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Management of Non-communicable Diseases - Prevention Vs. Intervention

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"Medicine is not health care; medicine is sick care. Good food, vigorous exercise, great friends, sound sleep and mental stimulation - that's health care." Community medicine or preventive and social medicine, being a sidelined branch in India, is actually the backbone of health care. Around 90% of all morbidity in the world can be dealt with using basic preventive approach to disease. Only 10% morbidity warrants specialized care or emergency health care. But unfortunately, the governments believe in trying to increase expenditure on heath care in terms of specialized care rather than emphasizing on preventive measures to preserve health. In fact, preventive medicine is the most cost-effective strategy to improve the health status of the country.

Noncommunicable diseases (NCDs), like diabetes, heart disease, and cancer, account for around 70% of all deaths globally. ^[1] Almost three fourths of all NCD deaths and 82% of the 16 million people who suffered premature death or died before the age of 70 years, occur in low- and middle-income countries. ^[2] The increasing magnitude of NCDs has been primarily because of four major risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets.

The epidemic of NCDs imposes dire health consequences on individuals, families and communities and threatens to overburden health systems. The socioeconomic costs associated with treatment of NCDs make the prevention and control of these diseases, a major development imperative for the 21st century. Urgent government action is needed to meet global targets to reduce the burden of NCDs especially by surveillance, prevention and control of NCDs.

Prevention of NCDs involves a wide range of activities specially tailored to the reduction of risk factors:

1. Tobacoo control

The tobacco control is concerned with three core areas: tobacco control economics, national capacity building and surveillance and information systems for tobacco control. The "tobacco control economics" team aim to demonstrate that tobacco control policies, in particular tobacco taxation, make good economic sense. They work with countries to strengthen their tobacco tax systems, carry out research and develop tools and manuals to support research and policy development, and survey tobacco taxation in countries. The national capacity building team provides assistance to countries to enhance their ability to resist the epidemic of tobacco and to reduce the demand for tobacco. in line with the WHO Framework Convention on Tobacco Control (WHO FCTC). The comprehensive information systems team seeks to improve the availability of surveillance data on tobacco use, exposure and related health outcomes.

2. Health Promotion

The Health Promotion team promotes action across sectors for health and health equity, the reduction of health risks and the promotion of healthy lifestyles. Oral Health and School Health are two key work programmes of the team. The former aims to integrate oral health into NCD prevention and control and the later to intensify action for achieving NCD related health and education outcomes at the population level, in collaboration with key stakeholders within and beyond WHO.

3. Surveillance and Population-based Prevention

Surveillance and population-based prevention are fundamental to the mission to prevent deaths from NCDs. Population-based prevention focuses on broad policy, program and environmental interventions targeted at the general population more than just the high-risk individuals. The Global School-based Student Health Survey (GSHS) is a collaborative surveillance project designed to help countries measure and assess the behavioral risk factors and protective factors in 10 key areas among young people aged 13 to 17 years. The GSHS is a relatively low-cost school-based survey which uses a selfadministered questionnaire to obtain data on young people's health behaviour and protective factors related to the leading causes of morbidity and mortality among children and adults worldwide. The key topics addressed by the survey are: Alcohol use, Dietary behaviors, Drug use, Hygiene, Mental health, Physical activity and Tobacco use.

Non-communicable diseases: Cost effectiveness of Prevention vs. Intervention

Diabetes

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. ^[3] The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin. In the past three decades the prevalence of type 2 diabetes has raised dramatically in countries of all income levels. Type 1 diabetes, once known as juvenile diabetes or insulin-dependent diabetes, is a chronic condition in which the pancreas produces little or no insulin by itself. For people living with diabetes, access to affordable treatment, including insulin, is critical to their survival.

The major long-term complications relate to damage to blood vessels. Diabetes doubles the risk of cardiovascular disease and about 75% of deaths in diabetics are due to coronary artery disease. Other "macrovascular" diseases are stroke and peripheral artery disease. The primary complications of diabetes due to damage in small blood vessels include damage to the eyes, kidneys and nerves. Damage to the eyes, known as diabetic retinopathy, is caused by damage to the blood vessels in the retina of the eye and can result in gradual vision loss and blindness. Damage to the kidneys, known as diabetic nephropathy, can lead to tissue scarring, urinary protein loss and eventually chronic kidney disease, sometimes requiring dialysis or kidney transplantation. Damage to the nerves of the body, known as diabetic neuropathy, is the most common complication of diabetes. The symptoms can include numbness, tingling, pain, and altered pain sensation, which can lead to damage to the skin. Diabetesrelated foot problems (such as diabetic foot ulcers) may occur, and can be difficult to treat, occasionally requiring amputation. Additionally, proximal diabetic neuropathy causes painful muscle atrophy and weakness.

The first WHO Global report on diabetes demonstrates that the number of adults living with diabetes has almost quadrupled since 1980 to 422 million adults.^[4] Factors driving this dramatic rise, which is largely on account of type 2 diabetes, include overweight and obesity. The new report calls upon governments to ensure that people are able to make healthy choices and health systems are able to diagnose, treat and care for people with diabetes. Around 8% of women - or 205 million women - live with diabetes worldwide, over half in South-East Asia and the Western Pacific. During pregnancy high blood glucose substantially increases the risk to health for both mother and child as well as the risk of diabetes for the child in the future. Almost half of women who die in low-income countries due to high blood glucose die prematurely, before the age of 70 years. According to WHO, around 422 Million adults had diabetes in 2016.Around 1.6 million deaths are directly attributed to diabetes each year. About 1 in 3 adults aged over 18 years is overweight and 1 in 10 is obese.

Prevention:

Prevention of type 2 diabetes, which accounts for 85–90% of all cases, involves measures to minimize complications and maximize quality of life for all people with diabetes. Our core functions are to set norms and standards, promote surveillance, encourage prevention, raise awareness and strengthen prevention and control.

Main recommendations for individuals are :

- Cessation of tobacco consumption and smoking
- Increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts;
- Limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats;
- Limit the intake of sugars;
- Be physically active accumulate at least 60 minutes of regular, moderate to vigorous intensity activity each day that is developmentally appropriate.

Societal recommendations:

- Curbing the childhood obesity epidemic requires sustained political commitment and the collaboration of many public and private stakeholders.
- Governments, International Partners, Civil Society, NGO's and the Private Sector have vital roles to play in shaping healthy environments and making healthier diet options for children and adolescents affordable and easily accessible. It is therefore WHO's objective to mobilize these partners and engage them in implementing the Global Strategy on Diet, Physical Activity and Health.

Intervention:

- Lifelong prescription of oral hypoglycemic drugs, some of the newer ones like sitagliptin cost as much as Rs.50 per tablet;
- Insulin(eg.Actrapid) injections which cost Rs.2880 for 5 injections
- A pancreas transplant is occasionally considered for people with type 1 diabetes who have severe complications of their disease, including end stage kidney disease requiring kidney transplantation.
- Complication of type 2 diabetes nephropathy may require kidney transplant, the costs of which are as follows:

Countries	Average price
U.S.A	\$65,000
U.K.	\$76,500
India	\$19,000 (Rs.12,00,000 approx.)

Cardiovascular diseases

Cardiovascular diseases (CVDs) are disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular diseases, rheumatic heart disease and other conditions. Four out of five CVD deaths are due to heart attacks and strokes. Cardiovascular diseases (CVDs) take the lives of 17.7 million people every year, 31% of all global deaths.^[5] Triggering these diseases are tobacco smoking, unhealthy diet, physical inactivity and the harmful use of alcohol. These in turn show up in people as raised blood pressure, elevated blood glucose and overweight and obesity. Around 17.7 million people die each year from CVDs, an estimated 31% of all deaths worldwide. More than 75% of CVD deaths occur in low-income and middle-income countries. Around 80% of all CVD deaths are due to heart attacks and strokes.

