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Editorial:
Public Health Issues in Non-communicable Diseases (NCDs)

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Public Health is an evolving discipline with an ever increasing perimeter. One of the major threats for development in the twenty-first century for India is the non communicable disease (NCD) burden. NCDs with its gamut of dietary and physical activity patterns, hereditary factors, smoking and alcohol consumption undermines the social and economic development and threatens the achievement of development goals.

The four main non communicable diseases - cardiovascular disease, cancer, chronic lung diseases and diabetes kill three in five people worldwide, and cause great socioeconomic harm within all countries, particularly developing nations

. A growing chorus of public health experts is calling for a movement to address the non-communicable diseases (NCDs) that are collectively responsible for one-quarter of the deaths and disability among the world's poorest billion people.[1]

In India, the age-standardized death rate per 100 000 for all NCDs is 781.7 males and 571.0 females[2]. The high NCD burden has been documented extensively. Sanjay Kinra et al [3] found that the age standardized prevalence of some risk factors for NCDs were: tobacco use - 40%; low fruit and vegetable intake - 69%; obesity - 19%; dyslipidaemia - 33%; hypertension - 20% ; diabetes - 6% and underweight - 21%. Risk factors were generally more prevalent in south Indians compared with north Indians.

Iyer et al studied employees of a large petrochemical industry in Vadodara and documented that although the medical history revealed the prevalence of hypertension to be 14.2%, when the clinical profiles were looked into, it was seen that 36.7% had hypertension (JNC VII classification) Using the WHO criteria of WHR, it was observed that 68.7% of the employees had central obesity. [5]

In the Mumbai Cohort Study (MCS) conducted in the main city of Mumbai, a total of 148,173 persons aged ≥35 years were recruited during 1991–1997. The study reported that less than 20% men and women had normal BP level. At every time point greater all-causes mortality was observed in subjects with stage-II hypertension as compared with other groups[7].

Case–control studies indicate that tobacco use, obesity with high waist: hip ratio, high blood pressure, high LDL cholesterol, low HDL cholesterol, abnormal apolipoprotein A-1: B ratio, diabetes, low consumption of fruits and vegetables, sedentary lifestyles and psychosocial stress are important determinants of cardiovascular diseases in India [8].

Rajeev Gupta et al concluded that urban middle-socioeconomic status (SES) subjects have high burden of cardiovascular risk factors in low-income countries. They found that adjustment for educational status attenuated linear trends in BMI and total and LDL cholesterol and accentuated trends in systolic BP, glucose, and HDL cholesterol. There was significant association of an increase in education with decline in smoking and an increase in overweight.[9] Type 2 diabetes is an increasing epidemic in Asia, characterized by rapid rates of increase over short periods and onset at a relatively young age and low body mass index. Prevention and control of diabetes should be a top public health priority in Asian populations.[10]

Thus we can conclude that we are approaching a crisis like state in non communicable diseases. The increasing burden poses a barrier to development. For every 10% rise in mortality from NCDs, the yearly economic growth is estimated to be reduced by 0·5%[11]. On the basis of this evidence, the World Economic Forum now ranks NCDs as one of the top global threats to economic development[12].

Mahal et al. (2010)[13] found that the share of NCDs in total out-of-pocket health expenditures in India increased from 31.6% to 47.3%. The financial burden poses an economic threat to India and also the other developing countries and may increase the existing inequalities in relation to health.

This is a challenge of epidemic proportions with long term developmental impacts. The behavioural risk factors, metabolic risk factors and its trends show an increasing trend. International and national mandates are already in place for quite some time. However, the prevalence rates of CVD risk factors have been rapidly rising within India over the past 25 years, particularly within urban communities. The reasons for this high burden of risk factors are speculative and have been poorly investigated. In this regard, cohort studies provide unbiased estimates of the relationship of exposure to outcomes, which would increase understanding of the determinants of CVD. Thus extensive and meticulously planned research has to be promoted, facilitated and implemented in relation to NCDs to fill the gaps in the existing literature. Use of information and communications technology to improve the programme implementation and surveillance systems need to be incorporated. Dissemination is a weak area as on date so sustainable strategies need to be developed. Quality interventions, best practices and lessons learned in the field of non-communicable diseases need to be documented. To ensure all this, operational and managerial skills should be significantly incorporated in graduate studies in general and post graduate studies in particular.

Advocacy for addressing non-communicable diseases has so far focused heavily on the concerns of wealthier countries, in which NCDs are "largely the result of eating too much, exercising too little, and consuming tobacco and alcohol" The needs are different in low-income countries. The first step forward would be to recognize the lead role of governments in combating this challenge and take necessary steps in response. All sectors of the society shall have to play a pivotal role in the prevention and control strategies. This is the crux of the public health challenge to ensure an effective response. So there is an urgent need to move NCDs higher in the development agenda and ensure changes in financial allocation and service delivery.

Evidence based criteria should be used for choosing interventions. The Lancet series[14] referred to the study done by Cecchini M et al[15] where five selected risk factors were studied in terms of interventions and cost per person per year in US dollars.

		Interventions	Cost/person/year US$ China	India	Russia
1	Tobacco use	Accelerated implementation of WHO Frame work convention on contol	14	16	49
2	Dietary salt	Mass media campaign and voluntary action by food industry to reduce consumptio	5	6	16
3	Obesity, unhealthy diet, Physical activity	Mass media campaign, food taxes. Subsidies, labelling, marketing facors	43	35	118
4	Harmful alcohol intake	Tax increase, advertise bans, restricted access	7	5	52
5	Cardiovascular risk reduction	Combination of drugs for individuals at high risk NCDs	102	90	173
	Total cost per person		172	152	408
	(Excludes any cost of synergies or future treatment cost savings)				

Five recommendations for action by countries and international agencies for the UN High-Level Meeting on Non-Communicable Diseases (NCDs) were

1) Leadership and strong high-level political support for a framework of specific commitments to tackle the NCD crisis with the aim of reducing NCD death rates by 2% per year.

2) Prevention through Tobacco Control to achieve a world essentially free from tobacco by 2040, where less than 5% of people use tobacco; Reduce salt intake to less than 5 g (2000 mg sodium) per person per day by 2025; Align national policies on agriculture, trade, industry, and transport to promote improved diets, increase physical activity, and reduce harmful alcohol use

3) Treatment - Deliver cost-effective and affordable essential drugs and technologies for all priority disorders; Strengthen health systems to provide patient-centered care across different levels of the health system, starting with primary care

4) International cooperation by raising the priority of NCDs on global agendas, and increase funding for these diseases; Promote synergies between programmes for NCDs and other global health priorities, including sustainability and mitigation of climate change

5) Monitoring, reporting, and accountability - Identify ambitious targets and a transparent reporting system; Assess progress on the priority actions and interventions; Report regularly to the UN and other forums on progress on these national and international commitments [14].

India is burdened with a multitude of problems in relation to health and its socio-cultural determinants, financial deficits and inequities. Health sector alone cannot manage to address all these issues; hence a multi-sectoral approach targeted at health promotion, individual services, and strengthening of health systems would be necessary. Public Health Experts would be the key stakeholders in NCD prevention and control strategies and would have to be all inclusive in their approach. Relevant international organizations may be approached to provide key technical assistance and capacity-building in developing countries. This multi pronged approach would also lead to additional benefits besides health and contribute to the society in terms of poverty reduction and national progress.

Acknowledgement:

This article has referred extensively from the "Proceedings of the meeting of General Assembly, United Nations, New York, 19 – 20 September 2011" and the Health Policy report of The Lancet NCD Action Group and the NCD Alliance - Priority actions for the non-communicable disease crisis

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CME

An Approach to reading Clinical Research 'The M.A.A.R.I.E Framework'

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Abstract:
The M.A.A.R.I.E. framework is the basis for a step-by-step approach to reading the clinical research literature. The six elements of the M.A.A.R.I.E. framework; Method, Assignment, Assessment, Results, Interpretation, Extrapolation and the three questions associated with each element form the basis for a step-by-step approach to reading the medical evidence. The paper discusses the use of this framework in form of a checklist taking example of a real journal article employing Clinical Experimental design model. Hope this checklist will be useful to young and upcoming researchers to evaluate epidemiologic literature systematically.

Key Words: Approach to read paper**,** Clinical Research, M.A.A.R.I.E framework

Critical appraisal of the reported research is important in today's era of Evidence Based Medicine. The M.A.A.R.I.E. framework outlined below is one of the frameworks which use a step-by-step approach to reading and appraising the clinical research literature. The six elements of the M.A.A.R.I.E. framework; Method, Assignment, Assessment, Results, Interpretation, Extrapolation and the three questions associated with each element form the basis for a step-by-step approach to reading the medical evidence. This checklist can be useful to young and upcoming researchers to evaluate epidemiologic literature systematically. However, it is important to note that M.A.A.R.I.E. is applicable only to the analytical type of epidemiological studies. An example of a generic MAARIE is shown below.

MAARIE Questionnaire:

Method- The purpose and population for the investigation

Study hypothesis: What is the study question being investigated?

Study population: What population is being investigated and what are the inclusion and exclusion criteria for the subjects of the investigation?

Sample size and statistical power: How many individuals are included in the study and in the control groups and what is the statistical power?

Assignment- Selection of participants for the study and control groups

Process: What method is used to identify and assign participants to study and control groups?

Confounding variables: Are there differences between study and control groups, other than the factor being investigated that may affect the outcome of the investigation?

Masking or blinding: Are the participants and/or the investigators aware of the participants' assignment to a particular study or control group?

Assessment- Measurement of outcomes or endpoints in the study and Control groups

Appropriate: Does the measurement of outcomes address the study's question?

Accurate and precise: Is the measurement of outcomes an accurate and precise measure of the phenomenon that the investigators seek to assess?

Complete and unaffected by

observation: Is the follow-up of participants nearly 100% complete and is it affected by the participants' or the investigators knowledge of the study or control group assignment?

Results- Comparison of outcomes in the study and control groups

Estimation: What is the magnitude or strength of the association or relationship?

Inference: What statistical technique(s) are used to perform statistical significance testing?

Adjustment: What statistical techniques(s) are used to take into account or control for potential confounding variables?

Interpretation- Meaning of the results for those included in the Investigation

Contributory cause or efficacy: Does the factor being investigated alter the probability that the disease will occur (contributory cause) or work to reduce the probability of undesirable outcomes (efficacy)?

Harms and interactions: Are adverse effects and/or interactions that affect the meaning of the results identified?

Subgroups: Are the outcomes observed in subgroups within the investigation different from outcomes observed in the overall investigation?

Extrapolation- Meaning for those not included in investigation

To similar individuals, groups or populations: Do the investigators extrapolate or extend the conclusions to individuals, groups, or populations that are similar to those who participated in the investigation?

Beyond the data: Do the investigators extrapolate by extending the conclusions beyond the dose, duration, or other characteristics of the investigation?

To other populations: Do the investigators extrapolate to populations or settings that are quite different from those in the investigation?

A real journal article employing Clinical Experimental design was chosen model and responded to the MAARIE questionnaire.

Please download Article: Corey L, Wald A, Patel R, et al. Once-Daily Valacyclovir to Reduce Risk of Transmission of Genital Herpes. N Engl J Med 2004; 350:11-20.

Now we proceed step by step using MAARIE Questionnaire as follows:

Method- The purpose and population for the investigation

Study hypothesis: Once daily dose of Valacyclovir reduces the risk of transmission of genital herpes in the susceptible partner.

Research Question: Does once daily dose of Valacyclovir reduce the risk of transmission of genital herpes in susceptible partner?

The study population being investigated: Was heterosexual couples who were serologically discordant for HSV-2 infection from 96 study sites.

The inclusion criteria: For the HSV-2–seropositive source partner were; an age of 18 years or older, presence of recurrent genital herpes with fewer than 10 episodes per year, and nonuse of any daily antiviral therapy. The inclusion criteria for the susceptible partner were; an age of 18 years or older and HSV-2 seronegativity on Western blots analysis. The relationship between the source partner and the susceptible partner was required to be monogamous. Both partners were required to be immunocompetent and in good health and the couple to be using effective contraception.

The exclusion criteria: Of the 4034 screened couples, 1385 of the susceptible partners (34.3 percent) were HSV-2–positive at the time of screening and hence were ineligible, 799 of the source partners (19.8 percent) were not HSV-2–positive and hence were ineligible, and 352 couples (8.7 percent) declined to take part.

Sample size: 1484 immuno-competent, heterosexual, monogamous couples: one with clinically symptomatic genital HSV-2 and one susceptible to HSV-2 was the population investigated. Of the 1484 source partners, 743 were in the Valacyclovir group and 741 in the placebo group, and they took their assigned study medication.

Statistical power: Because this study was designed to detect a 75 percent difference between valacyclovir and placebo in the rates of clinically symptomatic disease, it was estimated that 28 confirmed cases of genital HSV-2 infection were required for 90 percent power with a two-tailed test of proportions at the 5 percent significance level. It was estimated that random assignment of 750 couples to each treatment group would achieve these assumptions.

Assignment- Selection of participants for the study and control groups

The HSV-2–seropositive partners were randomly assigned, in a 1:1 ratio, to 500 mg of valacyclovir once daily or to matching placebo. At each visit, safer sex practices, including the use of condoms during sexual intercourse, were discussed with each partner, and standardized counseling was provided when signs and symptoms of genital herpes were recognized. Randomization was performed at a central site in blocks of 10 to ensure balance between the groups. Randomization was stratified according to the sex and HSV-1 status of the susceptible partners.

Confounding variables: The differences between study and control groups, other than the factors being investigated that might affect the outcome of the investigation/ can influence the likelihood of transmission are: 1.frequency of sexual contact; 2. frequency of (Level of) condom usage; 3.sex of susceptible partner, 4.duration of relationship and 5.duration of infection in source partner.

Masking or blinding: There is no mention whether the participants and/or the investigators were aware of the participants' assignment to a particular study or control group. But an end-points committee, whose members were blinded to the treatment assignment, reviewed all cases of genital herpes clinically diagnosed during the study. This committee also reviewed all cases in which the susceptible partner had an abnormal genital symptom or sign during the study, as well as all cases of genital herpes confirmed by laboratory analysis.

Assessment- Measurement of outcomes or endpoints in the study and control groups

Appropriateness: The predefined primary end point of the study was the reduction in transmission of symptomatic genital herpes in the susceptible partner. And the study question is, "does once daily dose of Valacyclovir reduce the risk of transmission of genital herpes in susceptible partner"? The study concludes that once-daily suppressive therapy with valacyclovir significantly reduces the risk of transmission of genital herpes among heterosexual, HSV-2–discordant couples.

Accuracy and Precision: Clinically symptomatic genital herpes was defined according to the presence of clinical signs and symptoms and was confirmed by isolation of HSV-2 in culture, detection of HSV-2 DNA by PCR, or HSV-2 seroconversion in the susceptible partner during the course of the trial. Thus the measurement of outcomes is an accurate and precise measure of the phenomenon that the investigators sought to assess.

Complete and unaffected by observation: The follow-up of participants is not affected by the participants' or the investigators' knowledge of the study or control group assignment. An end-points committee, whose members were blinded to the treatment assignment, reviewed all cases of genital herpes clinically diagnosed during the study. This committee also reviewed all cases in which the

susceptible partner had an abnormal genital symptom or sign during the study, as well as all cases of genital herpes confirmed by laboratory analysis. It is mentioned that, of the 1484 participating couples, 1159 (78.1 percent) completed the study. Reasons for withdrawal among the remaining 325 couples were based on the source partner's reason and included 82 who withdrew voluntarily (28 assigned to valacyclovir and 54 to placebo), 99 who were lost to follow-up (53 and 46, respectively), 66 whose relationship was dissolved (33 and 33, respectively), 16 who had an adverse event (11 and 5, respectively), 16 for whom there were protocol violations (8 and 8, respectively), 13 who decided to attempt pregnancy (6 and 7, respectively), 9 who reported frequent recurrences while taking the study medication (1 and 8, respectively), and 24 who withdrew for other reasons (18 and 6, respectively). The total number of withdrawals and the reasons for withdrawal were similar for the couples whose source partner was assigned to take valacyclovir (21 percent) and those whose source partner was assigned to take placebo (23 percent). However, voluntary withdrawal was more frequent among source partners who were randomly assigned to placebo than among those who were randomly assigned to valacyclovir (54 v/s 28, P=0.003), probably because of the frequent recurrences among the placebo-treated source partners.

Results- Comparison of outcomes in the study and control groups

Estimation: Clinically symptomatic HSV-2 infection developed in 4 of 743 susceptible partners who were given valacyclovir, as compared with 16 of 741 who were given placebo (hazard ratio, 0.25; 95 percent confidence interval, 0.08 to 0.75; P=0.008).

Susceptible partners who were given placebo are at 4 times more risk of acquiring clinically symptomatic HSV-2 infection as compared to susceptible partners who were given valacyclovir. Overall, acquisition of HSV-2 was observed in 14 of the susceptible partners who received valacyclovir (1.9 percent), as compared with 27 (3.6 percent) who received placebo (hazard ratio, 0.52; 95 percent confidence interval, 0.27 to 0.99; P=0.04). Susceptible partners who were given placebo are 2 times more at risk of overall, acquisition of HSV-2 as compared to susceptible partners who were given valacyclovir.

Inference: Hazard ratio (Cox-proportional-hazards model with covariates defined according to stratum of treatment), Confidence interval, Two tailed test of proportion (P<0.001). Stratified version of fisher's exact test, Log-rank-test, Interaction tests.

Adjustment: Potential confounding variables are mentioned earlier. Exploratory covariate analyses were performed for both clinical and overall HSV-2 acquisition. Condom use was defined as a time-dependent covariate. In these multivariate analyses, factors found to influence the risk of HSV-2 transmission significantly were female sex of the susceptible partner, greater number of sexual contacts, and shorter duration of genital herpes in the source partner as previously mentioned. There was no evidence that valacyclovir had a reduced therapeutic effect when efficacy was examined among subgroups defined by these covariates.

Interpretation- Meaning of the results for those included in the investigation

Contributory cause or efficacy: The study demonstrates that oral valacyclovir taken by immunocompetent persons with recurrent genital HSV-2 infection significantly reduces the rates of HSV reactivation, sub- clinical shedding, and transmission of genital herpes to a susceptible partner. A 500-mg dose of valacyclovir taken once daily reduced the risks of acquisition of symptomatic genital herpes and acquisition of HSV-2 infection

overall by susceptible, HSV-2–seronegative heterosexual partners. The results of the trial demonstrate the effectiveness of treating the source partner with an antiviral agent to reduce the risk of transmission of a sexually transmitted viral disease. The results were in addition to any effects that may have been attributable to counseling or safer-sex practices used by the study population.

Harms and interactions: The frequency of adverse effects was similar in the placebo and valacyclovir groups and was similar to those reported in studies of valacyclovir in immunocompetent persons with genital herpes. No serious adverse events were considered by the investigators to be related to use of the study medication. HSV-2 isolates were available for sensitivity testing from 11 of the 20 cases of symptomatic new infection. All 11 isolates were sensitive to acyclovir, with plaque-neutralization titers of less than 0.2 µg per milliliter.

Subgroups: In these multivariate analyses, factors found to influence the risk of HSV-2 transmission significantly were female sex of the susceptible partner, greater number of sexual contacts, and shorter duration of genital herpes in the source partner.

There was no evidence that valacyclovir had a reduced therapeutic effect when efficacy was examined among subgroups defined by these covariates.

Extrapolation- Meaning for those not included in the investigation

To similar individuals, groups or populations: The authors have extended the conclusions of the study to individuals having similar characteristics.

Beyond the data: The investigators do not extrapolate by extending the conclusions beyond the dose, duration. But investigators have mentioned that because the observed reduction in the rate of transmission of genital herpes with valacyclovir is clinically relevant but not complete, it is important that disclosure of genital herpes to the susceptible partner and the practice of safer sex continue, since both may reduce the risk of transmission of genital herpes. However, the study does not define the levels of condom use in combination with valacyclovir therapy that would provide optimal or suboptimal protection.

To other populations: The investigators have tried to extrapolate both the biologic and cost-effectiveness aspects of the data in this study to other settings as following;

They have mentioned that," It is likely that the transmission effects we found are applicable to nonmonogamous heterosexual couples. Valacyclovir is effective in suppressing genital herpes in men who have sex with men. However, as shown in the trial, sexual transmission is influenced by sexual behavior and biologic factors. Most instances of HSV-2 transmission occur with source partners who do not have a history of genital herpes, and few studies describing daily antiviral medication in such persons are available. Additional studies to evaluate whether suppressive therapy will prevent transmission among couples with a source partner with subclinical HSV-2 infection, couples in whom the susceptible partner is immune-compromised, and homosexual couples should be undertaken. Studies in which the susceptible partner is pregnant are of special importance because of the high risk of acquisition of HSV-1 or HSV-2 infection in this setting. The few cases of asymptomatic HSV-1 acquisition in this study were not sufficient to allow us to determine whether valacyclovir would reduce the risk of HSV-1 transmission."

Recommendation:

1. M.A.A.R.I.E framework can be used as Systematic Guideline/Checklist to evaluate articles.
2. The M.A.A.R.I.E. step by step approach to reading medical literature by postgraduate students can be taken up through Journal Clubs.

CME

Epidemic and pandemic influenza preparedness and response

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Abstract
Epidemic prone diseases have potential to spread rapidly in pandemic stages. So surveillance and rapid containment is required with pharmaceutical, non pharmaceutical and infection control measures. WHO global strategy for medical education envisages young doctors will be required functioning in multi disciplinary and multi professional decision making. WHO day every year is celebrated with appropriate themes to make aware about the current scenario in health and diseases in all the member states of WHO. Dr. Krishnan, WHO Director at Head Quarter, New Delhi, has provided technical and financial assistance for conducting this C.M.E. at B. J. Medical College with objective of creating awareness about influenza pandemic occurrence and measures required to prevent it.

Key words: influenza, pandemic, surveillance

Introduction:

This C.M.E. was organized by Department of Community Medicine, B.J. Medical College, Ahmedabad, Gujarat State on 20th & 21st September, 2012. Dr. Niti Talsania, Prof of Community Medicine Dept, B.J.M.C; Ahmedabad was the C.M.E. Co-ordinator.

The topics covered are overview of influenza, planning and preparation of influenza, public health measures to reduce transmission of influenza.

Participants were post graduate residents from N.H.L. Municipal Medical College, Ahmedabad and government medical college of Baroda, Rajkot and Karamsad. WHO, Delhi sponsored this CME with the aim for capacity building of post graduate residents regarding pandemic preparedness. Epidemiology is the branch of medicine that deals with the study of the causes, distribution, and control of disease in populations. Outbreak is a sudden, localized increase in a disease greater than the expected occurrence of that disease. Epidemic is the unusual occurrence in a community or region of disease, specific health related behaviour or other health related events clearly in excess of expected occurrence. Pandemic is an epidemic (or outbreak) occurring over a wide geographic area.

Requirements for a Pandemic[1]: Influenza has high possibility for global outbreak of disease because a) New influenza A virus emerges in humans b) there is minimal or no population immunity c) Spreads easily from person to person.

Overview of influenza[2]: Influenza A virus is categorized by subtype which is classified according to two surface proteins. Hemagglutinin (H) – has 16 known subtypes and Neuraminidase (N) – 9 known subtypes. Antibody to HA is protective. Antibody to NA can help modify disease severity.

Antigenic DRIFT: There is minor change in HA / NA. Point mutations occur during replication, but subtype remains the same. Since there are continuous changes, virus continues to cause illness and deaths. Limited partial immunity may exist to changed virus. So it results in the need to update vaccines annually.

Antigenic SHIFT: There is major change in HA / NA. New subtype of virus is introduced. It is caused by genetic re-assortment when 2 subtypes infect a host simultaneously or caused by direct transmission from birds or other animals to

humans. Mean incubation period is 2 – 3 days. There is high fatality rate in all groups. All ages are affected. Highest rates are in children < 5 years. Most serious complications occur in elderly.

Role and responsibilities of Rapid Response Team (RRT)[3]: The team has to verify any rumour of disease outbreak, carry out the outbreak investigation, propose ways to stop epidemics, initiate epidemic prevention and control and provide technical support to ministry of health. Core team members include the Team Leader**,** Epidemiologist, Clinical Officer**,** and Laboratory technician/scientist, Veterinarian or Animal Health Specialist, Social Mobilization Specialist. Expanded team members include Logisticians / Administrators**,** Infection control Officer**,** Security Officer and Communication specialist (with media).

Role of Team Leader (State and District Nodal Officer): The team leader briefs the team on the situation, outlines the investigation plans, monitors the evolution of the outbreak, assigns roles and responsibilities, oversees team member roles, communicates with media, conducts (international) reporting and communicates through fastest means of communication viz. fax, internet and email with other officials.(Epi-info and SPSS training)

Role of Epidemiologist: The epidemiologist verifies the outbreak, communicates case definition to team members, search for hidden cases and contact tracing, identifies specific control measures, social audit and supervises data collection, data analysis and documentation.

Role of Clinician: The clinician advises and assists in managing patients, Educates, implements, and supervises infection control measures, institutes case management measures, death audit, advises and assists in collection of clinical specimens from cases/patients, advises on referral in respective district hospitals.

Role of Microbiologist: The laboratory technician assures proper specimen storage and transportation after proper labeling the specimens, verify proper avian influenza laboratory diagnosis to help refine a case definition,(confirmatory diagnosis) Assess the area laboratory capability including bio-safety levels, know or devise a plan for sharing specimens with national or WHO laboratories.

Infection Control Officer: The infection control officer oversees decontamination processes, advises health units on proper infection control and performs procedures for isolation and triage of patients.

Pandemic Phases[5]

The classification of pandemic phases provides the global framework for preparedness and response. It is a six phase approach.

Phase 1 – 3: We have to strengthen pandemic influenza preparedness and response capacities at the global, regional, national, and sub-national levels. An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to human transmission sufficient to sustain community-level outbreaks.

The countries have to strengthen pandemic influenza preparedness and response capacities at the global, regional, national, and sub-national levels. An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat. No animal influenza virus circulating among animals have been reported to cause infection in humans.

Phase 4: Contain the new virus within a limited area or delay its spread to gain time to implement interventions, including the use of vaccines. Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.

Phase 5 – 6: To reduce the impact of the pandemic on society, hence actions shift from preparedness to response at a global level. In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region. To reduce the impact of the pandemic on society, hence actions shift from preparedness to response at a global level. The same identified virus has caused sustained community level outbreaks in at least two countries in one WHO region

Post Peak / Pandemic[6]: The goal of activities during the post-pandemic period is to address the long-term health and social impact of the pandemic, as well as to restore normal health and social functions. The post-pandemic period - Levels of influenza have returned to the levels seen for seasonal influenza in most countries with adequate surveillance. The overall goal of actions during the post-peak period is to address the health and social impact of the pandemic, as well as to prepare for possible future pandemic waves. Post-peak period - Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak level.

WHO's roles: The important role of WHO is to coordinate international public health response under International Health Regulations. It designates the global pandemic phases, select the pandemic vaccine strain and recommend the production of the pandemic vaccine. WHO assists, upon request, to rapid containment efforts of the emerging pandemic virus. It helps national authorities in deciding the optimal response by timely assessment of pandemic severity and provision of epidemiologic, virologic and clinical characteristics of pandemic influenza to. It provides the guidance and technical assistance to Member States in their efforts to be better prepared to mitigate a future influenza pandemic.

