	%
Labourer	115	12
Agricultural farmer	36	3.7
Shopkeeper/ Businessman	127	13.2
Professional	20	2.1
Government Service	39	4.1
Housewife	357	37.2
Others(Unemployed/Students)	266	27.7
Socio-Economic Status*	No	%
I	36	3.8
II	186	19.4
III	292	30.4
IV	353	36.7
V	93	9.7

*According to Modified B.J.Parsad Classification (2001)

TABLE 3
RESPONDENTS' PREFERENCE OF HEALTH CARE PROVIDER FOR TREATMENT

Total (n=960)		
Health Care Provider	No	%
STD specialist	58	6.0
MBBS	48	5.0
BAMS	41	4.2
BHMS	36	3.7
BUMS	38	3.9
Quacks	538	56.0
Jhar Phunk + Others*	201	20.9

*Multiple responses were given by respondent who may or may not be suffering from RTI/STI

*Spiritual, Traditional Healers, *Tantrik*

TABLE 4
SYMPTOMATICS' PREFERENCE OF HEALTH CARE PROVIDER FOR TREATMENT

Total (n=88)		
Private practitioner	No	%
STD specialist	32	36.4
MBBS	17	19.3
BAMS	12	13.6
BHMS	8	9.1
BUMS	8	9.1
Quacks	5	5.7
Others + Jhar Phunk	4	4.5
No treatment taken	2	2.2

($\chi^2 = 184.4$, $df = 6$, $p < 0.001$)

or other healers (20.9%) that include *jharphuk*, spiritual, traditional, *tantrik*, etc. whereas only 6 per cent responded that they would prefer to be treated from an STD specialist and 5 per cent expressed that they would consult an MBBS doctor.

When symptomatics of RTIs/STIs were interviewed about their preference of health care provider for treatment, it was observed that about 36.4 per cent of them responded that they would like to visit an STD specialist and 19.3 per cent expressed that they would consult an MBBS doctor. 5.7 per cent of the symptomatics still wanted to be treated by quacks and 4.5 per cent

wanted to take treatment from other traditional healers. Two symptomatics stated that they would not seek any treatment (Table 4). This difference in the preference of health care provider for treatment between respondents and symptomatics of RTIs/STIs was found to be statistically highly significant ($p < 0.001$).

The health seeking behaviour of a community varies according to its cultural and ethnic background¹⁰. Uttarakhand is considered to be the 'Abode of Gods' i.e. majority of its inhabitants are religious and God-fearing and still live in a conservative society where sex is not discussed

openly. Therefore, the task of studying the related health seeking behaviour is very challenging. Those suffering from such diseases do not disclose it to anyone due to social stigma attached to the diseases. Considering this, the suspected cases of STDs were identified through WHO Syndromic Approach for management of STDs¹¹ and efforts were made to find out the related health seeking behaviour among these cases.

However, as our country is rapidly urbanising with a boom in infrastructure development, people of Uttarakhand have also been repeatedly exposed to the effects of modernization. With no major industry and occupational opportunity for its residents to earn their living, they have been forced to move out of their district or state in search of jobs. At this juncture, they fall prey to the physiological needs of their body and contract STIs.

The present study revealed very peculiar findings when the respondents as well as symptomatics having symptoms of RTIs/STIs were interviewed about their preference of health care providers for treatment of RTIs/STIs. Majority of the respondents (76.9%) had responded in favour of quacks and/or spiritual, traditional healers. On the contrary, majority of symptomatics (55%) said that they would like to be treated by a qualified allopathic doctor (STD specialist/MBBS). This finding proves that the individuals suffering from RTIs/STIs know only qualified allopathic doctors could cure them.

As far as the respondents' answer was concerned, probably the primary reason for consulting incompetent health care providers at the initial stage could be economic¹⁰ and/or ignorance as well as the assurance of maintenance of confidentiality¹² by the quacks. These

findings bring to light that most of the respondents, especially during the period of economic instability; experiment first with the quacks, spiritual and traditional healers where in most cases, temporary relief may be given. This can be inferred only if the study has ascertained when they go to qualified doctors. Due to the social stigma attached to this disease, the infected patients also want confidentiality. The quacks, spiritual and traditional healers are guided by patients' self-diagnosis and personal experience which may be grossly inadequate to handle sensitive cases of STDs. These practitioners take full advantage of the opportunity and exploit them¹² as the treatment provided by quacks, spiritual and traditional healers is quite cheaper than by doctors in private hospitals or clinics¹⁰.

On the other hand, the symptomatics who have been suffering from this disease and have already wasted their time and hard-earned money in seeking treatment; generally prefer to see a qualified doctor for remedy. But why is this assumed? This is the overall opinion of all the researchers that the most probable reason for a symptomatic to see a qualified doctor might be due to their rise in the knowledge and awareness level about STD treatment after he/she has already wasted his/her time and money but in vain. Moreover, with delay, the problem gets aggravated and there is little option or hardly any option left for the symptomatic except consulting a qualified doctor. This shows a change in the treatment seeking behaviour of the STD symptomatics. These individuals could be utilised better in educating other persons in their community and will be of great use in removing various misconceptions associated with this group of diseases.

CONCLUSION

More in-depth community-based studies on health seeking behaviour of RTI/STI patients as well as of the general population of Uttarakhand should be conducted to bring out the real picture of the disease in this state. The findings will enable the health policy makers of Uttarakhand to think and act in the right direction.

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EPIDEMIOLOGICAL CORRELATES OF UNDER-FIVE CHILDREN AT RISK: A STUDY IN THE FIELD PRACTICE AREA OF RURAL MEDICAL COLLEGE, LONI

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ABSTRACT

India contributes 25 per cent of the global under-five deaths. Identification of children at risk and associated demographic, socio-economic variables is the first step of risk approach which could improve child health in rural areas where resources are scarce. This cross-sectional study was undertaken in six villages in the field practice area of Rural Medical College, Loni during November 2005 and June 2007. Out of the 652 under-five children selected through systematic random sampling, average prevalence of at risk was found in 54.7 per cent of the subjects. 71.5 per cent of the children belonging to socio-economic class V, 63.8 per cent of the children living in ill ventilated houses and 62.2 per cent of the children living in overcrowded dwellings were found to be at risk. It was observed that there was significant association of literacy status of mother, socio-economic status and environmental conditions with the presence of risk factor in children.

Key Words: At Risk, Under-Five Children, Rural Area, Socio-economic Factors.

10.6 million children in the world die every year before reaching their fifth birthday. Child health indicators in developing countries show that improvement in child health is not enough. India contributes around 25 per cent of the global under-five deaths¹. Majority of the causes of mortality and morbidity in this age group are preventable through existing interventions. But owing to the lack of resources like money, manpower and time, all the under-five children can't be given equal time and attention. Therefore, risk approach is an appropriate strategy and a managerial tool to provide better care to those in need². An individual may be at risk because of biomedical, social or environmental reasons. At risk group is a group of individuals in whom the frequency of risk factors is more than the other groups. In this study, risk factors were determined on the basis of recommendations given by the

WHO Expert Committee. Identification of at risk children in rural areas and associated social, demographic and environmental factors is the first step in the implementation of risk strategy.

METHODOLOGY

A cross-sectional study was conducted in six villages selected by simple random sampling from the two Primary Health Centers (PHCs) in the field practice area of Rural Medical College, Loni, Ahmednagar, Maharashtra. These two PHCs were also selected from six PHCs by simple random sampling method. Each PHC comprised of seven villages and three villages were selected from each PHC through draw of lots. Sample size was calculated by using the Formula $4pq/l^2$ at 10 per cent allowable error with 40 per cent prevalence. The computed sample size was 600. A total of 652 children

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were selected through systematic random sampling by selecting every-fifth child from the list of children in the Anganwadis of these villages.

Data collection were done by interviewing the mother of the particular child. House-to-house survey was done and anthropometrical measurements and clinical assessment was done to identify risk factors. Thirteen risk factors were selected as per the recommendations of the WHO expert committee³ that include: 1) Birth wt. <2500 gms, 2) Twins, 3) Birth order of five or more, 4) Birth spacing less than two years, 5) Present wt. <70 per cent of reference std., 6) Early lactation failure and artificial feeding before six months, 7) Major congenital anomaly, 8) History of death of >two siblings within 12 months of age, 9) Death of either or both parents, 10) Children with chronic or recurrent gastroenteritis and/or recurrent respiratory infections (recurrent infections mean >5-6 episodes of infections per year)⁴, 11) Mother working outside for more than eight hours, 12) Delay in giving supplementary feeds i.e. more than 6 months and 13) Mid-arm circumference less than 12.5 cms.

Modified B.G. Prasad's classification was used for classifying the socio-economic status and the number of persons per room was the criterion used

for overcrowding. The materials used for the study include: Standardized weighing scale (Salter weighing scale for infants and Libra weighing scale for children), Measuring tape and Paediatric Stethoscope. Weight was measured in kgs. and height of the child was measured by the measuring tape in cms. All instruments were standardized. Same instruments were used throughout the study by the same observer to minimize instrumental error and inter-observer variation.

FINDINGS AND DISCUSSION

Out of the total 652 under-five children examined, 357 were found to be at risk and the average prevalence rate of risk was found in 54.75 per cent of the children studied. Prevalence rate of risk was 51.8 per cent and 67.3 per cent in earlier studies conducted by Choudhari et al and Bhasin et al respectively^{5,6}. Children in the 1-2 years and 2-3 years age group were found to be the most vulnerable (65.69% and 56.34% respectively) while the figure was lowest (40.60%) for the children in the age group of 4-5 years (Table 1). Sex of the child was not significant with regard to at risk since there was not much difference in the prevalence rate between boys and girls. 193 (53.46%) male and 164 (56.34%) female children were found to be at risk. Out of the total children studied, 46.7 per cent

TABLE 1
AGE-WISE DISTRIBUTION OF CHILDREN AT RISK

Age Group	Total Children Examined	No. of Children at Risk (%)
0-1 Year*	128	72 (56.25)
1-2 Years	137	90 (65.69)
2-3 Years	142	80 (56.34)
3-4 Years	112	61 (54.46)
4-5 Years	133	54 (40.60)
Total	652	357 (54.75)

(167) had one risk factor while 24.08 per cent, 15.13 per cent and 10.3 per cent children had two, three and four risk factors respectively. In the study conducted by Bhasin et al, 37.2 per cent of the children were having one risk factor while 30 per cent, 29 per cent and 4.6 per cent of the children had two, three and four risk factors respectively⁶.

The most frequent risk factor observed in the current study was malnutrition (45.15%) followed by birth spacing <2 years (33.5%) and low birth weight (33%). The least common risk factors observed were history of death of siblings (0.28%), death of either or both parents (1.12%). Significant association was found between socio-economic status and presence of risk

factors. Majority of children from socio-economic class V (71.24%) and class IV (56.48%) were at risk. Similar findings were also observed by Sharma et al⁷. The study findings establish that there is inverse relationship between literacy status of mother and prevalence of risk factors. As the literacy level of the mother rose, her child's risk factor also declined proportionately. While 70.70 per cent of the children were found to be at risk whose mothers were illiterates the figure is 38.24 per cent whose mothers had education up to graduation or above. (Table 2). Among the 357 children, 111 children (70.7%) had illiterate mothers. Significant association was found between type of family and risk factor; children reared in nuclear families were more at risk.