Prevention measures include the following:

- Tobacco use, unhealthy diet and physical inactivity increase the risk of heart attacks and strokes.
- Engaging in physical activity for at least 30 minutes every day of the week will help to prevent heart attacks and strokes.
- Eating at least five servings of fruit and vegetables a day and limiting your salt intake to less than one teaspoon a day, also helps to prevent heart attacks and strokes.

Intervention measures include :

• Angioplasty which costs somewhere between Rs. 1.2 Lakhs to 1.6 Lakhs (USD \$1850 to 2600). This will include one stent cost, surgeon fees, 2 to 3 day stay at the hospital, food for the patient, drugs and other consumables. If more than one stent is required, then the cost will be additional. • Heart bypass which costs more than Rs. 1 lakh plus cost of hospital stay.

Cancer

Around 8.8 million people worldwide died from cancer in 2015. That is nearly 1 in 6 of all global deaths. US\$1.16 trillion was the estimated total annual economic cost of cancer in 2010.Around 30-50% of cancers could be prevented.^[6]

Cancer is a generic term for a large group of diseases characterized by the growth of abnormal cells beyond their usual boundaries that can then invade adjoining parts of the body and/or spread to other organs. Other common terms used are malignant tumors and neoplasm. Cancer can affect almost any part of the body and has many anatomic and molecular subtypes that each requires specific management strategies. Cancer is the second leading cause of death globally and accounted for 8.8 million deaths in 2015. Lung, prostate, colorectal, stomach and liver cancer are the most common types of cancer in men, while breast, colorectal, lung, cervix and stomach cancer are the most common among women.

Prevention:

According to current evidence, between 30% and 50% of cancer deaths could be prevented by modifying or avoiding key risk factors, including avoiding tobacco products, reducing alcohol consumption, maintaining a healthy body weight, exercising regularly and addressing infection-related risk factors. National policies and programmes should be implemented to raise awareness, to reduce exposure to cancer risk factors and to ensure that people are provided with the information and support they need to adopt healthy lifestyles.

Worldwide, tobacco use is the single greatest avoidable risk factor for cancer mortality and kills approximately 6 million people each year, from cancer and other diseases. Tobacco smoke has more than 7000 chemicals, at least 250 are known to be harmful and more than 50 are known to cause cancer. Tobacco smoking causes many types of cancer, including cancers of the lung, oesophagus, larynx (voice box), mouth, throat, kidney, bladder, pancreas, stomach and cervix. Second-hand smoke, also known as environmental tobacco smoke, has been proven to cause lung cancer in non-smoking adults. Smokeless tobacco (also called oral tobacco, chewing tobacco or snuff) causes oral, oesophageal and pancreatic cancer. Nearly 80% of the 1 billion smokers in the world live in low- and middle-income countries.

- Prevention of Tobacco smoking: which causes cancers of the lung, oesophagus, larynx (voice box), mouth, throat, kidney, bladder, pancreas, stomach and cervix;
- Prevention of Second-hand smoke (also known as environmental tobacco smoke): which causes lung cancer in non-smoking adults; and
- Prevention of Smokeless tobacco (also called oral tobacco, chewing tobacco or snuff): causes oral, oesophageal and pancreatic cancer.
- Dietary modification is another important approach to cancer control. There is a link between overweight and obesity to many types of cancer such as oesophagus, colorectum, breast, endometrium and kidney. Diets high in fruits and vegetables may have an independent protective effect against many cancers. Regular physical activity and the maintenance of a healthy body weight, along with a healthy diet, considerably reduce cancer risk. In addition, healthy eating habits that prevent the development of dietassociated cancers will also lower the risk of other noncommunicable diseases.

Intervention:

• The average cost of treatment for breast cancer through a private practitioner would be Rs 5-6 lakh, including investigations, surgery and radiotherapy. However, with targeted therapy, six cycles of chemotherapy can cost up to Rs 20 lakh

In conclusion, as the age old saying goes "Prevention is better that cure". If we can only reinforce healthy behaviors, we can prevent a great deal of morbidity and mortality due to noncommunicable diseases and also save millions that are being spent on the treatment of the diseases and their complications.

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My journey through the Preventive Medicine: Lessons learnt and Messages Received

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(Text of the speech delivered by Dr Pradeep Kumar for NINAD Oration during the Joint Annual State conference of Indian Association of Preventive & Social Medicine, Gujarat Chapter (XXV) & Indian Public Health Association Gujarat Chapter (VII) on 7th Dec 2017 at Surat)

Dear All,

First of all, with utmost humbleness, I sincerely and profusely thank IAPSM GC and the organizing committee of this conference for conferring the prestigious NINAD oration upon me. Of all honours and recognitions, peer recognition is the sweetest, so right now I am enjoying the sweetest fruit of my academic life.

Dear friends when for the first time I was informed by Dr Dipak Solanki, President of state chapter about the oration, my first reaction was a NO. I always thought that this oration is something like life time achievement award conferred to a person when he has crossed the zenith of his carrier. But then looking to the names of two illustrious orators of earlier years whom I respect a lot and owe everything that I have learned in Community Medicine in Gujarat, my chest filled with the pride and I said yes in all capital letters.

After saying yes, next issue came was that what shall be the topic of my oration. Unlike my many colleagues who have specialized in certain sub areas of Community Medicine and have made significant contribution in those areas, my work has been scattered. JO MIL GAYA USI KO MUQUADDAR SAMAJH LIYA, (whatever I received, I took it as my destiny).

Here,I will recall a book "My world of Preventive Medicine" by Dr CG Pandit, recipient of PADMABHUSHAN and OBE. This book is available in the library of this department. Dr Pandit a medical graduate of Bombay University did diploma in Microbiology & went to UK for higher studies. He was founder DG ICMR and wrote the autobiography, which was not an ordinary biography but an honest attempt to recreate the history and evolution of Public health in new independent India.

Finally, I decided to present my biography in a way that it does not become boring and where I can share few lessons and messages. I have been in this subject since 1981. This period of more than 36 years has been very eventful in the sense that I could put my hands on the data of 4 census. When I began my journey - in India, the IMR was 110 per 1000 live births, MMR was around 6 per 1000 live births. Population thanks to uncontrolled fertility, has more than doubled since then. Smallpox was just eradicated, paralytic polio was rampant, Malaria was at its worst and HIV was yet to appear in the map of the world. Leprosy was hyper endemic and being treated with MDT - mono drug therapy with Dapsone, Immunization schedule was just being strengthened with inclusion of measles. There was no talk of NCD or of mental illnesses as we were preoccupied enough with communicable diseases.

So, this is how I commenced my journey in 1981 in SPM or PSM or what we call now Community Medicine. In fact, the journey began much before when I joined MBBS in 1975 through a state level entrance test. Let me first confess that right from beginning I have been a very ordinary student. Blessed with a very good DNA from my parents, I lacked focus, concentration and efforts and as a result unlike most of you selected in first attempt, I got selected in 4th attempt from my marks of third attempt in the second lowest ranking medical college of UP - my alma mater MLB Medical College, Jhansi - a new college with all its UG and PG degrees unrecognized.