National governments' roles: It provide leadership and coordination among different sectors of the government and for the whole-of-society to be prepared for an influenza pandemic enacting or modifying legislation where required. It plans for effective risk communication before, during and after the pandemic. The government plan for and implement all available measures in an ethical manner to mitigate the impact of the pandemic and ensure continuity of health care provision during a pandemic

Lessons learned from previous influenza pandemics[7]:"Early diagnosis and prompt treatment" (EDPT) can prevent pandemics. It is expected that the next influenza pandemic will begin anytime, anywhere, thus media involment and documentation, will alert the neibouring states and can take future preventive actions.

Rapid Containment: Containment is Time Sensitive. Mathematical modeling indicates "window of opportunity" to act is very short. Only have ~ 3 weeks to start antiviral and public health measures after Index Cluster is detected. Detection, investigation and reporting of first cases must happen quickly.

Factors affecting Assessment[8]:

a) Biological factors-Laboratory evidence of a novel virus is critical. Certain features may suggest a newly advanced adaptation to humans like mix of avian and human genes and increased number of mutations.

b) Epidemiologic factors-Efficient and sustained human-to-human transmission such as 5 or more cases closely related in time or space and 2 or more generations of transmission. Clinical severity is not an important consideration. Early cases could be mild while severe illness is more likely to be detected.

Conditions in which containment is not recommended: Rapid containment is not recommended when novel influenza virus could not be confirmed, not operationally feasible to rapidly implement at the

necessary level, national authorities do not support the operation, virus has already spread too far and containment no longer feasible.

Acknowledgement:
I render my sincere thanks to Dr. Anish Sinha, State Surveillance Medical Officer, NPSP, WHO Country Office for India and Dr. Sampath K. Krishnan, NPO CDS, WHO Country Office for India acknowledge his incessant motivation and encouragement to prepare this article.

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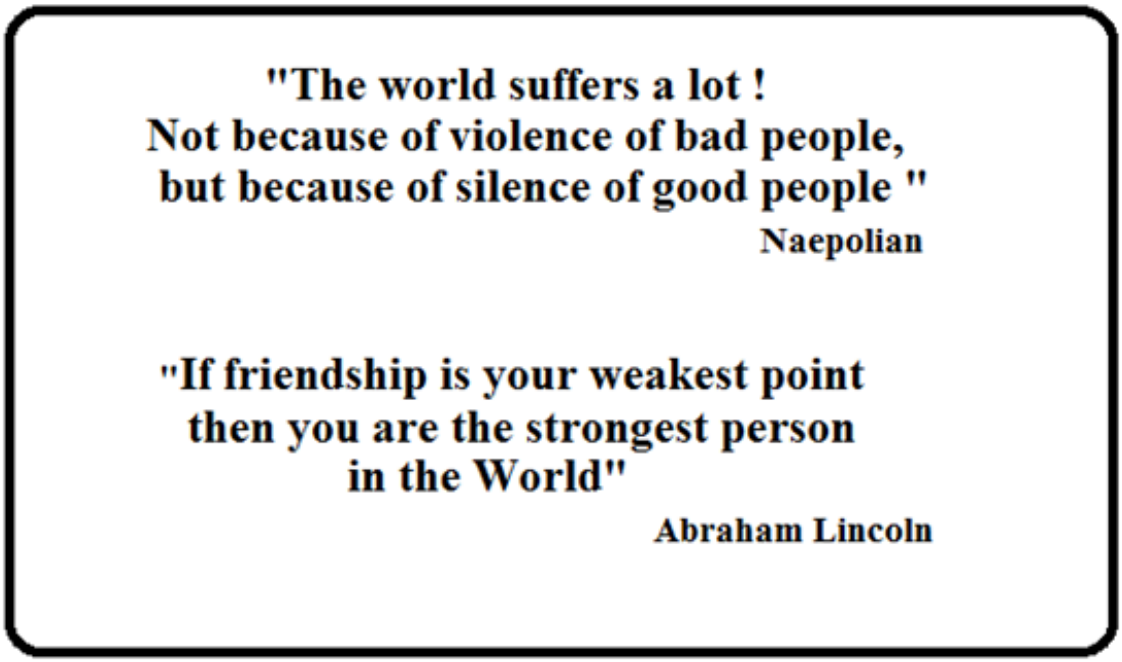

Initiative

Teaching With Service: Field Level Exposure Of PARAS (PREVENTION, ADVOCACY, RESEARCH, ALLIANCE, SERVICE)

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Background:

It was in the year 1991, when the leading newspaper, The Times of India, reported, for the first time, detection of 17 HIV positive blood samples in the blood bank of New Civil Hospital, Surat. Many samples out of these were later found to be due to duplication, and so the actual number was much lower. However, the mere detection of these samples was reason enough to be concerned about. Realizing the need for immediate action, the Preventive and Social Medicine Department of Government Medical College, Surat promptly geared up into action. As a part of its public health activities, the Department undertook the task of an HIV sero prevalence survey amongst the various high risk behavior groups, i.e. FSWs in the Surat Red Light Area, STD patients, Prisoners, Truck drivers, Diamond workers and SRP Jawans of Surat City. The course of action at initial stage was to get information about the prevalent situation, to develop trust and good rapport with the above groups, and thus facilitate future activities. Targeted Intervention "PARAS (**P**revention, **A**lliance, **R**esearch, **A**dvocacy and **S**ervices) Project among FSWs was established in the year 1997 with the support of DFID, UK later supported by NACO since 2000. GMC, Surat is the only Medical College in India which implements targeted intervention just like NGO.

PARAS Project

Goal: Control of STI / HIV / AIDS among FSWs of Surat city.

Vision: To empower the sex workers for STI treatment seeking behavior and prevention of HIV/STIs.

PARAS initiated its activity by extending services to the FSWs on Condom promotion, STIs management, Behaviour Change Communication (BCC) and creating Enabling Environment as a part of Project.

At present (2012) PARAS is providing services to 3138 FSWs by three TI units.

Advancement of core duties and capacity of the department with simultaneous development of PARAS

- **Collaboration and Coordination:** PARAS Project has been a key to start collaborating activities with different departments within the college (Skin & VD, Microbiologist, Obstetrics & Gynaecology, Pediatrics, Medicine, and Chest & TB) and networking with various NGOs at City/State and National level.
- **International Level**: Various international bodies have teamed up with the department for research activities. International collaboration with **a)** University College Hospital London, **b)** University of South Florida, USA. Department has received International research projects and International PhD students (1) Dr. Sangeeta Dave- PhD student from University College Hospital London : "Survey estimation of sexual behavior, HIV/STI prevalence & development of HIV prevention intervention in male migrant workers in Surat, India (2005 -07) Well Come trust , UK, funded "

2) Ms. Shilpa Patel (2012): PhD student from Emory University, Rollins school of

Public Health Atlanta, USA): "Determinants of Risk Behaviors of Married HIV Sero- discordant Couples in Gujarat, India"

3) Ms Dilisha Patel (2011):MSc. Sexual and Reproductive Health, London School of Hygiene and Tropical Medicine, U.K:"An observational study looking into (a) the perception of FSWs regarding future of their children (b) perception of the children who are residing at residential schools under extended PARAS PSM project at Surat, Gujarat.

Bilateral learning happens between with international PhD students & resident doctors.

- Collaboration with USF has resulted into series of workshops (research methods, biomedical ethics, grant writing) at department and online courses & participation of faculties/students in various research projects.
- Collaboration for research studies with FHI for STI prevalence study, capacity building of FSWs to explore feasibility of RCT for presumptive periodical treatment by UNDP& Population Council, Out of school children project by UNICEF.

National Level:

- Department get mileage by visit of Director General NACO, NACO officials and SACS officials and other research team official visits .Faculties and resident doctors get an opportunity to interact with National & International Experts.
- **State Level**: GSACS has identified Department of PSM, GMC, Surat as nodal agency for State level training centre for STI/RTI. Department faculties are also involved as trainer for TI (Peer Educator Training / ORW training/ PO Training /TI Evaluation), Sentinel Surveillance monitoring and STI clinic monitoring.
- Working with GSACS, and various departments like Health Department, Social Welfare Department, Home Department and Women & Child Development Department.
- PG's and Faculty members are exposed with key population at field level so they get sensitized towards this marginalized population. This will lead to change in their perceptions, attitudes and behavior towards marginalized community (FSWs/MSM/IDUs). The final goal of mainstreaming of marginalized community for utilizing health services will be achieved.
- Residents Doctors get opportunity for training in various components of TI and carry out dissertation & utilize this data for presentation on state and national level conference.
- Department of Skin & VD, Obs & Gynecology and Microbiology are involved in different research studies and they depute their resident doctors to run field level static STI Clinics with residents of PSM Department.
- Faculty members also get opportunity for participation in State, National level and International training and involve in different research projects. They are involved as resource persons to impart training to MO's, paramedical staffs, NGOs staff and Peer Educators.
- Hands on training is given to Post Graduates by involving them in HIV Sentinel Surveillance, DIC projects, TI and Link Worker scheme evaluation.
- Project has motivated FSWs to establish community base organization (CBOs), Sahyog for Red light area and Ekta for Non red light area. Many a time resident doctors visit CBOs to provide technical inputs.
- PSM Department is mentor for these CBOs and providing technical services. Department supports conduction of elections in these CBOs in a democratic way. One of the resident doctors has worked as election officer.
- Faculties & resident doctors are actively participating in various events celebration along with CBOs and PARAS like Rakshabandhan, Navratri, Eid etc.
- Department has taken lead for educational rehabilitation for children of

sex workers by admitting them to various schools and hostels. Resident doctors are providing their services to conduct health check-ups & celebrated bal-mela at juvenile home for girls & boys.

- The Project has developed self help groups and motivated them for vocational training. Intern Doctors and UG students get exposure with HRGs.
- Resident doctors are exposed with various facilities like ART Centre, ICTC/PPTCT/ STI clinic/ OST Centre and blood banks. Faculties have facilitated Red Ribbon Club in which PG/UG and intern doctors are involved.
- On the observation of World AIDS Day PG/UG and intern doctors have participate in quiz competition, poster making, debate competition and involvement in project activity like candle lighting and being a judge at various events carried out by the project or other CBOs of Surat.
- The Department has also hosted deliberation on MSM (IPC-III 377) and IDU issues by inviting various TI partners.
- Lawyers collective (group of Lawyers) have conducted workshops on the issues of Immoral Traffic Act, Women rights and Human rights. Crisis management training received by resident doctors help in training of peer educators and KPs.
- Resident doctors get opportunity to observe monthly/quarterly review meetings of TI/ICTC/STI Clinic.
- Students from Master of Social Works &various specialties different universities are posted for field level exposure within the project.
- Community Engagement:FSWs are visiting PSM Department to attend various trainings & meetings, so under graduate students also get opportunity to observe various activities of FSWs at department. FSWs are motivated to avail services of ICTC/ART clinic, STI Clinic as mainstreaming strategies. They share their experiences during PG session & academic activities in the department.

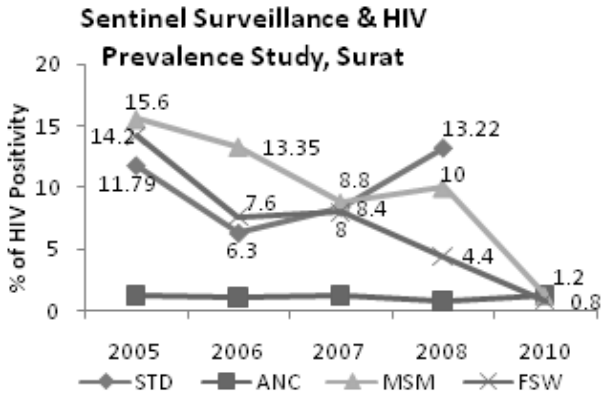
Category wise distribution of beneficiaries (FSWs) of PARAS Project

Category	Risk	Vulnerability	Other	Total
Home Based	760	481	601	1842
Street Based	629	426	241	1296
Total	1389	907	842	3138

Total key Population receiving services (March 2011 to April 2012)

- Ever Contacted : 3138
- Regular contact : 3054
- Total Condom Distribution : 985062
- STI Treated : 401
- No. of Counseling Sessions : 13143
- No. of HIV Positive detected : 3
- No. on ART since 2005 : 11

The graph suggests the reduction in HIV prevalence among FSWs since 2005



*STD not done in 2010

Conclusion:

Thus, as an initiative on one side, project is benefited by support from large team of a technically qualified person of the Department. On the other side the Department of PSM, GMC, Surat, has also reaped the benefits, as faculties & resident doctors are getting hands on experience in basic epidemiological understanding & applied epidemiology i.e. prevention & control measures in HIV/AIDS. Also, it has led to a number of the good quality field oriented realistic research in the HIV/AIDS.

Original article

Coverage study on Vitamin A supplementation amongst children aged 12-23 months in urban slums of Ahmedabad city.

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Abstract

Background: Vitamin A supplementation is a low cost sustainable approach to control Vitamin A deficiency. It has been found to be effective over last 25 years in many developing countries.

Objective: To determine Vitamin A – supplementation coverage in children aged 12-23 months in urban slums of Ahmedabad.

Design: The 30 cluster sampling technique based on probability proportion to size advocated under Multi Indicator Cluster survey by World health organization was used to assess Vitamin A first dose supplement amongst 138 children in the age group of 12-23 months residing in slums of Ahmedabad during August 2006.

Results: Only 75 (54.3%) out of total 138 children had received Vitamin A supplementation. The coverage was more among males as compared to females though the difference was found to be insignificant.71.7% of the children had received measles vaccination however only 47.8% of the children had received Vitamin A along with measles vaccine.

Conclusion: The study reflects low coverage of Vitamin A supplementation and non utilization of measles vaccination for Vitamin A supplementation.

Key words: children aged 12-23 months, Multi Indicator Cluster Survey, Vitamin A, and Measles.

Introduction:

Vitamin A deficiency (VAD) is a major cause of morbidity and mortality in India and other developing countries.[1] It is an essential micronutrient, which cannot be synthesized by the body and has to be consumed. It is required for maintaining normal growth, regulating cellular proliferation and differentiation, controlling development and maintaining visual and reproductive functions.[2] The major factors leading to Vitamin A defeciency are lack of awareness for consumption of Vitamin A rich food and frequent infections such as ARI, Diarrhea and Measles. The role of protein energy malnutrition is also important in Vitamin A deficiency. Diet Survey have shown that in India intake of Vitamin A is significantly lower in all states and Union territories.[3]

Vitamin A supplementation is a short term approach for prevention of VAD. A large proportion of the Indian Population receives less than 50% of the recommended dietary intake of Vitamin A from Dietary sources.[4] The long term measure is to ensure that the community at risk consumes adequate amount of food rich in Vitamin A. Periodic large dosing of Vitamin A has been found to be a cost effective strategy to combat this micronutrient deficiency. It has been proved to be an effective intervention for the improvement of vitamin A status among deficient populations. Clinical studies have shown that this strategy not only decreases xerophthalmia but also increases the child survival rates in areas endemic for VAD.[5] The Beaton report shows that all- cause mortality among children aged 6-59 months are reduced by 23 % through Vitamin A supplementation especially in areas were Vitamin A deficiency is a public health problem.[6]

The children in the age group of 9-12 months are administered Vitamin A along with measles immunization according to the National Immunization Schedule. In Gujarat, biannual round of Vitamin A supplementation is being conducted in the months of Feb and August every year with regular immunization activities since 2005. The objective is to cover children in the age group of 1-3 years with two doses of Vitamin A every year.

With rapid urbanization in India and one of the highest population growth rates in the world, around 27.8% of the population is forced to reside in urban slums (Census 2001). As slums are considered to be high risk areas in terms of health care delivery, an attempt was made to determine Vitamin A –first dose coverage amongst children(12-23 months) residing in slums of Ahmedabad.

Methods and material:

Department of Health and Family Welfare, Government of Gujarat planned to carry out Multi-Indicator Cluster Survey (MICS) in various districts. Community Medicine Departments of various medical colleges who had good liaison with the health department were given the responsibility for conducting the MICS in each district. Urban slums of Ahmedabad city was allocated to Community Medicine department, B. J. Medical College, Ahmedabad.

A structured, pretested questionnaire designed by UNICEF was used after necessary modifications. To minimize errors and uniform reporting, members of the survey team received extensive training and discussed the likely problems in filling the format.

Multi-indicator cluster survey proposed by World Health Organization with 30 clusters has been undertaken in the slums of Ahmedabad.[7] Among these, study of households in four different quadrants of the village with at least two children aged 12-23 months in each quadrant making a total of minimum 8 children was considered. A cross-sectional study was conducted during the month of July–August 2006 including 1800 households and 138 children in the age group of 12-23 months were studied for their Vitamin A status. The data was relied on the available documents and parents' recall at the time of survey.

Trained doctors collected the information regarding Vitamin A coverage using a structured questionnaire. Data was entered in Epi-info and the findings are expressed in percentage.

Results:

Out of 138 children in the age group of 12-23 months, 54.3% were males and 45.7% were females.

The study findings in Table 1 shows that 54.3 % of the children were supplemented with first dose of Vitamin A and 28.3% were not covered. Supplementation status was not known in 17.4% of the respondents. Vitamin A coverage was more (58.7%) among males as compared to females (41.3%). The difference was found to be statistically insignificant (Z=1.53p >0.05). Vitamin A was not supplemented to 56.4% of female and 43.6% of male.

Table 1: Vitamin A first dose Supplementation in Children (12-23 months of age)

Vitamin-A Received	Male		Female		Total	
	No.	%	No.	%	No.	%
Yes	44	58.7	31	49.2	75	54.3
No	17	22.7	22	34.9	39	28.3
Do not know	14	18.6	10	15.9	24	17.4
Total	75	100	63	100	138	100.0

(Z=1.53p >0.05)

Table 2 shows that 71.7 % of the children had received measles vaccine however only 47.8% of the children had received Vitamin A along with measles.

Extra 6.5% of the children had also received Vitamin A but not with measles vaccine. Vitamin A as well as measles vaccination was not received by 21.7% of the children.

Table 2 Vitamin A supplementation along with measles in Children (12-23 months of age)

Measles	Vitamin A		
	Yes	No /Don't know	Total
Yes	66(47.8%)	33(23.9%)	99(71.7%)
No / Don't know	9(6.5%)	30(21.7%)	39(28.3%)
Total	75(54.3%)	63(45.7%)	138(100%)

(χ^2=19.6, df=1, p<0.01)

Discussion:

In the Multi Indicator Cluster Survey 2006 conducted in 30 clusters of urban slums of Ahmedabad, 138 children between the age group of 12-23 months were studied for Vitamin A coverage and measles vaccination. It was found that the coverage rate for vitamin A was only 54.3%. Gender difference found in the supplementation of Vitamin A was not significant. Along with measles vaccination the coverage was 47.8%. As per the DLHS-3 data 52.5% of the children in the age group of 9-35 months had received at least one dose of Vitamin A in Ahmedabad.[8] A study in Ahmedabad urban slums shows 19.9% of coverage of Vitamin A along with measles in year 2000.[9] Studies from urban slums of other major cities like Surat and Delhi show 28.9% and 37.6% of coverage respectively.[10,11] It is noted that over the years there is improvement in the coverage of Vitamin A.

It is clear that any attempt to improve coverage of measles vaccination also improves coverage of Vitamin A. In the present study 71% of the children had received measles vaccination but Vitamin A coverage was low among them. This difference could be because of various reasons, such as (i) Vitamin A deficiency not considered a serious disease by the health workers. (ii) Lack of awareness regarding the dose and its importance (iii) Stock out situation of Vitamin A (iv) There is difficulty on the part of interviewees to recall. This difference could have been avoided by proper supervision and monitoring, training of health workers, proper recording of Vitamin A administration in the immunization card and record. Special emphasis should be given to 100% coverage of Vitamin A supplementation among children who receive measles vaccine.

Conclusions and Recommendations:

In the present study the first dose of Vitamin A coverage shows higher coverage than previous studies, it is still below the minimum target, set as national goals. As the vaccination card is an important tool during the survey, health workers must emphasize and act proactively on issue like 100% availability of vaccination card, follow up training of the health workers regarding vitamin A deficiency, coverage of Vitamin A along with measles vaccine and to generate awareness. Coverage studies should be done on a periodic basis to check the effectiveness of measures undertaken and appropriate corrective measures should be taken.

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Original article

Health-seeking pathway of patients coming to a tertiary care hospital in Vadodara City

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Abstract

Bakcground:
It is often seen that a Government hospital is preferred by those patients who cannot afford the health-care costs in other hospitals. In the absence of a systematic referral system, the follow-up of patients suffers and in turn affects the utilization of the public health care facilities. An attempt has been made to find out the health-seeking pathway of patients coming to one such Government Hospital in Vadodara city and the reasons for preferring to choose this hospital for health-care.

Aim: To find out the health-seeking pathway of patients coming to this tertiary care Hospital in Vadodara city and the reasons for preferring to choose this hospital for health-care.

Study Area: This study was conducted in the largest referral hospital (teaching hospital) which caters to primary, secondary and tertiary health care needs of the people of the state.

Sample size: A total of 183 patients coming to various OPDs and wards of the General Hospital were interviewed using oral questionnaire. Non-probability proportional sampling techn ique was used.

Statistical analysis used: Data entry and analysis was done using Microsoft Excel Worksheet 2007 and analysis by Epi-Info 5.6.D

Results & Conclusion: Majority of the patients in the study attending the OPDs and wards of Government Hospital were in the age group of 18-58 years. Almost an equal number of males and females attended the hospital. With regards to the health-seeking pathway and behaviour of the patients, 44.81% of them came directly to the Government Hospital without consulting other local doctors (PHCs, CHCs and private clinics-General Practitioners). 13.75% sought treatment here due to lack of satisfactory treatment at other medical centers.

Keywords: Health-seeking pathway, Government hospital

Introduction:

The hospital where this study was conducted has 1,118 beds across several clinical specialties and subspecialties, with an annual outdoor attendance of 5 lakh patients, annual indoor admission of 49,000 patients and bed occupancy rate of almost 90%. This is the average daily bed occupancy rate, considering 49,000 patients per year or 365 days= 135 indoor patients on a given day. [1]

It is often seen that a Government hospital is preferred by those patients who cannot afford the health-care costs in other hospitals. [2]

A recent trend in today's public health system is that of "decentralization" of health services. This means developing a model of comprehensive primary health care system by joining different settings and integrating the efforts of different parties within and outside the health sector. [3] This synergistic effect would help to strengthen human and social capital development and reduce health inequity. This ideology has been propounded in the National Health Policy (NHP) 1983 and 2002 and further reinforced in the National Rural Health Mission (NRHM).

The primary health care infrastructure is expected to meet over 80

percent of the health care needs of the population and refer the rest to secondary/tertiary health care institutions. However, owing to inadequate infrastructure, many of the cases that could have been managed at the PHCs are referred. There is no communication between the referring and referral centers on the case history or treatment provided to referred patients. Such patients return to the PHCs only if they have been cured after referral. If not, they resort to private health facilities. Thus, in the absence of a systematic referral system, the follow-up of patients suffers and in turn affects the utilization of the public health care facilities. [2.] Review of studies conducted in different countries illustrate how a well-developed primary health care system would reduce all causes of mortalities, improve health status, reduce hospitalization and be cost saving despite disparities in socioeconomic conditions. [3, 4]

A timely referral strategy is also required to strengthen the health care services. The referral should be undertaken when the prescriber (doctor) is unable to manage the patient due to inadequate experience or expertise or non-availability of appropriate facilities. [4]

As a result of rapid urbanization, people tend to move away from rural to urban areas. Disadvantaged citizens have difficulty in accessing quality health care if they become very ill. They bypass local doctors to seek help from outpatient clinics of urban hospitals. [5]

Objective

To study the health seeking pathway of the patients who come to Government Hospital, Vadodara.

Material and methods:

Sample Selection:

This tertiary hospital in Vadodara has an average of 1620 patients out-door attendance that includes regular and emergency patients as well as those patients who require tertiary referral care. Most of these patients are supposed to be referred cases as this hospital is a tertiary care hospital. But, as a matter of fact, over 65% of these patients have minor complaints and thus the hospital works as a primary unit of the city.

We interviewed, using oral questionnaire, 183 patients who came to the various OPDs and wards of the General Hospital. Non-probability proportional sampling technique-a type of convenience sampling, was used for the selection of subjects. 15 patients each were selected from the wards and OPDs of medicine, surgery, orthopedic, pediatric, obstetrics-gynecology departments, 9 patients each from skin, ARV clinic, ophthalmology, ENT wards and OPDs (as per the proportional inflow of patients). Interviews were taken by selecting equal number of patients from the total wards or units of the specified clinical sections thereby trying to minimize selection bias.

Study Duration:

The study was conducted over a period of 7 months from December 2009 to July 2010.

Enrollment:

The subjects were selected at the time of their exit from the OPDs or after at least 2 days of hospitalization in the wards. They were explained the objective of the study, and only those patients who gave verbal consent and showed willingness to participate in the study were interviewed. Interviews were taken after assuring confidentiality. They were given the freedom to withdraw at any time during the interview (names used in the text are not the real names of the clients). Out of the patients interviewed, two of them did not give consent for the interview. The questionnaires were filled in the language that the patients understood. The study used a semi-structured instrument with open ended questions for the following:

I. Preference given to government hospital over the other primary health care centres or community health centres (in case of patients coming from rural areas)
II. Preference for being treated at government hospital rather than other health centres, private doctors or hospitals
III. Reasons for being referred to government hospital.

The verbatim used by the patient were noted at the same time and utilized at the time of data analysis. Non-verbal assessment was done simultaneously. Each interview lasted for about 20-25 minutes.

Study Tools:

This is a cross-sectional quantitative study supplemented with qualitative data, based on an open-ended semi structured Performa. Information was obtained with regards to the above mentioned questions.
Qualitative research in this study was attempted to answer how and why of the tools stated above, and to draw logical inferences by supplementing the quantitative data.

Data Analysis:

For quantitative data, data entry was done using Microsoft Excel Worksheet 2007 and analysis by Epi-Info 5.6.D

The qualitative data entry was done using group codes and numbers which were later regrouped to get an idea of the emerging trends and patterns. Verbatim relevant to each group was translated into English and mentioned accordingly.

Results:

Majority of the patients (70.5%) in the study attending the OPDs and wards of government hospital were in the age group of 18-58 years. Almost equal number of males and females (50.8% and 49.2% respectively) attended the hospital for health services. Hindus formed 79.8% while Muslims comprised 18.6% of the study group. Of those patients studied, 34.1% had primary education, while 26.3% were illiterate. About 43.8% were engaged in skilled work, while 27.2% were unskilled workers. Of the patients who chose to seek treatment at Government Hospital, 44.8% were residents from rural, 27.3% were from urban city and 27.9% were from urban slum dwellers. (Table 1)

In this study, only 6.6% from below poverty line, 13.1% from poor income group, 31.7% were from lower middle income group, 25.1% from upper middle class, 15.3% from high class and 8.2% from upper high class availed the services of the hospital.