TABLE 2
DISTRIBUTION OF CHILDREN AT RISK BY LITERACY STATUS OF MOTHER

Literacy Status of Mother	Total Children Examined	Children at Risk	
Illiterate	157	111	(70.70%)
Primary	103	59	(57.28%)
Secondary	280	144	(51.43%)
Higher Secondary	78	30	(38.46%)
Graduate and above	34	13	(38.24%)
Total	652	357	

Value of $X^2 = 30.9$, $p < 0.001$ Highly significant

TABLE 3
DISTRIBUTION OF CHILDREN AT RISK BY ENVIRONMENTAL CONDITIONS

(A) Housing Status

Type of House	Total	Children at Risk	
		No	%
Kachcha	198	130	36.41
Kachcha-Pucca	201	115	32.21
Pucca	253	112	31.37
Total	652	357	54.75

Value of $X^2 = 21.60$, $p < 0.05$ Significant

It was found that environmental condition in which people live plays an important role as far as the children at risk are concerned. Study findings show that children who lived in pucca houses were the least at risk (31.37%) followed by kachcha-pucca (32.21%) and kachcha houses (36.41) (Table 3 A).

Similarly, findings in Table 3 (B) show that children living in houses with ventilation facilities were less likely to be at risk (41.79%) in comparison to their counterparts living in houses without proper ventilation (63.80%).

Data again show that children living in over-crowded dwellings were more likely at risk (62.26%) than children living in less crowded environ (41.53%) (Table 3 C).

CONCLUSION

In India, about 70 per cent the population lives in rural areas where resources are always scarce and people are at risk of facing many health problems. Hence, need-based risk approach is

required to provide proper health care to them. Identification of children at risk and associated socio-economic and environmental factors will surely help for the result-oriented implementation of maternal and child health services in rural areas.

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(B) Ventilation

Ventilation	Total	Children at Risk
		%
Satisfactory	268	41.79
Unsatisfactory	384	63.80
Total	652	54.75

Value of $X^2 = 23.41$, $p < 0.05$ Significant

(C) Over-Crowded

Over-Crowd	Total	Children at Risk	
		No	%
Present	416	259	62.26
Absent	236	98	41.53
Total	652	357	54.75

Value of $X^2 = 26.18$, $p < 0.05$ Significant

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ASSESSMENT OF BLOOD DONORS' PERCEPTION IN A HOSPITAL BLOOD BANK AND THEIR INTENTION FOR FUTURE DONATION

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ABSTRACT

The increasing demand for blood has encouraged health authorities to convert first-time blood donors to become regular blood donors. Satisfaction of donors with the current donation influences their intent to donate blood in the future. This study was undertaken at a tertiary care hospital blood bank. Indicators to evaluate the quality of blood bank services were developed and prototype tools in the form of questionnaires were used to assess the quality of services. Primary objective of the study was to evaluate the quality of blood bank services. Secondary objective was to assess the knowledge and perception of donors about the quality of the blood bank. Association between overall satisfaction of donors in relation to the donation process, donor demographics and their effect on a donor's motivation and intent to return for donation in future was also studied. It was observed that out of the total 117 subjects, majority of the blood donors were less than 40 years old (83.8%), 96.6 per cent were men, 44.4 per cent were businessmen and 88 per cent were graduates. All the donors were found to be Hindus, 115 (98.3%) of them belonged to middle class. Most of them were vegetarians 92 (78.6%), non-smokers 72 (61.5%) and non-alcoholic 73 (62.4%). Of the 117 blood donors, 98 per cent were satisfied with the total score of 20.6/21. For all the donors, satisfaction level of the current donation experience was associated with the intention of future donation (95.7%). Intention to return in future had a positive correlation with male donors, donors living locally and excellent donor score (p-value 0.001).

Key Words: Blood Bank, Services, Blood Donor Satisfaction, Intention to Return, Motivation.

In the course time, blood banking has developed from a bench in a corner of clinical pathology to a specialty of Transfusion Medicine. But what has not changed is the desire of human volunteers to donate blood¹. All over the world, blood donors belong to a minority community. India is no exception¹. Distinct promotional strategies should be adopted to increase repeated blood donation among experienced versus new donors². Blood donor satisfaction varies between

demographic and donation history sub-groups and is positively associated with the intention to return for future donation³. The primary motivation among all the donors is altruism and the incentives to future donation may need to be tailored according to the requirements of the demographic sub-groups³. Patient's satisfaction has been observed as an important indicator for quality of care³. Keeping this in mind, an analysis was done to assess the existing quality of blood bank services,

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blood donors' satisfaction and their intention to return for donating blood.

METHODOLOGY

The study was carried out in a blood bank of a 108 bedded tertiary care hospital with the help of entry and exit interview questionnaire. Donors were explained through donor information sheet and consent was obtained from those willing to participate. Indicators to evaluate quality of blood bank services were developed after review of literature³. Prototype tools in the form of questionnaires were used to assess the quality of services. Entry interview of blood donors was done to document their expectations from the blood bank services of the hospital. Any problem faced by the donor while reaching the blood bank, parking their vehicle, locating the blood bank, etc. were taken into consideration. Exit interview of the blood donors were done to assess their satisfaction with the blood bank services, doctor-donor interaction and blood bank staff. Quality of care score was calculated by considering following variables:

- a) Availability of facilities = Scores to be added are
Waiting area+ Light+ Refreshments+ Newspaper+ Lift+ Toilet=Maximum score of 6
Scoring modified for calculating score as yes=1, no=0 and so-so=0.5
- b) Phlebotomy services = Scores to be added are
Venous Puncture (VP) + Double Puncture (DP) + Swell + Faint + Donor Couch (DC)= Maximum score of 5. Scoring modified for calculating score as yes=1, no=0 for VP and DC and yes=0 and no=1 for DP, Swell and Faint. This was not done in the

Performa so as to prevent bias and manipulation of the scoring.

- c) Donor score= Scores to be added
e.g. 8, 9 or 10
Total score=A+B+C

All statistical analyses were carried out with the SPSS software. Socio-demographic characteristics of blood donors were analyzed in number (per cent). In demographic variables, intra-group comparisons were made and p-value was calculated. Univariate analysis was used for descriptive frequencies of variables concerning donor satisfaction, intention to return and motivation for blood donation. Chi-square test and Fisher's exact test were considered appropriate to assess bivariate associations between demographic and blood donation variables compared to donor satisfaction, intention to return and motivation. Associations between demographic and blood donation variables compared to donor satisfaction, intention to return and motivation were calculated using Chi-square test. Calculated value was then compared with tabulated value and p-value was calculated. If calculated value was more than tabulated value then p-value < 0.05 was significant.

FINDINGS

Over a period of four weeks, 117 voluntary blood donors were enrolled at the blood bank and all of them were willing to be the part of this study. The mean age was 31.53 ±7.84 years with 98 (83.8%) less than 40 years. On further evaluation of age, it was seen that more than half (52.8%) of the donors were in the age group of 18-30 years followed by 31-40 years (31.6%), 41-50 years (14.5%) and the least were >50 years (1.7%). Number of male donors (96.6%) were much

higher than the female donors (3.4%) and 76 (65%) of the total donor were married. P-value was calculated within the group (intra-group) and was found to be significant for age, sex and marital status of the blood donors (Table 1). Socio-demographic profile of blood donors is shown in Table 1. A majority of the blood donors were businessmen 52 (44.4%), graduates 88 (75.2%), Hindus 117 (100%) and of middle class 115 (98.3%).

The study reveal that all the 117 blood donors were satisfied with donor packet and hospital facilities such as waiting area, light arrangement, newspapers, toilet, lift facilities and refreshments provided by the blood bank. All of them were satisfied with the phlebotomy services (courtesy of the staff, explanation by the medical officer, venous puncture, double puncture, no swelling, no fainting episodes after blood donation and for comfortable donor couch). The mean score for

TABLE 1
DEMOGRAPHICS OF BLOOD DONORS

CHARACTERISTICS	N0. (%)	p-value
AGE <40 >40	98 (83.8) 19 (16.2)	0.001
SEX Male Female	113 (96.6) 4 (3.4)	0.001
MARITAL Married Not Married	76 (65) 41 (35)	0.001
Vegetarian Yes No	92 (78.6) 25 (21.4)	0.001
SMOKER Yes No	45 (38.5) 72 (61.5)	0.013
ALCOHOLIC Yes No	44 (37.6) 73 (62.4)	0.007
RESIDENCE Yes No	61 (52.1) 56 (47.9)	0.644
P VISIT Yes No	20 (17.1) 97 (82.9)	0.001
PARKING Yes No	111 (94.9) 6 (5.1)	0.001

p-value <0.05 = significant

TABLE 2
MEAN QUALITY SCORE AND PATIENT SATISFACTION LEVEL

Type of Score	Maximum Score	Mean Score	%age Mean Score
A. Availability of Facilities Client Convenience	6	6	100
B. Phlebotomy Services	5	5	100
C. Donor Score	10	9.6	96
D. Total Score	21	20.6	98

TABLE 3
ASSESSMENT OF DONOR SCORE AND INTENT TO RETURN

Characteristics	Number of Blood Donors (%)	P-Value
DONOR SCORE 1-8/10 9 n/10 10/10	4 (3.4) 22 (18.8) 91 (77.8)	0.001
INTENT TO RETURN Yes No	112 (95.7) 5 (4.3)	0.001

p-value <0.05 = significant

availability of hospital facilities is given in Table 2. Assessment of donor score and intention to return is shown in Table 3.

Chi-square and Fisher exact tests were used for bivariate associations. On associating donor score with socio-demographic variables, motivation and intent to return; it was found that excellent donor score (10/10) was statistically significant for married donors (p-value of 0.046) and intention of the blood donors to return for donating blood (p-value of 0.041) (Figure 1).

Out of the 117 blood donors, it was observed that motivation is associated with male donors (p-value 0.047), vegetarian (p-value 0.05), non-alcoholic (p-value 0.02), non-smoker (p-value 0.006) and businessmen (p-value

0.042) (Figure 2). Out of 117 blood donors, 112 (95.7%) showed interest to return in future for further donating blood. Intention to return is associated with male donors (p-value 0.037), blood donors staying locally (p-value 0.017) and excellent donor score (p-value 0.041) (Figure 3).

DISCUSSION

Several studies on donors have reported that a very small number of donors repeat blood donation^{4,5}. Repetition of donation in the initial phase is a predictive factor for continued donations in the future^{4,6}. Blood donation has few problems; to name a few- myths, misconceptions, beliefs and above all, fear of pain involved during the process and 'faceless' sort of service.