In MBBS, I could just scrape through all examinations in first attempt and ranked 26 in the batch of 100 students. I was reasonably good in acquiring and transferring knowledge but poor in skill acquiring and even poorer in skill transfer, hence I opted for the most non-medical branch in the medical college the SPM or present-day Community Medicine. Premonition always works, my performance in all internal and external examinations during the MBBS was mediocre but somehow only once in entire MBBS in the first internal examination of 2nd MBBS I topped the entire batch in theory of only one Subject and it was the Community Medicine so the God was directing me in this direction. Thanks to My PG guide & HOD, Dr RN Srivastava, during my 3 years of MD, I had more exposure of field work than of reading. You all will agree that you are maximally influenced by your PG teacher as you observe and follow him keenly. God forbid if two share genders as well, candidate may come out as full replica of him or her. I also tried to imbibe his many habits. He believed in networking and documentation and from that time I also started believing the same. Let me tell you that these two things helped me a lot in my later carrier.

Before going further, let me acknowledge, few persons who played important role in my journey of learning. Apart from my teacher Dr RN Srivastava mentioned earlier, my real learning began after MD when I joined in Medical Education in Gujarat. Post MD learning is free flowing, purely voluntary, without any fear of being assessed. It is largely through reading, observing and participating with colleagues and senior teachers. Here I will acknowledge two teachers and two beaurocrats who influenced me a lot and facilitated my learning.

Late Dr CK Purohit and Dr Vikas Desai under whom I worked for 9 and 15 years respectively shaped my academic personality a lot. While former helped me in academic reading and scientific writing, later helped me in understanding the public health administration especially the HR and finance related issues. The two are giants in their own capacity but then are as different as chalk and cheese. Point is you can learn a lot from people who are so diverse and different. Two beaurocrats namely Dr Amarjit Singh and Mrs. VL Joshi both senior IAS officers with whom I worked for brief periods of 1 – 2 years each. Even in this brief tenure not only I got their faith and affection, I learned a lot about the administration. The innovative approach coupled with boldness, honesty and integrity are the essence of good governance. What is required is the judicious and fair use of the narrow window of discretion to get the best out of the plan. Same window can ensure optimum use of human resources by incentivising and disincentivising the staff within the legal frame work. I also learnt from them that how effective delegation can reduce your stress/ work load and can ensure better results.

Let me revert back to my journey of PSM. In 1984 I joined at BJ Medical College. At that time, it was only university in India where PSM was not a regular subject and was a matter of chuckle and ridicule in all national conferences. We hardly had any UG teaching but as a result, I got lot of time to join in PG teaching and assisting PG students in their dissertations as Co guide. Needless to say, that while working as Co guide with as diverse teachers as Dr Purohit, Dr Seetalvad and Dr AU Shah, I had extensive learning of working with different types of teachers. Further I received lot of respect and affection from these PGs which in most of the cases is existing even today. Here the message is that never look for immediate gains. Sometimes the small efforts help you in a big way later as long-term gains. Thanks to plenty of time available, I also read the book of Maxcy and Oxford Book of Public health

which I did not read during my MD days. I also tried Occupational Health by Donald Hunter but could read only 10 – 15% of it. Department at BJ for last 10 years at least had no research publications but then due to the constant motivation and guidance of Dr Purohit and a healthy competition among all young APs, we had several publications all in the IJCM within a period of 2 years. First one was by Dr Lala, followed by Dr Kartha, Dr Talsania and myself. It created an atmosphere of promoting research work in the department and amongst us we had 8 - 10 publications in a brief period of 3 - 4 years. Dr Purohit became Medical Superintendent for a brief period when Ahmedabad had an epidemic of AGE & Cholera. Daily OPD and IPD reports used to come to him which he always shared and discussed with me. This resulted in my first research paper, published in IJCM in 1990. Take home message is that every study need not to be a planned one. Availability of hospital based secondary data and intelligent analysis under the guidance of Dr Purohit made it an oral presentation short listed for best paper in Gwalior national conference; however it missed the target narrowly. Another paper which has given me international recognition with more than 200 citations is about modified social classification. It was also conceived here. Dept. was using this type of multiplication factor to rationalize the social classes but it had neither a reference nor documentation. I linked it with CPI and got it published.

My second inning began at Surat with joining as Associate Professor on ad-hoc promotion. Most people discouraged me while a few handful encouraged rather pushed me to go for it. This decision I never repented thereafter and itturned out to be the wisest decision ever taken by me. Take home message is that fortune may not knock at your door second time so go for it when it knocks for the first time. My stay at Surat for 14 years from 1993 to 2007 has been most eventful and contributory in my carrier. I would say that if you have not worked in Surat your public health training in Gujarat is incomplete. Surat is a city full of surprises and

paradoxes. It is referred as vertical slum, extension of Mumbai, city of migrants (original residents of Surat < 10%) or city of opportunities and STD. From Public health point of view, it offers all sorts of illnesses both lifestyle related and sanitation and hygiene associated characteristically seen in upper or lower social class or migrants. All disasters manmade or otherwise strike Surat frequently. SMC was first Municipal Corporation in state with all MD (PSM) at its top positions. With best possible coordination, we tried innovative models in urban health care especially in post plague period after 1994. During this tenure I saw and participated in innumerable conferences, workshops and trainings including management of events like Plague, Bird Flu, recurring outbreaks of Leptospirosis, Famous flood which struck twice. Each one episode enriched me in terms of knowledge, skill, ability to work in team and in coordination with other departments. I also learned during this period that how an event can be organized at the shortest notice with minimum or nil resources. When I joined Surat, Dr DM Saxena left for state AIDS cell and his 5 - 6 orphaned PGs were taken by Vikas madam under her wings. I asked her that can I assist these PGs in their thesis work. She readily and kindly agreed so again I became so called Co guide in all these dissertations. Initially I joined at Surat alone and my family joined later after few months. So, I had the luxury of assisting 4 – 5 thesis works on daily basis. This is also a period when I got few of the life time finest friends and also few very bright and laborious students. I would recall the name of Dr HG Thakor who was a GP and the first PG student registered under me in Surat. Very senior and younger to me only by few months, he has been very modest but very meticulous and hard working. Out of his dissertation, he produced 4 original and 3 review articles; all published in reputed journals like Indian Journal of Paediatrics, Indian Journal of Hypertension and IJCM. He also got the best paper award in state conferences twice in succession which I think is a sort of record. Finally, after serving with several organizations, based on his technical

achievements, he has recently moved to USA on E11 visa. Point I want to make here is that such students once in a while come to all of us and they are pure delight to work with as they bring laurels to you with minimum to nil efforts from your side. Secondly between intelligence and the perseverance, later is more contributory to the success.

We also had journal club in our department those days where papers published in IJCM were to be discussed, such was the enthusiasm and preparedness of PGs, that every paper discussed was dissected so harshly and extensively that the authors would have withdrawn the paper if they get any access to our discussion. I started sending these comments to the Journal editor after thorough editing and this I did 8-10 times in two years. At the end Dr Sunder Lal, editor IJCM wrote to me that if you are so good in criticizing the work of others, why don't you join the editorial board? Thus, I became reviewer in IJCM in 1999. I was the only Associate professor who was also the member of editorial board. Apparently, it was a thankless job rather money was to be spent on postage etc. I did it diligently and with honesty and till date, I am the one, who has reviewed more than 100 articles with around 60% rejection rate. This appointment as reviewer 18 years ago was also a premonition for the future event?