The reasons being- excess expenditure incurred in private (18.6%), good review regarding treatment (9.3%) and efficiency of doctors (9.3%), known to doctors at the hospital (6.97%), getting government bills passed (4.65%), for further proper investigations and/or operations (4.65% each), hospital is situated near residential area (4.65%), not satisfied with the treatment at private/local doctors (2.3%).

55.2% of the patients came in directly to government hospital while 44.8% were referred. (Table 2)

Most common reasons for coming directly to government hospital were* free treatment (14.9%), regular treatment at the same hospital (11.9%), effective treatment and hospital being located near residential area (9.9% each), on recommendation of friends and relatives (8.9%), good services and facilities at this hospital (7.9%), unsure of proper facilities elsewhere (6.9%), no knowledge of any other such hospital elsewhere/ at their village (4.9%), doctor not present at the local hospitals or investigations not being done there routinely (4.0%), came in emergency condition, bad experiences at private hospitals in the past (3.96%), Government employee –for getting bills passed/ fitness certificate (2.97%)

* Multiple answers. It was difficult to get complete answers to all the questions in case the patient's condition was serious

Ramesh, 36 year old, a labourer from urban slum said that they should have money to go elsewhere for treatment.

The poor prefer to come here for free treatment. Dashrathbhai, 45 year old male, earning 4000 rupees a month and having a family of 4, came from rural Dabhoi to the hospital. On being asked the reason, he replied that he had come there (hospital) only because he had gotten free treatment.

Ritaben, 40 year old, with family income of rupees 10,000 per month, 7 family members and residing in rural area came in here as there were no equipments elsewhere, the medicines were also not good. Darjibhai, 56 year old driver form urban city had faith in the treatment here.

Table 1: Distribution with respect to the socio- demographic pattern

	N=183	%	95% CI
SEX			
Males	90	49.2	41.7-56.7
Females	93	50.8	43.3-58.3
CASTE			
Hindus	146	79.8	73.2-85.3
Muslims	34	18.6	13.2-25
Others	3	1.6	0.1-6.9
EDUCATION			
Illiterate	44	26.3	19.8-33.7
Pre-school	2	1.2	0.1-4.3
Primary	57	34.1	27.0-41.9
Secondary	36	21.6	15.6-28.6
Higher secondary	14	8.4	4.7-13.7
Graduate	14	8.4	4.7-13.7
OCCUPATION			
Unskilled	46	27.2	20.7-34.6
Semi-skilled	22	13.0	8.3-19
Skilled	74	43.8	36.2-51.6
Highly skilled	27	16	10.8-22.4
AREA OF RESIDENCE			
Rural	82	44.8	37.5-52.3
Urban city	50	27.3	21-34.4
Urban slums	51	27.9	21.5-35

According to Nitaben, a 23 year old female who came from the urban slum area and earning rupees 900 per month, "specialists were available at the hospital, and that too at a low cost".

An additional 13.75% could have been included to have come directly since they had earlier visited other medical facilities before coming to this hospital.

With regards to the health-seeking pathway and behavior of the patients, 44.81% of them came directly to government hospital without consulting other local doctors (PHCs, CHCs and private clinics-General Practitioners). 13.75% came to government hospital for treatment since they could not get satisfactory treatment at other medical centers. (Figure 1)

The number of patients coming directly for treatment at the tertiary care hospital is significantly higher than those being referred from rural and urban cities and slums.(The difference being significant at 95% confidence limits, p=0.0018. (Table 2)

Table 2: Distribution of patients with respect to mode of referral and area of stay

Variable	Mode of referral		Total N=183 (100%)
	Direct 101(55.2%)	Referred 82 (44.8%)	
Rural	34 (31.7%)	48 (63.2%)	82 (44.8%)
Urban city	36 (33.6%)	14 (18.42%)	50 (27.3%)
Urban slums	31 (28.97%)	20 (26.31%)	51 (27.9%)
Chi-square 12.6 at df 2 p .0018			

Table 3: Distribution with respect to referral and type of treatment availed

Referred	Minor complaints N=86 (48.3%)	Complicated cases N=92 (51.7%)	N=178
No	56 65.1%	42 45.7%	98 55.1%
Yes	30 34.9%	50 54.3%	80 44.9%
Chi –square-6.81 df:1 p 0.009			

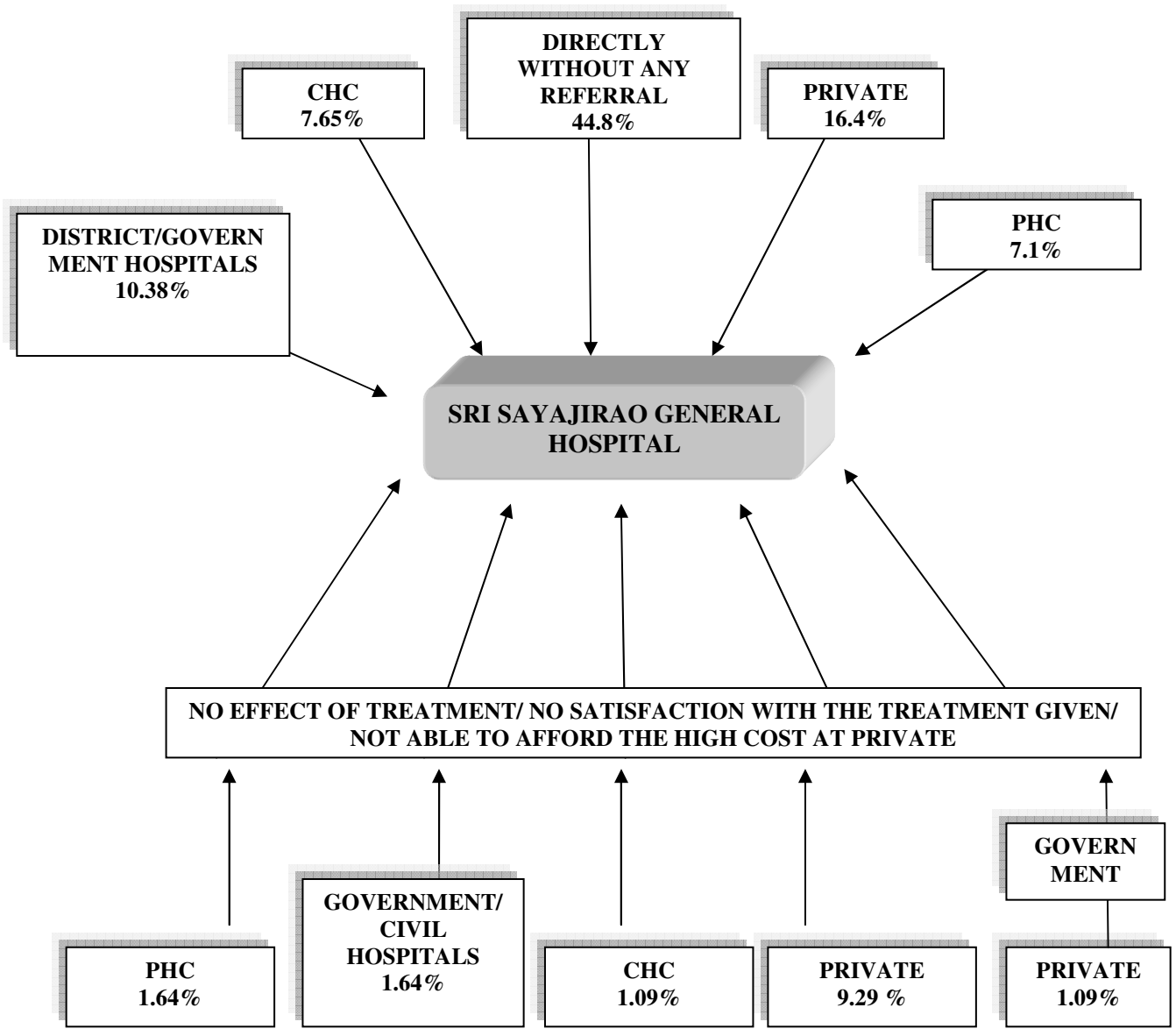
The patients in rural areas visited nearby health care centres and later were referred to government hospital due to

lack of money, no doctors/investigations at private or local hospitals.

The main reasons for the patients to have been referred from other health centers were- further investigations and/or diagnosis, no improvement with treatment at the previous/other health centres.

Madhuben, 60 year old housewife, coming from the urban city area, was being treated at private hospital for paralysis She left the treatment there and came to this hospital. On being asked the reason, she replied that the treatment was not effective in-spite of having spent a great amount of money in private health care centers.

Figure 1: Distribution of patients with respect to their health seeking pathway.



The reasons some patients were not treated at other health centers were: lack of facilities to cater to serious medical/surgical conditions or accidents, absence of doctors at the various other health centers, some doctors were not ready to take emergency cases in their private clinics, while in some cases, the doctors in rural areas were either absent or could not come to a specific diagnosis for treatment (especially in case of paediatric age groups).

Median time interval between signs and symptoms and seeking treatment at health centers other than government hospital was 54 days (range 1-202 days), showing at government hospital after being referred from other health centers was 144 days (range 1- 459 days). Median time interval before getting treatment was 64 days (range 1-217 days).

Almost half (48.3%) of those who came in for treatment at government hospital had complaints that could have been treated at secondary care centers (CHCs / District Hospitals or General Medical Practitioners), and 51.7% of the patients had serious complaints requiring referral. (Table 3) Of those who had come for treatment of minor complaints, 65.1% of the patients had come directly to government hospital for treatment instead of showing at local medical centres, while 34.9% of the patients had been referred by the doctors at other medical centres (Table 3). Of those coming for major complaints or complicated cases to government hospital, 36.3% had travelled a long distance from rural areas. (Table 4) Gopal, a 40 year male, came all the way from a small village of MP travelling 10 hours in a train for getting tablet ranitidine for complaint of pain abdomen for last one week, which he otherwise could have got free from the PHC in his village or for mere Rs 0.5/ tab from any medical store from the nearby place.

Of the patients referred to government hospital for further treatment 6.57% belonged to below poverty line group. In contrast, 56.9% of the lower middle class income group patients came in directly to government hospital for treatment.

Almost all the patients who were referred to government hospital were asked to go to government hospital having been given some initial treatment. 30.8% of patients were referred to government hospital because they belonged to lower class income group and could not afford the expensive treatment at private hospitals/clinics.

In the study group, 48.3% of the patients had come for treatment of minor complaints while 51.7% had come for complicated/chronic complaints. (Table 4)

Discussion

In this study, of the patients who sought treatment at the Hospital, almost half of them were from rural areas. Those patients from urban slums prefer government hospitals due to subsidized rates of treatment and medications, thus showing appropriate utilization of government services by those who are unable to spend money in private sector.

Almost one-thirds of the patients (31.7%) came from lower middle income group while 6.6% of them are from below poverty line. [6-8]

This shows that needy beneficiaries of government hospital form a minor percentage, while those who are somewhat affording (23.5%) take undue advantages.

An ongoing review of utilization of public facilities in Maharashtra suggests that about 40% of the 'free' users can be termed poor, with the rest being beneficiaries of various exemptions-government employees, freedom-fighters and likewise. In general, not all 'free' users of public health facilities are poor.

A study by Bruno Meesen et al. [9] shows that proximity to urban hospitals and capacity to afford these other costs are probably the main reasons why the better off benefit more from the subsidized

services in public hospitals than poor people do. A key empirical issue for universal systems is whether people living in poverty can really afford the so-called free health services they are offered which is the question also in this study conducted at the hospital.

The poor people come for free treatment at '*Sarkari davakhana'* (Government hospital), while few of them go to nearby accessible health centers for lack of money required for travelling. They are later referred to the government hospital for the same reason-lack of money.

In the study group, 19.7% of patients were referred to the hospital because they belonged to lower class income group and could not afford the expensive treatment at private hospitals/clinics.

Private health facilities are too costly and the doctors prescribe a lot of medicines which add to the costs. The health care provided in Government Hospitals is free of cost and one can avail the facilities as often as needed without any hesitation.

This is very beneficial to poor and needy patients, which is why they prefer treatment at Government hospitals. [2]

As per V. K. Mathur, [5] the civilized society should make medicine and health care available to all based on need and not on paying capacity.

A study by Kristiansson C et al. [10] shows that the poorest seek less care from health professionals for non-severe illnesses as well as for severe illnesses.

Another study aimed at investigating health seeking behaviour and utilization of drugs in relation to household socioeconomic status in two small Amazonian urban communities of Peru showed that majority of the patients of lower socio-economic status did not seek any treatment unless and until it was essential and till they were referred to higher hospitals. [11]

An additional 13.75% can also be included as having come directly. They had earlier visited other medical facilities before coming to this hospital. However, instead of being referred by the doctors in those facilities, they had come to this hospital by themselves, a few of their most common reasons being: free treatment, no effect of the treatment already undergone, too much of money spent already at private/other medical centres without any good outcome, for investigations and reports at a cheaper rate, lack of facilities at other PHCs/ CHCs, no doctors available in the local medical service centres.

As per the study conducted by Gertler and Hammer, [12] people use government services because they have no other option. User charges are known to keep people from seeking life-saving care till the situation gets worse and they have to take treatment wherever available on an emergency basis.

Among those referred, almost one fifth were from private hospitals because the staff there was not ready to take critical conditions at private hospitals in urban areas and -private setup at rural level was not adequate to treat certain health conditions

A study by Perappadan BS [13] states that at primary level the unavailability of doctors and/or drugs at the government health centre force the patients to choose private practitioners. However, inability to pay there, forces them to seek health care again in government hospitals since they do not have any other option.

With regards to the health-seeking pathway and behaviour of the patients (Figure 1), more than half of them came directly to government hospital without consulting other local doctors (PHCs, CHCs, private clinics-General Practitioners), most of them due to their faith in the treatment here.

33.6% of patients residing in urban cities came directly to government hospital, while 63.2% of the patients from

rural areas were referred to government hospital.

Patients from rural areas came to the government hospital due to lack of money, absence of local doctors or lack of investigative facilities at the health centers. Referral was done for further investigations, no improvement in the health condition despite medications. These findings are similar to a study conducted by Perappadan BS. [13]

Almost all the patients who were referred to the hospital were asked to do so after being given some initial treatment.

Almost half of those who came in for treatment at government hospital had minor complaints that could have been treated at secondary care centers (PHCs, CHCs or General Medical Practitioners or local AYUSH doctors), and the rest of the patients had serious complaints requiring referral.

Of those who had come for treatment of minor complaints, almost two-thirds of the patients had come directly to government hospital for treatment instead of showing at local medical centres, while the rest of the patients had been referred by the doctors at other medical centres The referral rate for minor complaints and complicated ones is significantly different. This shows that a major burden on the hospital is due to secondary or minor complaints which can be treated at the local level itself. The National Health Policy 2002 aims at decentralization of the health services in order to reduce this burden so as to help tertiary hospitals focus on the treatment of complicated cases. [14]

Many of the patients had travelled a long distance from rural areas to avail treatment at the government hospital. There is significant difference between the place of residence and the type of treatment availed for minor complaints and complicated cases. They could have been treated at local PHCs or CHCs instead of travelling a long distance for treatment at government hospital. Majority of them had to spend money on travelling for long distances from their hometowns. A few of them had travelled all the way from states like Rajasthan and M.P. The health seeking attitude is preferential i.e. those who come to the hospital once tend to come here repeatedly, while those who prefer private come here when they do not have any alternative. This would give rise to bias in selecting the health seeking centre.

Conclusions:

Majority of the patients in the study coming for treatment at government hospital were from lower middle class income group. Almost half of the patients in the study group had come directly to government hospital without being referred from other health centres.

Patients were also referred because the other health centres were not equipped well enough or did not have competent doctors to treat certain minor ailments that could ideally have been treated at local health care centre. Those patients in the study group staying in urban city areas preferred being treated here as the hospital was in their vicinity.

Those patients coming from rural areas preferred nearby local health centres since they lacked money for travel. As a result they ended up in this hospital at a later stage with chronic complaints. Most of the patients preferred government hospital for free treatment.

Recommendations:

Development of work culture, moral values and a sense of commitment amongst the doctors and paramedical staff is the need of the day. This can be improved by making greater use of trained health personnel. Strengthening primary health care would help in the screening of patients at the local level and thereby reducing the burden of tertiary care hospitals. It would also reduce the compulsion of the poor to access private healthcare which, in fact proves to be

costly for them. The option of establishing public-private partnerships can be explored.

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Original article

A study on occurrence of indoor accidents in field practice area of UHTC in Surendranagar.

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Abstract :

Background: Indoor accidents are public health problems worldwide. The consequences of the indoor accidents may prove disastrous as it may result in liabilities and loss of productivity.

Aims and objectives: To study occurrence of indoor accidents in field practice area of UHTC and its association with various epidemiological factors.

Material and methods: *Setting and design:* Community based- Cross sectional study. Complete information from 259 households Consisting of 1360 individuals was collected through semi-structured and pretested questionnaire. Indoor accident was considered when any of these individuals had met with an accident inside the house or the immediate surroundings of the house during the last 6 months from the date of survey. *Data analyzed*: The obtained data was analyzed using simple proportion and χ^2 test.

Results*:* The incidence of indoor accidents was found to be 3.16%. The most common accident reported was fall. Accidents were reported in significantly higher proportion in extreme age groups and in females. Higher proportion of accidents occurred during morning and evening hours. About 18.60% were treated at home, 60.46% as outdoor patients and 20.94% as indoor patients. The mean duration of hospital stay was found to be 2 weeks. 1(02.32%) death related to indoor accident due to drowning was reported in the present study.

Conclusion: Indoor accidents were more common in extreme age group and in females. The reason may be higher amount of time spent at home and greater participation in daily home activities. Falls being the most frequent type of accidents, proper designing of house and adequate illumination may help in reducing their occurrence, as majority of the accidents occurred during morning and evening hours in our study.

Keywords: Indoor accidents, Falls, UHTC area, Child, Female and Extreme age.

Introduction:

Indoor accidents are accidents that occur in a home or its immediate surroundings and more generally, all accidents which are not connected with traffic, vehicles or sport. Indoor accidents are public health problems worldwide. The consequences of the indoor accidents may prove disastrous as these may result in liabilities and loss of productivity. Children and women are at risk in and around the home. Home injuries including burns, scald, cuts, choking by swallowing small object, poisoning, fall, drowning, animal bites and injuries due to unsafe games being played in home. Overcrowding due to rise in number of people of home and lack of awareness and poor implementation of essential safety precautions result in an increasing number of accidents.[1] It necessitates safe environment in the home and the vicinity of home, safe toys and keeping medicines and harmful substances out of reach from young children.[1]

Aims and objectives:

To study occurrence of indoor accidents in field practice area of UHTC and

its association with various epidemiological factors.

Materials & methods:

The present descriptive study was conducted in field practice area of UHTC in Surendranagar district, Gujarat, from August 2011 to November 2011. Total number of houses registered under UHTC area was found to be 518. Out of this 50% houses (259 houses) were selected by simple random sampling method. Complete information from 259 households consisting of 1360 individuals was collected by interviewing the eldest person belonging to the particular household using a semi-structured, pre-tested questionnaire. If the eldest person could not be interviewed due to illness or could not answer because of old age then the next person was interviewed. Indoor accident was considered when any of these individuals had met with an accident inside the house or the immediate surroundings of the house during the last 6 months from the date of survey. Overcrowding was considered when the number of persons per room exceeded the accepted standards.[2] The collected data was tabulated and analyzed in terms of proportion using SPSS. Chi-squared test was applied to study the relationship between occurrence of accidents and different socio-demographic variables. P-value less than 0.05 was considered significant.

Results and discussion:

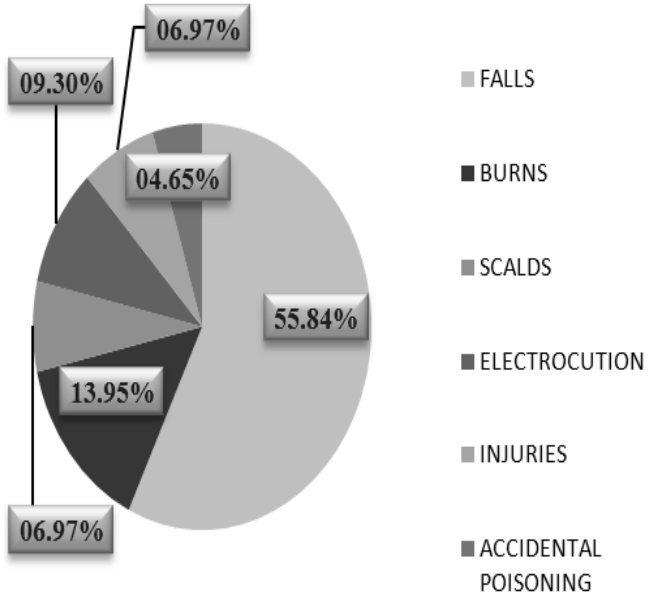
The total number of reported indoor accidents in study was 43, making the incidence 3.16%. Devroey et al. reported an incidence of 2.7% in their study done in Belgium.[3]

Table-1 and figure-1 shows that, the most common accident reported was falls i.e. 55.84%.This category included fall on floor, slipping in bathroom, fall from height and fall from stairs injuries (06.97%), accidental poisoning (04.65%) and drowning (02.32%).

Table-1: Occurrence of indoor accidents according to type. (n=43)

TYPES OF INDOOR ACCIDENTS	FREQUENCY NO. (n=43)	PERCENTAGES (100%)
Falls	24	55.84%
Burns	06	13.95%
Scalds	03	06.97%
Electrocution	04	09.30%
Injuries	03	06.97%
Accidental poisoning	02	04.65%
Drowning	01	02.32%
Total	**43**	**100%**

FIGURE-1: OCCURRENCE OF INDOOR ACCIDENTS ACCORDING TO TYPE (n=43)



In accidental poisoning group one case of cleansing acid consumption and one case of rat poison consumption was reported. Both the cases were reported in age-group 0-15 years.

No case of swallowing or animal bites was reported. Neghab et al. observed higher proportion of burns and sharp objects injuries. [4]

The LARES survey of WHO Regional office for Europe reported cuts as the most frequent type of accident [5], while burn and scald were most common type of indoor accidents in the study of Chaurasia and Shukul.[6]

In our study six out of nine cases of burn and scald were found in females.

Table-2 depicts that the occurrence of indoor accidents was higher in extreme age groups. The association was statistically significant.

Table-3 shows, the occurrence of indoor accidents among the individual in the age group of 0-15 years, it was found to be marginally higher though not significant in the age group of 5-10 years.

Table-4 shows, the occurrence of falls according to age-group, higher proportion was observed in the age group of ≤ 15 years (02.16%), which was statistically significant.

Table-2: Occurrence of indoor accidents according to age-group (n=1360)

AGE GROUPS (YEARS)	INDOOR ACCIDENTS						TOTAL		
	YES			NO					
	no.	percentage		no.	Percentage		no.	percentage	
		↓%	→%		↓%	→%		↓%	→%
≤15	16	37.23	03.84	400	30.27	96.16	416	30.58	100.0
15-30	05	11.62	01.48	332	25.23	98.52	337	24.77	100.0
30-45	06	13.95	02.11	279	21.18	97.89	285	20.96	100.0
45-60	06	13.95	02.84	205	15.56	97.26	211	15.52	100.0
≥60	10	23.25	09.01	101	07.66	90.99	111	08.16	100.0
Total	43	100.0	03.16	1317	100.0	96.84	1360	100.0	100.0

Statistically significant (χ^2=17.240, d. f. = 4, p=0.001)

Table-3: Occurrence of indoor accidents in the age group of ≤ 15 years (n=416)

AGE GROUP (YEARS)	INDOOR ACCIDENTS						TOTAL		
	YES			NO					
	no.	percentage		no.	percentage		no.	percentage	
		↓%	→%		↓%	→%		↓%	→%
≤5	05	31.25	02.81	173	43.25	97.19	178	42.78	100.0
5-10	06	37.50	04.76	120	30.00	95.24	126	30.28	100.0
10-15	05	31.25	04.46	107	26.75	95.54	112	26.94	100.0
Total	16	100.0	03.84	400	100.0	96.16	416	100.0	100.0

Statistically not significant (χ^2=0.919, d. f. =2, p=0.6315)

Table-4: Occurrence of falls according to age group (n=1360)

AGE GROUP (YEARS)	FALLS						TOTAL		
	YES			NO					
	no.	percentage		no.	percentage		no.	percentage	
		↓%	→%		↓%	→%		↓%	→%
≤15	09	37.50	02.16	407	30.96	97.84	416	30.58	100.0
15-30	02	08.33	00.59	335	25.07	99.41	337	24.77	100.0
30-45	03	12.50	01.06	282	21.13	98.94	285	20.96	100.0
45-60	04	16.66	01.89	207	15.49	98.11	211	15.52	100.0
≥60	06	25.01	05.41	105	07.85	94.59	111	08.16	100.0
Total	24	100.0	01.76	1336	100.0	98.24	1360	100.0	100.0

Statistically significant (χ^2=12.390, d. f. =4, p=0.0147)

Table-5: Occurrence of falls according to presence of overcrowding (n=1360)

OVERCROWDING	FALLS						TOTAL		
	YES			NO					
	no.	percentage		no.	percentage		no.	percentage	
		↓%	→%		↓%	→%		↓%	→%
PRESENT	18	75.00	03.16	550	41.16	96.84	568	41.76	100.0
ABSENT	06	25.00	00.76	786	58.24	99.24	792	58.24	100.0
TOTAL	24	100.0	01.76	1336	100.0	98.24	1360	100.0	100.0

Statistically significant (χ^2=9.748, d. f. =1, p=0.001)

In our study, overcrowding was found in 568 individuals. Falls were reported in significantly higher number of individuals who were occupying overcrowded dwelling (table-5).

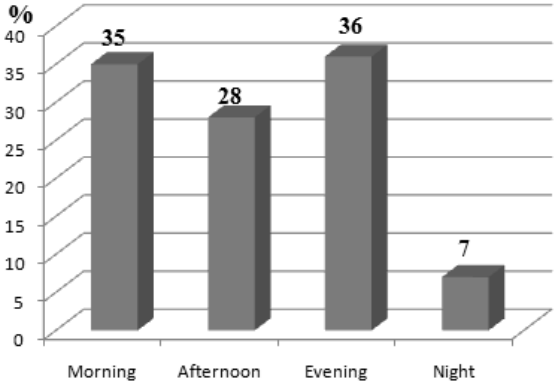
Female gender was found to be a significant predictor of indoor accidents (table-6). Chaurasia and Shukul also reported higher incidence of indoor accidents in females except in the age group of 50 years.[6] Neghab et al also reported similar gender difference in their study.[4]

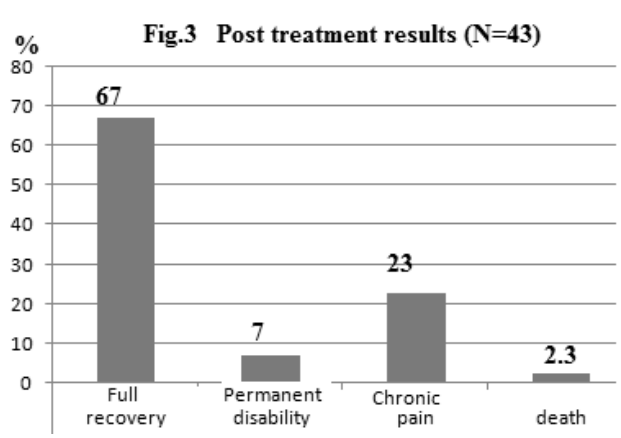
The proportion of indoor accidents was marginally higher in families with low social class; it was not statistically significant (table-7), which was in contrast to the findings in a study by Chaurasia and Shukul. [6]

Figure-2, Considering the time of accidents, 15(34.88%) accidents occurred during the morning hours, 12(27.91%) in the afternoon, 13(30.24%) in the evening and 03(06.97%) in the night.