FIGURE 1
ASSOCIATION BETWEEN DONOR SCORE WITH SOCIO-DEMOGRAPHIC VARIABLES, MOTIVATION AND INTENTION TO RETURN

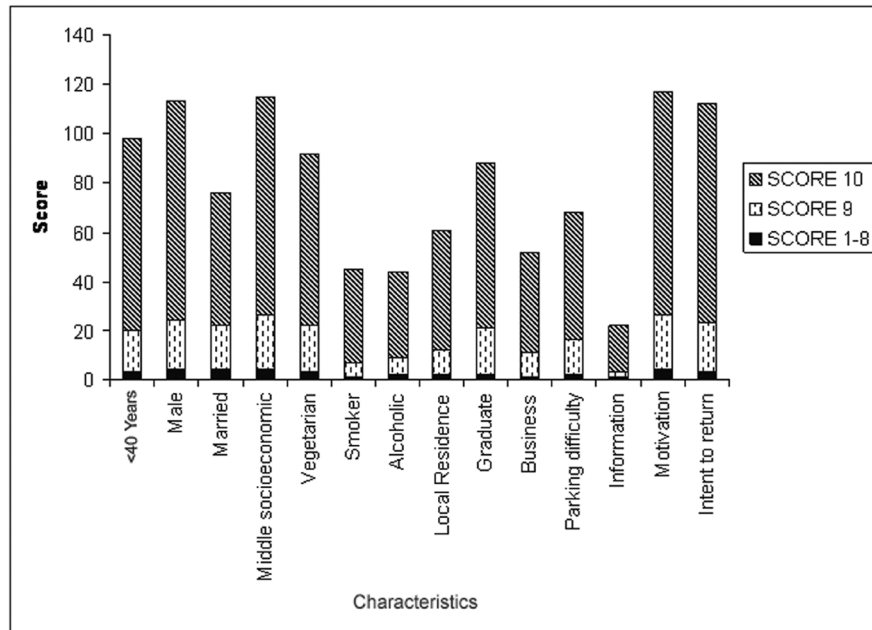
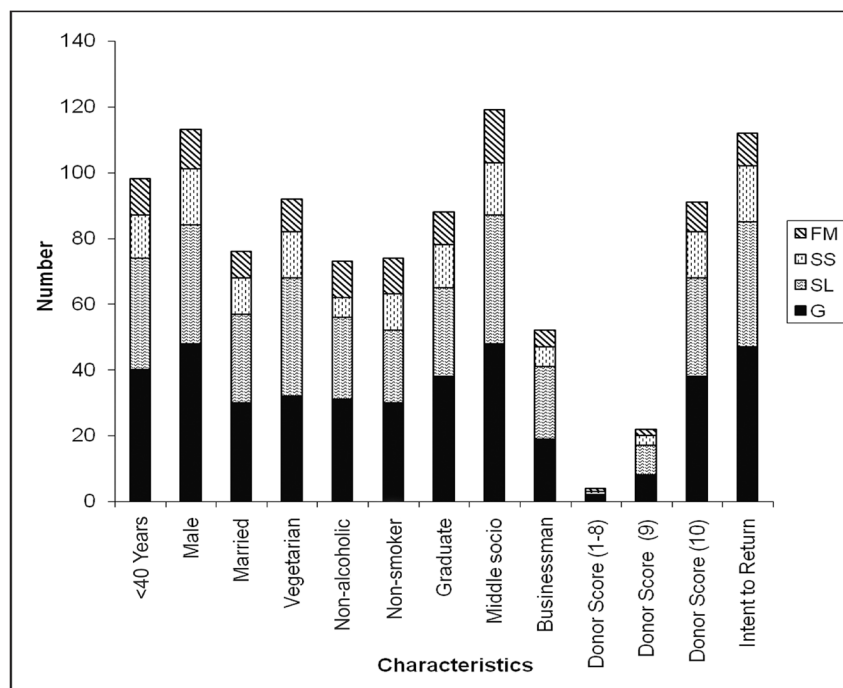
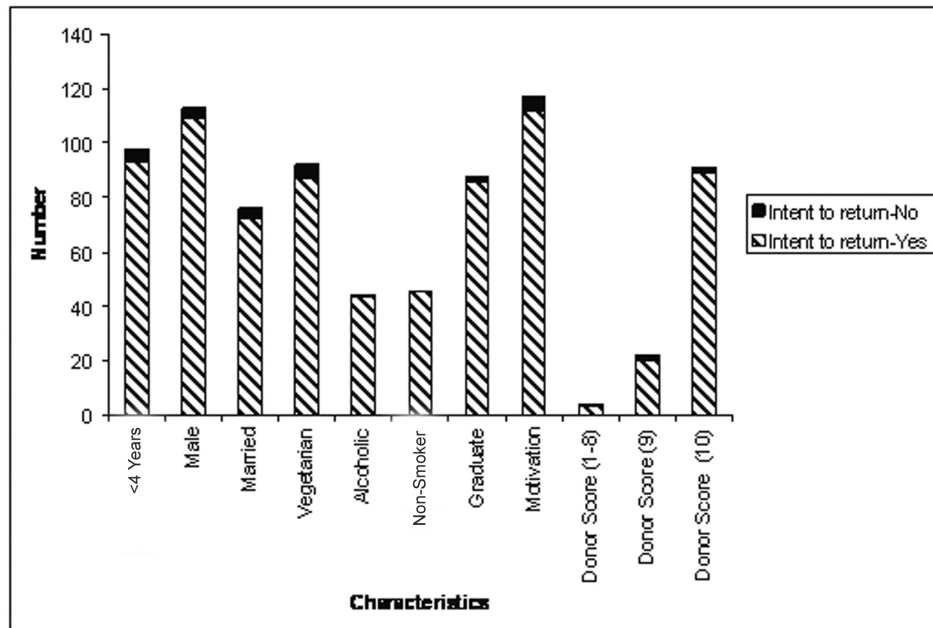


FIGURE 2
ASSOCIATION BETWEEN MOTIVATION (FM, SS, SL and G) WITH SOCIO-DEMOGRAPHIC PROFILE, DONOR SCORE AND INTENT TO RETURN



FM- Family Members, SS- Self-Satisfaction, SL- Save Life, G-Good Cause

FIGURE 3
ASSOCIATION OF INTENT TO RETURN WITH SOCIO-DEMOGRAPHIC PROFILE,
MOTIVATION AND DONOR SCORE



In the present study of the 117 blood donors, majority were less than 40 years of age (83.8%), mean age of 31.53 ± 7.84 and males counted 96.6 per cent. In another study of 300 voluntary blood donors by Ray et al, it was reported that 48 per cent of the blood donors were in the age group of 16-25 years and 89.3 per cent of the donors were males⁷. In this study, majority of the blood donors belonged to middle class, were unmarried and Hindus as compared to the findings of Ray et al⁷. Most of the blood donors in the current study were vegetarians (92%), 38 per cent of them were both smokers and alcoholic while 37.6 per cent were only alcoholic. These figures are much higher than the findings reported by Ray et al⁷. Majority of the blood donors (96.58%) gave high satisfaction ratings of their overall donation experience, although the investigators did note some differences according to age, sex, marital status, and education and occupation sub-groups. According to Nguyen et al, they had more than 75 per cent of the donors rating overall

donation process at 9 or 10 on scale, with females, high school educated and first-time donors gave high satisfaction ratings than males, college-educated and repeated donors³. In this study, high donor satisfaction had positive association with married blood donors and intention to return for further donation (Figure 1). Nguyen et al observed donor satisfaction was correlated with their intention to return for another donation (p -value 0.002)³. For all donors, satisfaction with the current donation experience was associated with the intention of future donation (95.7%). Women in the present study gave higher satisfaction ratings than men. However, due to lower numbers it cannot be hypothesized. Young donors (<40 years) gave significantly higher ratings (83.8%) than donors aged more than 40 years in this study. Intention to return had a positive association with male donors; donors living locally and excellent donor score (Figure 3). However, the researchers measured intent to return rather than actual return.

It is felt that distinct promotion strategies should be adopted to enhance repeated blood donation. For experienced donors, the predictors are intention, perceived control, anticipated regret, moral norm, age and frequency of blood donation in the past. For new donors, intention and age are the only determinants of behaviour^{2,7-10}. Most of the donors were motivated in their current donation for good cause (41%) and the figure is higher than the figure as reported in the study by Ray et al⁷. Women donors in this study reported higher donor score than men. This could be explained by a strong altruistic orientation in women. Both men and women were motivated by 'empathetic concern' to donate blood, but women scored significantly higher than men in this category^{9,11,12}. Blood donors who were students or professionals were less motivated for blood donation than businessmen (p-value 0.04). Motivation had a positive association with male donors, vegetarians, non-alcoholics, non-smokers and businessmen indicating a positive intent similar to the findings by Ray et al⁷ although they had not correlated these factors with motivation statistically. When asked about which interventions would encourage them to donate more frequently in future, it was found that medical testing and frequent donor programmes carry importance for motivation and make it popular. This is consistent with other surveys^{10,12}. Data in this study also suggest the importance of 'convenience' as expressed especially by younger donors may surpass altruism as a motivation in younger generation of blood donors¹³⁻¹⁴. There are a few limitations in this study. This is a private sector study and precaution is required to extrapolate the results for generalization to public sector. However, multi-centre studies with larger sample size are required. In conclusion, in this time

of scarcity of blood donors, a donor's sense of satisfaction is immediate but evanescent and we must continue their intention to return by continuous motivation programmes to retain them.

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DESIGNING PROMOTIONAL STRATEGIES FOR MEDICAL TOURISM IN INDIA: A CASE STUDY OF AN OPHTHALMIC HOSPITAL IN NCR

Santosh Kumar*

ABSTRACT

Medical tourism, also called medical travel or health tourism is a term initially coined by travel agencies and the mass media to describe the rapidly-growing practice of travelling to another country to obtain healthcare. People travel to avail of such a facility because of much cheaper rates or those treatments such as ayurveda or yoga therapies which are not available in one's own country. Such services typically include elective procedures as well as complex specialised surgeries such as joint replacement (knee/hip), cardiac, dental or cosmetic surgeries. Leisure aspects typically associated with travel and tourism are also included in such medical travel trips. A bypass surgery is the cheapest in India (\$9,300) while the same costs \$1,00,000 in the USA followed by \$16,500 in Singapore and \$11,000 in Thailand. Similarly, a procedure for an angioplasty is also cheaper in Asian countries than USA. Similarly, foreigners also prefer India for eye-treatment. A retinal detachment procedure costs approximately \$900 to \$1,400 per eye in India and the same costs between \$2,500 and \$5,000 in the US and between \$4,000 and \$6,000 in Britain. The study showed that most of the medical travellers used internet followed by newspapers for information with regard to the availability and facilities available in the Indian hospitals.

Key Words: Medical Tourism, Medical Travel, Low-cost, Foreigners.

Emerging Market for Medical Tourism

The first recorded instance of medical tourism dates back thousands of years to the Greek pilgrims who travelled from all over the Mediterranean to the small territory in the Saronic Gulf called Epidauria. Factors that have led to the recent increase in the popularity of medical travel include the high cost of healthcare or waiting times for procedures in industrialised nations, the ease and affordability of international travel, and improvements in technology and standards of care in many countries. Countries that operate public healthcare systems are often so taxed that it can take considerable time

to get a non-urgent medical care. The time spent on waiting for a procedure such as a hip replacement can be a year or more in Britain and Canada, while in Singapore, Hong Kong, Thailand, Cuba, Colombia, the Philippines or India, a patient could feasibly have an operation the day after their arrival. In Canada, the number of procedures in 2005 for which people were waiting was 7,82,936. The concept of medical tourism is not a new one though. The first recorded instance of medical tourism dates back thousands of years to the Greek pilgrims who travelled from all over the Mediterranean to the small territory in the Saronic Gulf called Epidauria. This territory was the sanctuary of the healing God Asklepios.

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Epidauria became the original travel destination for medical tourism.