I owe a lot to Surat as it gave me a recognition whereby I was handpicked to work at GSACS as APD and by default also the Director of GSCBT later being far more important post not known to me before the joining. In both cases I was to report directly to the Commissioner Health and Secretary Public Health respectively. I was there during NACP phase 3 of 2007 – 11. It was the time when there were more funds, more manpower, mandate for scaling up and lastly excellent supervision from GOI where Ms. Sujatha Rao was our DG NACO. It was success all over the country and more so in Gujarat thanks to the excellent supervision and support from Commissioner health and equally good coordination among Additional Directors of health, medical

Services & Medical Education. As a result, I received undeservingly the credit of its success. It is here for the first time I heard certain terms like PIP, AAP, SOE, UC or UTC either unaudited or audited. Here I also realized that in teaching line whatever you learn visualize or dream all can be achieved if you become part of the implementing system. I used to say that GSACS and its team of CST has done much more in 4 years for AIDS patients than all clinicians of state put together in the same period. In 2007 there were only 2 ARTCs catering to less than4000 patients and by end of 2011, there were 24 ARTC with 36 link ARTC catering to around 24000 patients on ART another 30000 on pre-ART registration. Incidentally the concept of Link ART was developed by GSACS during NACP phase 2 and India's first Link ART was started in Himmatnagar during phase 3. So many patients didn't come overnight and were brought for the treatment thanks to the escalation of testing facilities. Testing centres in the state increased from 380 to 1167 with testing of 2.5 lakhs per annum to 11.72 lakhs per annum in 2011. Though the sero prevalence in all be it the general population or voluntary blood donors or pregnant women or HRB, or STI cases decreased but the enhanced detection resulted in the increase in absolute number of positives who were put on the ART. Similarly, impressive achievements were there in other areas too such as TI, Blood safety, STI clinics, IEC etc. While some states were not able to utilize the approved budget, we were able to demand and get the additional allocation from the NACO out of the savings from the unutilized funds of other states. I am most contented and satisfied with this tenure. It will be most stupid to say that I did all this. It was because of the excellent team with me at GSACs and at periphery - some of the faces I can see in the audience as well, and equally excellent support and supervision from the office of PD or the Commissioner Health. Here I also realized that people crib unnecessarily about lack of authority or power. If you are correct and honest in your intentions, you can use your power innovatively judiciously and achieve a lot in the same system. I also learnt some important lessons of HR management how to recruit and retain best people as far as possible. Thanks to my boss Dr Amarjit Singh, in this tenure only I also got opportunity to work in Modasa outbreak of B hepatitis and illicit liquor tragedy in Ahmedabad. It was indeed an honour when I presented the response of state for Modasa outbreak before the DGHS and team.

Excellent coordination which exists between health medical service & medical education in Gujarat is unique and unparalleled. While other states have separate ministers for Health services and Medical education, Gujarat has single ministry and a post of single Commissioner where all directors report. This convergence at Commissionerate level is the secret of coordination.

I learnt two messages here

- 1. You are as good as your team members are and your superiors support you or allow you.
- 2. Higher in the hierarchy you should have broader vison.

This tenure though very satisfying no doubt was full of stress of meeting deadlines, extensive travel and extended and irregular working hours. Moreover, I started missing the teaching. I decided to quit and came back to the teaching which has been my first and last extra marital affair. Here I was entrusted the department at a new medical college. So far, I worked at old and established medical colleges which have their advantages and few disadvantages. It was a new department to be established with a very young bright and enthusiastic team. Second senior person in the department was also at least 16 - 17 years younger to me which in academic terms mean almost two generations. Except for Dr Rashmi and Dr Manish all were the fresh postgraduates or just graduates. Paramedic and support staff was also oven fresh. They came from different colleges and so brought with them different philosophies. We used to have frequent brainstorming to pick up the best of all colleges.

Advantage of a new college is that you don't have the baggage of history and traditions and can try lot of new things. My tenure at state government helped me to get lot of trainings and projects in the department which were implemented by the staff with little or no grudge and wholehearted active participation. Thanks to the support of everyone in the department, we could make it one of the active department more active than some old established departments that too when we had no postgraduation and minimum staff.

Another thing that happened at this time was the chief editorship of Indian Journal of Community Medicine. Again, to be honest there are many persons in India and for that matter in Gujarat as well who are more competent and deserving this job, but I was asked to contest for it. I will ever be thankful to the Gujarat fraternity for choosing me for this honour. The selection rather election for this post was very smooth thanks to the whole-hearted support of everyone in Gujarat and strategic mobilization of members to vote. Here I will mention the fact that we don't have any rivalry among colleagues. The way all HODs and their staff members supported my election is un-parallel and can happen only in Gujarat. Once the euphoria was over, I realized that this job has more problems than privileges. There was a huge outstanding financial liability. A high rejection rate of 80 – 90 percent is sure to make me enemy number 1 in the country. In addition to this there are other responsibilities such as regular communication with indexing agencies, correspondence with publishers, RNI etc. With support from my colleagues in IAPSMGC and health department, I could bring the journal from red to black back in less than 2 years. Two of my colleagues who are helping me in journal work deserve a special mention namely Dr Rashmi Sharma and Dr Harsh Baxi. By and large it is a thankless job for them as the credits for that matter discredits go to Chief Editor alone. Though their roles are overlapping, Dr Rashmi while helps me in moving the article up and down in the cycle, Dr Baxi deals with financial matters and correspondence on behalf of chief editor. Many times, the mail you see on my behalf are totally written by him of course with my concurrence. He also has a copy of my signature which he pastes wherever deems fit. My one achievement where I genuinely take pride is that I have made these two guys fully competent, capable and empowered to run a journal independently. Most of the times I agree with the decision taken by Dr Rashmi for an article, I also accept verbatim a letter drafted by Dr Harsh. To be very blunt it would not have been possible for me to run this journal for a day without the support of these two persons.

Now in October 2017 I got retired from the government job after a brief stay of 3 and half months at BJ Medical College. What a prophetic way the journey ended in 2017 at the same place precisely where it started in 1984. Now I have joined a new college. I hardly know anything other than PSM so cannot do anything else. I will remain active and do whatever I can in my full capacity. Basically, it is a journey where this retirement from government job was a brief stopover. After taking a break and recuperating, journey goes on till I am there.

Retired professors and senior citizens have a habit of offering unsolicited advises to the youngsters. I am both so my few advice are as below.

- 1. Retain your minimum clinical skills because these only make you superior than the MPH guys. Also pick up the additional skills especially computer related while doing post-graduation
- 2. In this subject, there is no substitute of field work. It will teach you which many text books cannot. Liaise with health departments be it ZP, MC or the state team work with them or for them as much as possible because they are the implementers of what we learn or teach.
- 3. These guys in health department are sitting on the mountains of data and at times don't know what to do with these mountains except its upward transmission. Work on this data with them generate the evidence read paper which not only

improve your CV but also help the planners and administrators in the policy, planning and action.

- 4. Fortune may not knock twice so grab it when it knocks for the first time.
- 5. No efforts go wasted in long run though may look wasted at that point of time. Focus on long term gains only.
- 6. Networking and documentation of what you do is crucial
- 7. Develop a speciality of your own within the Community Medicine. Try to work in that area and generate a body of work so overtime you become truly an expert of that area at least within state if not in India.

Before concluding, few words about the research publications. MCI mandate is to get total 4 publications in entire carrier for promotions. To fulfil this do that much as per the whims of MCI. But thereafter do as you want. Selection of topic of research work is utmost important. Mostly our papers are reinvention of wheel and are inspired by someone else work. Research work is noticed only when it is different. I am registered at research gate. My total 70 publications have 380 citations. While most papers have nil to 1 or 2 citations, only 8 – 10 papers have more citations. All these papers are very simple in terms of study design, sample size etc but looked at the research problem from a different angle. Please also note that barring one or two none had any financial support

At the end, I cannot forget that originally, I am from UP and don't belong to this place but the way I have been adopted by everyone here – MAI TO BHUL CHALI BABUL KA DESH PIYA KA GHAR PYARA LAGE. Out of thousands of events, barring a few which can be counted on the fingers of one hand only, I received unconditional love affection and respect from each one of you.