As far as treatment-seeking pattern is concerned, out of 43 subjects, 08(18.60%) were treated at home, 26(60.46%) as outdoor patients and 09(20.94%) as indoor patients. The mean duration of hospital stay was found to be 2 weeks (Figure-3).

Fig.2 Occurrence according to time (N=43)





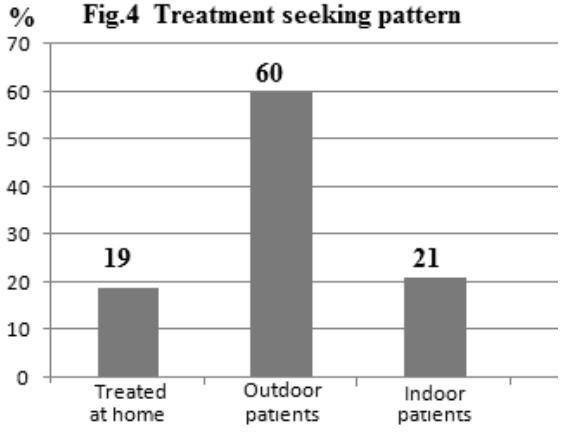


Table-6: Gender-wise distribution of indoor accidents (n=1360)

GENDER	INDOOR ACCIDENTS						TOTAL		
	YES			NO					
	no.	percentage		no.	percentage		no.	percentage	
		↓%	→%		↓%	→%		↓%	→%
MALE	**15**	34.88	02.00	**735**	55.81	98.00	**750**	55.14	100.0
FEMALE	**28**	65.12	04.59	**582**	44.19	95.41	**610**	44.86	100.0
TOTAL	**43**	100.0	03.16	**1317**	100.0	96.84	**1360**	100.0	100.0

Statistically significant (χ^2**=6.549, d. f. =1, p=0.01**)

Table-7: Occurrence of indoor accidents according social classification (n=43)

SOCIAL CLASS (per capita income in Rs.)	INDOOR ACCIDENTS						TOTAL		
	YES			NO					
	no.	percentage		no.	percentage		no.	percentage	
		↓%	→%		↓%	→%		↓%	→%
I (≤3653)	**05**	**11.63**	**04.46**	**107**	**08.14**	**95.54**	**112**	**08.23**	**100.0**
II (1826-3653)	**05**	**11.63**	**03.06**	**158**	**11.99**	**96.94**	**163**	**11.98**	**100.0**
III (1096-1825)	**10**	**23.25**	**04.58**	**208**	**15.79**	**95.42**	**218**	**16.03**	**100.0**
IV (0548-1095)	**08**	**18.61**	**02.46**	**318**	**24.14**	**97.54**	**326**	**23.97**	**100.0**
V (≥547)	**15**	**34.88**	**02.77**	**526**	**39.94**	**97.23**	**541**	**39.79**	**100.0**
TOTAL	**43**	**100.0**	**03.16**	**1317**	**100.0**	**96.84**	**1360**	**100.0**	**100.0**

Statistically not significant (χ^2**=2.873, d. f. =4, p=0.5793**), Modified Prasad's classification (2009)[7]

Figure-4 shows, Full recovery was observed in 29(67.44%) cases of indoor accidents, while permanent disability was found in only 3(06.98%) cases in the form of short limb, while 10(23.26%) reported chronic pain after the accidents.

Thus, in our study, minimal number of indoor accidents was reported in the present study. 01(02.32%) death due was to drowning related to domestic accident was reported in the present study. Though Neghab et al. reported permanent disability rate of only 0.05%, mortality due to

domestic accidents was quite high i.e. 1.3% in their study.[5]

Conclusions:

The study concludes that indoor accidents are more common in extreme age groups and in females. The reason may be higher amount of time spent at home and greater participation in home activities.

Falls being the most frequent type of accidents, proper designing of house and adequate illumination may help in reducing their occurrence, as the majority of the accidents occurred during morning and evening hours in our study.

Our study reported minimal disability resulting from minimal accidents. However there was one fatal accident (02.12%).Low rate of accidents may be the result of observation made in the field practice area of UHTC where better health services are available and assessable. The low rate of accidents found in this study could be due to the area studied which was the urban field practice area where a health centre and facilities existed. So better accessibility of health services resulted in less disability.

A broader study involving the rural population may provide a clearer picture of the epidemiology of indoor accidents in our country.

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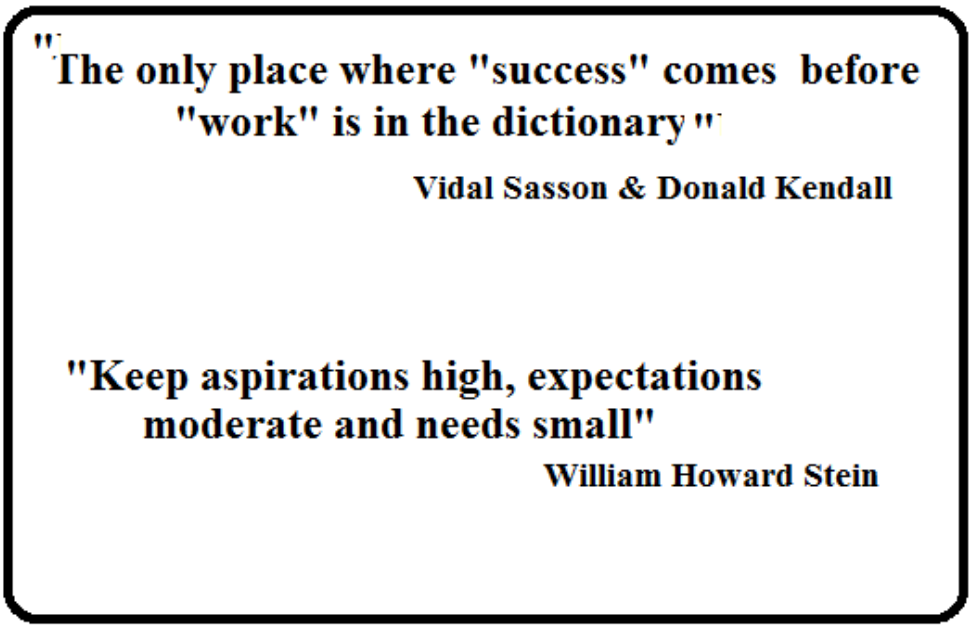

Original article

Immunization Status of 12-23 months Children in Rural Ahmedabad

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Abstract:

Background: Immunization is the most effective method of preventing childhood diseases.

Objectives: 1) To assess immunization status among children of 12-23 months age group. **2)** To find out reasons of left outs / dropouts. **3)** To check quality of records in immunization card.

Methodology: Community based cross sectional study was conducted at nine villages of seven sub centers of two Primary Health Centers from one block of rural Ahmedabad during October 2011 to January 2012. Performa was prepared on the basis of government immunization card. Information was assessed mainly from immunization card else by directly asking to mother / guardian whenever card was unavailable. Data of 120 eligible children was collected.

Results: Immunization card was available for 100(83%) children, among them 89(74%) was government and 11(9%) was private card. Date of birth was noted in card for 94(78%) and birth weight for 62(52%) of children. Out of 120 children, 118(98%) had taken BCG vaccine. BCG scar was seen in 91% of available children. Proportion of fully immunized was 74%, while that of partially immunized was 26%. Gender difference in immunization status was not significant (P=0.59). Vaccine dropout was highest for DPT_{1-3}(20%) followed by DPT_1-measles (16%). Common reasons of partially immunization were off place (22%), not aware (20%) and sick child (20%). Major source of vaccination was PHC (53%). Growth mapping was seen in 68% of card.

Conclusion: In spite of good coverage (>80%), dropout rate was high (>10%). Relevant steps should be taken to improve vaccine utilization as well as documentation in card.

Key words: Immunization status, Immunization card, Vaccine, children dropout.

Introduction:

Immunization is one of the well-known and most effective method of preventing childhood diseases[1,2] With the implementation of Universal Immunization Programme (UIP), significant achievements have been made in preventing and controlling the Vaccine Preventable Diseases (VPDs) namely Tuberculosis, Diphtheria, Tetanus, Pertussis, Polio and Measles.[3] Immunization has to be sustained as a high priority to further reduce the incidence of all VPDs, control measles, eliminate tetanus and eradicate poliomyelitis.[4,5,6]

India has one of the largest Universal Immunization Program (UIP) in the world in terms of quantities of vaccines used, number of beneficiaries (27 million infants and 30.2 million pregnant women) covered, geographical spread and manpower involved.[2,7,8] India spends more than Rs. 2000 crores every year in immunization program to immunize children against VPDs including polio eradication programme.[7,9] Immunizations services are provided through vast health care infrastructure which primarily include primary health centers and sub-centers. Planning for routine immunization is a continuous process of analyzing data, evaluating progress and constraints and making decisions about reaching programme objectives.[1]

The recent NFHS-3 data of India and Gujarat state shows that the coverage of fully immunized children is around 15-18% less than the same in urban area.[10] In

India majority population is in rural area, so keeping these points in mind, the current study was planned in rural Ahmedabad district with the following objectives:

1) To assess immunization status among children of 12-23 months age group.
2) To find out reasons of left out / dropout.
3)To check quality of records in immunization card.

Materials and Methods:

Out of total 43 PHCs in rural Ahmedabad, 2 PHCs were selected from one block of Ahmedabad district. Using the purposive sampling method, a cross sectional community based study was conducted in nine villages of seven sub centers of these PHCs. Data was collected during October-November 2011. An effort was made to collect data for maximum number of children during the available time period and 120 children were included. Performa was prepared on the basis of government immunization card having information regarding birth weight, date of birth, gender of baby, birth registration, growth chart and their vaccination status. Details of source of vaccination and reasons for partial immunization / non immunization were also included in Performa. As the Performa was specially prepared for the study, field testing was done and necessary modifications were applied to make it standardized and uniform. Information was assessed primarily from immunization card. If card was unavailable, Information was gathered by directly asking the mothers / guardians after their informed verbal consent. Analysis of study was done by using appropriate statistical software applying suitable statistical tests.

Results:

Out of 120 children card was available for 100 (83%) children. Among these 89 (74%) had government card (Mamta card / Bal-mamta card), while 11 (9%) had private card / file. Looking into gender distribution, there were 63 (52.5%) male and 57 (47.5%) female children. Regarding birth date status, 94 out of 120 (78%) children had its documentation in their card. Efforts were carried out to know exact date of birth by directly asking the parents and in other 19 (16%) children's date of birth were noted. Documentation of birth weight was available for 62 (52%) of children, while 44 (37%) children's details were recorded from their mothers. Birth weight detail was not found in 14 (11%) of children. Majority, 73 (69%) of children had birth weight > 2.5 kg, 30 children (28%) had weight between 2 to 2.5 kg and 3 children (3%) had birth weight <2 kg. Regarding birth registration details, 27 (22.5%) children were having documentation in card, for 67 (56%) children details were taken from their mothers / guardians whereas birth registration of 26 (21.5%) children were not done.

The vaccine-wise coverage is shown in Table-1. Out of 120children, 118 (98%) had taken BCG vaccine. Out of these children, BCG scar was seen in 90 (91.2%) out of 98 children present at the time of field survey. All 120 children had received DPT_1 & OPV_1 vaccines. But DPT_3 & OPV_3 vaccines were taken in 96 children (80%). Measles vaccine with 1st dose of vitamin A was given to 101 children. Vaccine dropout of DPT_{1-3} & OPV_{1-3} was highest i.e. 20% followed by BCG-DPT_3 (18.6%) & DPT_1-measles (16%). Looking at the data of intensified pulse polio immunization programme (IPPIP), 13 children (11%) had not taken any OPV dose in IPPIP rounds. One OPV dose in IPPIP was received by 38 (32%) of children while remaining (69, 57%) had received at least 2 doses of OPV during IPPIP.

The immunization status of these 120 children shows that 89 (74%) children were fully immunized and 31 (26%) were partially immunized. No single unimmunized child was found. There were multiple reasons found for partial

immunization. The most common reasons were off place (22%), not known (20%) and sick child (20%). Other reasons were too far (12%), fear of vaccination (12%), no faith (9.5%) and no time (5%). Major source of vaccination was PHC (53%) followed by field Mamta session at anganwadi/subcenter (23%). Other sources were government hospitals (17%) and private hospitals / clinics (7%). Out of 89 government cards, growth chart

Table 1: Gender wise vaccination coverage and dropout rates among study subjects

Vaccination coverage	Boys		Girls		Total		Chi-square	P value
	n=63	%	n=57	%	n=120	%		
BCG	62	98.4	56	98.2	118	98.3	0.005	0.9
DPT_1	63	100	57	100	120	100	___	___
DPT_2	63	100	51	89.5	114	95	4.9	0.026
DPT_3	54	85.7	42	73.7	96	80	2.7	0.1
OPV_1	63	100	57	100	120	100	___	___
OPV_2	63	100	51	89.5	114	95	4.9	0.026
OPV_3	54	85.7	42	73.7	96	80	2.7	0.1
Measles	55	87.3	46	80.7	101	84.2	0.98	0.3
Fully immunized	48	76.2	41	71.9	89	74.1	0.28	0.59 (>0.05)
Partially immunized	15	23.8	16	28.1	31	25.8		
Dropout rates (%)	Boys		Girls		Total		Chi-square	P value
$BCG-DPT_3$	12.9		25		18.6		4.7	0.03
BCG-Measles	11.3		17.8		14		2.0	0.16
DPT_1-DPT_3	14.5		26.3		20		3.7	0.054
OPV_1-OPV_3	14.5		26.3		20		3.7	0.054
DPT_1-Measles	12.7		19.2		16		1.3	0.25

Table 2: Comparison of vaccine coverage among study subjects with NFHS-3 & DLHS-3

Vaccination status (%)	Present study	DLHS3		NFHS3	
	2011-2012	2007-08		2005-06	
	Ahmedabad (Rural)	Ahmedabad (Rural)	Ahmedabad (Total)	Gujarat (Rural)	Gujarat (Total)
Fully immunized	74.16	80.3	50.2	40.1	45.2
BCG	98.3	94	94.9	84.7	86.4
DPT-3 doses	80	58.3	56.4	58.4	61.4
OPV-3 doses	80	83.4	70.2	61.9	65.3
Measles	84.2	76.7	77.4	61.4	65.7

mapping was done in only 61 (68.5%) government cards.

The result of the survey was compared with the latest District Level Health Survey (DLHS-3) & National Family Health Survey (NFHS-3) (Table-2). The data was also compared with total District findings as well as rural component of the District. For comparison with National surveys, the state total as well as rural components of the state was considered.

Discussion:

Immunization card is one of the important tools for assessing immunization status and as a documentary record. In this study out of 120 children card was available for 100 (83%) children, among them 74% was government and 9% was private card. This shows that majority of health services in rural area is delivered through government setup. The gender difference observed in the study (63 boys & 57 girls) is statistically insignificant. The gender wise distribution of the sample population (63 boys & 57 girls) with sex ratio of 904, also explains its representativeness to the study population as the sex ratio of Ahmedabad district is 903 (Census 2011). From the results of general information, it is clear that the documentation was average for date of birth (78%). However, documentation was poor for birth weight (52%) and birth registration (22.5%) which shows that proper documentation requires higher compliance by the health workers. From the result of birth weight, it was found that out of 106 children who had birth weight details, 33 (31%) children were low birth weight (<2.5 kg).

Quality of BCG vaccination was also satisfactory as the BCG scar was found in around 91.2% of children who were available during field survey. Study reveals that vaccine access was good because all the children had taken first dose of DPT & OPV. But vaccine utilization still needs to be improved because only 96/120 children (80%) received DPT_3 & OPV_3. Measles coverage has improved upto 84%. The coverage of measles was found to be even higher than DPT_3. Possible reasons for this include poor tracking, late vaccinations, refusal by parents for further doses of DPT due to fever/local reactions, ignorance by workers to check for DPT doses when infant is brought for measles at 9 months or not updating the card while the vaccination is actually carried out. Vaccine dropout of DPT_{1-3} was 20%, which was highest followed by BCG-DPT_3 (18.6%) & DPT_1-measles (16%). Study reveals that all dropout rates were higher than the 10% cutoff.[1] These highlights higher need for preparing complete due lists' and following it during field sessions along with higher and effective use of E-mamta. If we see the intensified pulse polio immunization programme (IPPIP) status, 13 children (11%) had not received any OPV dose in IPPIP round. Awareness regarding the pulse polio immunization should be strengthened by health workers in community for polio eradication. Regarding the immunization status, 89 children (74%) were fully immunized and 31 children (26%) were partially immunized. Although the fully immunization rate was higher among boys than girls, the gender difference was statistically not significant. (P= 0.59). Lower coverage and higher dropout rates for girls' highlights the gender differences in utilization of services not only in curative services but also in preventive services like vaccination. Most common reasons for partial immunization were off place (22%), not known (20%) and sick child (20%). To improve immunization status, proper IEC particularly strengthening the interpersonal communication skill of the workers regarding vaccination needs to be emphasized. The result of source of vaccination emphasizes the importance and role of government health facilities in service delivery particularly in rural area.

Growth or road to health chart is very important tool for monitoring the growth and nutritional status of baby.[2] Poor growth charting (68.5%) highlights the importance of proper growth charting by the health workers for early identification of malnourished children.

Conclusions & recommendations:

The documentation of various records including birth date, birth weight, registration and growth charting is poor and needs strengthening. Vaccination coverage shows good access to services (coverage >80%) but at the same time reflects poor utilization (dropout rate >10%). Health workers need to be sensitized to follow programmatic guidelines (IEC, tracking, documentation, delivery of key messages etc.) for improvement in performance.

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"In the confrontation between the stream and the rock, the stream always wins..... Not by strength but by perseverence"

Jackson Brown

"Soul is born old and grows young ! That is the comedy of life. Body is born young and grows old ! That is life's tragedy"

Oscar Wilde

Original article

A study on the prevalence of use of tobacco amongst school going children (11 to 15 years age group) of Surendranagar

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Abstract

Background: Despite increasing awareness of the harmful effects of tobacco, the use of tobacco in various forms continues to be a significant health risk factor amongst youth**.**

Aims and Objectives: This study was conducted to find out the prevalence of tobacco use, its health hazards, and awareness regarding tobacco and its ill effects and influence of role model seen for tobacco use amongst students.

Study design: A cross-sectional study.

Materials and Methods: By simple random technique one Govt. school and one Private school were selected after enlisting all the schools. All the students of 5th to 9th standard (11 to 15 years age group) were interviewed.

Statistical Analysis: By SPSS software with Z test, the Chi-square test, and the multivariate logistic regression.

Results: A total of 17.31% of students ever tried Cigarettes / bidi and 28.10% of students were found who ever tried smokeless form of tobacco. A total 71.08% of students were aware about tobacco and 30.08% reported Cancer as a harmful effect of tobacco. Tobacco use was found to be significantly associated with having seen the best friend smoke (OR 3.22), Favourite celebrity smoke (OR 2.6), father smoke (OR 2.07).

Conclusion: Tobacco use is still important risk behaviour amongst adolescent students. This study found a strong association of tobacco use by the students and their having seen various role models smoking. Early detection of tobacco use and its health hazards will help to prevent various life threatening conditions like cancer, heart diseases etc.

Key words: Tobacco, smoking, chewing, role models, health hazards, awareness.

Introduction:

Tobacco is estimated to have killed 100 million people in the 20th century and continues to kill 5.4 million people every year and this figure is expected to rise to 8 million per year by 2030, 80 % of which will occur in the developing countries.[1] Tobacco chewing is prevalent in all parts of the world and all age groups, though it varies in extent. [2, 3, 4] An estimated 186 million of the world population are school children of 13-15 years. Among them, approximately 34.8 million are current tobacco users. [5] There is an urgent need to curb tobacco use amongst school children from the early adolescent age so that such bad habits can be easily nipped in the bud. Hence this study was conducted to estimate the prevalence of tobacco use amongst school children, its health hazards and to evaluate the level of awareness regarding tobacco use amongst the students.

Aims and objectives:

- To assess the prevalence of tobacco usage amongst school children.
- To evaluate the level of awareness amongst the students regarding the hazardous health effects of tobacco.
- To estimate the incidence and types of health hazards due to tobacco use in these children.

Materials and methods:

- Type of study : A Cross sectional study

- Study area : Both the private and the government schools of Surendranagar were enlisted first and from this list one school from private and one from government were selected as a study school by simple random sampling method.
- After taking prior permission from principal of the school, interview dates of the study were fixed. Written consent from the students was taken for the interview.
- **Study population:** School children of a government and a private school of 11 to 15 years age group (5^{th} to 9^{th} standard) of Surendranagar.
- **Sample size**: 491 students of 11 to 15 years age group.
- A pre-designed and pre-tested proforma was used for data collection and each and every student of 5^{th} to 9^{th} standard who was present at the time of interview was included in the study and confidentiality of each interview was maintained.

Data analysis: Data was analyzed using SPSS for Windows – statistical software package.

Results:

Table- 1: Awareness of Tobacco consumption amongst both the government and private school students (N=491)

Awareness (in students' Language)	Government School (N=244) Frequency (%)	Private School (N=247) Frequency (%)	Total (N=491) Frequency (%)
Bad	148 (60.65)	201 (81.37)	349 (71.08)
Good	57(23.36)	21 (8.50)	78 (15.88)
No idea	39 (15.98)	25 (10.12)	64 (13.03)
Total	244 (100.00)	247 (100.00)	400 (100.00)

Table 1 shows that there is a significant difference regarding the awareness between the government and the private school students. **(χ^2 =26.38, d. f. =2, P<0.001)**

Figure1: Reasons for tobacco consumption amongst students of both the Government and private school students of 5^{th} to 9^{th} standard (11 TO 15 YEARS) (N=78)

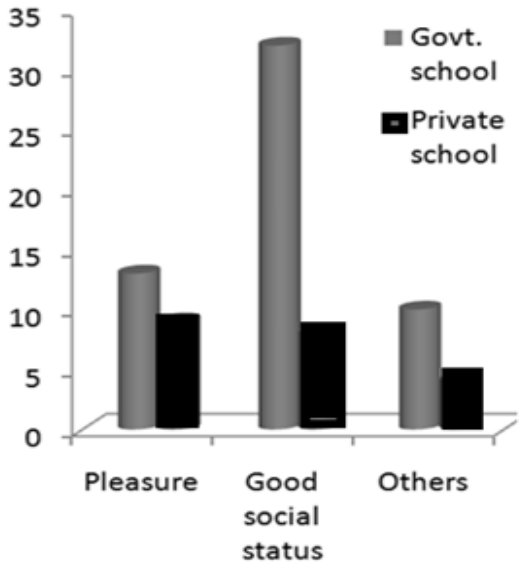

Table -2: Knowledge regarding health hazards of tobacco use amongst school students of both the government and private school students (5^{th} to 9^{th} standard) of Surendranagar. (N=349)

If bad, Health Hazards	Government School (N=148) No. (%)	Private School (N=201) No. (%)	Total (N=349) No. (%)
No idea	11 (7.43)	7 (3.48)	18 (5.15)
Cancer	46 (31.08)	59 (29.35)	105(30.08)
Teeth problems	24 (16.21)	36 (17.91)	60 (17.19)
Oral problems	23 (15.54)	25 (12.43)	48 (13.75)
Lung diseases	12 (8.11)	16 (7.96)	28 (8.02)
Heart diseases	4 (2.70)	5 (2.48)	9 (2.58)
Others	6 (4.05)	9 (4.47)	15 (4.29)

Table 3: Multiple responses related to awareness regarding health hazards of tobacco amongst school children (5th to 9th standard) (N=349)

Health hazards (Multiple Responses)	Govt. School (N=148) No. (%)	Private School (N=201) No. (%)	Total (N=349) No. (%)
Cancer, Teeth problems	**9 (6.08)**	**17 (8.45)**	**26 (7.44)**
Cancer, Teeth problems Oral problems	**7 (4.72)**	**12 (5.97)**	**19 (5.44)**
Cancer, Teeth problems, Oral problems, Lung diseases	**6 (4.05)**	**15 (7.46)**	**21 (6.01)**

Figure 2: Source of information regarding health hazards related with tobacco consumption amongst both the Govt. and the private school students (N=349)

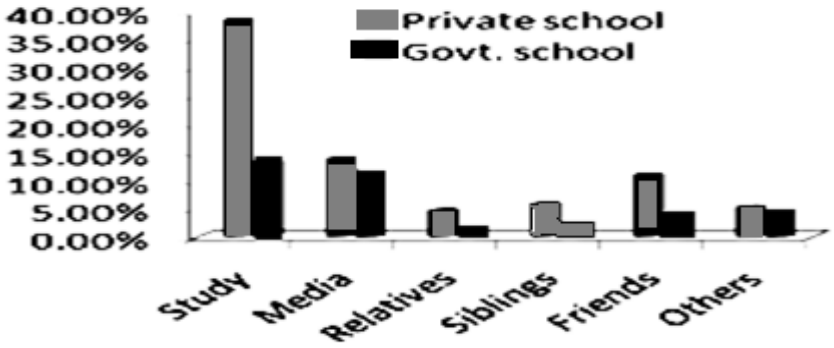

Table 4: Prevalence of Tobacco consumption amongst both the government and the private school children of 11 to 15 years age group. (5th to 9th standard) (N=491)

Tobacco consumption	Government School (N=244) Frequency (%)		Private School (N=247)		Total (N=491) No. (%)
	Male (N=171)	Female (N=73)	Male (N=155)	Female (N=92)	
Ever tried Cigarette/ bidi	**43 (25.14)**	**16(21.92)**	**21 (13.54)**	**5(5.43)**	**85 (17.31)**
Age at 1st Smoking ≤ 11 yrs	**12(7.01)**	**5(6.84)**	**8(5.16)**	**2(2.17)**	**27(5.49)**
Current Cigarette /bidi (≥1 time in 30 Days)	**14(8.18)**	**3(4.10)**	**7(4.51)**	**1 (1.08)**	**25(5.09)**
Tobacco consumption	**Govt. School (N=244)No. (%)**		**Private School (N=247)**		**Total (N=491) No. (%)**
	Male(N=171)	**Female (N=73)**	**Male (N=155)**	**Female (N=92)**	
Current heavy Smoking (≥ 5 Cigarettes/bidi Per day	**6(3.50)**	**1(1.37)**	**2 (1.29)**	**0 (0.00)**	**9 (1.93)**
Ever tried Smokeless tobacco	**65(38.01**	**24 (32.87)**	**41(26.45)**	**8 (8.69)**	**138 (28.10)**
Current Smokeless tobacco use (≥1 time in 30 Days)	**38 (22.22)**	**13 (17.80)**	**12 (7.74)**	**4 (4.34)**	**67 (13.64)**

There is a significant difference between tobacco consumption amongst both the Government and the private school students. **($\chi 2=16.924$, P<0.0001)**

Table 5: Role models ever seen consuming tobacco (either smoking/ smokeless tobacco by the students (5th to 9th standard) (N=491)

Role models	Government School (N=244) No. (%)	Private School (N=247) No. (%)	Total (N=491) No. (%)
Father	46 (18.85)	45 (18.21)	91 (18.53)
Mother	08 (3.27)	02 (0.80)	10 (2.03)
Siblings	24 (9.83)	23 (9.31)	47 (9.57)
Best friend	30 (12.30)	21 (8.50)	51 (10.38)
Favorite teacher	16 (6.55)	11 (4.45)	27 (5.50)
Favorite celebrity	50 (20.49)	40 (16.91)	90 (18.32)

Table 6: MULTIPLE RESPONSE TABLE - Role models ever seen consuming tobacco (either smoking/ smokeless tobacco by the students (5th to 9th standard) (N=491)

Role models	Govt. School (N=244) No. (%)	Private School (N=247) No. (%)	Total (N=491) No. (%)
Father. Best friend	11 (4.50)	18 (7.28)	29 (5.90)
Father, Brother	08 (3.27)	10 (4.04)	18 (3.67)
Father, Best Friend Favorite celebrity	10 (4.09)	11 (4.45)	21 (4.28)
Total	29 (11.88)	39 (15.79)	68 (13.24)

Figure 3: Influence of role models amongst students of both the government and the private school students. (N=491)

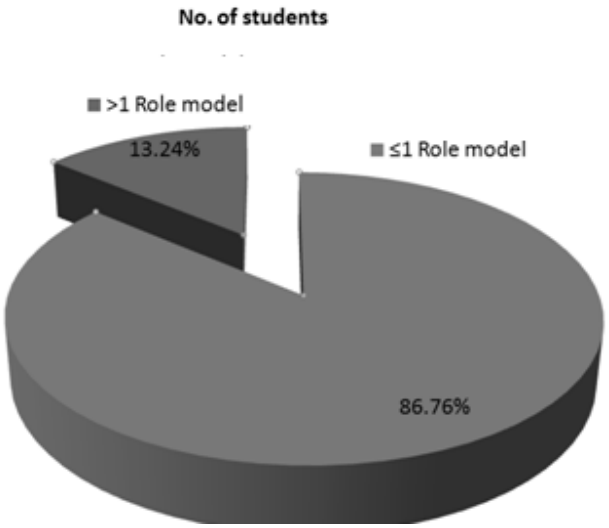

Table 7: Association of tobacco consumption amongst students and the influence of role models (N=92)

Role models	Tobacco consumption (N=92) (%)	OR (CI)	P Value
Best friend	16	3.22 (1.72 to 6.02)	0.0002
Favorite celebrity	26	2.61(1.54 to 4.45)	0.0003
Father	34	2.07(1.21 to 3.54)	0.007

Table 7 shows that Best friend, favorite celebrities and father are three important role models for the students who are consuming tobacco.