Medical tourism is growing and diversifying. Estimates vary, but McKinsey & Company and the Confederation of Indian Industry (CII) put gross medical tourism revenues at more than \$ 40 billion worldwide in 2004. Others estimate the worldwide revenue at about \$ 60 billion in 2006. McKinsey projects that this will increase to \$100 billion by 2012 (Graph 1).

Internationally-known hospitals, such as Bumrungrad in Thailand and Apollo in India report their annual revenue growth at about 25 per cent. McKinsey estimates that Indian medical tourism alone will grow to \$ 2.3 billion by 2012. Singapore hopes to treat one million foreign patients that year.

Most Sought-after Medical Procedures in India

India is becoming a fast growing

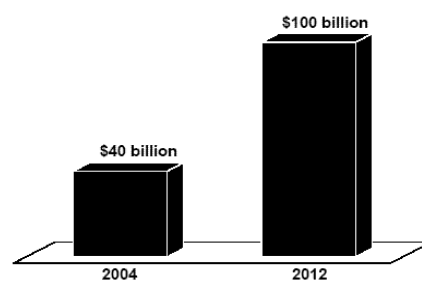
and favoured destination for medical tourism. The main procedures for which foreigners come to the country are cardiac surgeries, gastrectomy, IVF and surrogacy, knee replacement, cosmetic and plastic surgeries.

Common Treatments for which Foreigners Travel to India

Cardiac Procedures

Among cardiac procedures, CABG, coronary angiography and angioplasty are the procedures for which most foreign patients come to India. A cost comparison of cardiac procedures is given in Table 1. As far a bypass surgery is concerned, it is the cheapest in India (\$9,300) while the same costs \$1,00,000 in the USA followed by \$16,500 in Singapore and \$11,000 in Thailand. Similarly, a procedure for an angioplasty is also cheaper in Asian countries than USA.

GRAPH 1
WORLDWIDE MEDICAL TOURISM INDUSTRY¹



¹Source: McKinsey and the Confederation of Indian Industry, 2006

TABLE 1
COST COMPARISON OF CARDIAC SURGERIES IN DIFFERENT COUNTRIES

Procedure/Country	US	India	Thailand	Singapore
Bypass	\$1,00,000	\$9,300	\$11,000	\$16,500
Angioplasty	\$1,60,000	\$9,000	\$10,000	\$15,000

Sleeve Gastrectomy

A growing trend among patients from the West (US, Canada, Britain, and Ireland) is to travel to India for sleeve gastrectomy surgery. Low price, experienced bariatric surgeons, quality hospitals and no waiting times for the weight-loss surgery are some of the many reasons for this growing phenomenon. In this surgery for weight loss, stomach size is reduced. So, the individual feels full quickly with a small meal and also production of hunger causing hormone is restricted. The main reason of this surgery becoming so popular is the positive clinical findings of patients who have had this procedure in the last few years. Apart from India, Costa Rica and Mexico are also among the most favoured destinations for gastrectomy procedures which costs \$7,500, \$8,900 and \$11,900 respectively. Thus, it is evident that gastrectomy procedure is very economical in the country. In fact, it's not only the cost of obesity surgery low here but also the level of service is very high.

Surrogate Mothers

Surrogate mothers in India cost considerably lower (about a fourth of what it would cost in the US). The cost of surrogacy in the US is anywhere between \$50,000 and \$100,000. Surrogacy here has few legal hassles and the Indian Council of Medical Research, has set national guidelines to regulate it. Unlike many countries where surrogacy is banned or has many restrictions, India's laws allow the surrogate mother to sign away her rights to the baby as soon as it's delivered.

Surrogacy cycle approximate costs \$13,000 at a reputed hospital in India which includes: i) doctor charges, ii) surrogate work-up, iii) ante-natal care,

iv) delivery charges, v) surrogate compensation and vi) drugs and consumables. This does not include the cost of IVF, though IVF cost in India is about \$1,800. Additionally, what works in favour of India, unlike some developing countries, is the availability of advanced healthcare facilities and English-speaking doctors and nurses. Surrogacy is about a half a billion dollar business in the country.

Computer-aided Knee Replacement Surgery/Arthroplasty

The typical price of this surgery here is about 20 per cent of what it would cost in the US. This price includes the estimated travel and lodging expenses that would be occurred for a person to fly from North America to India.

Cosmetic/Plastic Surgeries

Cosmetic or plastic surgery is another very popular procedure. Majority of the overseas patients visit for i) blepharoplasty, a procedure for removal of fat, usually along with excess skin and muscle from the upper and lower eyelids, ii) liposuction procedure, a surgical procedure intended to remove fat deposits and shape the body, iii) face-lift procedure which is intended to improve facial appearance and make a person look good for his/her age, and iv) rhinoplasty procedure which is to reshape the nose. Rhinoplasty is one of the most common of all plastic surgery procedures.

Ophthalmic Surgeries

India has seen a lot of advancements in the field of ophthalmology. As a result, many patients from abroad are coming here to seek treatments for their eye ailments. Not only are these procedures less expensive than that in

the developed nations such as the US and Britain; the technologies used in the treatment of eye diseases here is at par or even better than many other nations.

Table 2 shows the cost difference among various ophthalmic procedures between India, the US and Britain. The cost of these surgeries in India is less than 50 per cent of that in the developed countries. While vision correction procedure costs around \$ 250-\$ 1,250 per eye in India, the same procedure costs approximately \$1,500 to \$2,750 in the US and \$1,800 to \$3,600 in the UK. Similarly, retinal detachment procedure costs approximately \$900 to \$1,400 per eye in India and the same costs between \$2,500 to \$5,000 in the US and between \$4,000 to \$6,000 in Britain.

Factors Promoting Medical Tourism in India

Factors which encourage patients from abroad to seek healthcare in India can be classified on the basis of the facilities/healthcare set-up in their home countries. These factors include: i) non-residential Indians (NRIs), ii) patients from other developing countries, iii) patients from developed countries with state-owned healthcare system, and iv) patients from developed countries with private healthcare system.

A large number of NRIs prefer to come back to the country for their healthcare needs as they are not only guaranteed excellent treatment at far lower costs but also a trip to their home country. The patients from countries with underdeveloped facilities such as Pakistan, Nepal, Bangladesh, etc. come to India for lack of quality healthcare services in their home countries, whereas patients from developed countries with state-owned healthcare system such as Britain with NHS prefer India for less waiting times and patients from developed countries with private healthcare system such as the US come here for lower costs.

OBJECTIVES

It is evident that medical tourism is a booming industry which provides substantial opportunity to Indian hospitals for elective procedures. The Centre for Sight, a renowned eye care hospital in New Delhi, is exploiting this opportunity to the hilt. To explore the opportunities of medical tourism, it is important to understand the key issues related to medical tourism and strategies required to be adopted for the same.

Keeping this in mind, this study, titled 'To study the Indian Medical Tourism Industry and Design Promotional Strategies to Increase Footfalls at a

TABLE 2
COST DIFFERENCE IN VARIOUS OPHTHALMIC PROCEDURES

Procedure	US (\$)	Britain (\$)	India (\$)
Vision Correction	1,500-2,750 per eye	1,800-3,600 per eye	250-1,250 per eye
Cataract (Phaco)	2,500-5,000 per eye	4,000-6,000 per eye	900-1,400 per eye
Retinal Detachment	2,660-3,160 per sitting	3,000-4,500 per sitting	600-1,000 per sitting
Ptosis	2,900-3,600	3,000-4,500	750-1,000

Super-Specialty Eye Hospital in NCR Region' was commissioned. The study findings will help the hospital to adopt medical tourism, build its public image and enhance patient satisfaction.

The objectives of the study include to:

- i) study the factors that promotes India as a destination for medical tourism;
- ii) find out the expectations of overseas patients;
- iii) find out the probable hiccups with medical tourism; and
- iv) design promotional strategies to increase footfalls at the hospital under study.

METHODOLOGY

To do the situational analysis, a descriptive study was designed. Both primary and secondary data were used in this study. The primary data included age, sex, and country of origin of the patients coming to the Centre for Sight, a super-specialty ophthalmology hospital, in New Delhi. The criteria that a patient chooses before selecting a hospital and a list of most popular media, journals and magazines that cater to the NRI population were also included. Primary data also included opinion of consultants on enablers for medical tourism.

The secondary data included the healthcare scenario and scope of medical tourism in the country, factors influencing this industry stream, cost of various procedures in other developed and developing countries.

The sample size comprised:

- i) Records of 200 patients who used services at The Centre for Sight during January 2005- March 2008 period.
- ii) Patient Interaction: 20 overseas

patients visiting The Centre for Sight during February-March 2008.

Records of overseas patients who visited the super-specialty ophthalmology department to seek eye care services during January 2005-March 2008 were reviewed to understand their demographic, major ailments, average cost of treatment, etc. Questionnaire-based interaction was also held with the patients to know the factors that encourage them to seek healthcare in India in general and The Centre for Sight in particular. An attempt was also made to understand the factors that determine the selection of a hospital. Various specialists were also interviewed to find out the enabling and disabling factors for medical tourism. The specialists were asked to suggest steps required to tap medical tourism opportunities in a more concerted manner.

Various periodic articles from magazines, newspapers and medical journals/websites were reviewed to understand the industry trends. Interaction with media partners were also held to find out the most popular media in other countries.

FINDINGS

The data analysis was presented under the headings of i) healthcare scenario, ii) HIS Review, iii) interaction with clients and iv) interaction with the consultants.

Healthcare Scenario

The medical tourism scenario in India has been on the rise since the past decade. With the opening of many new corporate hospitals providing the best of the quaternary care in the metros and mini-metros like Ahmedabad, Rajkot, Surat, etc.; more and more foreign patients prefer India for their medical treatments. Given below are

some factors pertaining to the growth of medical tourism in the country:

- As per a McKinsey-CII report of 2005, during early 2000, hardly 10,000 foreign patients visited India for medical treatment. However, by 2005, this number rose to 1,00,000, generating revenues of whopping Rs. 1,500 crore.
- The Indian healthcare market is growing at 13 per cent per annum. According to a PWC projection, it is expected to grow to nearly \$40 billion by 2012.
- Medical tourism is poised to be the next Indian success story after IT. According to a McKinsey-CII study in 2005, this industry's earning potential is estimated at Rs 5,000-10,000 crores by 2012 which will account for 3-5 per cent of the total healthcare delivery market in the country.

Analysis of Hospital HIS

Analysis of the past records (Graphs 2-5) taken from the HIS of The Centre for

Sight depicts the origin of international patients.