Finally, thanks giving to the most important person. Whatever I have done in academic world, has

been possible due to the one-person - wife in my life. She is Dr Pushpa Gupta. All men are commitment phobic and run away from marriage or at least from domestic responsibilities. I have no hesitation in saying that I am also a man. I can't say that she is the best wife due to limited sample size but what I can say there could not have been anything better for me. Importantly, she is a very good mother of my two children who have made me proud father and also a rare commodity these days she is a very good daughter in law.This all when she is professionally equally qualified and working woman with more job responsibilities. She bore my idiosyncrasies, tolerated my mood swings and provided me a stress-free environment where I could contribute in the area of my interest.

Big thank you once again to IAPSM GC its office bearers and members, organizing team of Government Medical College, Surat especially Dr. Kosambiya and Dr. Moitra.

Thank you all.

A Cross-Sectional Study on Intranatal and Postnatal Healthcare Usage among Mothers in Fishermen Community of Kovalam Area in Kanchipuram District, Tamil Nadu

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Abstract:

Introduction: Globally, most of the maternal deaths are occurring in the developing countries. Both intranatal and postnatal healthcare services play a major role in improving the maternal health as well as reducing the maternal mortality. **Aims & Objectives :** To assess the utilization of intranatal and postnatal health services and to identify the factors influencing their utilization among women of fishermen population in Kanchipuram district, Tamil Nadu. **Method :** The cross-sectional study was done among the mothers in Kovalam area of Kancheepuram district. Details were collected using a pre-tested questionnaire and analyzed using statistical software. **Results :** The study included 284 mothers of which 35% were illiterates. Delivery was conducted by skilled personnel in 80.28% of pregnancies. During the postnatal period 35.91% of the mothers had more than one postnatal visit, 54.58% mothers had only one visit and 9.51% had no postnatal visit. 48.24% of the mothers were beneficiaries of Janani Suraksha Yojana scheme and also only 45.77% had received cash benefits from Dr. Muthulakshmi Reddy scheme. Better levels of education and socio economic class were found to be significantly associated with better utilization of intranatal and postnatal services. **Conclusion :** This study reveals the fact that maternal health service schemes were not fully utilized by the community and improving the literacy status & socio-economic status will have a better impact on utilization.

Key words: Fishermen, Intranatal care, Maternal health, Postnatal care, Utilization.

Introduction:

According to World Health Organization (WHO) reports 830 women are dying every day from pregnancy or childbirth related complications worldwide. The maternal mortality ratio in developed countries is 12 per lakh live births in contrast to 239 per lakh live births in developing countries. ^[1] India alone accounts for 45,000 maternal deaths in 2015 and the Maternal Mortality Ratio (MMR) in our country is 167 per lakh live births during 2011-13. ^[2] It is of utmost importance to have proper intranatal care by skilled health personnel and postnatal care in the weeks after child birth, as timely management can save the lives of both mother and child. In India, the total fishermen population was about 4 million living in 8.64 lakh families. 61% of the fishermen population was living below the poverty line. Sex ratio among them was 928 females per 1000 males and the family size on an average was 4.63.^[3] The fishermen population is being considered as a marginalized and special group owing to their varied socio-cultural practices, low socio-economic status, low literacy levels and possibly less awareness about the healthcare services being provided. Taking into account of the above details, this study has been planned to identify the usage of intranatal and postnatal health care services and the factors influencing the usage among fishermen population in Tamil Nadu.

Method:

This study was a community based cross-sectional study to assess the utilization of maternal health services among women of fishermen population and it was conducted among women residing in Kovalam (fishermen area) village in Thiruporur taluka of Kanchipuram district. The study was done between April 2015-September 2015 (6 months). The study was done among married women who have delivered a child in the past 5 years, who were a resident of the study area. Unmarried women, those women who were not residents of the study area and those who were not willing to participate in the study were excluded from the study.

The sample size was calculated on the basis of 49.6% of pregnant women having received postnatal care in rural areas of Kancheepuram, district as per DLHS- 4 data, using the formula, $N=Z_{\alpha}^{2} p \times q/d^{2}$, sample size comes to 265. [4] Assuming 10% non responsiveness, the sample size is taken as 290. For the study purpose Kovalam village in Thiruporur taluka of Kanchipuram district was chosen, since the area is highly inhabited by fishermen population. With the help of the local health authorities and the maternal-child health registers available with them, a complete list of mothers from the fishermen families, who have delivered in last 5 years was prepared and the study subjects were selected by simple random technique using computer generated random numbers.

The study was done by using a pre- tested, semistructured questionnaire to collect data from the participants. The study questionnaire was divided into three parts as follows: Part I- Socio Demographic details- Basic details such as age at child birth, education, occupation, income, etc. Part II-Details regarding delivery by skilled personnel (doctors/ trained nurse/trained dais/etc.) or unskilled personnel (untrained dais/quacks/etc.), mode of delivery, place of delivery and details of any intranatal complications; Part III- Details about the number of post natal visits, any complications during the period, intake of iron and folic acid tablets and about family planning methods adopted were enquired. Whether received benefits under Dr. Muthulakshmi Reddy scheme (cash benefit scheme in Tamil Nadu)/ Janani Suraksha Yojana (JSY) was also asked. Socio-economic classification was done using Modified BG Prasad (2015) classification based on Tamil Nadu Consumer Price Index of August 2015 value of 124.5.^[5]

Initially permission to conduct the study was obtained from Institutional ethical committee. With the help of the local health worker, the eligible mothers were identified. Informed and written consent was obtained from the participants. Confidentiality was guaranteed to each participant. Details about the basic socio-demographic profile and utilization of health services were obtained as per the questionnaire. Data collected was entered into MS Excel and then analyzed using SPSS 16.0 software. Categorical data were represented by percentages and proportions. To test the association Chi square test was used for categorical variables and P value < 0.05 was taken as statistically significant.

Results:

The study included 284 mothers from Kovalam area of Kancheepuram district. Among them, 57% (162) were in the age group of 21-25 years, 22% (63) were <20 years, 19% (54) were of 26-30 years and only 2% (5) were >30 years at the time of child birth.

Among the study participants 35.21% (100) were illiterates, 34.51% (98) have studied till primary education, 19.37% (55) have done secondary education, 9.86% (28) have done some under graduation and remaining 1.06% (3) have studied till post graduation. With regards to their occupation, 37.68% (107) of the mothers were homemakers, 45.42% (129) were unskilled workers, 6.69% (19) were having semi skilled job and remaining 10.21% were doing skilled work. Among the mothers enquired 61.27% (174) were having their first child, 27.11% (77) having second child, 8.45% (24) were having their third and remaining 3.17% (9) were having their fourth child. According to modified B.G.Prasad classification 45.07% (128) of the study subjects belong to socio-economic class

Table 1. Othization of intranatal meaturcare services				
VARIABLE	SUB CATEGORY	FREQUENCY (N=284)	PERCENTAGE (%)	
Skilled attendance at	Skilled	228	80.28	
delivery	Unskilled	56	19.72	
Mode of delivery	Normal	157	55.28	
	Caesarean	127	44.72	
Any complications	Yes	118	41.55	
during delivery	No	166	58.45	
Type of complication	Bleeding	31	26.27	
	Fits	14	11.86	
	Diabetes mellitus/	37	31.36	
	Hypertension			
	Fever	16	13.56	
	Others*	20	16.95	

Table 1: Utilization of Intranatal Healthcare services

*-prolonged/obstructed labour, placenta related complications, uterine complications, etc.