Table 8: Incidence of health hazards and type of health hazards found amongst students consuming tobacco of both the government and the private school (5^{th} to 9^{th} standard) (N=92)

Health hazards	Government School N=68)	Private School (N=24)	Total (N=92)
Addiction	03 (4.41)	01 (4.16)	04 (4.34)
Teeth staining	09 (13.23)	02 (8.33)	11 (11.95)
Oral problems	16 (23.52)	05 (20.83)	21 (22.82)
Frequent cough problem	11 (16.67)	02 (8.33)	13 (14.13)
Others	02 (2.94)	03 (12.50)	05 (5.43)
Total	41 (60.29)	13 (54.17)	54 (58.70)

Table 8 shows that 58.70% of students had health hazards amongst those who consuming tobacco in any form (either) smoking/smokeless tobacco **($\chi 2=21.334$, $P<0.05$** statistically significant

Discussion:

The overall awareness regarding tobacco consumption and tobacco related health hazards amongst students in our study was 71.08%, which is almost similar to the study conducted by Rekha P et al. In which it was 75%. [6] . The findings were similar to other studies conducted in different regions of India. [7, 8, 9] Major source of information in our study were study books, media and parents which are similar to the study conducted by Rekha et al. Regarding ever tried cigarettes/bidis smoking amongst students was 17.31% which is almost near to study conducted by Rahul Sharma et al. In New Delhi it was 16.0%.[10] In our study ever tried smokeless form of tobacco amongst students was 28.10% which is higher than the study conducted by Rahul Sharma et al. In new Delhi in which ever tried smokeless form of tobacco was 10%.[10] Regarding current smoking , 5.09% of students are current smokers (≥1 time in past 30 days); whereas 7.1% students were current smokers in the study conducted for tobacco use amongst adolescents students in new Delhi. The prevalence of tobacco use overall, including smoking and smokeless form of tobacco is 18.73% in our study whereas study conducted in New Delhi was 20.9% which is almost similar to our study. The tobacco use was significantly higher amongst students who had seen their favorite celebrity (or 2.61, ci=1.54 to 4.45, p value=0.0003), best friend (or 3.22, ci=1.72 to 6.02, p value=0.0002) and father (or 2.07, ci=1.21 to 3.54, p value=0.007), findings are almost similar to the study conducted by Rahul Sharma et al. Where best friend and parents were two important role model. [10] Study carried out by Jha et al. Too reported that friend , parents and siblings are important influencing role models.[11] Other studies reported similar results. [12,13]. Problems due to tobacco use were teeth staining, oral problems and frequent coughing which were similar to the study conducted by Rekha P Shenoy et al.

Conclusion and recommendations:

The findings in the study suggest that tobacco use is still an important risk behavior amongst adolescent students. This study found a strong association of tobacco use amongst students and its influence with role models ever seen. Tobacco use was comparatively higher amongst males though its use is not restricted to them only. Tobacco use cessation programs targeting the adolescents should be taken into consideration. Iec activities are needed to promote healthy behavior in the community and especially the influence of role models as a provoking factor for tobacco use amongst adolescents should be emphasized.

Acknowledgement:

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"Better to remain silent and be thought a fool than to speak out and remove all doubts"

Abraham Lincoln

"There are only two ways to live your life. One is as though nothing is a miracle. The other is as though every thing is a miracle "

Albert Einstein

" All mankind is divided into three classes: those who are immovable, those who are movable and those who move"

Benjamin Franklin

Original article

Knowledge, Attitude and Sources of Information for Increasing Awareness about HIV/AIDS among College Students

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Abstract:

Background: In India people in the age group of 15-29 years account for 31 percent of all Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome cases. This clearly indicates that young people are at high risk of contracting HIV infection. A couple of HIV/AIDS awareness programmes are there in place in India, an analysis of the media used to disseminate information needs to be conducted to determine if new methods of communication can be incorporated to create better awareness and enhance the knowledge of young people.

Aims: The present study was conducted; 1) to determine the level of information that college students have about HIV/AIDS in order to take further steps towards increasing their knowledge base and consequently changing their behaviour vis-à-vis HIV/AIDS, 2) to determine the relationship between level of knowledge about HIV/AIDS and attitude towards people with HIV/AIDS among college students, 3) to determine the types of media used to disseminate information in college students.

Method: This is a cross sectional study. A purposive sample of 100 students, comprising equal number of boys and girls in the age range of 18 to 23 years were selected. They belonged to arts and commerce faculties from English medium of private colleges in the city of Hyderabad.

Results: It was found that the level of knowledge about HIV/AIDS was average and the attitude towards people with HIV / AIDS was positive among the students. There was a significant positive correlation between level of knowledge and positive attitude. However, most of the students were unable to state the predominant modes of transmission of HIV and had a few misconceptions about HIV transmission indicating lack of comprehensive knowledge. It was also found that students were receptive to increasing their knowledge about the disease. They reported to being comfortable learning more about HIV/AIDS from health professionals, their peers and mass media, due to accessibility, comfortability and anonymity.

Conclusions: Based on the findings of this study, better methods of promoting knowledge about HIV need to be used extensively in addition to the existing ones in order to ensure correct, comprehensive and long lasting information retention.

Key-words: *attitude towards people with HIV/AIDS, HIV/AIDS knowledge, sources of information, college students*

Introduction:

Since the first case of Human Immunodeficiency Virus (HIV) infection was reported in India in 1986 till date, there has been an increased awareness about HIV/AIDS due to the efforts of both the government and various non-governmental organizations[1]. Besides identifying the affected individuals and subsequently providing treatment to them, prevention has been one of the focal points as part of addressing the problem in a holistic manner.

Researchers[2, 3] across the world have found that, though most people have good knowledge of HIV/AIDS, this knowledge appears to be superficial and lacks comprehensive understanding.

Studies[2, 3] have shown that the level of knowledge among youth, though better than other groups in the population[4], lacks depth[5]. The youth, despite being aware of the means of HIV transmission, also wrongly believe that mosquito bites[6, 7], sharing swimming pools[6] and casual contact such as handshake can spread HIV. These wrong beliefs could be because the traditional method of disseminating information through schools and colleges among the youth is not adequate. HIV/AIDS programs need to improve the content of messages pertaining to HIV, by providing information not only on how HIV is transmitted, but also as to how it is not transmitted.

The effectiveness of the methods used till date, to spread awareness about HIV can be determined by assessing the level of HIV knowledge among the youth. It is necessary to promote good knowledge about HIV among the youth for various reasons. Firstly, to decrease high risk sexual behaviour and to promote healthy sexual behaviour among young people and secondly, to reduce the stigmatizing behaviour towards HIV positive people that emanates from ignorance and poor knowledge about the disease.

One of the objectives of the present study was to determine the levels of knowledge among college students and their attitude towards people with HIV/AIDS. The second objective was to determine the relationship between level of knowledge about HIV/AIDS and attitude towards people with HIV/AIDS among college students. The last objective was to determine the sources of information that the college students have already been exposed to and ones they would be open to for receiving information about HIV/AIDS. The lacunae of the current methods employed to spread correct knowledge about HIV/AIDS indicates the need to evaluate the sources of information and to explore the possibility of employing newer media.

Materials and Methods:

This is an analytic cross sectional study design. A convenience sampling method was used to recruit 100 participants with equal number of males and females, from three English medium private undergraduate colleges in the city of Hyderabad, India. The sample consisted of students from the stream of arts and commerce who were in the age range of 18 to 23 years. The nature and purpose of the study was explained to the participants and their written informed consent was obtained. Data was collected over a period of three days from December 1st 2010 to December 3rd 2010.

The research instrument measured the level of knowledge about HIV/AIDS[8]; assessed the attitude towards people with HIV/AIDS[9] and determined the sources of HIV information. The instrument had a total score of 30 for the HIV knowledge segment of the questionnaire. The students were categorized as having poor knowledge about HIV/AIDS if their score was between 0 and 10, average knowledge if their score was between 11 and 20 and good knowledge if their score was 21 and above. For attitude measurement a 15 item, 6-point scale, ranging from strongly agree to strongly disagree was used. The minimum score possible on the scale was 15 and the maximum 90; with a high score indicating a more positive attitude towards people with HIV/AIDS. To determine the sources of information, the participants were asked open ended questions about the media they would be comfortable with discussing about HIV/AIDS and also the media they would consider as credible sources of information. The frequency of the responses was tabulated and percentage of the college students giving a particular response was calculated.

The frequency distribution, percentage, mean and standard deviation were computed to describe demographic variables, sources of HIV information, knowledge and attitudes related to HIV. Pearson product-moment correlation

coefficient was calculated to determine if there was any relationship between level of knowledge and attitude towards people with HIV/AIDS. Independent t-test was used to examine the gender differences in knowledge about HIV/AIDS and attitudes towards people with HIV/AIDS.

Results:

Table 1 shows the demographic profile of the participants. The sample included 50 male and 50 female undergraduate students. The age of participants ranged from 18 to 23 years with mean age of 19.57 years (S.D. = 0.90).

Table 1: Demographic profile of study participants (N=100)

Demographic variable	No. & %	Demographic variable	No. & %
GENDER		**AGE (Yrs)**	
Male	**50**	**16**	**5**
Female	**50**	**19**	**47**
		20	**38**
		21-23	**10**
EDUCATION (Yr of study)		**EDUCATION (stream)**	
2nd year UG	**36**	**Arts**	**17**
3rd year UG	**64**	**Commerce**	**83**
NATIVE PLACE OF LIVING			
Rural	**3**		
Urban	**97**		

Table 2 shows the level of knowledge about HIV/AIDS and attitude towards people living with HIV/AIDS among college students. The level of knowledge ranged from 8 to 26 with mean 18.69, which was average. . There was no significant gender difference in the level of knowledge among college students ($t = 0.84$, $p < 0.05$).

Table 2: Gender differences in HIV/AIDS knowledge and attitude towards people living with HIV/AIDS among college students

Category		Total (N=100)	Males (n=50)	Females (n=50)	t
Knowledge about HIV/AIDS	Minimum	8	8	8	
	Maximum	26	25	26	
	Mean	18.69	18.34	19.04	0.84^{NS}
	S.D	3.80	3.73	3.83	
Attitude towards people with HIV/AIDS	Minimum	34	45	34	
	Maximum	87	87	86	
	Mean	68.66	66.68	70.64	3.28^{NS}
	S.D	11.01	11.54	10.06	

^{NS} Not significant

Table 3: Correlation between HIV/AIDS knowledge and attitude towards people living with HIV/AIDS among college students

	Males	Females	Total
Coefficient of correlation	0.48 **	0.38 **	0.44**

** Significant at 0.01 level

HIV/AIDS knowledge and attitude towards people with HIV/AIDS

Among males the attitude score ranged from 45 to 87 and in females the score ranged from 34 to 86. No significant gender difference was found in the attitude towards people with HIV/AIDS ($t = 3.28$, $p < 0.05$).

The correlation between the knowledge that college students have about HIV/AIDS and their attitude towards people with HIV/AIDS was found to be significant. The correlation coefficient values, as seen in table 3, were higher than the p value at alpha level 0.01 for males ($r = 0.47$), females ($r = 0.38$) and for all the college students ($r = 0.44$).

Source of HIV/AIDS information

A significant finding of the study was that 96% of the male and 90% of the female college students reported the need to learn more about HIV/AIDS. Also, 86% of the male and 90% of the female students reported that they wished to increase their level of HIV knowledge and learn more about it. This shows that students realize the necessity of increasing their knowledge on HIV/AIDS.

The most common sources reported by the male participants, as seen in figure 1, were schools, television, newspapers and magazines, friends, internet, and books.

As seen in the same figure, the common sources of receiving information about HIV/AIDS among the female participants were television, friends, newspapers and magazines, internet, schools and books. The sources of information about HIV/AIDS among youth seem to be predominantly the mass

Fig.1 Sources from which information received

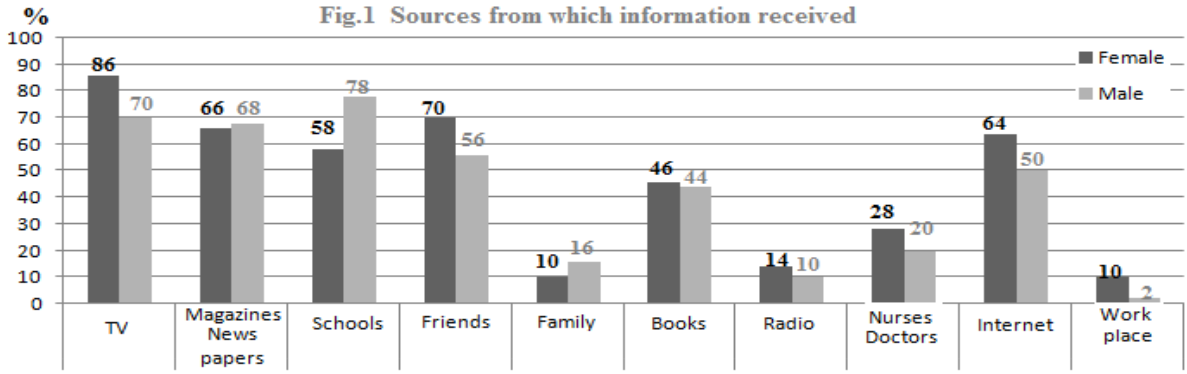


Fig.2 Sources where college students were confortable receiving information on HIV/AIDS

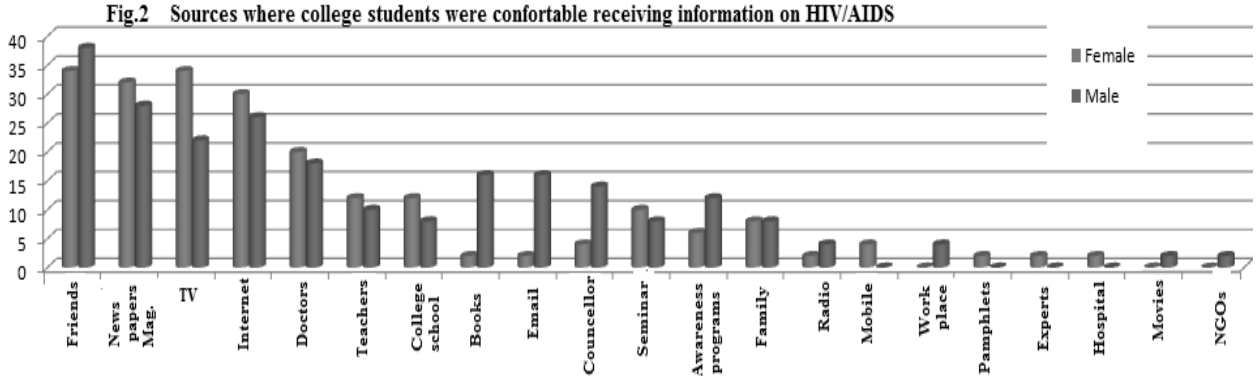
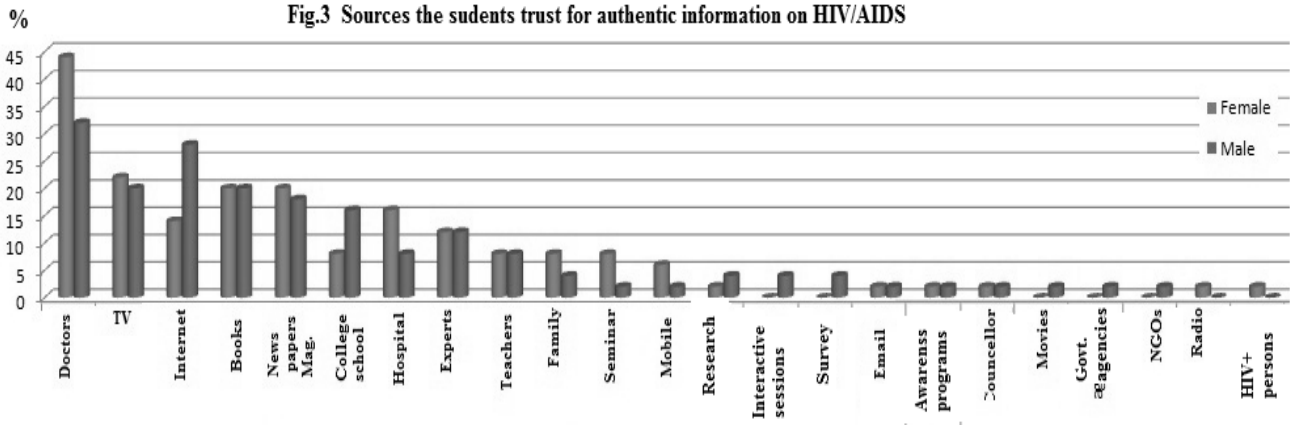


Fig.3 Sources the sudents trust for authentic information on HIV/AIDS



media i.e., television, newspapers; besides schools which often have sex education in their curricula.

With reference to the sources of information about HIV/AIDS, as seen in figure 2, both male and female participants mentioned that they would be comfortable with friends as a source of information for HIV/AIDS. It was also found that the female participants mentioned being more comfortable with television, newspapers and magazine, internet and doctors as the sources of information about HIV/AIDS.

Figure 3 shows the sources that college students trust to provide them with relevant and authentic information when they wish to know more about HIV/AIDS. It can be observed that greater percentage of female participants than male participants trust doctors as a relevant and authentic source of information. Media in various forms is the next source that male and female participants find trustworthy sources of information about HIV/AIDS as seen by their predominant choices of television, newspapers and magazines and books when asked to state sources that they trusted to provide them with accurate information about HIV.

Discussion

HIV/AIDS knowledge

The level of knowledge about HIV/AIDS in college students was found to be average with ample scope for learning and gaining more knowledge. Studies assessing HIV/AIDS awareness have found mixed results. Some studies have found that knowledge among students was poor and that they continued to have certain misconceptions about the spread of HIV[2,3,6]. On the other hand, results from a nationwide behaviour surveillance survey[10] conducted by NACO in 2006 showed that across India awareness among youth was good. The findings of the current study were not in line with the above mentioned results showing that knowledge of the college students is average. The reason for low awareness may be attributed to the sources from which they have received their information. The information provided by the various sources may not have been comprehensive[11]. The recipients of the information also check the credibility of the sources of information. It is important that comprehensive AIDS awareness programmes be conducted and the information disseminated on a regular basis through credible sources to ensure retention of information.

The knowledge gathered and retained is affected by the media from which they are obtained. In the case of information related to health awareness and practices for communicable/ contagious diseases, retention of information is of great importance as this would dictate health behaviour and prevent contracting and spreading of the disease[12,13].

A particularly noteworthy finding was that the students consider their knowledge to be average or below average. They believe that they need to have comprehensive knowledge about HIV/AIDS and wish to learn more about HIV/AIDS. It is a relevant finding as people who are open to receiving more information may also take active measures in obtaining this information.

In the quartet of communication- source, channel, message and receiver, the receptivity of the receiver dictates the perception and retention of information. In the present study, majority of the respondents realized the need to learn about HIV/AIDS and also indicated the desire to learn more. This would suggest that the young college students would not be averse to future awareness programmes and may take an active role in increasing their knowledge. One of the possible reasons for the unanimous response of the college students could be that the students were assessed on their knowledge about HIV/AIDS and were also asked to make a self assessment of their knowledge. This may have led them to believing their

knowledge to be poorer than what it is and realizing the need for further information or knowledge. Perceived need for gaining knowledge about HIV/AIDS is negatively associated with self belief about one's knowledge and actual level of knowledge[14].

Attitude towards people with HIV/AIDS

The attitude of college students towards people living with HIV/AIDS was found to be positive with no gender differences. There was also a positive correlation between level of knowledge about HIV/AIDS and the attitude towards people with HIV. In other words, as the awareness about HIV/AIDS increases, the attitude towards HIV positive people tends to be positive. The results of the present study are in line with findings from other studies conducted in India[15, 16] and different parts of the world[6, 7].

Stigma and discrimination is a pervasive factor in the management of HIV/AIDS. Changing attitudes of people towards an object by giving information about it is a strategy quite commonly adopted as it is cost and resource effective[17].

Keeping in view the findings that knowledge levels are low among youth and there is a significant correlation between knowledge and attitude with respect to HIV/AIDS, the researchers further explored the various sources of spreading HIV/AIDS information among urban youth.

Source of HIV/AIDS information

Another component of the communication process – the channel or medium also plays a prominent role in public health awareness. Students reported being most comfortable discussing about HIV with their peers[18, 19] and friends. Mass media seems to be prevalent choice among the college students to obtain knowledge about HIV. This could be due to the fact that Indian society does not encourage open discussions of topics related to sex and hence most youngsters may be uncomfortable raising questions and getting their queries clarified in the presence of others. They may prefer the anonymity and confidentiality offered by mass media. It is important to keep this in mind when planning future strategies for awareness generation among this group of population[18].

It can be observed from the present study that internet services, which are one of the major means of modern day communication, are increasingly becoming one of the means of gaining information about HIV/AIDS both in males and females.

Another aspect about internet being a prime choice for youth could be that it affords them the freedom to explore and access information that they find relevant and comprehensible. However, in India most of the population in this age group does not have access to internet and so this medium cannot be the primary focus of intervention strategies, though it could be a complementary medium that could be used along with the traditional methods.

Half of the respondents of the study trust the medical fraternity – doctors[18], nurses and hospitals to provide them with correct information and are comfortable discussing HIV with them. This may be because medical professionals would be the first ones who disclose the information about HIV positive status and provide the crucial immediate and subsequent medical services. Awareness programmes conducted by peer educators[20] for example, medical students could perhaps serve a dual purpose as college students would trust them and be comfortable in discussing topics related to sex with them. The effectiveness of peer-led education for increasing HIV/AIDS awareness and knowledge and bringing a change in attitude from negative to positive have been seen in several studies[21,22,23].

Mass media are also reported to be trusted sources of information for the

college students. It is essential that the messages they receive through this mode, be it in the form of public awareness programmes, movies, or documentaries, be correct and comprehensive in order to avoid development of misconceptions among people.

Use of mobile phones has increased since the last few years in most parts of the world. In India, the number of youngsters with access to a mobile phone is high. Through mobile phones they also have access to radio and internet. This provides increased scope for newer media through which selected segments of the population can be contacted and communicated through tailor made HIV/AIDS awareness programmes. Extra effort has to be put in public health communication interventions and the receivers have to be met at their level of technological use, especially in the context of rapidly changing communication channels[24].

Conclusions and recommendations

This study was aimed at exploring the various sources for creating AIDS awareness and determining new media that could aid in future public health awareness campaigns as there have been changes in health communication, particularly in dealing with young people. We found out that the level of knowledge about HIV/AIDS is average among college students and that their attitude towards people with HIV/AIDS is positive. The students are aware that their knowledge is not complete and are also receptive to learning more. It has also been found that the students trust medical professionals as well as mass media to provide them with authentic information. However, the students would be more comfortable with learning about HIV/AIDS from their friends as they constitute the 'comfort zone'. Youngsters are hesitant about discussing issues regarding sexuality with everyone and would prefer mediums that are anonymous and that assure confidentiality. Keeping these factors in mind, tailor made intervention strategies could be used by mass media, medical personnel, and peer educators.

The data has been collected from a small sample comprising of only three private colleges in Hyderabad. Hence, it is precluded from generalizing the results to all the college students of the city. In future, studies with a more representative and larger sample could be undertaken. Demographic information was also confined to age, gender, education and place of living in this study but further studies could be scaled to include religion, education level of parents, socio economic status as these factors influence the sources of information that the youth have access to, thus affecting their level of health awareness.

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Original article

Effect of different maternal factors on birth weight in the Odhav ward of Ahmedabad Municipal Corporation – A Case Control Study

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Abstract

Aims and objectives: To study the effect of various maternal risk factors associated with outcome of LBW

Study Design: Case control study

Methodology: The case-control study was conducted in the Odhav ward of Ahmedabad Municipal Corporation area with the purposive selection of 200 Low Birth Weight (LBW) babies and age and sex matched 200 Normal Birth Weight (NBW) babies from the link workers' served area. Data regarding various maternal and socio-cultural factors were collected by interviewing the mothers and analysed with appropriate statistics.