Country of Origin

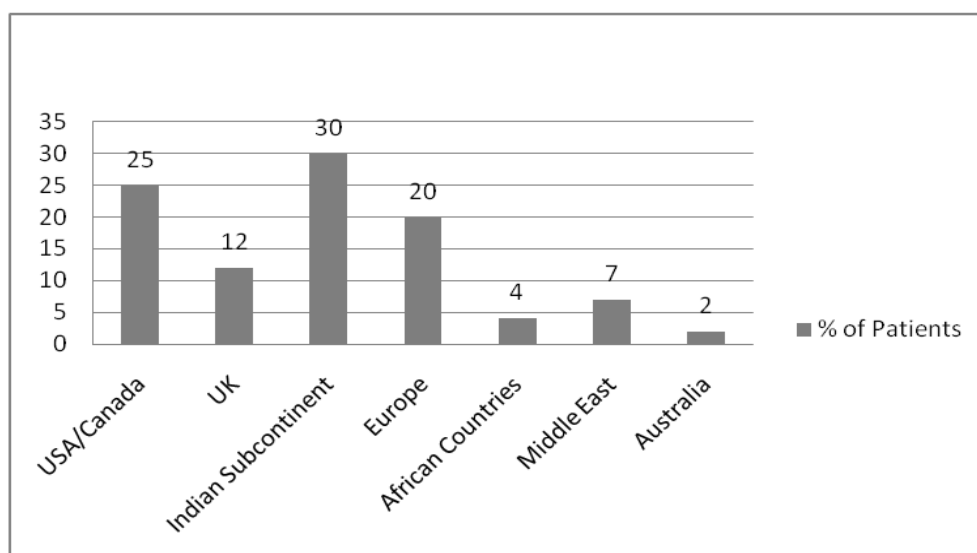
Graph 2 shows common countries from where patients prefer to come to India. A significant one-fourth of the total patients who visited the Centre for Sight were from the US/Canada followed by Europe (20%), Britain (12%), and others (13%). Only one-third were from the Indian sub-continent.

Further analysis shows that during the past three years, more than 85 per cent of international patients who came to this hospital were NRIs. The patients from Britain and Europe prefer India for quick care with almost little waiting time while those from the US come to India for the quality care with low cost. Those from the Indian sub-continent visit India for lack of quality care services in their home countries.

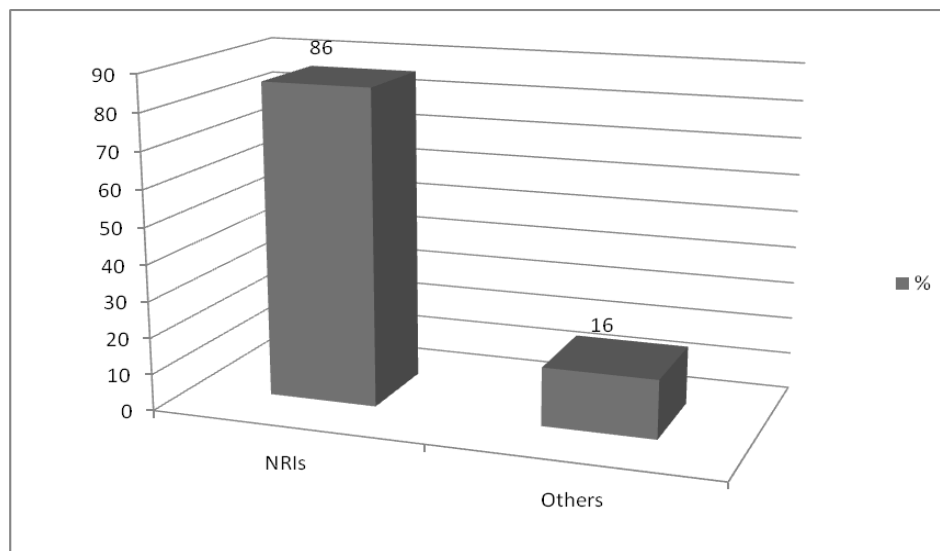
Major Services Availed

The findings from the hospital records indicate that more than half of the

GRAPH 2
ORIGIN OF PATIENTS COMING TO INDIA FOR OCULAR CARE



GRAPH 3
FLOW OF PATIENTS AT OPHTHALMOLOGY HOSPITAL IN THE LAST 3 YEARS



patients (52%) who visited The Centre for Sight undergo vision correction procedure (LASIK) followed by glaucoma (20%), vitreo retinal (14%) and cataract cases (14%).

Analysis of Patient Interviews

Opinion of patients, their major sources of information about Indian healthcare facilities, criteria for selecting hospitals, their satisfaction level and suggestions etc. were also analysed.

Major Source of Information

Personal interviews with patients reveals (Graph 4) that the internet is the major source of information about healthcare services in India, with around 40 per cent of the patients using this to find out healthcare facilities in India. Graph 4 also shows that nearly 20 per cent of the patients reported advertisements as their major sources of information. Detailed analysis reveals that a number of patients has seen advertisements given by corporate hospitals in the local media, newspapers and magazines that cater specially to NRI population in

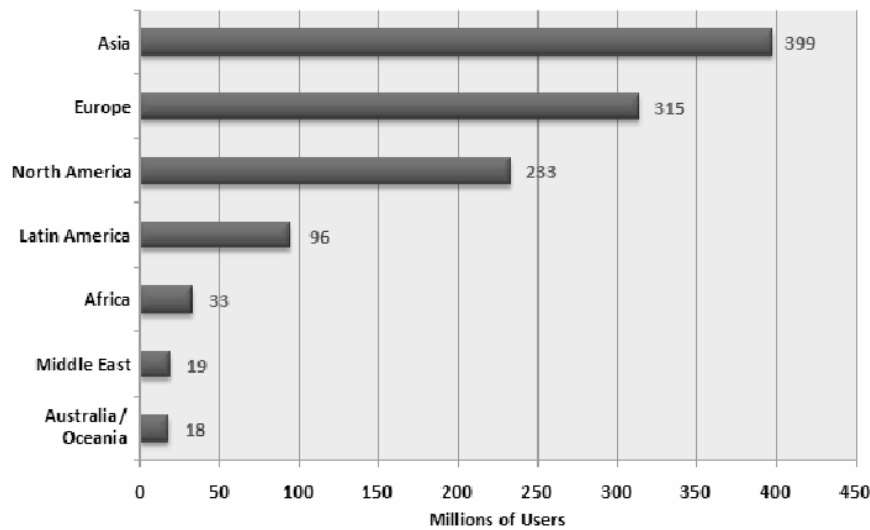
the US, Britain and Canada. The World Health Tourism Congress 2007 report (Graph 4) says that a large number of patients worldwide use the internet to find out the information about healthcare providers.

The prominent newspapers published by NRIs are *Desi Talk*, *Des Pardes* and *The Voice*. These newspapers carry information about current events in India along with information about local events and relevant advertisements that are of interest to NRIs. Therefore, these newspapers could be an important media for promoting hospital services among the NRIs in countries such as the US, the UK and Canada.

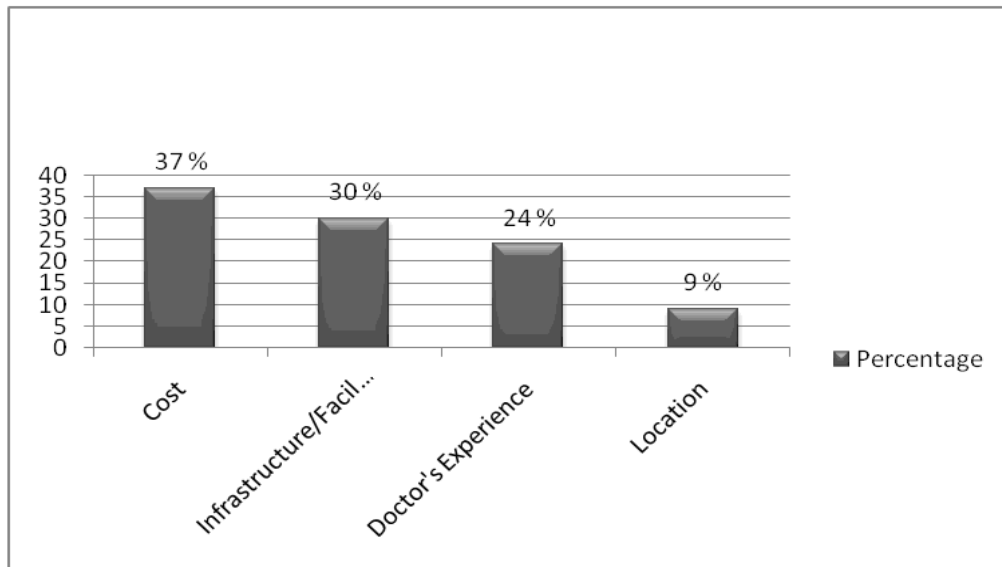
Criteria for Selecting The Centre for Sight for Study

For more than one-third of the patients, low cost of procedures is the major reason for choosing India as a medical tourism destination. In fact, four-fifths of the patients said that they carried out a detailed cost analysis of treatment before coming to the centre.

GRAPH 4
INTERNET USERS WORLDWIDE



GRAPH 5
SELECTION CRITERIA ADOPTED BY THE FOREIGN PATIENTS VISITING THE CENTRE FOR SIGHT



Client Satisfaction Level

Among the patients interviewed, a whopping 99.9 per cent stated that they were satisfied with the overall care given at The Centre for Sight and they expressed their desire to refer the

hospital to their friends and relatives. The high patient satisfaction can mainly be attributed to short stay at the hospital for cosmetic surgeries which do not have any complication.

Suggestions by Patients

Most of the patients suggested that the hospital provided sufficient parking space and cafeteria for relatives visiting the hospital. A few patients suggested that a collaborating body, such as a Medical Tourism Facilitator, which is quite a common concept in other established destinations such as Thailand, Malaysia and Singapore, could prove to be a good support system to foreign patients travelling to the The Centre for Sight.

Consultants' Opinion

Interaction with the consultants has revealed that there is a need to promote Medical Tourism Facilitators, who could help patients in identifying hospitals, estimate cost of treatment, make travel/visa arrangements, local stay and travel and care in the hospitals.

Key Findings

- The analysis of various literature and interaction with the patients has revealed that clinical outcomes in India are at par with the world's best centres as hospitals here have internationally qualified and experienced doctors.
- Costs of the medical procedures in India are approximately one-fifth to one-tenth of the cost in the West. This cost differential enables patients the opportunity to have a vacation in an exotic country, recover in a 4 or 5 star resort in complete anonymity, and then return home having spent even less than the procedure alone in their home country.
- The most prominent markets for Indian medical tourism are the US, Britain, the UAE, Bangladesh, Nepal, Pakistan and Mongolia.
- A large number of NRIs come back to seek healthcare.

- Medical tourism focuses on treatment of acute illness, elective surgeries such as cardiology and Lasik, among others.
- A large number of foreign nationals (40%) use the internet as a tool to seek information about the services at hospitals. Therefore, investing in creating an informative and well-descriptive website is a productive investment.
- Since nearly 20 per cent of the NRIs use the local newspapers and magazines for healthcare information, the hospitals should provide their success stories in their local communication.
- Agencies specialising in international medical travel, known as Medical Tourism Facilitators are a growing part of the medical travel industry and work with hospitals, clinics, physicians, surgeons, airlines, hotels and recovery retreats abroad to offer patients the best quality at the most affordable rates.

RECOMMENDATIONS

To fulfil the objective of increasing the footfalls of international patients at The Centre for Sight, the researcher suggests to take the following steps:

- Since majority of the consultants and patients have reported medical tourism facilitators as an important enabler, there is a need to tie up with medical tourism facilitators in India and abroad.
- Since majority of NRI patients (20%) use local magazines and newspapers to seek information about healthcare facilities here, the hospital should promote its services through international magazines and newspapers catering to the NRI population.
- Since a large number of foreign patients visiting the hospital use the

internet to search for information related to healthcare services in the country, hospitals should promote their websites by putting it on popular search engines.