VARIABLE	SUB CATEGORY	FREQUENCY (N=284)	PERCENTAGE (%)
No. of post natal	1	155	54.58
visits	2	88	30.98
	3	8	2.82
	>3	6	2.11
	No visit	27	9.51
No. of Iron and folic	<50	122	42.96
acid tablets taken	50-100	45	15.85
	100-200	15	5.28
	Not taken	102	35.92
Any complications	Yes	89	31.34
during post natal	No	195	68.66
period			
Advised about family	Yes	251	88.38
planning methods	No	33	11.62
Type of contraception	OCP	23	8.10
adopted	IUD	120	42.25
	Condom	9	3.17
	Permanent	66	23.24
	Not used	66	23.34
Beneficiary of JSY	Yes	137	48.24
scheme	No	147	51.76
Beneficiary of	Yes	130	45.77
Dr. Muthulakshmi			
Reddy Scheme	No	154	54.23

II, 41.9% (119) belong to class III, 10.56% (30) belong to class I and only 2.46% (7) belong to class IV.

Delivery was conducted by skilled personnel in 80.28% (228) of pregnancies, of which 37.72% deliveries happened in primary health centres, 47.81% delivered in government hospitals and 18.86% delivered in private hospitals. 19.72% (56) of deliveries were conducted by untrained personnel. 55.28% of the mothers had normal delivery and 44.72% had caesarian delivery. Also 41.55% have got some complications during delivery, which includes severe bleeding, epilepsy, diabetes/hypertension, fever and others. (Table 1) In the postnatal period, 54.58% (155) mothers had only one postnatal visit, 30.98% had two visits, 4.93% of mothers had three or more visits and 9.51% of the mothers had no visits. Also, 35.92% of the mothers did not take any iron and folic acid tablets and 88.38% of the mothers were advised regarding family planning in the postnatal period. Various family planning methods adopted were intra uterine devices (42.25%), oral contraceptives (8.1%), condoms (3.17%), permanent sterilization (23.24%) and the other 23.34% were not practicing any method.

Variable	Percentage (n)	Skilled attendance	Chi square value	df	P value
Age at shild hinth (in		at delivery			
Age at child birth (ii	i completed years)				
<20	63	85.7			
21-25	162	77.8	3.059	3	0.383
26-30	54	79.6			
>30	5	100			
Education					
Illiterate	100	82			
Primary	98	84.7	16.683	3	0.001*
Secondary	55	61.8			
Graduate & above	31	93.5			
Occupation					
Home maker	107	78.5			
Unskilled work	129	79.1	3.366	3	0.339
Semi skilled work	19	78.9			
Skilled work	29	93.1			
Birth order of child					
1	174	79.9			
2	77	83.13	0.835	2	0.659
3	33	75.8			
Socio Economic Clas	S				
Ι	30	100			
II	128	74.2	13.345	3	0.004*
III	119	83.2			
IV	75	7.1			
*- statistically significa	nt I		<u>ا</u>		

Table 3 : Factors in utilization of Intranatal health services

Variable	Democrate on (m)	Cl-ille d		36	Develope
variable	Percentage (n)	Skilled	Chi square	ar	P value
		attenuance	value		
Ago at child hirth (ir	completed years	at delivery			
	62	15.0			
<20 21.25	03	12.9	1.0(2)	2	0 5 0 0
21-25	162	13.1	1.962	3	0.580
26-30	54	18.5			
>30	5	20			
Education	1				1
Illiterate	100	22			
Primary	98	9.2	8.421	3	0.038*
Secondary	55	10.91			
Graduate & above	31	16.13			
Occupation					
Home maker	107	14			
Unskilled work	129	15.5	2.142	3	0.543
Semi skilled work	19	21.1			
Skilled work	29	6.9			
Birth order of child					-
1	174	16.1			
2	77	7.8	4.364	2	0.113
3	33	21.2			
Socio Economic Class					
Ι	30	6.7			
II	128	14.1	3.655	3	0.301
III	119	17.6			
IV	75	14.28			

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*- statistically significant

48.24% of the mothers were beneficiaries of JSY scheme and also only 45.77% had received cash benefits from Dr. Muthulakshmi Reddy scheme. (Table 2)

From Table 3, it was observed that education graduate and above (χ^2 - 16.683; p-0.001) and socio economic class- class I (χ^2 - 13.345; p-0.004) were significantly associated with utilization of skilled attendance at delivery. And education-graduate and above (χ^2 - 8.421; p-0.038) was found to be having statistically significant association with better utilization of postnatal health services. (Table 4)

Discussion:

Out of the total 284 study population, 80.28% deliveries were conducted by skilled personnel. National Family Health Survey-4 (NFHS-4) data shows 99.3% of the deliveries were conducted by skilled personnel in rural Tamil Nadu and 80% in national level.^[6] District level Household survey-4 (DLHS-4) also shows 99.1% of the deliveries being conducted by skilled personnel in rural Tamil Nadu.^[4] Jat et al. has reported the deliveries conducted by skilled personnel to be 49.8%.^[7] The better situation in our study population can be due to better

availability of healthcare facilities and personnel in the study area. Lancet Maternal Survival Steering Group report by Campbell OM et al. has also reported that effective intrapartum care is needed in order to reduce maternal mortality.^[8]

During the postnatal period 90.49% of the mothers had atleast one postnatal visit. According to DLHS-4 data only 63% of the mothers had postnatal visits in rural Tamil Nadu within two weeks of delivery. ^[4] 48.24% of the mothers were beneficiaries of JSY scheme and also only 45.77% had received cash benefits from Dr. Muthulakshmi Reddy scheme. As per NFHS-4 data, only 43.8% of mothers received cash benefits from JSY scheme. ^[5] More than half of the mothers have to be covered under the scheme in the future.

Higher levels of education (graduates & above) and socio economic class I were found to be significantly associated with better utilization of intranatal services. Kesterton AJ et al. in their study also found that economic status was a major factor in institutional care seeking for child birth in rural India.^[9] And only higher education (graduate and above) was found to have statistically significant association with better utilization of postnatal health services. In other studies too, socio economic status and mother's education were found to have association with better utilization of either intranatal or postnatal services.^[10-15] In a study done by Van Eijk AM et al. in Kenya, accessibility to health facility was also found to be a significant determinant of institutional care for delivery. ^[16] Apart from education and economic status, maternal health knowledge, birth interval and number of household members were also identified as determinants of facility based care for childbirth by Kawakatsu Y et al.^[17]

A study done in a special community in Bangladesh by Islam M R et al. has reported a very low level of postnatal service usage (6.2%) and the reasons were level of education, distance to the service centers and exposure to any mass media.^[18] Kebede et al. has also reported that distance from the health facility was a major factor leading to better health service utilization.^[19] Jacobs et al. has reported that utilization of antenatal services also serve as a determinant of intranatal and postnatal care utilization.^[20] Exposure to media and women with low parity were identified as factors influencing their utilization, according to a study by Regassa N.^[21] Huq NL et al. has advised an integrated maternal healthcare intervention by deploying more skilled birth attendants in remote areas for promotion of skilled care during childbirth.^[22]

Conclusion:

The study which was done among the fishermen community found out the percentage of deliveries conducted by skilled personnel were less than the average in the state and also more than half of the mothers were not covered under both the state/central cash benefit schemes. More than 90% of the mothers had atleast one postnatal visit. Better socio-economic status and higher levels of education were identified to be associated with better utilization of intranatal and postnatal services. The study proves the need for improving awareness and utilization of maternal healthcare services among the mothers in the community, especially among those residing in the underserved areas like fisherman community.