Results: Average birth weight of the study population was 2.52 ± 0.53 Kg which was slightly higher for male babies than female. Literacy of mother was associated with beneficial effect with the higher birth weight of new born babies. Laborers' occupation had a negative effect on the birth weight as compared to housewives and service class women. Maternal age with less than 25 and more than 30 years had higher proportions of low birth weight babies (63.5%) as compared to normal birth weight babies (56.5%). The birth interval and previous child's birth weight were significantly associated with birth weight of the new born.

Conclusion: Laborer as maternal occupation had significant adverse impact on birth weight and it needs to be targeted for intervention. Improving institutional delivery, higher maternal education and adoption of temporary family planning practices for regulating fertility might improve the birth weight of new born babies.

Key words: low birth weight, maternal occupation, literacy, pre-term

Introduction:

The World Health Organization has defined the term "Low birth weight" as birth weight less than 2500 grams irrespective of the duration of the gestational period.[1,2,3,4] Birth weight (BW) is the single most important criterion for determining the neonatal and infant morbidity and mortality. Low Birth Weight (LBW) is a sensitive indicator of the socio-economic conditions and indirectly measures the health of the mother and the child. Incidence of LBW in India in the year 2008 was 30%.[5] Several studies present a detailed account of factors associated with LBW.[6,7,8, 9] Number of factors like maternal, socio-environmental and genetic factors is responsible for the normal health, development and survival of children.[10] During past decade, several interventional programmes including Reproductive and Child Health have been launched all over India to improve the health status of mothers and children.

The study was aimed to find out the effect of various maternal risk factors on the birth weight with the objectives: (1) to study the effect of various factors associated with outcome of LBW and (2) to study which one of the various factors had maximum impact on LBW.

Methodology:

Study design: Case Control Study

Study area: Area served under the link worker of Odhav ward UHC of Ahmedabad Municipal Corporation.

Sampling technique: Purposive sampling
Sample size: By selecting 200 LBW and age and sex matched 200 NBW children born during the period of 1st August 2008 to 31st July 2010 whose birth weight records were available with link workers of the ward.

- Case - Low birth weight (LBW): According to the WHO definition, infants with birth weight less than 2500 gm are low birth weight irrespective of age of gestation.[1]
- Control - Normal birth weight (NBW): Infant birth weight ≥ 2500 gm.[1]
- Case : Control = 1:1 age and sex matched
- Exclusion Criteria (Both for Case and Control): Mothers who did not give consent, babies whose birth record was not available, mother was not available for giving information.

Study period: August 2010 to November 2010
Study Method: Verbal consent was obtained from each mother recruited for this study. A personal interview was carried out with the predesigned questionnaire. Information regarding the maternal factors like maternal age, parity, spacing between pregnancies and birth history like place of delivery, gestational age at delivery and type of delivery was obtained. Also, factors like maternal education and her occupation was noted. Information regarding birth weight was obtained from the available birth records. Data was compiled and analysis was done using computer. Epidemiological and statistical parameters were computed. Multivariate analysis was done adjusting for the effect of maternal age, maternal occupation, education and gestational age at delivery.

Results and discussion:

The study was carried out in the underprivileged area of the Odhav ward. It was the Hindu dominant area, with most of the families residing in one hall kitchen homes or chawls. (Low socio-economic class) Total 400 children below 2 years of age were included in the study; around 30% were between the age group 12 and 18 months. The mean age of LBW babies was 12.4 ± 6.7 months and of NBW babies was 11.6 ± 7.3 months. The difference in age was statistically not significant. In the study, 212(53%) were female children. Average birth weight among the LBW babies was 2.09 ± 0.3 Kg, whereas among the NBW babies it was 2.95 ± 0.32 Kg. Out of total 400 deliveries, 20% were caesarean delivery.

It was observed that 42.25% mothers were illiterate. In LBW cases, 47% mothers were illiterate while in NBW cases, 38% mothers were illiterate, literacy was not significantly associated with LBW (Table 1) (χ^2=2.96, df 1, P= 0.08). Mondal B et el[11] and Anand Kiran et el[12] also found the similar result. Multivariate analysis showed the value of odds ratio 1.6 for illiteracy which indicates that the maternal illiteracy had negative effect on birth weight of baby.

Out of 30 laborer mothers, 90% delivered LBW babies while 10% delivered NBW babies (Table 1). It is not the working status of mother which affects the birth weight (χ^2=0.73, df 1, P>0.05), but type of maternal occupation had significant effect on the birth weight (χ^2=30.18, df 2, P <0.0001). Odds ratio for occupation shows that as compared to housewives, mothers who were involved in the service had much lower risk (Odds ratio 0.2) of having LBW whereas laborer mothers had 10.6 times higher risk of having LBW baby.

Literacy and type of occupation had synergistic effect on birth weight of baby (Table 2). In this study, literacy had some favorable impact on the birth weight of baby as all (100%) illiterate laborer mothers had LBW babies as compared to 85% of literate laborers, whereas 66.7% illiterate but servicing mothers had LBW as compared to only 12% LBW deliveries among literate and servicing mothers.

In our study the range of maternal age was 20 years lo west to 40 years highest.

Table 1: Relationship of various maternal factors with birth weight

Maternal Factors	LBW	NBW		Confidence Interval	
	N=200 (%)	N=200 (%)	OR	Lower	Upper
Maternal Education					
Illiterate	93 (46.5)	76 (38.0)	1.42	0.95	2.11
Literate	107 (53.5)	124 (62.0)			
Maternal Occupation					
Housewife	168 (84.0)	174 (87.0)	1	-	-
Labour	27 (13.5)	3 (1.5)	0.11	0.03	0.36
Service	5 (2.5)	23 (11.5)	4.44	1.65	11.96
Maternal age(Years)					
<25	85 (42.5)	75 (37.5)	1	-	-
25-29	73 (36.5)	87 (43.5)	1.35	0.87	2.1
>30	42 (21.0)	38 (19.0)	1.03	0.6	1.76
Gestational age at delivery					
>=37 weeks (Full Term)	184 (92.0)	196 (98.0)	0.23	0.08	0.72
< 37 weeks (Preterm)	16 (8.0)	4 (2.0)			
Place of delivery					
Hospital delivery	156 (78.0)	175 (87.5)	0.51	0.29	0.87
Home delivery	44 (22.0)	25 (12.5)			
Previous siblings Birth Weight*					
Low	28 (25.5)	17 (14.7)	1.99	1.02	3.89
Normal	82 (74.5)	99 (85.3)			

***** Only 226 children were having siblings

Table 2: Association of Occupational categories and Literacy of mother with LBW babies

Occupation	**Literate**	**Illiterate**
Labourer	85.0%	100.0%
Service	12%	66.7%
Housewife	45.7%	53.2%

Table 3: Multivariate analysis with the impact of the variable on birth weight

Variable	**Wald Test**	**df**	**Significance**	**Odds ratio (OR)**	**95% C.I. for OR**	
					Lower	Upper
Maternal age <25 Years	3.456	2	0.178	Ref.*		
Maternal age 25-29 years	3.269	1	0.071	0.648	0.405	1.037
Maternal age ≥30 years	0.089	1	0.765	0.915	0.511	1.638
Education - Illiterate	4.102	1	0.043	1.567	1.015	2.421
Occupation – Housewife	22.733	2	.0000116	Ref.*		
Occupation – Labourer	14.289	1	.0001568	10.557	3.111	35.832
Occupation – Service class	7.406	1	0.006	0.242	0.087	0.672
Gestational age - Pre term	8.548	1	0.003	5.489	1.753	17.189

*Ref. – Reference value

proportion of LBW was lowest (21.0%) among the maternal age group >30 years as compared to age groups <25 years (36.5%) and 25-29 years (42.5%) (Table 1). Anand and Garg et el[12] (2000) found no significant relationship between maternal age and LBW. To study effect of maternal age on birth weight, cases and controls were classified into three groups as per maternal age - <25 years, 25-29 years and > 30 years. Babies of mothers with age <25 years were compared with other 2 groups by multivariate analysis (Table 3). Results indicate that maternal age group 25 – 29 years had protective effect on birth weight (Odds ratio 0.6) while maternal age > 30 years (Odds ratio 0.92) had almost equal risk as <25 years maternal age (Odds ratio 1).

Hospital delivery in either government or private hospitals constitutes about 82.75% of total deliveries. Those who had delivered at home had 63.8% of LBW babies as compared to 47.2% LBW babies who had delivered in the hospital. As per interview with trained birth attendants, it is their practice to refer the pregnant women to nearby hospitals for delivery if they found some higher weight gain during pregnancy as well as if they predict any complication at the time of labor. When comparison of LBW babies was done with gestational age at delivery, preterm deliveries (<37 weeks) accounted for 80% as compared to 48.4% in the full term deliveries (Table 1). Place of delivery (χ^2=9.885, df 1, P value 0.007) and gestational age at delivery (χ^2= 6.37, df 1, P value 0.01) was found to be significantly associated with birth weight of new born. Impact of preterm delivery as a single risk factor was 2nd highest in LBW babies (Odds Ratio 5.5) as compared to all other maternal factors (Table 3). Risk for LBW babies was more when illiterate mothers had preterm deliveries as none of the illiterate mother had preterm NBW babies against 20% NBW preterm deliveries by literate mothers.

As the 174 mothers in the study population were primipara, only 226 mothers were considered for study the effect of birth spacing and the previous history of low birth weight baby. Out of 226 mothers, 37.5% had LBW deliveries with average birth spacing less than three years as compared to 56% among those having the birth spacing more than 3 years. The birth interval was found significantly associated with birth weight (χ^2=7.2, df 1, P value 0.007). These findings were supported by Deswal et al[9] and Mavalankar et al.[13]

Out of total 45 mothers who had LBW babies in the previous pregnancy, 62.2% (n=28) had LBW babies currently included in the study. The recurrence of LBW was higher for those having history of previous LBW siblings, which was statistically significant with χ^2 value 4.13 and P value 0.042. Idris et al[14] (2000) studied a total 259 mothers who had previous adverse obstetric history and 44.40% of them had LBW deliveries.

Conclusion:

As a single risk factor maternal occupation laborer, had the highest adverse impact on the birth weight of a baby followed by preterm delivery and was statistically significant. In this study maternal age <25 years, > 30 years and illiteracy were also found as major risk factors responsible for LBW babies. This study indicates that improving female literacy, avoiding close birth interval are essential measures for reducing the prevalence of LBW babies. Government's efforts are ongoing to improve literacy, optimize the age of pregnancy and improvement of antenatal care to decrease preterm delivery. But there is a need for targeted intervention for laborer mothers to improve maternal and child health.

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"In a conflict between the heart and the brain, follow your heart"

"Comfort is no test of truth. Truth is often far from being comfortable"

"Take up one idea. Make that one idea your life - think of it, dream of it, live on it. Let the brain, muscles, nerves and every part of your body be full of that idea, and just leave every other idea alone. That is the way to succed !

Swami Vivekanda

Original article

Effect of implication of time management principles on efficiency parameters in the cardiac catheterization laboratory

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Abstract:

Context: With the increasing incidence of Coronary Artery disease in developing countries and availability of fewer resources and manpower, optimal Operating Room management is the key factor for patient care.

Aims: To evaluate the effect of time management principles on efficiency parameters in the cardiac cath-lab.

Methods and Material: Prospective interventional study was carried out on patients admitted for procedures at the cath lab amongst eight cardiologists during April 2009 to June 2009. The control period was from January 2009 to March 2009. Parameters like start time tardiness, case cancellation rate, turn over time, waiting time of the operator in the waiting area of the cath-lab and patients' waiting since hospitalization for operative slot was evaluated after the implementation of time management steps and compared with control group. Unpaired t-test was used for statistical analysis. P< 0.05 was considered as statistically significant.

Results: Total number of the patients were 430 (Mean ± SD, 73.75±83.63) and 590 (75±52.59) for study group and for control group respectively. Implementation of operating room (OR) management principles resulted in improvement of OR efficiency parameters reaching statistically significant reduction in start-time tardiness (P=0.023), case cancellation rate (P=0.031), turnover time (P=0.0113) and patient waiting time (P=0.025) while reduction in cardiologist waiting time did not reach statistically significant level (P=0.15).

Conclusion: Implementation of OR management principles in cath-lab resulted in improvement of most of the efficiency parameters in patient management.

Key-words: OR Efficiency parameters, Time management

Introduction:

Coronary heart disease is a leading cause of mortality in the world, accounting for almost 17 million deaths annually. Nearly 80% of this global mortality and disease burden occurs in developing countries[1] and projections show that this will still be the case in 2025.[2] Optimal resource utilisation to tackle this huge burden is a key area. Operating room (OR) management is a new subset of hospital management and entails not only optimal utilization of OR resources but also of time slots by various operators. The same holds true for Catheterization Laboratory (cath-lab) for cardiology since "Time is muscle". However, fewer cath labs and especially fewer trained operators mark the importance of time management, with efforts directed towards maximizing resource efficiencies. Mismanagement in the cath-lab not only results in time delays of both the doctor and patient care but also lead to frustration amongst the patients and operators involved, apart from under utilization of resources.

Personal time management skills like **Goal setting, Prioritization**, **Managing**

Interruptions, Procrastination and Scheduling are essential tools for effective utilization of Resources. Various efficiency parameters[3] were predefined, based on other time efficiency parameter studies [3,4,5]. In this study, following parameters were used for quantitative assessment for time management in cath-lab:

1. Start-time tardiness: Mean tardiness of start times for elective cases per OR per day i.e. the time delay between scheduled time and actual beginning of the procedure.
2. Case cancellation rates (overnight case cancellation): Cancellation rates vary among facilities, depending partly on the types of patients receiving care. Monitoring the cancellations correctly is calculated by taking the ratio of the number of cancellations to the number of scheduled cases.
3. Turnover time: It is the time from when one patient exits an OR until the next patient enters the same OR. Turnover times include cleanup times and setup times, and not delays between cases.
4. Patient waiting time[4] : Time from hospitalization to shifting to an OR.
5. Cardiologist waiting time: Time from operator's arrival to OR to his getting washed up in OR for that case.

For timely intervention and treatment, the effect of various time management principles in cath-lab has been analyzed in this study, considering it as important marker of patient management.

Subjects and Methods:

This interventional single centre study was carried out at a private hospital of Ahmedabad city for three consecutive months (April 2009 to June 2009). All the patients undergoing procedure in cath-lab during this period were recruited in the study (study group). All eight Cardiologists working in this cath lab centre during this period were included in the study. Apart from this cath lab centre, all cardiologists use to operate at atleast one more cath lab centre, which influenced OR utilization efficiently. Three of the eight cardiologists also had their OPD consultation in the same premises and it tended to run simultaneously with procedures in cath lab. Practice pattern in this part of India is determined by "patient and referral doctor preferred cardiologist" approach instead of divided emergency scheduling of cases. Hence the numbers amongst the operators were uneven.

Based on the principles of time and OR management, following steps were taken with effect from 1st of April 2009 in terms of cath-lab (Operating Room) management policy :-

1. 1. Assigning duty of cath-lab manager[5] to an assistant doctor and a senior cath-lab technician. They were assigned to coordinate for the slots and timings amongst all the operators based on their schedule by calling all the cardiologist in the morning for scheduling their respective cases based on the operator and cath lab availability. This did not incurr any additional cost. Similar methods are being employed by some but not all the corporate hospitals in the city. However there are no published data about the OR management from India to our knowledge and to our knowledge this study is first of its kind to implement OR management principles in cath lab.
2. All operators were briefed about tentative cath-lab schedule of planned cases.
3. Shorter duration cases and diagnostic procedures (like angiography) were given priority over planned longer and therapeutic procedures (like angioplasty).
4. Early start rather than late start strategy was preferred for optimal utilization of available resources.

Cath lab tended to start for planned cases at 1000 hrs or so before implementing the policy but during the study period certain cardiologist, who found it suitable, started their cases around 0800 hrs or so.

5. Procedural route selection i.e. Radial or femoral route was left to operators experience and judgment and lesser on the demands of the patients to optimize time management.
6. If the time anticipated for making a decision for an "ad hoc interventional procedure" (like angioplasty) was more after a diagnostic procedure (like angiography) by relatives , then that time was utilised for another diagnostic procedure (angiography) or short operation, thus utilizing the OR for the same time.

Five efficiency parameters: start time tardiness, case cancellation time, turn over time, waiting time of the operator in the waiting area of the cath-lab and patient waiting time since hospitalization for operative slot were evaluated after the implementation of time management steps. The control period was from January 2009 to March 2009 and all the patients ("all-comers") operated during this duration by the same eight cardiologists in this cath-lab were included in the control group, for which data was collected on retrospective basis for the same parameters . Comparison was done to evaluate the effect of application of time management principles.

Data thus collected was entered in the master chart and statistically analysed using unpaired t-test to evaluate the effect of time management principles in our hospital settings. Statistical analysis was done by using software epi-info version 6.0. $P< 0.05$ was considered as statistically significant.

Results:

In the present study, total number of the patients were 430 (Mean$\pm$ SD, 73.75 $\pm$ 83.63) and 590 (75 $\pm$ 52.59) for study group and for control group respectively amongst eight operators (Table 1). Following are the results of various efficiency parameters that were evaluated:

1. Start time tardiness: For control group, Mean=22.8. Standard Deviation (SD) = 9.73 .For intervention study group, Mean = 13.7.SD = 2.23. After implementation of management principles, statistically significant reduction was found in start-time tardiness (P=0.023). (Table 2)

Table 1: Personal characteristics:

	Control study period (Jan 2009 - March 2009)	Intervention study period (April 2009 - June 2009)
Total number of operators	8	8
Total number of patients	590	430

2. Turnover time: For Control group, Mean = 24.2. SD = 10.8. For intervention study group, Mean = 12.0. SD = 1.53. Statistically significant reduction was found in turn over time (P=0.0113). (Table 3)
3. Patient waiting time: For control group, Mean = 184. SD = 77.2. For intervention study group, Mean = 115. SD = 10.7. Statistically significant reduction was found in patient waiting time after application of management principles (P=0.025). (Table 4)

Table 2: Start Time Tardiness (with mean value) in Control and Intervention study group:

Operators	Control group		Intervention study group	
	Total STT(min)	Mean STT per patient	Total STT(min)	Mean STT per patient
A	6368	24.21	1675	11.3
B	1622	21.91	1122	9.59
C	1653	27.09	508	13.4
D	624	27.13	413	14.8
E	162	32.4	63	15.8
F	2321	26.07	503	14.8
G	0	0	32	16
H	1764	23.52	805	13.6
Gross Total	14514	22.8	5121	13.7

Table 3: Turnover Time (with mean values) in Control and Intervention study group:

Operators	Control group		Case group	
	TOT (min)	Mean value	TOT(min)	Mean value
A	6937	26.37	1732	11.7
B	1678	22.67	1279	10.93
C	1741	28.54	401	10.55
D	724	31.47	312	11.14
E	178	35.6	49	12.25
F	2411	27.09	403	11.85
G	0	0	31	15.5
H	1612	21.49	706	11.96
Gross Total	15281	25.9	4913	11.42

Table 4: Patient waiting time (with mean value) in control and Intervention study group:

Operators	Control group		Intervention study group	
	PWT(min)	Mean value	PWT(min)	Mean value
A	59793	227.35	19741	133.38
B	14889	201.2	13007	111.17
C	13242	217.08	4352	114.52
D	4425	192.39	3218	114.92
E	1186	237.2	421	105.25
F	19934	223.98	4120	121.17
G	0	0	245	122.5
H	13121	174.95	5821	98.66
Gross Total	126590	214.56	50925	118.43

Table 5: Cardiologist waiting time (with mean value) in Control and Intervention study group:

Operators	Control group		Intervention study group	
	CWT(min)	Mean value	CWT(min)	Mean value
A	7028	26.72	3403	22.99
B	2479	33.5	2412	20.61
C	1812	29.70	768	20.21
D	877	38.13	576	20.57
E	165	33	83	20.75
F	2687	30.19	701	20.61
G	0	0	43	21.5
H	2003	26.70	1212	20.54
Gross Total	17051	28.3	9198	21.39

Table 6: Case cancellation rate (%) in Control and Intervention study group:

Operators	Control group		Intervention study group	
	CCR (%)	Mean value	CCR (%)	Mean value
A	9	3.42	2	1.35
B	2	2.70	1	0.85
C	2	3.27	0	0
D	1	4.34	0	0
E	0	0	0	0
F	3	3.37	1	2.94
G	0	0	0	0
H	1	1.33	0	0
Gross Total	18	3.05	4	0.93

Table 7: Measurement of Efficiency Parameters:

Efficiency Parameters	Control (n=590)				Cases(n=430)				P* value
	Gross Total	Mean value	SD of mean	95% CI value for mean	Gross Total	Mean Value	SD of mean	95% CI value for mean	
Start-time tardiness	14514 min.	22.8 min	9.73	17.44±28.15	5121 min.	13.7 min	2.23	8.29± 19.01	0.023
Case cancellation rate	18	2.31 %	1.66	1.25± 3.36	4	0.643 %	1.06	-0.412± 1.64	0.031
Turnover Time	15281 min.	24.2 min	10.8	18.33± 29.98	4913 min.	12.0 min	1.53	6.161± 17.81	0.0113
Patient waiting time	126590 min	184 min	77.2	142.5± 226.1	50925 min.	115 min	10.8	73.41± 157.0	0.025
Cardiologist waiting time	17051 min.	27.2 min	11.6	20.99± 33.50	9198 min.	21.0 min	0.894	14.72± 27.23	0.15

***P value <0.05 is considered as statistically significant.**

4. Cardiologists' waiting time: For control group, Mean = 27.2. SD = 11.6. For intervention study group, Mean = 21. SD = 0.894. The reduction in cardiologists waiting time was statistically not significant. (P=0.15). (Table 5)
5. Case cancellation rate: For control group, Mean = 2.31. SD = 1.66. For intervention study group, Mean = 0.643. SD = 1.06. Statistically significant reduction was found in case cancellation rate (P=0.031). (Table 6)

Measurement of efficiency parameters with P value are shown in Table 7. Overall 9393 minutes of start time tardiness, 75665 min of patient waiting time and 10368 min of patient turn over time were saved in intervention phase. This saved time can be utilized for improving patient care and OR management. Also there was reduction of cancellation rate from 3.05% to 0.95 % in the intervention period as compared to pre intervention period. There was also trend towards reduction in cardiologist waiting time with reduction of 7853 min but this did not reach statistically significant level. (Above results were obtained by subtracting gross total time of study group from that of control group for each parameter – Table 7).

Discussion:

Operating Room Management is the science of how to run an Operating Room Suite. Operational Operating Room Management focuses on maximizing operational efficiency at the facility, i.e. to maximize the number of surgical cases that can be done on a given day while minimizing the number required resources and related costs. This study was envisaged to extend these principles for cath-lab management.

In the present study, there were more number of cases in January to March, 2009 (pre interventional period/ control period) as compared to April to June 2009 (Interventional period/ study period). This variability may be due to seasonal factors and marriage season in second half in India and more leaves utilized by the cardiologist during the same period.

In present study, early start of the procedure helped in reduction of start time tardiness. Assigning the duty to an assistant doctor or senior cath-lab technician as cath-lab manager improved the cath-lab efficiency in terms of reduction in start time tardiness and patient waiting time. Knowledge of schedule also resulted in the improvement in case cancellation rate and turn over time[6, 7]. Prioritizing short procedure over longer, improved on-time performance and decreased staff member overtime expense and turn over time.[8]

Application of OR management principles in cath-lab improved most of the efficiency parameters. Though waiting time of cardiologist reduced but, still remained below the statistically significant level in the current study. Further studies need to be conducted, applying various management principles and eventually it may lead to reduction in this parameter as well to a level of significance. As elucidated in the study, application of OR management principles is easy and inexpensive. Also it can be adopted by other cath labs as well as other sub specialities like advanced imaging modalities which are underutilized due to scarcity of resources. The total number of procedures along with operating room utilization can be increased more markedly in terms of time as well as cases[9].

Other OR management principles like bin packing algorithms, parallel processing and resource management can also be studied to analyze further impact on patient care and management with improvement in efficiency parameters. To conclude, time

management in cath-lab has proved to be an effective tool to increase the efficiency of patient management and resource utilization under this study. Improvement in OR efficiency can reduce duration of hospital stay and fasten the diagnostic or therapeutic procedure schedule of the patient. Application of OR management principles as adopted in this study can help in more efficient utilization of resources in populous nations and areas where patients outnumber the available resources.

Acknowledgement:

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"Poor health is not caused by some thing you do not have. It is caused by disturbing some thing you already have"

Dean Ornish

"Doctors are men who prescribe medicines of which they know little, to cure diseases of which they know less, in human beings of whom they know nothing"

Voltaire

"So many people spend their health gaining wealth, and then have to spend their wealth to regain their health."

A.J.Materi

Original article

Data Validation of Immunization under RCH Programme among Poor Performing Blocks of Surat District

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Abstract

Introduction: Effective systems for monitoring progress and outcomes are critical for all programme implementation. Community, District and National levels all require appropriate information for decision-making. Information systems on coverage of interventions can serve as a powerful evidence-based tool for programming.

Objective: To assess the availability, accessibility, utilization and effective coverage for Immunization services of Reproductive Child Health programme among poor performing blocks of Surat district.

Methods: Cross Sectional study with unit 10 PHCs and from each PHC two sub centre villages were selected randomly in Surat District.

Results: All vaccine availability at studied PHCs was 99%. Accessibility of UIP vaccines during monthly Immunization session was 96.4%. First, DPT1 coverage at individual PHC was averaged 112.4%. Adequate coverage of fully vaccinated children at individual PHC was averaged 114%. Effective coverage for immunization at 20 sub center was 88.9%.

Key Words: Data Validation, Immunization

Introduction:

Under RCH-II programme, the Government of Gujarat (GOG) is making every effort to improve the quality of health services in rural areas. Therefore, it becomes essential to understand the current status by evaluating important components of Reproductive Child Health activities. It is with this background, this exercise was carried out to assess the status of Reproductive Child Health programme among poor performing blocks of Surat district.

This study was carried out to strengthen the RCH activities by validating PHC records. The tool for validation used in this study was based on Modified John Hopkins monitoring steps – Availability, Accessibility, Utilization, Adequate Coverage and Effective Coverage; incorporating the BDCS strategy (Border District Cluster Strategy).[1]

Materials and Methods

Methodology:

The study was planned in the poor performing blocks of Surat District as per the 2010 RCH Programme Report of Surat District. Two blocks were poor performing (Full Immunization coverage less than 70%) as per RCH programme report of Surat district. Validation activity was done in 10 poor performing PHCs of Bardoli (6 PHCs) and Mangrol (4 PHCs) block of Surat district.