- Since a large number of international patients cite low-cost as a major reason for choosing India, hospitals should make sure that they keep costs at reasonable levels so that it remains economical for foreign patients.
- The hospital should maintain the leadership in terms of infrastructure and facilities to attract the overseas patients.

CONCLUSION

The Indian medical tourism industry is booming and is supposed to be the next revolution after the IT industry. Major medical procedures for which India is a key destination are cardiology, orthopaedics, IVF and surrogacy, and cosmetic and plastic surgeries. Majority of overseas patients coming to India are NRIs who wish to combine their medical services with a trip back home. Factors that encourage foreign nationals to seek healthcare here are low-cost, quality of services, availability of latest technology and well qualified and skilled healthcare professionals. Eye care is also becoming one of the sought after procedures by foreigners. The technology available here for ophthalmic care is at par that in the developed countries. Most of the overseas patients with eye problems come to Indian hospital for vision correction procedures. An effective way of promoting the services of The Centre for Sight to foreign nationals is through collaborating with medical tourism facilitators, advertising in NRI publications and investing on its website to make it an effective marketing tool.

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EVALUATION OF ADOLESCENT-FRIENDLY HEALTH SERVICES IN INDIA

R.J. Yadav*, Rajesh Mehta**, Arvind Pandey* and Tulsi Adhikari*

ABSTRACT

The study was undertaken on the request of World Health Organisation through the Ministry of Health and Family Welfare to evaluate the role of the adolescent-friendly clinics (AFCs) being operationalized in three medical college hospitals in Delhi, Kolkata and Chandigarh. The evaluation covers the role of the adolescent-friendly health services clinics (AFHC) and their feasibility, sustainability. The researchers interviewed the key stakeholders on issues related to AFHC. Out of the 14 sites, three sites which are functional for more than three years in tertiary care hospitals located in medical colleges were selected.

The impact of AFHS clinics was visible in all the three sites. The clients in the AFHS clinics seem to be more satisfied as far as accessibility and timing at the clinics are concerned. Percentage of clients who say that the clinics are accessible easily is higher in AFHS clinics vis-à-vis other OPDs. The waiting time to see the health worker at the AFHS clinics is lesser as compared to other OPDs. 20 per cent of the adolescents visiting AFHC in Delhi were living alone and the figures of adolescents living alone were quite low in Kolkata. Similarly, satisfaction level of the clients in the AFHS clinics is also much better than in other OPDs. They liked the environment and the friendliness of the staff. The differences between AFHC and other clinics were more evident in Chandigarh and Delhi than in Kolkata. To improve the utilization of these services, the service users suggested to get the activities of AFHS clinics advertised through media, motivate the peers and friends and publicize these clinics through various programmes targeting school children.

Key Words: Adolescent-Friendly Health Services (AFHS), Behaviour, OPDs, Medical Staff.

It has increasingly been recognized that adolescents form a specific group in society and have their own specific needs. Adolescence has become a more clearly defined developmental stage in human life; and there is currently a greater recognition of this group's biological, psychosocial and health needs than before. Exploration and experimentation, the hallmark of adolescent behaviour, often propel adolescents towards risk-taking and exposure to unwanted pregnancy,

HIV/AIDS and other sexually transmitted infections, substance abuse and unintended injuries. At the same time, adolescents often face constraints in seeking services including misperceptions about their own needs, fear of disclosure and service provider's negative attitudes. To overcome these constraints, it is imperative to develop specifically designated services for adolescents. Adolescent-friendly services should be able to attract young people, meet

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their needs comfortably and with sensitivity, and retain young clients for continuing (follow-up) care. The most important attributes of adolescent-friendly services are specially trained staff with attitudes to respect privacy and confidentiality, and a comfortable clinic environment. Ideally, the holistic package of services should include reproductive health services, nutrition counseling, counseling to promote responsible sexual behaviour and prevent substance abuse, and services such as immunizations and life skills education. Although outreach services such as school-linked clinics, workplace clinics, satellite clinics and mobile clinics have proven to be more successful and cost-effective, services for adolescents can be provided from fixed sites such as hospitals and clinics. AFHCs are government health care facilities that provide services free of cost to the public. Children up to 12 years of age are seen in the paediatrics out-patient department (OPD), and those above 12 years of age are seen in the medical out-patient department or other specialty clinics. However, with the increased recognition of adolescents' needs, the AFHCs implement a specially designed set of services for adolescents.

OBJECTIVE

The paper examines whether the adolescent friendly health centres have increased the quality and access to health services as per the client's perceptions.

METHODOLOGY

Out of a total of 14 sites, three sites run in tertiary care hospitals located in medical colleges and have been functional without interruption for more than 3 years were included in the study. These three sites were Safdarjung Hospital, Delhi; Government Medical College and Hospital, Chandigarh

and Government Medical College and Hospital, Kolkata. Each site has established a centre and trained health providers in other departments of the hospital as well as personnel out of the hospital. All three sites have run an outreach programme for schools. A qualitative assessment was carried out to evaluate the role of the adolescent-friendly health services clinics (AFHCs) and their feasibility, sustainability. The assessment included interviews with the key stakeholders such as facility coordinators, hospital/institution chiefs, and review of relevant documents.

Since there were no baseline data on the quality of services for adolescents, the evaluation assessed levels of quality using Standards Framework in these dedicated adolescent centres. Out-patient departments like Obstetrics, Skin Care, etc. where health workers have not been oriented in adolescent-friendly approaches ('Control Group') were also assessed with regard to their roles in this programme. Students were also interviewed to assess the outreach of intervention on schools and the level of access to information and health services by them.

In each AFHC intervention site and other OPD sites, 4 staff members, 25 adolescents and 25 parents were interviewed.

FINDINGS AND DISCUSSION

Background Characteristics

Sex of the adolescents visiting the hospital, his/her religion, caste as well as their mother tongues and their marital status were studied. It was observed that proportion of adolescent girls visiting the AFHCs in Delhi and Kolkata was higher whereas the situation was reverse in Chandigarh (Table 1). As

expected, the proportion of Hindu adolescents was more in Delhi and Chandigarh but Muslim adolescents were more in Kolkata. The adolescents belonging to other castes were more than two-thirds in Chandigarh and Kolkata. About three-fourths of the adolescents in Delhi and Chandigarh had Hindi as their mother tongue. With regard to their marital status, all the

adolescents were unmarried in Delhi and Chandigarh while a few (6.5%) were married in Kolkata. Data given in Table 1 show that a majority of the clients coming to the AFHS clinics belonged to literate families than the other OPD clinics in all the three sites. This difference was statistically significant.

Family Profile

TABLE 1
SOCIO-DEMOGRAPHIC PROFILE OF ADOLESCENTS (%)

		Chandigarh		Delhi		Kolkata	
		AFHC	Other OPDs	AFHC	Other OPDs	AFHC	Other OPDs
Age (Years)		13	15	13	14	16	18
Gender	Male	60.0	57.1	44.4	27.8	41.7	24.0
	Female	40.0	42.9	55.6	72.2	58.3	76.0
Marital Status	Never Married	100	94.1	100	94.4	93.5	69.6
	Others		5.9		5.6	6.5	30.4
Education of Mother	Illiterate	21.1	48.6	11.1	44.4	22.4	28
	Up to High School	68.4	48.5	77.8	55.5	77.6	72
	Graduate & Above	10.5	2.9	11.1			
p-value		(.000)		(.06)		(.488)	
Education of Father	Illiterate	11.1	24.2		17.1	14.8	20
	Up to High School	66.7	60.6	88.9	77.2	78.8	76
	Graduate & Above	22.2	15.2	11.1	5.7	6.4	4
Number of Adolescents		64	34	45	36	46	36

TABLE 2
FAMILY PROFILE OF THE ADOLESCENTS (%)

Living Details		Chandigarh		Delhi		Kolkata	
		AFHC	Others	AFHC	Others	AFHC	Others
Place of Living	Parent House	95.0	88.6	100.0	94.4	93.9	76.0
	Spouses House		2.9		5.6	4.1	16.0
	Guardian House	5.0	5.7			2.0	4.0
	Others		2.9				4.0
Living With	Alone	12.5	12.9	20.0	3.2	6.3	8.0
	Mother/Mother-in-Law	81.3	74.2	80.0	93.5	83.3	84.0
	Father/Father-in-Law	6.3	6.5			8.3	4.0
	Married Brothers/Sisters		3.2				
	Others		3.2		3.2	2.1	4.0

Almost all the adolescents were residing in their respective parental homes. Only a few (5) were residing either in their guardian houses or house of the spouse. More than three-fourths of the adolescents were living in their mother's house (Table 2). Interestingly,

20 per cent of the adolescents visiting AFHC in Delhi were living alone and the figures of adolescents living alone were quite low in Kolkata.

TABLE 3
LOCATION OF HOUSE (%)

Residence Details		Chandigarh		Delhi		Kolkata	
		AFHC	Others	AFHC	Others	AFHC	Others
Place	City	66.7	61.8	66.7	94.4	60.4	32.0
	Village	33.3	38.2	33.3	5.6	39.6	68.0
Locality	Slum	16.7	23.1	11.1	22.9	43.6	28.6
	Colony	83.3	76.9	88.9	77.1	56.4	71.4
Number of rooms excluding kitchen	1	16.7	15.2	25.0	22.9	46.8	30.4
	2	16.7	27.3	50.0	45.7	23.4	43.5
	3	44.4	39.4		14.3	14.9	4.3
	> 4	22.2	18.2	25.0	17.1	14.8	21.6
Residing in Own House		72.2	75.0	55.6	82.4	62.2	80.0

TABLE 4
ACCESSIBILITY/APPROPRIATENESS OF SERVICES IN TERMS OF TIME AND PLACE (%)

Accessibility and Acceptability			Chandigarh		Delhi		Kolkata	
			AFHC	Others	AFHC	Others	AFHC	Others
Time required reaching health facility	<30 min		45	34.3	55.6	44.4	40	67.3
	30-60 min		35	37.1	22.2	2.8	16	26.5
	>60 min		20	28.6	22.2	47.2	40	6.1
Easy accessibility			70	54.3	88.9	88.9	72	67.3
Having an appointment			50	57.1	22.2	8.3	36	16.3
Suitable hours for the clinic	2 – 4 p.m.		65	20	100	5.6	8	20.4
	8 – 12 a.m.		25	80		94.7	82	79.5
Waiting time to see health worker	<30 min		60	34.3	66.7	61.1	44	42.9
	30-60 min		15	34.3	22.2	16.7	16	34.7
	>60 min		25	28.6	11.1	11.1	36	20.4
	p-value		(.34)		(.05)		(.04)	
Long waiting for services			50	77.1	44.4	69.4	51	48
All services provided free of charge			40	34.3	100	69.4	34.7	44

Location of House

It was noted that about two-thirds of the adolescents belonged to cities and most of them were residing in a government colony or government approved housing colony. More than 60 per cent of the adolescents were residing in their own houses with two or more rooms (Table 3).

Accessibility and Timing

The clients in the AFHS clinics seem to be more satisfied as far as accessibility and the timing of the clinics are concerned. Number of clients who stated that clinics were easily accessible was higher for AFHS vis-a-vis other OPDs. 45 per cent and 55.6 per cent of the service seekers in Chandigarh and Delhi respectively told that it took less than 30 minutes for them to reach the respective AFHCs which were higher than service seekers to other OPDs. In contrast, more number of service seekers in other OPDs in Kolkata (67.3%) took less than 30 minutes than people visiting AFHC. Also the waiting time to see the health workers was lesser in AFHS clinics as compared to the other OPDs (Table 4).