Recommendations:

The study has reported the fact that intranatal & postnatal healthcare services were not utilized fully by the community and fishermen population being a special group has to given the needed attention from the healthcare delivery system. Apart from improving the level of awareness about the services, more impetus on literacy and socio-economic development of the community has to be given.

Declaration:

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A Cross Sectional Study to Assess and Impart the Knowledge about Life Skills Education Related to Physical and Emotional Changes in Adolescent Girls Residing in Orphanages of Ahmedabad City

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Abstract:

Introduction : The WHO has defined Life Skills as, "the abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life". It is through life skill education, they gain correct knowledge regarding their body physiology, myths related to it and are able to cope up in future. With this background, the underlying study was conducted among adolescent girls residing in orphanages of Ahmadabad city. **Objectives :** To assess the level of knowledge on life skills related to physical & emotional changes in adolescent girls. **Method :** The study group included 62 adolescent girls (11-19 years) of orphanage in Ahmedabad city. With prior permission from authority, pretested questionnaire was used for pre & post test. **Results :** Our population consisted of 18(29%) girls with age group (10-14 years) and 44(71%) with age group of (15-19 years). Among them 6(9.67%) were illiterate. Nearly 37% girls were unaware of body changes happening during adolescent period.52 (83.87%) girls had attained their menarche. Among them 43(82.69%) of girls used cloths during periods. Around 24% followed certain restrictions due to various myths. About 49(79.03%) Girls were aware regarding their legal age of marriage. **Conclusion :** The study concludes that the intervention on life skill education is helpful for the adolescents residing in orphanages for enhancing the correct knowledge and to accept pubertal changes positively.

Key words: Adolescent Girls, Life Skill Education, Orphanage

Introduction :

As per WHO, Adolescent is "any person between 10-19 years of age" and this age range falls with the definition of young people. Adolescent is a period of transition from childhood to adulthood that implies many developmental changes and associated problems. "Life skills" is defined by WHO as "psychosocial abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life".^[1] As per UNICEF, life skill education is a structured program of needs and outcomes based participatory learning that aims to increase positive and adaptive behavior by assisting individual to develop and practice psychosocial skills that minimize risk factors and maximize protective factors.^[2] "Life Skills" includes Problem-Solving, Decision Making, Critical Thinking, Creative Thinking, Communication Skills, Self-Awareness, Stress Management, Empathy and Interpersonal Relationship.^[3]

According to UNICEF "A child who has lost one or both of his parents is considered to be an orphan." $^{\mbox{\tiny [2]}}$

Impact of Life-Skills Education

- Early identification of problems, early intervention and support at key moments in lives of young people is vital.
- To build different dimensions of well-being, by building self-image & self-worth, which in turn help individuals to be less vulnerable to the variations within a given context.

It is through life skill education, they gain correct knowledge regarding their body physiology, myths related to it and are able to cope up in future.^[4]

In orphan adolescents this transition becomes more vulnerable and important in many contexts. They may be deprived of this crucial information and knowledge due to lack of personal attention towards them.

An international children's charity has found that among 20 million of child population in India 4% are orphans. $^{\rm [4]}$

So, by assessing and imparting life skill education to orphan adolescent girls related to physical and emotional changes in adulthood will help them to cope up in future. 'Life Skills' provide primordial prevention against health problems, by reinforcing positive behavior and preventing health problems.

Method:

This was a cross sectional study carried out in two randomly selected orphanage (Mahipatram Ashram and Vikas Gruh) in Ahmedabad city which had a higher adolescent girls enrollment. All the 62 adolescent girls of 10-19 years of age present during our visit were included in the study. Prior permission from the concerned authority of Mahipatram Ashram and Vikas gruh was obtained. The questioner was a self administered checklist. Same format was used for pre test & post test. In between two test life education session was conducted by surveyors. And post test was conducted the next day.

The data were analyzed in excel using appropriate tests.

Results & Discussion :

Population of Adolescent (10-19 years) in India is more than 236.5 million (19.9%), which is very high compare to China (191 million, 2.14%) & USA (43 million, 13.8%).^[5]

Adolescent girls in India constitute almost 47 percentage of the adolescent population. Adolescent period is the formative period when maximum

amount of changes take place and pubertal change is one of them. ^[6]

Our study population consist of 62 orphan adolescent girls among which 18(29%) belong to 10-14 years age group and 44(71%) belong to 15-19 years age group. As per census 2011 sex ratio among adolescent age group between 10-19 years is 898 and literacy status in adolescent age group of same is 88.2 %.^[5]

In this orphanage, Maximum girls 29 (46.78%) were studying in secondary level of education followed by 11(17.75%) in higher secondary .There were 6 (9.67%) girls who were illiterate. (Table 1)

Table 1: Educational Status of the Study Population

Educational Status	Frequency	Percentage
Illiterate	6	9.67
Primary education	11	17.75
Secondary education	29	46.78
Higher secondary		
education or college	16	25.8
Total	62	100

*Illiterate were guided and explain by faculty members.

Only 39 (62.90%) girls were aware of various body changes happening during adolescent period. (Table 2)

Table 2: Awareness among Orphanage Girls Regarding Body Changes Happening During Adolescent Period

Awareness about body changes happening during adolescent period	Pre test	Post test
Aware	39(62.90%)	52(83.87%)
Not aware	23(37.10%)	10(16.17%)

Chi Square value 6.98, p < 0.05 .

As per R B Jain out of 320, 212 (66.3%) studied, were aware of at least one adolescent change(s) whereas, when probed and further asked to enumerate the changes taking place in them, 272/320 (85%) adolescents could narrate at least one such change.^[7] In a quantitative survey by Kotecha et al, results showed that 69.8% male and 52.3% female adolescents perceived physical changes whereas, 5.5% males and 66.1% female adolescents were aware of sexual changes.^[8]

There was a significant change between pre test and post test knowledge regarding awareness of body changes happening during adolescent period with chi square value 6.98, p < 0.05.

When asked about various body changes occurring in boys and girls of adolescent age group differently, nearly 27 (43.55%) girls were able to enumerate them all correctly for female changes but only 6(9.68%) were able to tell about changes happening in boys during this period. (Table 3)

Table 3 : Awareness among Orphanage Girls RegardingBody Changes in Males And Females

Awareness about body changes	Pre test	Post test
Aware only about male changes	6(9.68%)	38(61.29%)
Aware only about female changes	27(43.55%)	47(75.80%)

Chi Square value 7.151, p < 0.05

In a community-based door-to-door survey by Nair, et al in village-Gazipur in East Delhi Almost all the girls were aware of the weight and height gain that occurred with puberty; 59.7% and 33.8% of the adolescent girls were aware of the breast enlargement and growth of axillary/pubic hair respectively that accompanied puberty. Two-thirds of the study subjects had knowledge of menstruation.^[9]

There was a significant change between pre test and post test knowledge regarding awareness of male and female body changes respectively happening during adolescent period with chi square value 7.151, p < 0.05

Menstruation is a physiological phenomenon which is unique to females that begins in adolescence. It is monthly uterine bleeding for 4-5 days coming regularly every 28 days. Normally females get 13 menses in a year and around 400 menses in her reproductive life. The first menstruation is termed as "menarche". The age of menarche is between 10- 16 years in India. ^[10] In those orphan girls, 52(83.87%) girls had attained their menarche. Among them only 9 (17.31%) girls used sanitary pads and 43 (82.69%) used cloths during menstruation.(Table 4)

Used during menses	Frequency	Percentage (%)	
Sanitary Pad	9	17.31	
Cloth piece	43	82.69	
Total	52	100	

Table 4 : Practices Followed during Menstruation

Incidence of reproductive tract infection is 70% more common among these women. Moreover, hygiene is neglected by girls especially in rural areas, due to lack of availability and inability to afford sanitary napkins. ^[11] A study conducted in Aurangabad, India reported that 60% of urban girls used market available sanitary napkins whereas; this was limited to 6% of rural girls.^[12]

A survey by A Das Gupta Depicting the practices during menstruation shows that 18 (11.25%) girls used sanitary pads during menstruation, 68 (42.5%) girls used old cloth pieces and 10 (6.25%) girls used new cloth pieces. 64 (40%) girls used both cloth pieces and sanitary pads during menstruation.^[13]

Though menstruation is a natural and normal physiological process for all healthy adult women as ever, it has been surrounded by secrecy, negativity and myths in much society. It is still clouded by socio-cultural restriction and taboos and associated with various myth and misconception.^[14]

There were few restriction followed by girls in orphanage during menses like not entering temple, going to store room containing grains etc.