Sample Size: 10 PHCs and from each PHC two sub centre villages were selected randomly from Bardoli and Mangrol bloack of Surat district.

a) **Data collecting teams:** Each PHC was visited by a team of 4 Members (Assistant Professor as team leader and three faculties/ resident doctors) from the department of Community Medicine, GMC, Surat. Two members validated the PHC data while the other members covered the Sub centre for data validation and collection. Thus, one unit was covered in one day. The field investigators were trained for collection of quality data and adherence to the uniform guidelines for data collection.

b) Data Collection: Total 5 teams were formed and they validated one PHC per day. So total 2 days field work was carried out (10 PHCs). Standard prescribed format (Modified Johns Hopkins) was used for data collection. Sub centre and PHC villages were surveyed for data validation. Team picked adequate numbers of beneficiaries (at least 3) for each of the intervention to be verified. Thus, exercise was carried out in 10 PHCs, 20 Sub Centre villages and 60 beneficiaries for each intervention.

c) Study tool: Modified Johns Hopkins Module was used for data collection separately at PHC, Sub centre and village level.[1]

d) Data Analysis: Reference period for data collection was decided from 1st March 2010 to 28th February 2011. Data once collected was entered and analyzed in MS Excel as per guidelines of Modified John Hopkins criteria.

Results:

This validation exercise was carried out in poor performing 10 PHCs (Primary Health Centre) of two blocks of Surat district to strengthen RCH activities. The data was collected for the reference period 1st March 2010 to 28th February 2011. The following indicators of Surat district were used throughout in this exercise:

Birth Rate- 16.83 per 1000 live births [3]

Infant Mortality Rate- 16.08 per 1000 live births

Proportion of home deliveries by untrained birth attendant- 0.45(Factor)

Cumulative number of children born during the reference period in the PHC area was taken as target population for the service of immunization and district Crude Birth Rate (CBR) was used to calculate the target population.

1. Availability

This is defined as percentage of week vaccines were available in adequate quantity during the reference period. Thus it is checked for the **periodicity** and **adequacy** at the place for which the item is supplied, i.e. vaccines were checked when it reached PHC.

Availability of all vaccines including Hepatitis B vaccine and excluding Hepatitis B vaccine was calculated separately, as Surat district is one of the pilot districts in the country where Hepatitis B immunization was introduced as a part of routine immunization.

Availability was calculated for individual PHC by measuring periodicity and adequacy of vaccines at PHC. **Periodicity** was calculated as percentage of weeks when all vaccines were available during the reference period. While **adequacy** was calculated by cumulating the total number of doses received for each of the vaccines and then it was assessed against the required quantity for the reference period. District estimates for availability were calculated by doing average of figures of individual PHCs in percentage.

Table 1 District estimates for availability of Immunization

Availability	Percentage
All vaccines (Including Hepatitis B vaccine)	99.0%
All vaccines (Excluding Hepatitis B vaccine)	99.0%

2. Accessibility

This is defined as the geographical reach of the services for practical purpose. At some point of time one need to start looking at socio-economic consideration of access to services. According to National UIP guidelines, every village should have a monthly immunization session. During this study, for assessment of accessibility three categories of inhabitations (including hamlets) were included in the numerator:

Category–a: Inhabitation with more than 1000 population having at least one monthly immunization session.
Category–b: Inhabitation with less than 1000 population and within 1 mile distance from monthly immunization site
Category–c: Inhabitation with less than 1000 population but more than 1 mile away from monthly immunization site having at least quarterly immunization sessions or four session in succession during the period of easy accessibility.

District estimate for accessibility was calculated by doing average of figures of individual Sub centres in percentage. The value obtained in this exercise was 96.4% for the Surat district.

3. Utilization

The initiation of service, i.e. DPT1 was taken as the utilization for immunization.
Adjusted utilization for district was calculated in 3 steps:

1) First, DPT1 coverage at individual PHC was averaged. It was 112.4% for immunization.
2) Then, Correction factor was calculated in two stages from validation at Sub Centre. First, by validation of entries reported in form-6 for number of children received DPT1 from their registers at Sub Centre and secondly by validation of actual service received in the field. Thus the value of Correction factor during this exercise obtained was 1.0.
3) Finally, the averaged DPT1 coverage was multiplied by correction factor to get adjusted utilization for district. The adjusted Utilization for Surat district calculated was 112.4%

4. Adequate coverage

It indicates the continuity and complete utilization of services. For immunization, adequate coverage was taken as the percentage of children fully vaccinated by the first birthday.

Adjusted adequate coverage for district was calculated in 3 steps:

1) First, coverage of fully vaccinated children at individual PHC was averaged. It was 114% for immunization.
2) Then, Correction factor was calculated in two stages from validation at Sub Centre. First, by validation of entries reported in form-6 for number of children fully vaccinated from their registers at Sub Centre and secondly by validation of actual service received in the field. Thus the correction factor obtained was 0.78.

Finally, the averaged coverage for fully vaccinated children was multiplied by correction factor to get adjusted adequate coverage for district. The value obtained was 88.9%.

5. Effective coverage

It indicates the quality of services. Quality includes skills of the health worker to do the task in desired way. For monitoring, effective coverage for immunization was taken as the percentage of children fully vaccinated before first birthday by the health workers who maintain cold chain for vaccine and practices injection safety. This was calculated for district level based on assessment of 20 Sub centres.

Adjusted effective coverage for district was calculated by multiplying Correction factor for quality, which was **1** and adjusted adequate coverage which was **88.9%** as calculated above. Thus the adjusted effective coverage obtained was **88.9%.**

Discussion

Availability of all vaccines including Hepatitis B vaccine and excluding Hepatitis B vaccine was calculated separately and it was 99.0% for both indicators. Data validation report 2006 reported the availability of all vaccines including Hepatitis B vaccine was 77.0% and excluding Hepatitis B vaccine was 82.5%.[4]

Accessibility estimates by this study was 96.4% as calculated by doing average of figures of individual Sub centres. Previous data validation of Surat District estimated 97.5% accessibility by doing average of figures of individual Sub centres. [4]

DPT1 coverage at individual PHC was averaged 112.44%. After calculation of correction factor 1.0, the adjusted DPT1 coverage was 112.44% in this study. Previous data validation of Surat District reported DPT1 coverage of 115.1 % and with correction factor of 0.84 the adjusted DPT1 coverage of 96.4%.[4] MICS 2006 of Surat District[5] reported DPT1 coverage of 92.3% and MICS 2011 of Surat District[6] 97.0%.

This study showed coverage of fully vaccinated children of 114% at individual PHC. After calculation of correction factor with 0.78 the adjusted adequate coverage for district was 88.92%. Previous data validation of Surat District reported fully vaccinated children at individual PHC was **110.1%** and with correction factor of 0.75 the adjusted adequate coverage was 83.1%.[4] MICS 2006 of Surat District[5] reported fully vaccinated children of 75.8%% and MICS 2011 of Surat District[6] 91.7%.

This study find out the adjusted effective coverage for district was calculated by multiplying Correction factor for quality, which was 1 and adjusted adequate coverage which was 88.92%. Previous data validation of Surat District reported the adjusted adequate coverage of 83.1%.[4] So, Validation of data with the Modified John Hopkins methodology leads to find out the effective coverage of Various RCH indicators.

Effective coverage is the crux of indicator instead of reported coverage. As this study was conducted in poor performing blocks of Surat district in terms of immunization indicator, we found that effective coverage rate of 88.9%.

Limitation of study : Surat district indicators like CBR, IMR and Proportion of home deliveries were used as baseline data for calculation of availability, accessibility, utilization, adequate coverage and effective coverage of Immunization for poor performing blocks of Surat district which may not be same for poor performing blocks of Surat district.

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Original article

Health needs assessment by Participatory Rural Appraisal technique.

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Abstract

Introduction: There are wide disparities in various health needs between urban and rural areas as suggested by large gaps in achievement of diverse health indices. Though different health indices are very useful to identify professionally defined needs but professionally defined needs may not comprise of Perceived needs, and it is always difficult to identify Perceived needs of community. Active community participation is very much essential in recognizing the Perceived needs. Participatory Rural Appraisal (PRA) has been documented as a powerful means of not only involving community in identification and analysis of problems, but also in planning and implementation of programs.

Materials and Methods:

Three PRA methods like social map (with water & sanitation map), life-cycle frame work & village transect were applied. Data were analyzed manually.

Results and Discussions: The primary perceived need found by Social Map is water supply. It was the sole responsibility of women to go & fetch water from water sources. This has direct bearing with the overall development and health of women. There is lack of availability of sanitary facility at most of the houses and lack of utilization of available community toilet. Village transect reveals use of age old cow dung as the principal fuel in their chulas and this may affect women's health on long term. Opportunities for earning a livelihood include either fishing or working in a prawn farm. Health problems in women range from adolescent health problems to health problems of elderly women.

Key Words: Health needs assessment, Participatory Rural Appraisal

Introduction:

In simple words, a need is something that is necessary for organisms to live a healthy life.[1] In more complex form, need has two characteristics. Firstly, need refers to a lack of something. Secondly, need is not an absolute concept. There are gradations of needs, and hence needs are prioritized. Less immediately apparent is the idea that need is a subjective rather than an objective, scientific concept. Perceptions of need will vary depending on the observer.[2]

Health needs may be defined as scientifically(biologicalyl,epidemiologically etc.) determined deficiencies in health that call for preventive, curative and eventually (where appropriate) control or eradication measures.[3]

A more refined classification was proposed by the WHO Expert Committee on Health Statistics in 1971[4]:

a) Perceived need: the need for health services experienced by the individual and which he/she is prepared to acknowledge.

b) Professionally defined need: the need for health services recognized by a health professional from the point of view of the benefit obtainable from advice, preventive measures, management or specific therapy.

c) Scientifically confirmed need: the need confirmed by objective measures of biological, anthropometric or psychological factors, expert opinion or the passage of time. It is generally considered to correspond to those conditions that can be classified in accordance with the International Classification of Diseases.

There are wide disparities in various health needs between urban and rural areas as suggested by large gaps in achievement of diverse health indices for example Neonatal Mortality Rate, Post Neonatal Mortality Rate, Infant Mortality Rate, Child Mortality Rate (1-4 years) and Under 5 Mortality Rate. Water supply, sanitation facilities, availability of electricity are not up to the mark in rural India. RCH indicators like 3 + ANC visits, IFA for 90+ days, Post natal care within 2 days of delivery, Children with anemia, Underweight children are also poor in Rural India. [5]

Though these indices are very useful to identify professionally defined needs but professionally defined needs may not comprise of Perceived needs, and it is always difficult to identify Perceived needs of community. Active community participation is very much essential in recognizing the Perceived needs. Participatory Rural Appraisal (PRA) has been documented as a powerful means of not only involving community in identification and analysis of problems, but also in planning and implementation of programs. Robert Chambers defines PRA as "a semi-structured process of learning from, with and by rural people. It is a community empowering method that generates information on health and social issues for utilization by the communities and service providers for planning, development, implementation and evaluation of the programs."[6] PRA involves visual methods and is considered as one of the best frameworks to understand, analyze and develop programs with communities.[7]

Participatory Rural Appraisal (PRA) describes "a growing family of approaches and methods to enable local people share, enhance and analyze their knowledge of life and conditions, to plan and to act."[8]

In the last two decades, many PRA methods have been developed to inform various aspects of health and social development. The list of reliable and valid methods includes: social maps to identify social & health assets and vulnerable individuals & groups; transact walks for topological or social features; service maps describing design and services available at a facility; and body maps describing illness.[9] Use of combination of many of these methods for program planning, implementation and evaluation cycle has also been successfully tested.[10] Robert Chambers analyzed the 20-year history of the development of PRA and concluded that with appropriate attitude of respect for rural people and interest in what they know and say, professionals could find innovative methods as highly useful for analyzing the health context and for developing programs.[6]

Materials and Methods:

Study design: Qualitative study using Participatory Rural Appraisal (PRA) Techniques (described wide below)

Study setting: Small interior village of South Gujarat region, India

Study population: local people of the same village

Study period: Last week of May, 2011

Consent prior to study: Informed verbal consent was taken from all the participants.

Sampling technique: All the villagers were informed about the objectives of the study and the voluntary participation was encouraged. Some individuals who came voluntarily for the study were included in the study. Different numbers of individuals were included in different PRA techniques.

PRA techniques:

We used three methods: social map (with water & sanitation map), life-cycle frame work & village transect. Three facilitators participated in the process. One facilitator was asking questions & was discussing with the community, 2nd was copying diagrams on paper sheets & 3rd was taking notes from the discussions. All of the sessions were conducted with the

community at a common place, where villagers usually gather for Gram Sabha, except for village transect (which was conducted by having a walk with some villagers in village).

At the start of the session the facilitator introduced the participatory rural appraisal to initiate participation & explained the purpose & schedule of conducting different methods of PRA. On each of these methods conducted with the community, chalks were used to draw different maps & diagrams on the ground.

Following are the methods that were utilized.

1. **Social map**[11]: Participants of community were asked to draw a map of the village to get information of village layout & infrastructure mainly focusing on social strata, water supply & sanitation. Other aim was to establish a close rapport with the community. Three men & four women participated in drawing the map. There were other people approximately 15 of different age to guide them in drawing the correct map.
2. **Village transect**[11]: An observatory walk was conducted with four informants of the village through the residential area, observing & making notes of layout of the village; examining the social aspects as a whole. We also visited the houses for having a look of livestock management, grain storage, stove used for cooking & other purposes, water supply & storage, sanitation.
3. **Life cycle framework**[12]: Participants of community were asked to draw a line on the ground & divide it into various stages of life from birth to death, and then they were asked to list & discuss various health problems or needs & the reasons for the same, as perceived by them in different life stages. Eleven women of different stages of life participated in this activity.
4. **Data entry & analysis:** Diagrams and notes taken by the facilitators were later analyzed manually.

Results

1. **Social map**: Mendhar faliya is the biggest one (among three faliyas), in which primarily Tandel community stays. Other two faliyas are small. Koliwad is chiefly occupied by Koli Patel community & Bavri is again occupied chiefly by Tandel community.
2. **Water supply:** There are seven open wells in Mendhar village. Two of these seven are used for drinking purpose. One is located in Mendhar faliya & the other located in Koliwad. The other five wells are used for domestic purpose. All of these well are again located in Mendhar faliya. There are no well in Bavri faliya. So the people of Bavri faliya has to mainly rely for drinking water upon the well located in Mendhar faliya, one & half kilometer away.

   In addition to open wells, there are common taps, water of which is again utilized for domestic purpose. Because of no wells (for getting water for domestic purpose) in rest of two faliya, they have to depend on hand pumps. Because there are no wells in Bavri & Koliwad for water for domestic purpose, the people of Bavri & Koliwad have to depend upon common taps located in their areas. But the primary problem is that water in common tap comes at an irregular interval mostly every two or three days. Many people have an arrangement of Boring (Electric Motor well) water, which is also utilized for domestic purpose. There are four lakes, three out of them are small & gets dried in summer. Only one lake which is big located in Mendhar faliya, in which water remains even in summer is also utilized for domestic purpose. There are two RCC water tanks which

Table 1: Health Problems being faced by children & women of Mendhar village and Factors considered by them to be responsible for the same

Age in Years	Health Problems being faced	Factors considered by them to be responsible for their health problems
0(birth)-5	Acute respiratory tract infections (including cough & cold, pneumonia), fever, anemia, diarrhea, chicken pox, malaria, meningitis, asthma.	Dust responsible for cough & cold, asthma; mosquito bite responsible for malaria, dirty water responsible for mosquito breeding, open house water tank for three to four months responsible for mosquito breeding; heat responsible for chicken pox & worship of Mata cures chicken pox; unhygienic food & water responsible for diarrhea; inadequate & improper food intake responsible for anemia
6-12	Early menses	Milk, pickle & methi
13-18	Abdominal pain (dysmenorrhoea), menorrhagia, anemia, fever, reproductive tract infection	Inadequate & improper food intake
19-25	Anemia, leg swelling, eclampsia, joint pain during pregnancy; infertility, jaundice	Adverse drug effects responsible for jaundice; anemia of preceding age
26-45	Watery vaginal discharge, burning micturition, joint pain, early menopause, asthma	Dust responsible for asthma; heat, chili & pickle responsible for burning micturition
46-60	Cataract, joint pain, hypertension, diabetes mellitus, hypermetropia, paralysis	Aging process
61-75(death)	Blindness in addition to above	Aging process

are not in use now. One big RCC tank has been constructed recently, which is destined to be working in near future. It is likely that it will provide water to each house. The underground pipelines & tap in each house have already been established for this.

3. **Sanitation:** Only about ten percentages of houses have toilet in their houses. Rest of the people goes to open field which is mainly barren land due to presence of sea water in land. There are two community toilets, which are not utilized by the villagers.
4. **Village transect**: The information collected in social map were confirmed in village transect. They mainly store rice in barrel. There are gas stoves in their houses, which are mainly used for making tea; otherwise they mainly use Chula for cooking. Dried cow dung is used as fuel. Most of the houses are either pucca or semi-pucca. There were cattle sheds in some of the houses. They dispose of animal urine in a pit made in land. Most common occupation of people of Mendhar village is fishing. Some of the people work in Prawn farms.

5. **Life cycle framework**: Women in Mendhar village divided the life cycle of a woman in Mendhar village to following groups; 0(birth)-5, 6-12; 13-18, 19-25, 26-45; 46-60 & 61 to 75(death).
6. The women of Mendhar village described following health related problems and the factors responsible the same. (Table 1)

Table 1: Health Problems being faced by children & women of Mendhar village and Factors considered by them to be responsible for the same

Age in Years	Health Problems being faced	Factors considered by them to be responsible for their health problems
0(birth)-5	**Acute respiratory tract infections (including cough & cold, pneumonia), fever, anemia, diarrhea, chicken pox, malaria, meningitis, asthma.**	**Dust responsible for cough & cold, asthma; mosquito bite responsible for malaria, dirty water responsible for mosquito breeding, open house water tank for three to four months responsible for mosquito breeding; heat responsible for chicken pox & worship of Mata cures chicken pox; unhygienic food & water responsible for diarrhea; inadequate & improper food intake responsible for anemia**
6-12	**Early menses**	**Milk, pickle & methi**
13-18	**Abdominal pain (dysmenorrhoea), menorrhagia, anemia, fever, reproductive tract infection**	**Inadequate & improper food intake**
19-25	**Anemia, leg swelling, eclampsia, joint pain during pregnancy; infertility, jaundice**	**Adverse drug effects responsible for jaundice; anemia of preceding age**
26-45	**Watery vaginal discharge, burning micturition, joint pain, early menopause, asthma**	**Dust responsible for asthma; heat, chili & pickle responsible for burning micturition**
46-60	**Cataract, joint pain, hypertension, diabetes mellitus, hypermetropia, paralysis**	**Aging process**
61-75(death)	**Blindness in addition to above**	**Aging process**

Social problems faced by women of Mendhar village: Alcoholism is very common among men of Mendhar village. Many times, women of Mendhar village face violence from their family members most commonly from their husbands. Because of alcoholism, men also don't go for work. So, their wives have to work for family. This leads to extra burden of work to women & indirectly affects women's health.

Discussion:

PRA techniques revealed various issues in relation to the need of the people, resources available, status of the execution of various schemes and acts and the role of the PRI in context of the National Rural Health Mission (NRHM).

Villagers of small village having population of 2500 on western part of India are waiting for safe drinking water supply at their homes along with the drive for domestic and peridomestic sanitation. Although they have started a restricted use of environment friendly LPG at their homes, an act like NREGA for guaranteed employment in rural area and a mission like NRHM have yet to move the things at PRI level for eliminating the gaps between the perceived needs and the professional needs of the people.

Unequal distribution of water resources and erratic water supply in a village of 3 Km diameter has come out as a major concern of the people as reflected in Social map and during village transect.

By definition, although, it is not a 'no-source' village[13] under water supply and sewerage board, women in this village desire such a basic amenity. Currently women have adapted themselves to the situation of drinking water in a village by fetching the water from Mendhar hamlet or waiting in a queue for several hours for uncertain episode of watering from community tap.

One of the few health problems (of the children) identified by women of this village was diarrhea and it may be related to scarcity of water and meager facility of toilets and absence of culture of use of sanitary latrine in this traditional community. Another water related illness emerged out in life cycle framework was malaria, which may be attributed to improper storage of water or Anopheles sundaicus breeding for which coastal area is a natural habitat.[14]

Life cycle framework also reflected occurrence of anemia during adolescent and young adulthood among women. It can be mainly due to dietary deficiency or infections due to poor sanitary condition in addition to increased physiological demand during life-cycle. Although fish is easily available, dietary deficiency can occur among poor people. It also raised an issue of much talked school adolescent anemia control programme in Gujarat[15] under which all adolescent girls are provided with weekly supplementation of iron in the form of iron folic acid tablet.

Existence of reproductive tract infection, vaginal discharge, burning micturition, infertility and menopause exhibits professional need of an obstetrics and gynecological services by a state government who claims to have started working for the first time for the people residing in the coastal area under 'Saagar Khedu' yojana.

In addition to acute conditions, a list of chronic diseases like osteoarthritis, diabetes mellitus, hypertension, cataract (resulting in blindness) and stroke (resulting in paralysis) seems to be a challenge for policy makers of NRHM. Encroachment by such secondary and tertiary care issues in such a village suggests increase in life expectancy as well as increased burden of diseases on a rural area.

Various aspects in adolescent health and geriatric age group have been mentioned by women of middle age group (in addition to fewer representatives of extremes of age groups) reflecting growing need of attention to a neglected span of life frame namely adolescence and geriatrics. Currently trainings of adolescent friendly health services[16] have been initiated in public health sector domain to generate awareness among providers rather than users due to unavailability of organized structure in government setup.

Surprisingly It was found that the list of health issues did not mention about cancer, AIDS, or even pulmonary tuberculosis. This might indicate role of Social stigma because of which even though the cases are present in the

community but hidden or it might be the true condition of this village. Days of occurrence of vaccine preventable diseases (VPDs) and skin infections might have been replaced by alcoholism and health related issues of aging.

Nonetheless, information technology is yet to change the false belief and misconceptions about the occurrence of diseases and the dynamics of transmission. Health issues by and large were related to external physical environment, food and drugs, aging process and to some extent with superstition. Basic knowledge among women of this village suggests the scopes of execution of different National Health Programmes in a meaningful manner. It also indicated the need of preventive, promotive, curative and rehabilitative care at village level but failure to perceive it at village level by respondents.

NRHM is optimistic about the VHSC in reference to decentralization and the ownership about health and sanitation needs in villages. Efforts of VHSC have not been visible in any of the method applied for exploration.

During Village transect, caste wise distribution of people was seen and was confirmed from the names of the hamlets. But there Were not many cultural barriers and differences with reference to the perceived needs and settlements for needs. Similarly, health related conditions narrated by people pinpointed mainly to age groups involved and other epidemiological factors were not identified. On the contrary, conditions related to physical environment, dietary factors and a few superstitious dynamics have been thought for such disease conditions.

Social implications of alcoholism among men have been a major concern for women of Mendhar village as it resulted not only into overburden of work for women but also in domestic violence.

Conclusion:

The most important perceived need of villagers was regular house to house drinking water supply, which will reduce physical burden on women of Mendhar village to a great extent, and will also relieve them from huge mental stress of obtaining water for their family. Lack of availability of basic sanitary facility at most of the houses and lack of utilization of available community toilet reveals lack of knowledge, lack of importance given to hygiene and sanitation, and inability of health system to convert their needs into their health demand. One more important reason of non utilization of community toilet is irregular water supply, indicating the linkage of water supply and sanitation facilities, both of which should always go side by side. Village transect revealed that the lack of availability of other sources of income can threaten the social security of this rural people. This requires organization of self help groups which does not only help women to start small business, providing the alternative method of income generation but it also empowers women of this village. Life cycle framework discloses that the health problems of women are just not limited to pregnancy and delivery but also extends from adolescents to elderly women in the form of Non Communicable Diseases, which are not wholly covered under the idea of primary health care. For different diseases, they had many misbelieves, which need to be considered and to be dealt with before planning to provide any health services to them. Initiation of self help group & strengthening of VHSC can go a long way to sort out the above issues.

Recommendations:

1. Training is required to facilitate peripheral health staff in executing PRA techniques to know Perceived needs of community. PRA will take into account the community participation. This will ensure active involvement of local community not

only in identifying their problems but also in finding the solution of the same by themselves.

2. Incorporating self help groups and VHSC in solving the issues related to the basic amenities like water supply within their reach along with the sanitation facility with due weight on increasing the awareness of community about the importance of utilization of the same for the benefit of that community.
3. Strengthening VHSC in increasing the community awareness about the causes of various conditions in health & disease and taking appropriate actions at village level.

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Original article

Rehabilitation of female burns patients admitted in a tertiary care hospital: A longitudinal study

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Abstract

Background: Burn injuries have a considerable physical, psychological and economic impact on the patients, their families and society.

Objectives: To create a liaison between burn victims and rehabilitation services so as to help the patients lead a better life.

Methods: A longitudinal study of one and half year duration (May 2009 to October 2010) was conducted among female burn patients admitted in tertiary care hospital. Universal sampling method was employed. All the adult female burns patients above 18 years who were admitted during the study period and gave consent for study were included. Total number of study participants was 103. On first contact with the subject, a semi-structured questionnaire was used to obtain socio-demographic details and details about burns injury. Subsequently each of them was followed up for a period of two months after their discharge from hospital to know about their health status / social problems and utilization of rehabilitation services depending upon their needs. Statistical analysis was done using SPSS-17 version.

Results: Case fatality rate was found to be 35%. Out of 48 women who were followed up, only 3(6.2%) had undergone reconstructive surgery for contractures while 14(29.1%) women had developed contractures. Only 15(31.2%) women were regularly attending physiotherapy and occupational therapy sessions.

Conclusion: Counseling services for rehabilitation of victims should be strengthened not only during hospital stay but also after discharge to emphasize on positive thinking, importance of physiotherapy and occupational therapy, prevention of secondary infections & contractures and vocational guidance for earning own livelihood.

Keywords: Burns, rehabilitation, reconstructive surgery, contracture

Introduction:

Burns are a global public health problem, accounting for an estimated 195000 deaths annually. Burns are among the leading causes of disability-adjusted life-years (DALYs) lost in low and middle-income countries [1]. In India, approximately, there are 6 million burns cases annually, of which around 0.7 million cases require hospitalization, of which approximately, 0.12 millions die annually [2]. Goldman describes burns as ***"the silent epidemic"*** [3].

Rehabilitation is now an essential and integral part of burn treatment [(4, 5)]. The rehabilitation for patients with burn injuries starts from the day of injury, lasting for several years and requires multidisciplinary efforts. A comprehensive rehabilitation program is essential to decrease patient's post-traumatic effects and improve functional independence [(6)]. Severe burn survivors often undergo a prolonged course of rehabilitation that begins at the acute care hospital, transitions to an inpatient rehabilitation facility and is completed as an outpatient [7].

Rehabilitation of burns patients is a continuum of active therapy starting from admission. There should be no delineation between an 'acute phase' and a 'rehabilitation phase' [8] as this idea can promote the inequality of a secondary

disjointed scar management and/or functional rehabilitation team [9].

There is little information on the pattern of outcome among burns patients and their rehabilitation. Hence, this study was conducted to gain an insight into the socio-cultural determinants of burns patients and the physical, mental and social sequel to burns injury. It will also identify the various modes of rehabilitation of burns patients and the various problems faced by patients, their relatives and the service providers in the rehabilitation of these female patients. Thus, the study will try and create a liaison between the burn victims and rehabilitation units so as to help the patients cope up with their injury and they are rehabilitated to lead a better life.