Clinic Environment

The service seekers visiting AFHS clinics were more satisfied with the clinic environment than those visiting other OPDs. It was observed that the waiting area was more clean, better furnished and had better lighting in AFHCs than other OPDs. The toilet facility at the AFHS clinics was better than the other OPDs. The AFHS clinics had more educational material displayed and those were also of interest to the clients (Table 5). Responding to the quality of the waiting areas, not a single service seeker in Delhi viewed it as very good although 66.7 per cent and 33.3 per

cent of the seekers in AFHC and other OPDs stated it as good. Nobody in Delhi or Kolkata termed the quality of toilets in service centres was very good but 35 per cent of the seekers of AFHC clinic and 11.4 per cent of the seekers of other OPDs in Chandigarh termed the toilet quality very good.

AFHS Care Providers

Data findings given in Table 6 reveal that the care provided at the AFHS clinics was better than other OPDs. The care included friendliness of the health care workers, their readiness to listen to the patients, quality of the counseling, readiness to provide the clients with the required information regarding the clinic hours, test to be carried out, follow-up arrangement, etc. More than 95 per cent of the service seekers both in AFHCs and other OPDs in all the cities told that doctors were quite friendly with them with the only exception for service seekers availing of service from other OPDs in Chandigarh. Cent per cent of the seekers in Delhi AFHC told that they got every information on clinic timings, types of medical services provided, tests and treatments carried out and follow-up arrangements whereas the figures were lower in other AFHC clinics and OPDs.

Confidentiality at the Clinics

The confidentiality in the AFHS clinics was found to be more than the other OPDs. Though the consent of the parents was required before accessing the services, the proper confidentiality is maintained at the clinics. About 95 per cent of the service seekers in Chandigarh clinics stated that parental consent was required before accessing services but it was as low as 2.8 per cent for the seekers in other OPDs of Delhi (Table 7). There are separate private waiting areas for the clients

TABLE 5
ENVIRONMENT OF CLINICS (%)

Environment of Clinics		Chandigarh		Delhi		Kolkata	
		AFHC	Others	AFHC	Others	AFHC	Others
Waiting area is comfortable	Very good	50	34.3			32	10.2
	Good			66.7	33.3		
	p-value	(.04)		(.12)		(.003)	
Rating of basic quality of toilet facilities	Very good	35	11.4				
	Good			55.6	19.4	16	8.2
	p-value	(.10)		(.25)		(.000)	
Availability of reading health materials in waiting		55	31.4	55.6	41.7	55.1	12
p-value		(.025)		(.32)		(.000)	
These materials of interest		35	25.7	33.3	13.9	44.9	8

in the AFHS clinics and also they can talk to the health workers privately so that other people could not overhear what was discussed between the client and the doctor ($p < .05$). Confidentiality and privacy levels were much lesser in Delhi's clinics than Chandigarh and Kolkata.

Overall Impression and Suggestions about the Services

The satisfaction level of the clients in the AFHS clinics was found to be much better than the other OPDs in all the three cities. The service seekers liked the environment and the friendliness of the staff. The clients of the AFHS clinics were more satisfied as compared to their counterparts availing of services from other OPDs. Clients of AFHS told that the doctors talked to them in isolation. The clients of the AFHS clinics wanted to come back to the clinics and also thought that they would encourage their friends also to avail of the facilities ($p < .05$). They suggested that the services available in AFHCs should be advertised through media,

peers and friends and publicity should also be done through various school-targeted programmes (Table 8). The differences between AFHC and other clinics were more evident in Chandigarh and Delhi than in Kolkata.

CONCLUSION

The impact of AFHS clinics was visible in all the three sites. The clients in the AFHS clinics seem to be more satisfied as far as accessibility, timing and time given to listen to their problems at the clinics were concerned. Percentage of clients who said that the clinics were accessible easily was higher in AFHS clinics vis-a-vis other OPDs. The waiting time to see the health worker at the clinics was lesser in AFHS clinics as compared to the other OPDs. The satisfaction level of the clients in the AFHS clinics was also much better than the other OPDs. The confidentiality in the AFHS clinics was better maintained than in other OPDs. The clients liked the environment and the friendliness of the staff. To improve and expand the services available in AFHCs, the clients

TABLE 6
ADOLESCENT FRIENDLY HEALTH CARE PROVIDERS (%)

Details of Health Care Providers		Chandigarh		Delhi		Kolkata	
		AFHC	Others	AFHC	Others	AFHC	Others
Reception/Registration Counter		70	60	88.9	80.6	95.9	92
Doctor		95	85.7	100	97.2	100	96
Nurse		95	62.9	88.9	58.3	2	36
Felt comfortable in presence of HW		90	88.6	88.9	75	85.7	96
HW listen carefully to you		90	82.9	100	88.9	91.8	96
HW explain things in a way client understand		95	74.3	100	94.4	91.8	92
HW give time to ask about your health problem		80	65.7	88.9	80.6	83.7	96
Time given for examination/ counseling		100	100	100	100	100	100
Able to ask all questions you wanted to		85	85.7	100	75	79.6	84
Received information on the following							
Clinic hours		75	68.6	100	91.7	95.9	92
Types of medical services provided		75	62.9	100	86.1	53.1	84
Tests carried out		70	82.9	100	80.6	38.8	84
Treatment		80	82.9	100	86.1	85.7	92
Follow-up arrangements		85	80	100	88.9	51	92
Reasons of not getting information	Lack of time	5	31.4	11.1	13.9	8	20.4
	Inadequate staff attitude			11.1	2.8		6.1
You were treated in a manner you wanted		90	85.7	100	88.9	98	88
Staff respected your opinions and decisions		55	45.7	88.9	69.4	46.9	76

TABLE 7
CONFIDENTIALITY AND PRIVACY (%)

Confidentiality and Privacy	Chandigarh		Delhi		Kolkata	
	AFHC	Others	AFHC	Others	AFHC	Others
Parental consent required before accessing services	95	94.3	22.2	2.8	63.3	56
p-value	(.106)		(.112)		(.105)	
Private/separate waiting area for adolescents	35	2.9	22.2		46.9	44
p-value	(.000)		(.036)		(.206)	
Client talked with HWs privately so other people could not overhear	65	28.6	22.2	2.8	61.2	20
p-value	(.000)		(.211)		(.002)	

TABLE 8
OVERALL IMPRESSION/SUGGESTIONS (%)

		Chandigarh		Delhi		Kolkata	
		AFHC	Others	AFHC	Others	AFHC	Others
Very much satisfied with service received		90	65.7	88.9	77.8	80	81.6
p-value		(.004)		(.716)		(>66)	
Client liked the best about service	Environment	65	88.6	88.9	44.4	40	16.3
	Staff friendliness	45	22.9			40	46.9
Doctor talked to client separately		90	80	100	27.8	40	42.9
Would come back in future for health problem		100	77.1	100	80.6	91.8	96
p-value		(.007)		(.276)		(.111)	
Adolescent would be happy to come here		20	8.6	44.4	36.1	89.8	92
Client encourage friends to use these services		100	82.9	100	83.3	63.3	56
Suggestions for creating awareness among adolescents about health facility and services	Advertise through media	25	25.7	33.3	36.1	93.9	96
	Advertise through peers and friends	50	54.3	44.4	30.6	32	30.6
	Publicize services to school	25		33.3	30.6	44	32.7

wanted these services to be advertised through media, peers and friends and school-targeted programmes.

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CHANGES IN IMR IN RAJASTHAN OVER 25 YEARS

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ABSTRACT

A consistently high level of Infant Mortality Rate (IMR) in India, particularly in the northern states, is a serious concern for the health policy-makers, programme managers and academia in India. The authors had published a paper on Infant Mortality Rates and Causes of Deaths among Infants in the journal Indian Paediatrics in 1981. This paper is a follow-up study after 25 years that was conducted in 2005 to find the changes and the causes of IMR in the same group of villages. This is a cross-sectional study conducted in villages of Jaipur in Rajasthan, India. Data on infant deaths have been analysed at two different points in the same population with an interval of 25 years. Same methods were adopted for both the studies. Significant decline in IMR has been observed over a period of two-and-half decades. While IMR was 124 in 1980, the figure was 55.4 in 2005. The study findings show an increase in the proportion of neo-natal mortality (within 7 days) which was 87.5 per cent in 2005 in comparison to 51.6 per cent in 1981. While proportional mortality due to diarrhoea, severe malnutrition, fever and rashes has decreased; proportional mortality due to pre-maturity, low-birth weight, asphyxia, birth-injuries and congenital injuries has increased over the years. The current interventions for reducing IMR mainly focused on post-neo-natal period of infancy such as immunization, promoting ORS use for diarrhoeal cases and management of ARIs are not enough for reducing the IMR. Strategies should also focus on redesigning interventions for safe-delivery and child-birth, improved coverage and quality ante-natal care, and nutrition supplementation among pregnant women.

Key Words: Infant Mortality Rate (IMR), Neo-natal, Child Survival, Diarrhoea, Delivery.

In spite of technical advances that have increased the rate of survival of children in developing countries, infant mortality rates (IMRs) are still at least 10 times higher in developing countries than in developed countries. Reduction in infant and child mortality is a major concern for achieving health for all. One of the objectives of the Millennium Development Goals is monitoring of Infant Mortality Rate (IMR) and the Under-Five Mortality Rate (U5MR), the reduction of child mortality by two-thirds in the period between 1990 and

2015. Mortality rates among children aged less than five years in developing countries have declined over the past years consequent to improvements in the socio-economic conditions and child-survival programmes¹. Infant mortality has also declined in most settings. A consistently high level of Infant Mortality Rate in India, particularly in the northern states is a serious concern for the health policy-makers, programme managers and academic research community India. Infant deaths account for about one-

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fourth of the total deaths, while the population of infants is only about two to three per cent of total population.

Trends in IMR in India have shown a gradual decline from an average 110/1000 live births in the year 1981 to 55/1000 live births. There are wide variations in infant mortality in India. The states of Rajasthan, Uttar Pradesh, Bihar, Madhya Pradesh, and Orissa, experience a high Infant Mortality Rate compared to the national average of 55 per 1000 live births. Moreover, IMR is alarming in many of these states, particularly in Rajasthan. The proportion of neo-natal deaths to total infant mortality has been rising for the last one decade. The slow decline of IMR and increasing proportion of neo-natal deaths possibly imply that the current strategies and interventions are not effective in further reduction of infant deaths.

The present study is a follow-up study in the same group of villages in Rajasthan to examine the infant mortality rates and analyze the causes of deaths. The purpose of the study was to analyze the changes in the infant mortality rate and causes of deaths.

METHODOLOGY

The first study was conducted in 1980 in a group of villages of Jamwa Ramgarh panchayat samiti in the Jaipur district of Rajasthan. The study measured infant mortality and assessed the causes of deaths. It also included information on parity, birth-order, spacing, maternal care, delivery characteristics of women. The study was published in *Indian Pediatrics*². A follow-up study based on cross-sectional survey was conducted covering the same villages after a gap of almost 25 years in 2005. Additional neighbouring villages were also included to make up the desired

sample size. The design of the follow-up study, in terms of study area and methodology was similar to that of the earlier study. In addition to the cross-sectional survey, analysis of published reports and records was also undertaken.

The villages covered under the original as well as follow-up study were Naunpura, Papad, Khatepura, Booz, Naniyabaas, Sarjauli, Chavandiya and Nayla of Jamwa Ramgarh panchayat samiti in the Jaipur district of Rajasthan. It first study covered a total of 2268 households and found 499 births and 62 infant deaths. The follow-up survey covered 2753 households. However, it considered a reference period of two years preceding the survey for enumeration of births and deaths. Hence, with a reference period of two years, it found a total of 1496 births and 72 infant deaths. The data of infant deaths have been analyzed at two different points of time in the same population with an interval of 25 years.

It allowed the researchers to investigate some of the challenges associated with improving infant health in a developing country like India which is facing epidemiological and demographic transitions. The investigators tried to describe trends in infant mortality; particularly it's neo-natal and post-neo-natal components, ante-natal care, delivery conditions and causes of infant mortality and other associated factors. They have also analyzed how these outcomes might have been affected by changes in health-care practices, with emphasis on the role of the changing health system in India.

FINDINGS

IMR in India and Rajasthan has been declining over the past decade (Figure 1). However, the decline has

been slow but steady in the country as well as in Rajasthan, although the state maintained higher levels than

the national average through out the corresponding period. IMR in Rajasthan almost remained 85 in the decade 1991-

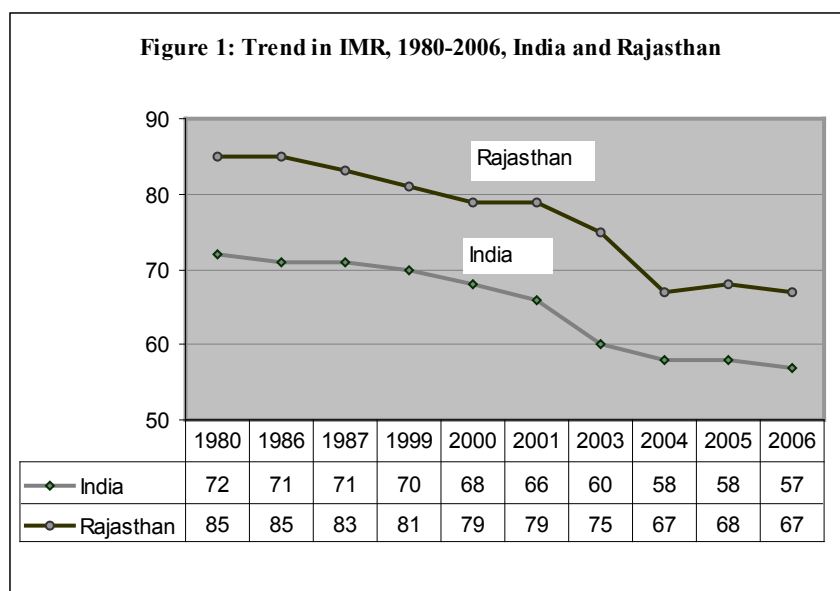


TABLE 1
INFANT AND NEO-NATAL MORTALITY IN 1980 AND 2005

Items	1980	2005
	n=62	n=72
Infant Mortality Rate	124.0	55.4
Per cent distribution of infant deaths by period		
Neo-natal deaths	50.3	66.7
Post-neo-natal deaths	49.7	33.3
Per cent distribution of neo-natal deaths by period		
Within 7 days	51.6	87.5
After 7 days	48.4	12.5
Place of Delivery		
Institution	4.0	62.5
Home	96.0	37.5
Assistance during Delivery		
Doctor/Health worker	14.2	66.7
Dai/Traditional birth attendant	80.0	29.2
Family Members	5.8	4.2

2000. The decline in IMR was gradual till 2003, and thereafter, it showed a sharp reduction of 8 points, from 75 in 2003 to 67 in 2004. Thereafter, it again became stagnant after 2004. The IMR of India as a whole remained at a lower level as compared to Rajasthan, but the trend in the change in IMR over the years remained almost similar to the trend observed in case of Rajasthan.

The study findings show three important changes over the years: significant reduction in IMR to less than half; increase in the proportion of neo-natal deaths to total infant deaths; and change in the pattern of causes of infant deaths. There has been a substantial and significant decline in the IMR over a period of two-and-half decades. The 1980 study showed IMR as 124² while the 2005 research showed IMR of 55.4, a reduction by less than a half, which is statistically significant.

Another change in pattern of infant deaths was the increasing proportion of neo-natal deaths. The distribution of infant deaths by age showed an increase in the proportion of neo-natal deaths as compared to those occurring in the post-natal period. Neo-natal

deaths which accounted for almost 50 per cent of the total infant deaths in 1980 study, increased to two-thirds of infant deaths in 2005. Most marked changes were seen in early neo-natal mortality (within 7 days), that accounted for 87.5 per cent of neo-natal deaths in 2005, compared to 51.6 per cent in 1980.

Causes of Deaths

Change in patterns of causes of deaths which has direct implications for child survival policies and strategies were also reported. The comparison of causes of infant deaths between the first study and the follow-up study showed a changing pattern of causes over a period of 25 years (Table 2). The proportion mortality due to diarrhoea has declined substantially from 14.5 per cent to 8.3 per cent during the period. Percentage of deaths due to fever and rashes which also included measles, have gone down from 16.1 per cent to 5.6 per cent. Similar was the pattern for deaths associated with severe malnutrition, with a 57.2 per cent decline from 19.4 per cent. However, pneumonia deaths remained unchanged and continued to be a major cause of death. About one-fourth of deaths were due to pneumonia.

TABLE 2
CHANGING PATTERNS OF CAUSES OF DEATHS OVER A PERIOD OF 25 YEARS

Causes of Deaths	1980	2005
Pneumonia	25.8	27.8
Diarrhoea	14.5	8.3
Severe malnutrition	19.4	8.3
Rashes/fever	16.1	5.6
Prematurely/LBW	12.9	19.4
Asphyxia	9.7	19.4
Birth injury	1.6	5.6
Congenital anomalies	0.0	5.6
Total	100.0	100

While there has been a decline in proportional mortality due to diarrhoea, severe malnutrition and fever/rashes, the proportional mortality due to prematurity and low birth weight, asphyxia, birth injuries and congenital anomalies have increased over the period. This was mainly due to increased proportion of neo-natal mortality in infancy.

DISCUSSION

The authors have attempted to present the change in infant mortality rates, neo-natal mortality and causes of deaths over a period of 25 years. The study findings show a reduction of 55.4 per cent in the infant mortality rate in three decades. However, the decline has been slow and at times, stagnant in different phases of time periods. The major question to be answered is that what has contributed to this decline? Whether technology and improved child care, or is it the overall development in terms socio-economic change, access to health care, availability and increased safe drinking water, improved supplementary nutrition and raised levels of education? The slow declining trends suggest that it was not technology alone and exclusively but seems to be the result of a combination of the two. Over the past twenty five years, there has been a phenomenal expansion of health care facilities and services, disease-specific health interventions, and success of developmental programmes such as water and sanitation, education and poverty reduction measures.

Health seeking behaviour of the women especially during pregnancy has an important role to play for the health of the newborn³. An important factor for reduction in infant mortality may be improvement in the coverage with ante-natal care, iron folic supplements and tetanus toxoid vaccine provided under

the RCH programme. At the time of the first study 25 years ago, knowledge and utilization of ANC was quite low. Only 35 per cent of the pregnant women got the required ANC services (3 ANC check-ups with IFA and TT). The utilization is quite high now and more than 80 per cent of the women reported getting ANC services in the follow-up study. The follow-up study indicated that the proportion of institutional deliveries has also increased dramatically, from mere 4 per cent in 1980 to 62 per cent in 2005. Access to skilled birth attendants (doctors/health workers) has also increased from 14.2 per cent to 66.7 per cent during the period. A reduction in the mortality due to diarrhoeal diseases over the years represents a positive result of the efforts made during last two decades for the promotion of ORS. Availability and use of ORS or home available fluids (HAF) for diarrhoea has become near universal in the study area. According to NFHS, nearly three-fourths of the women in Rajasthan were aware of ORS for treatment of diarrhoea⁴. In 1980, there was no such programme. In early 1980s, there was no ICDS in the area which has become universal now. Universal immunization programme followed by child survival and safe motherhood programme during 1985-'96 has made a significant change in child survival strategies.

One would expect that a significant improvement in women's educational attainments played an important role in reducing mortality. Rajasthan's achievement in respect of literacy has been spectacular in the last two decades. It has recorded the highest percentage increase in literacy rate among the Indian States. The proportion of literates among the females aged seven and above has risen from 14 per cent in 1981 to 44 per cent in 2001, more than three-fold increase in just two decades.

Improvements of roads and transportation facilities may have had an effect leading to easy access to health care facilities thereby reducing child mortality. Nayar (1985)⁵ in his study suggested that access to good roads in Kerala contributed to lower mortality as compared to the other states in which accessibility was inadequate. Another study reported that communes (administrative districts) with better access to road had a childhood mortality rate of 18 which was quite lower than that of communes with no access to roads when all other variables were held constant⁶. This could have been a contributing factor in the reduction of infant mortality in the current study area. Until early 1980s, only the main village Naila was connected to national highway through coaltar road but all other villages did not have road connectivity. Public transport was non-existent and the means of transportation was camel carts. Since then, the situation has improved remarkably. All the villages are now connected with coaltar roads, public and private transportation facilities are available in all the villages, all the villages have now electricity and availability of drinking water has improved.

The present study has shown a significant increase in the proportion of neo-natal deaths to total infant deaths. This may be due to the fact that for the last more than two decades, the major emphasis of child survival interventions remained on reducing child mortality, particularly infant mortality, largely through immunization, oral rehydration and control of acute respiratory infections. Consequently, deaths among children over one month of age have declined in the last few decades⁷. These changes, however, did not have a marked impact among neo-nates, leading to the shifting of mortality

in early days of infancy. Most child health interventions mainly effected post-neo-natal mortality. As a result, the contribution of neo-natal mortality to IMR has shown a significant rise. There has been a perceptible change in the distribution of causes of deaths. Predominantly, these were birth asphyxia, birth injuries, low birth weight, prematurity and congenital anomalies. This has been the experience in most countries worldwide⁸. This study corroborates these observations.

IMPLICATIONS

It is a follow-up study of the same population over 25 years and presents evidence on new challenges for policy-makers and child survival strategists to design strategies and programmes that address reduction in neo-natal mortality in order to reach the Millennium Development Goals. The current focus on reducing post-neo-natal mortality alone by increasing coverage with immunization, promoting ORS use in diarrhoeas and management of ARIs would not suffice. Strategies would require redesigning interventions for safe delivery and child birth, improved coverage and quality of ante-natal care, and nutrition supplementation among the pregnant women. This study suggests that an effective reduction in infant mortality would occur with reduction in neo-natal deaths as it constitutes over two-thirds to three-fourths of all infant deaths. Low birth weight is an important determinant of neo-natal mortality; thus, would required special emphasis on strategies to improve birth weight. The on-going National Rural Health Mission with a focus on safe delivery at the institutions, newborn care and improved nutrition has a great promise for future reduction in maternal and child mortality in order to achieve MDGs.

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