Material & methods:

A longitudinal study was conducted over a period of one and half year from May 2009 to October 2010 among adult female burns patients admitted in a tertiary care hospital in a metropolitan city. Universal sampling technique was employed for selection of study participants.

Inclusion and Exclusion Criteria:

All the female burns patients above 18 years of age who were admitted during the study period in the tertiary care institute and gave consent for the study were included in the study. The patients or legally accepted guardians, in case of serious patients, who did not give consent were excluded from the study. Also, patients who expired prior to the interview were excluded from the study.

Altogether 107 burns patients were admitted during the study duration. Of these, three patients did not give consent for the study and hence were not included while one patient expired prior to the first interview and hence was excluded from the study. Thus, the total sample size was 103.

A semi-structured questionnaire was designed after reviewing the literature. On pilot basis, seven women were interviewed to test validity and response. The questionnaire was then suitably modified and used as a tool for data collection. The questionnaire included socio-demographic details of the participant as well as details about the burns injury. Participants were interviewed face to face after obtaining their informed consent after they were stabilized in the burns unit. The help of the nursing staff was taken to establish rapport with the subjects and their relatives. Each of the study participants and their relatives was linked with the medical social worker (MSW) for provision of counseling regarding financial concessions for drugs, procedures, etc as well as rehabilitation services on the first contact itself. The extent of burn injury was calculated according to Wallace rule of nine [(10)]. Kuppuswamy's method of socioeconomic status was used to determine social class to which women belonged [11].

Regular visits were paid to the female burn victims during their hospital stay and each visit reinforced the importance of rehabilitation among the subjects as well as their relatives. The subjects were offered rehabilitation services depending upon their needs in the following ways:

1) Medical: With the help of splints, pressure garments, skin grafting surgeries, corrective surgeries, etc. Referral to physiotherapy and occupational therapy after discharge

2) Vocational: With the help of the institutional MSW, the needy subjects were referred to rehabilitation centers considering their requirements, accessibility, affordability, educational qualifications, financial requirements, etc.

3) Psycho-social: Every opportunity was utilized, for optimizing the acceptance of the victim by the family members and in making an effort to tackle the social misconceptions by giving all subjects sufficient time for counseling individually

and motivating them that this is not the end.

After discharge, at weekly intervals for a period of two months, the subjects were contacted over telephone about their condition/ any complication/ any significant marital or social issue that may have arisen which she was unable to cope / acceptance at workplace, etc. In addition, in collaboration with the physiotherapy and occupational therapy staff, the date of follow up of the subject was fixed and then re-confirmed with the subjects so as not to miss the opportunity of personal contact and corroborate the reliability of the information obtained over telephonic conversation. Subjects who could not be contacted even telephonically were declared as lost to follow up.

Ethical considerations: Ethical clearance was obtained from the Institutional Ethics committee prior to the start of the study. Written informed consent was obtained from the study participants before obtaining any information from them. Utmost care was taken to maintain privacy and confidentiality.

Data analysis: Data entry and statistical analysis was done using SPSS version 17. Frequency distributions were calculated for all the variables.

Results:

In the present study, majority of the women 63(61.2%) were in the age group of 18-30 years. 21(21.4%) were in the age group of 30-45 years. Mean age was 31.4 years with standard deviation of 13.3 years. 78(75.7%) women were belonging to Hindu religion while only 23(22.3%) women belonged to Muslim religion. As regards to education, 23(22.3%) women were illiterate, 31(30.1%) were educated up to primary level, 28(27.2%) up to secondary level and 9(8.7%) women were graduates and above. Majority 74(71.8%) women were housewives while 5(4.9%) women were involved in skilled and professional work.

Table 1 shows the details about burns injury. It shows that flame burn was the most common cause of burns accounting for 80.6% of the total burns. No cases of chemical burns were found. Among flame burns, it was seen that kerosene stove was the most common cause of flame burns seen in 56(67.5%) subjects. According to the subject, accidental burns accounted for 86.4% burns i.e. in 89 cases while homicidal burns accounted for 9.7% cases.

Out of the total 103 subjects, 36(35%) expired during their hospital stay. A total of 67 women were available for follow up of which 22 women were discharged against medical advice. 18 women were lost to follow up as they could not be contacted which included 14 women residing out of the city in which the study was conducted. One woman had expired within two months of discharge from the hospital. Thus total 48 women were only followed up for the next two months after their discharge.

Table 2 shows the site of contractures among these subjects. 14(29.1%) of the followed-up women developed contractures out of which only 3(21.4%) underwent reconstructive surgery. Apart from contractures as a secondary complication, nine women required a re-hospitalization for complications like secondary wound infections. Other complications observed were pruritus in 24(47%) women and hypertrophied scar in 13(25.4%) women.

Table 3 shows the reasons for non usage of splints / pressure garments and for not attending physiotherapy / occupational therapy. Of the 46 women who were advised use of splints and pressure garments, only 21(45.7%) women were actually using it. 13(27.1%) burn victims did not require any physiotherapy, 15(31.3%) women were regularly attending physiotherapy-occupational therapy sessions while rest 20(41.6%) victims either attended physiotherapy irregularly or did not attend at all.

Table 4 shows that 12(25%) subjects were completely accepted by their families and families were supportive of them. It was also observed that 26(54.1%) women

Table 1: Details about burns injury

Details about burn injury	Number	Percentage (%)
Mode of burns		
Flame	**83**	**80.6**
Scald	**17**	**16.5**
Electrical	**3**	**2.9**
Nature of burns		
Accidental	**89**	**86.4**
Suicidal	**2**	**1.9**
Homicidal	**10**	**9.7**
Percentage of TBSA involved		
< 25%	**29**	**28.1**
25 - 50%	**38**	**36.8**
50 - 75%	**30**	**29.1**
> 75%	**6**	**5.8**
Site of burns		
Head / neck / face	**53**	**51.4**
Upper limb	**67**	**65.0**
Lower limb	**56**	**54.3**
Trunk	**39**	**37.8**
Genitalia	**14**	**13.5**

Table 2: Site of contracture among follow up subjects (n = 14)

Site of contracture [a]		Number	Percentage (%)
Neck		**11**	**22.4**
Upper limb	**Axillary region / Shoulder**	**6**	**12.2**
	Elbow	**2**	**4**
	Wrist	**1**	**2**
	Fingers	**2**	**4**
Lower limb	**Knee**	**1**	**2**

[a] Sites of contracture are not mutually exclusive

Table 3: Reasons for non utilization of medical rehabilitation services

Reasons for not using splints / pressure garments (n = 25)	**Number**	**Percentage (%)**
Did not feel it was important / necessary	16	64
Ignorance or neglect	9	36
Reasons for not attending regular physiotherapy (n = 20)	**Number**	**Percentage (%)**
Very frequent visits are required	17	85
Lack of motivation / low self esteem	8	40
Daily domestic chores are hampered	13	65

Table 4: Psycho – Social and vocational rehabilitation of burns victims

Post burn impact on day to day life (n = 48)	**Number**	**Percentage (%)**
Positive change	12	25
Negative change	21	43.7
No change	15	31.2
Post burn impact on job (n = 18)	**Number**	**Percentage (%)**
Resumed prior work duties	14	77.8
Vocational training for burns victims (n = 11)	**Number**	**Percentage (%)**
Tailoring	3	27.3
Vegetable packing	5	45.4
Floral packing	3	27.3

Table 5: Problems faced in rehabilitation of victims (n = 48)

Problems faced		**Number**	**Percentage (%)**
Subject	Lack of motivation / low self esteem	14	29.1
	Daily domestic chores are hampered due to physiotherapy visits	29	60.4
	Abuse by in laws	17	35.4
Relatives	Not worth investing time and money for rehabilitation	18	37.5
	Daily domestic chores are affected	24	50
	Has to be accompanied every time affecting their routine activities	14	29.1
Service providers	Discharge against medical advice	22	45.8
	Poor follow up to determine the long term sequelae.	29	60.4

could carry out their daily activities normally, 17(35.4%) women with difficulty and the remaining 5(10.4%) women required help of family members for some of her daily activities. Out of the total 48 women, 18(37.5%) were earning members of family and rest 30(62.5%) were housewives. 14(77.8%) women resumed work normally but four could not because of development of contractures. These four women along with seven other study subjects who were housewives were referred to different vocational rehabilitation centers with the help of medical social worker of the tertiary care institute.

Table 5 shows that problems faced by women in their rehabilitation. During the follow up visits it was observed that 14(29.1%) women had lack of motivation / low self esteem because of the disfigurement. The concerned spouse and

the in-laws were counseled by the medical social worker to facilitate the integration of burn victim in the family. Simultaneously family meetings were organized involving families of other burn victims of the study who had accepted the victims in their family. They shared their point of view with other families which did not accept the victims and positively motivated them to promote acceptance.

Discussion:

In the present study, 63(61.2%) of the women are in the age group of 18-30 years. Similar results were obtained in a study done in India which reported that 85% cases of burnt women were between the age of 16-30 years and the rest 15% were beyond the age of 30 years [12]. Also, in a study done in South India observed that 40.9% of the female victims belonged to the age group of 15 to 24 years [13]. The triggering factors for burns in this young age were most probably inadequate precautions during cooking, exposure to hazardous situations at home and also dowry deaths, etc.

Flame burn was the most common cause of burns accounting for 80.6% of the total burns, kerosene stove accounting for 67.5%, followed by scald burn seen in 17(16.5%) subjects in the present study. This was mainly because of faulty and unsafe cooking practices. Similar results were obtained in various studies done in India as well as in other countries [14, 15].

In the present study, upper limb and lower limb involvement was most commonly involved while in a study done in Indore, thorax and abdomen (67.9%) were found to be the most common areas involved in all types of burns [16].

In the current study, it was seen that 16(64%) subjects did not feel the necessity of using splints / pressure garments and 9(36%) did not use it just because of their ignorance. It suggests the need for constant reinforcement and motivation among the women for utilization of medical rehabilitation services. Counseling burns victim about the importance of use of splints is very essential as splinting is the only available therapeutic modality that applies controlled gentle forces to soft tissues for sufficient lengths of time to induce tissue re-modeling [17].

It was also found that most women 17(85%) felt that it was not possible for them to go for physiotherapy so frequently. 13(65%) felt such frequent visits adversely affected their domestic chores while 8(40%) had a lack of motivation. This shows the need of expansion of physiotherapy and occupational therapy services in order to improve their accessibility for the needy persons. In another study done in Mumbai, only 5 women attended for physiotherapy. The remaining 69 were not aware of the need for physiotherapy. Thus, there was very poor awareness of the need for physiotherapy among these patients [18].

In our study, it was observed that 12(25%) subjects had a positive change in life post burns i.e. they were completely accepted by their families. 21(43.7%) women were not completely accepted by their husband and in laws, were not properly taken care of, sometimes verbally abused. In another study, it was observed that the prevalence of psychosocial maladjustment among the adults was 10% [19].

In our study, 14(77.8%) women resumed work normally. Rest 4(22.2%) were unable to return to work as a result of development of contractures. In a study done in Sweden, it was observed that 31% had not returned to work and had lower health-related quality of life [20]. In a systematic review, it was found that an average of 66% of patients returned to work following their burn [21].

The study had its limitations in the form that long term follow up of the burns victims was not undertaken and no home visits were paid to identify the actual post burns impact on the women's life. Also, although each subject had a psychiatric evaluation done during the hospital stay,

no such intervention was done at the time of follow up.

Conclusions:

Following a burn injury most of the victims can feel isolated and alone especially in case of women. These women should be encouraged in order to re-establish themselves in their social and vocational lives as soon as they are able to, and their family members should be encouraged to promote this behavior. Counseling services for rehabilitation of victims should be strengthened not only during hospital stay but also after discharge to emphasize on positive thinking, importance of physiotherapy and occupational therapy, prevention of secondary infections & contractures and vocational guidance for earning own livelihood.

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Original article

A Community based cross sectional study on use of sanitary latrines in a rural setup in Maharashtra.

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Abstract:

Background - Even after more than 60 years of independence, open air defecation is widely prevalent in rural India.

Objectives:

To find out the reasons for under utilization of community latrines in a rural set up of district Pune, Maharashtra, India and to recommend measures which would lead to increase in the utilization of the sanitary latrines.

Methods:

The present community based cross-sectional study was carried out in a village of district Pune (Maharashtra) during May-June 2011 among 282 subjects. A modified WHO questionnaire adapted to local conditions was used for data collection. Interpretation of data was done using percentages and proportions.

Results:

In spite of presence of community latrines, 67% of the population resorted to open air defecation. Inadequate water was the major reason for under utilization (48.6%) of community latrines followed by lack of awareness about the availability of these (19.5%). Only 14.5% were not aware of any harmful effect of open air defecation. 66.7% of them had the knowledge of night soil disposal. 77.6% were aware of the importance of hand washing with regards to prevention of disease. Women found open air defecation even more embarrassing and dangerous.

Conclusion:

The attitude to use these latrines is present in the surveyed population but people are not willing to take the responsibility of maintaining their cleanliness. Inadequate water supply stands out to be the most important reason for under utilization of these latrines. Reinforcement and guidance is required to solve the problem of under utilization of these latrines.

Key-words: rural sanitation, sanitary latrine, underuse.

Introduction:

"Sanitation is a way of life", it should be people's programme. In many areas of the world, including India, access to basic sanitation especially excreta disposal is a problem of grave importance.[1,2] Access to safe water and sanitation facilities remains a formidable challenge in developing countries.[3,4] In 2008, only 21% of rural and 54% of urban India has access to improved sanitation, the national average was measly 31%.[5]

Despite comprehensive programmes like total sanitation campaign, open defecation still remains the predominant norm and poses one of the biggest threats to the health of the people. Even after more than 60 years of independence, open air defecation is widely prevalent in rural India. Nearly 60 per cent of the people in the world who defecate in the open belong to India.[6]

Efforts made by various organizations to persuade people to do away with this practice have failed miserably in the past. Situation in the village under study is also grim with only 15% of the population having attached sanitary latrines. The present study was therefore conducted to ascertain the

reasons of under utilization of community latrines in a rural village of Maharashtra (India) and to recommend measures which would lead to increase in the utilization of sanitary latrines.

Materials and methods:

The present cross sectional community based survey was carried out in a selected village of district Pune (Maharashtra) during May-June 2011 using a modified WHO questionnaire (WHO Library Cataloguing-in-Publication Data, Core questions on drinking-water and sanitation for household surveys). Visit to the gram panchayat office was made followed by an interactive session with the village development officer (VDO). Related schemes operational in this aspect as told by the Gram Sewak are: Nirmal Gram Yojna, Agandhari Mukt Yojna, Gadke Baba Scheme and Goodmorning Pathak.

The study village was randomly selected from the list of villages falling under rural field practice area of Department of Community Medicine, Armed Forces Medical College (AFMC), Pune. (It's around 40 km from Pune on the Sholapur Highway. It has been adopted by the medical college for training of under graduate and post graduate students in community medicine and for provision of health services to the villagers.) Total households in the selected village were 357. It was planned to interview one member per household so total number of households required to be surveyed were 357. The author of the study visited each household and conducted face-to-face interview with the head of the family using a structured questionnaire to conduct the survey.

One person (preferably the head of the family) was interviewed from each household. The purpose of the study was explained before the interview started. Informed consent was obtained. Ethical committee approved the study. Some interviews were rescheduled as the interviewees were busy with other jobs at the stipulated time. In spite of all the efforts, only 282 out of the 357 persons per household selected could be interviewed giving overall response rate of 78.99%. The interviews lasted for 30 to 45 minutes. Volunteers from Deep Griha (an NGO for orphan children in the village) came along with the interviewer to overcome the difficulty expected to occur in comprehending the local language (Marathi).

All the questionnaires were manually checked and edited for completeness and consistency and were then coded for computer entry. Finally they were compiled and summarized. The collected data was entered in Microsoft Excel. Coding of the variables was done. SPSS version 11.5 was used for analysis. Interpretation of the collected data was done by using appropriate statistical methods like percentage and proportions.

Results

Out of total 282 persons interviewed, majority of respondents (48.6%) were illiterate, followed by those educated till High school (21.6%). Most (67.8%) of the study participants were in the age group of more than 50 yrs. Gender wise males outnumbered females.

Table 1: Profile of study subjects

Variable	Total Sample N (%)
Gender	
Male	223 (79.1)
Female	59 (20.9)
Age	
< 30 yrs	28 (9.9)
31-50 yrs	63 (22.3)
>50 yrs	191 (67.8)
Education	
Illiterate	137 (48.6%)
Primary	47 (16.7%)
High school	61 (21.6%)
Secondary	29 (10.3%)
Graduate	8 (2.8%)
Post Graduate	-

Out of total, 189 (67.0%) practiced open air defecation whereas remaining 93 used either household sanitary latrines (18.1%) or community latrines (14.9%). Inadequate water 137 (48.6%) and not aware of the facility 55 (19.5%) were two most frequent reasons cited by the subjects when they were asked regarding underutilisation of community latrines. (Table 2)

Table 2: Distribution of subjects according to types of latrine usage and reasons for under utilization of community latrines

Study variable	No. (%)
Types of latrine usage	
Household Sanitary Latrines	51 (18.1%)
Use Community Latrines	42 (14.9%)
Open Air Defecation	189 (67.0%)
Reasons for Under Utilization of Community Latrines	
Inadequate Water	137 (48.6%)
Not Aware of the Facility	55 (19.5%)
Caste Based Discrimination	37 (13.1%)
Open Air Defecation Better	49 (17.4%)
Others	4 (1.4%)

Fear of getting diseases by the faecal matter was the most frequent 98 (34.7%) perceived disadvantage of open-air defecation. 41 (14.5%) people perceived this act as unhygienic and similar number of subjects were unaware of any disadvantage of open- air defecation. (Table 3)

Awareness about night soil disposal:

Majority of respondents 188 (66.7%) were aware regarding night soil disposal. Remaining 94 (33.3%) did not know about night soil disposal.

Knowledge about importance of hand washing:

Majority of people 219 (77.6%) had knowledge about importance of hand washing. On the other hand, 45 (15.9%) of the respondents were not aware of its importance. Remaining 18 (6.5%) of the respondents reported customary and other reasons for hand washing practices.

Table 3: Perceived disadvantages of open-air defecation by study subjects.

Perceived Disadvantages of Open- Air Defecation*	No. (%)
Don't Know	41 (14.5%)
Unhygienic	41 (14.5%)
Embarrassing	30 (10.6%)
Snake/Insect Hazard	17 (6.0%)
Diseases	98 (34.7%)
Foul Odour	20 (7.1%)
Fly Breeding	38 (13.5%)
Difficulty in Rainy Season	6 (2.1%)
Distance	18 (6.4%)
* Multiple responses permitted.	

Discussion

A cross sectional study on usage of sanitary latrines in a village in district Pune of Maharashtra, India was performed in this survey. In spite of presence of community latrines, 67% of the population resorted to open air defecation in the present study. Similar results were observed by another study conducted in Bangladesh.[7] Open air defecation was practised by 42% to 79% of the population.

Inadequate water supply was one of the major reasons for this under utilization (48.6%) of community latrines. Another study from Haryana[8] also confirmed our observation in this aspect. Inadequate water supply was most common cited reason (28% to 53%) for the under utilization of community latrines in

that community. People were found unwilling to take responsibility of maintaining the cleanliness of these latrines.

Not surprisingly our study shows that 34.7% of study subjects knew that various diseases can spread due to act of open air defecation. Another study from Bangladesh[3] highlighted the correct importance of hand washing after defecation (94%) in relation to prevention of diseases.

The lack of privacy nearby because of scarcity of open land around the village was one of the major reasons stated in previous studies as well. Women found open air defecation even more embarrassing and dangerous. This situation has been an important factor in creating demand for latrines even in rural area.[9]

The impact of the health education has been assessed in the previous studies which had observed a significant reduction in diarrhoea at the end of one year (from 14.2 to 7.4%).[7]

An interventional study from Chandigarh[10] observed that open defecation had significantly reduced and the awareness regarding diarrhoea as hazard of unsafe water had improved significantly from 28.7% in baseline survey to 55.6% after intervention.

Around 15% of people felt that open air defecation was much more comfortable and better than using latrine. Another KAP study from north India[8] reported fresh open air (64%) and morning walk (51%) as two top reasons perceived as main advantages of open air defecation by the open air defecators. Some also consider open air defecation as a clearer act in comparison to in-house latrine. In India people consider excreta to be best disposed off outside the house, it being a very filthy thing. A few respondents strangely reported that they go to open field with the aim of providing natural manure which would in turn improve the fertility of their fields as in case of cow dung.

Conclusion

The attitude to use these latrines is present in the surveyed population but people are not willing to take the responsibility of maintaining their cleanliness. Inadequate water supply stands out to be the most important reason for under utilization of these latrines beside other reasons like unawareness of the presence of facility, castes and perceived advantages of open air defecation. As has been proved time and again by the previous studies on the subject, reinforcement and guidance is required to solve the problem of under utilization of these latrines. The same can be provided by planning and conducting IEC activities on this very important issue on a regular basis.

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"It is no longer a question of staying healthy ! It is a question of finding a sickness you like"

Jackie Mason

"You can live to be a hundred if you give up all the things that make you want to live to be a hundred."

Woody Allen

"Eating words has never given me indigestion."

Winston Chruchil

"Isn't it a bit unnerving that doctors call what they do practice?"

George Carlin

Short communication

Assessment of Postgraduate Teaching in Community Medicine at a Medical College-A Focus Group Discussion with Postgraduate students

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Abstract:

Background:
There is a need to understand the current needs and expectations of postgraduate medical students in the state of Gujarat as no common postgraduate curriculum is in force.

Objective: To know the changes required in postgraduate teaching in the subject of community medicine, as perceived by the postgraduate students.

Methods:
Current study utilized "Focus Group Discussion" with postgraduate medical students in the subject of Community Medicine as a method of enquiry.

Results:
Active participation in the departmental research activities, managing clinical posting, cooperative senior teachers and attending undergraduate lectures regularly were the facilitating factors identified. Factors impeding teaching were: Lack of postgraduate teaching schedule and absence of assessment of performance.

Conclusion:
A qualitative method such as Focus Group Discussion with Postgraduate students appears to be a promising tool to identify the current needs of the postgraduate students with reference to teaching in community medicine.

Key Words: postgraduate teaching, community medicine, focus group discussion

Introduction: Post graduation, teaching and training in Community Medicine is spread over three years, after MBBS. In the state of Gujarat, Medical Colleges are affiliated to different Universities; hence no common curriculum is followed. There is a need to understand the current requirements and expectations of postgraduate students as the specialty of Community Medicine is gaining more and more importance in the public health practice. Restructuring curriculum in line with Medical Council of India recommendation[1] and current National public health requirements is needed. Substantial restructuring of curricula is required for development of competencies not only in epidemiology, health management, health education, and health informatics, but also in public health policy, health economics, environment and occupational health and health promotion [2]

Current study utilized "Focus Group Discussion" (FGD) with postgraduate medical students in the subject of Community Medicine as a method of enquiry. The research question being; "What changes in postgraduate teaching are required in the subject of community medicine at a Medical College, as perceived by the postgraduate students?" Focus Group Discussion permits free and focused participation to explore the issues at hand. [3]

Material and Methods:

The Focus Group Discussion was conducted with nine postgraduate students currently registered for post graduation in Community Medicine at a Medical

College in Gujarat. Both the moderator and note-keeper were trained in qualitative research. A semi structured guideline was prepared with the objectives; to get an account of the current scenario of Postgraduate teaching and training; to understand the facilitating factors and impeding factors by taking views of students registered in the department and thereby, learn from them the teaching changes needed as perceived by them.

At the beginning the participants were explained the purpose of the discussion and a verbal consent was taken. They were explained that they had the liberty to refuse to answer any question that they did not like. There were no disturbances & almost all could remain present throughout the discussion. No audio-tape was used. The discussion lasted for one and half hours and the notes were expanded within 24 hrs of the discussion.

Results & Discussion:

Study Setting:

The FGD was set up in a quiet comfortable departmental conference room, seated in a circle bereft of any disturbance. Their informed verbal consent was taken and purpose of the study explained. The participants were those students who were registered for MD in community medicine. They had undergone one to five terms in the subject at the time of study, i.e. they were at different levels of seniority and work experience. The moderator, principal author of this paper, is an associate professor with over 19 years of experience. The note keeper is a teacher in the department with eight years of experience.

Field Posting:

Postgraduate students are posted in various public health institutions for a period of one to four weeks. Most of them felt that these postings need restructuring. They also feel that the content of "what to learn" out of each such visit should be defined. With increasing emphasis on Urban Health more time may be given to posting at Vadodara Municipal Corporation (VMC). Visit to institutes located outside Baroda may be considered. Overall, it needs to be more structured and defined.

Field surveys and other assigned activities: Students felt that for each such survey, identified team should be trained before survey. Data management and computer use should be taught to the participants.

Dissertation: As it is compulsory prerequisite, the topics for the same should be selected by the end of first year. Research methodology should be taught to all postgraduates in the first half of first year. In fact, they went on to suggest that, Community Medicine department can take lead in the same and carry out such a specific teaching for all Postgraduates at the various departments of Medical College Baroda year after year regularly.

Factors impeding PG teaching are:

*Lack of postgraduate teaching schedule/ irregularly conducted journal club/Postgraduate presentations

*And lack of system of assessment of performance during Postgraduate education and learning

Factors facilitating are:

*Active participation (by Postgraduates) in the departmental services and research activities

*Managing clinical postings

*Co-operative and receptive senior teachers

*Attending Undergraduate lectures regularly

Additional inputs:

Majority suggested that senior teachers must share new information after attending conference / workshop / seminar or State / National level meetings, etc…

- Many of them suggested that students themselves must take initiative to make presentation of topics of current interest and relevance.

- Need to increase use of library
- Pursuing modular training by reading set of modules of various health programmes under guidance of Assistant Professors regularly.
- Interestingly, some of them were of the opinion that soon after undergraduate lectures, additionality and newer details of the same topic should be followed up with Postgraduates, giving reference material, and suggested references to read up.

Final note:

At the end the facilitator thanked the participants. The participants expressed that it was indeed a fruitful exercise which gave them an impetus & an insight into Postgraduate learning.

Recommendations:

- A qualitative method such as Focus Group Discussion with Postgraduate students appears to be a promising tool to improve the teaching and training standards.
- This would also lead to better teacher's and student's participation in designing and implementation of curriculum.

Limitation:

Though the participants had volunteered, hierarchal relationship perhaps could have influenced flow of information. Besides having known the moderator as teacher also perhaps would influence 'issues' raised in some of the domains of enquiry; based on personal preferences or otherwise.

Acknowledgement:

We extend our sincere thanks to all the study participants for cooperating with us during the discussion.

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Regimen II (a)	Tenofovir + Lamivudine + Efavirenz
Alt. 1st line	
Regimen III	Tenofovir + Lamivudine + Nevirapine
Regimen III (a)	Tenofovir + Lamivudine + Efavirenz
Regimen IV	Zidovudine + Lamivudine + Atazanavir/Ritonavir
Regimen IV (a)	Tenofovir + Lamivudine + Atazanavir/Ritonavir
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