A study conducted in Ranchi, India reported that 45.5% of the girls face social restrictions, majority of them were restricted in religious practices, wearing new clothes, cooking food, etc.^[15]

As per A Das Gupta regarding different types of restrictions practiced during menstruation, only 24 (15%) girls did not practice any restriction. 136 (85%) girls practiced different restrictions during menstruation. Among them, 96 (70.59%) girls did not attend any religious occasions, 68 (50%) girls did not eat certain foods such as sour foods, banana, radish and palm. Fifty-eight (42.65%) girls did not play, 46 (33.82%) girls did not perform any household work, 22 (16.18%) girls did not attend any marriage ceremony during the menstrual period. ^[13] (Table 5)

Table 5: Misconceptions regarding restrictions (Social/ Followed During Menstrual Period

Misconceptions	Before education	After education (post test)	
about restrictions	(Pretest)		
Yes	15(24.19%)	3(4.84%)	
No	47(75.81%)	59(95.16%)	

Chi square value 9.358, p < 0.05

There was a significant change between pre test and post test knowledge regarding myths and restriction followed during menstrual period with chi square value 9.358, p < 0.05. At least 21 (33.8%) respondents were aware of a disease named AIDS. But only 10(16.12%) were able to write full form of AIDS and only 6(28.57%) were able to enumerate at least two way of HIV transmission. (Table 6)

Table 6 : Knowledge about AIDS Inclusion

Knowing the	Pre Test	Post Test				
word "AIDS"						
Yes	21(33.87%)	53(85.48%)				
No	41(66.12%)	9(14.51%)				
Chi Square 34.3178 p< 0.05						
Full form of "AIDS" Pre Test Post Test						
Know	10(16.12%)	36(58.06%)				
Don't Know	52(83.87%)	26(41.93%)				

Chi Square 23.36 p < 0.05

The United Nations International Children's Emergency Fund (UNICEF) statistics (2003-2008) found that only 20% of the adolescent females are aware about the comprehensive knowledge on HIV/AIDS, while the percentage in male counterpart is about 36%.

In a slum surveyed by Henmanta et al out of the 400 adolescent girls, 63 (15.75%) said that HIV/AIDS transmits through unsafe sex, 94 (23.5%) through contaminated blood transfusion, 19 (4.75%) through mother to child during pregnancy and child birth, 48 (12%) through breast feeding, 24 (6%) by sharing contaminated needles/syringes, and 217 (54.25%) were not aware exactly how HIV/AIDS transmits from one person to another.^[16]

Legal age of marriage in India for girls is more than 18 years and for boys it is more than 21 years. About 30(48.38%) girls knew about the legal of marriage for boys and girls.

Aarthi Gopal found that one fifth (21%) and one third (31%) of the study subjects knew the legal age for marriage to be 21 years for boys and 18 years for girls respectively. One third of the subjects felt that the desirable age for marriage in boys and girls should be between 21-25 years.^[17]

Conclusion:

The result of present study revealed a strong association of increase in awareness and knowledge of adolescent girls after life skill education session.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Assessment of Knowledge & Contributing Factors of Accredited Social Health Activist (ASHA) Workers Regarding Antenatal Care in Bhojipura Block, District Bareilly

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Abstract :

Introduction: The Government of India launched the National Rural Health Mission (NRHM) on 12th April 2005, to provide accessible, accountable, affordable, effective and reliable primary health care, especially to the poor and vulnerable sections of the population. One of the main tenets of the mission is to identify one ASHA (Accredited Social Health Activist) per 1000 population in the rural areas with the purpose of supporting the community to access public health services. **Objectives:** Assessment of the knowledge of ASHA workers regarding Ante Natal Care (ANC) and to study the factors contributing the working of ASHA for Antenatal services. **Method:** The present cross sectional study was carried out in the rural field practice area of the department of Community Medicine, Shri Ram Murti Samarak Institute of Medical Sciences, Bhojipura (District Bareilly) during the period from May 2014 to September 2014. Total of 48 villages were included in the study. Total 64 ASHA were interviewed. **Results:** Out of 64 ASHA, 30 (46.9%) ASHA knew that 23 days training provided after selection. All 64 (100%) ASHA knew that two doses of Tetanus Toxoid (TT) immunization were given to pregnant women. 54 (84.4%) ASHA knew the correct doses of giving TT immunization to pregnant women. **Conclusion:** According to the study findings, the knowledge level of ASHA regarding Antenatal care is satisfactory but time to time monitoring and appraisal is needed to enhance the quality of services provided by ASHA to pregnant mother.

Keywords: ANC, ASHA, Knowledge

Introduction :

The Government of India launched the National Rural Health Mission (NRHM) on 12th April 2005, to provide accessible, accountable, affordable, effective and reliable primary health care, especially to the poor and vulnerable sections of the population.^[1]

One of the main tenets of the mission is to identify one ASHA (Accredited Social Health Activist) per 1000 population in the rural areas with the purpose of supporting the community to access public health services. ^[2] ASHA must be primarily a woman resident of the village, Married/ Widowed/Divorced and preferably in the age group of 25 to 45 yrs, should be a literate woman with formal education up to eighth class.

The Ministry of Health & Family Welfare (MOHFW) has developed a 23-day basic training schedule to provide the necessary knowledge and skills to women identified as ASHA and there is also regular re-orientation trainings organized at the district levels. Separate curriculum and the modules are made available in providing training to the ASHAs.

The discourse on the ASHA's role centers around three typologies - ASHA as an activist, ASHA as a link worker or facilitator and ASHA as a community level health care provider. ASHA is expected to ensure the antenatal, natal and postnatal services to women, counseling on family planning and nutrition, safe abortion, escort or accompany the pregnant female to hospital for institutional delivery, to create awareness on institutional delivery, potential danger signs and complications during pregnancy, delivery and postpartum period and to mobilize the community toward increase utilization of the existing health services.^[3]

Ante Natal Care (ANC) is the care a woman receives throughout her pregnancy in order to ensure that both, the mother and child remain healthy. Basic components of ANC include to ensure early registration and see to it that the first check-up is conducted within 12 weeks (first three months of pregnancy), track every pregnancy for conducting at least four antenatal check-ups (including the first visit for registration), administer two doses of TT injection and provide at least 100 tablets of Iron and Folic acid.^[4]

ASHA is the first helping hand for pregnant mother. ASHAs form the backbone of the NRHM and are meant to be selected by and be accountable to the village. Since ASHA workers are grass root level workers, the success of NRHM in India depends on how well ASHAs are trained and perform. Hence, it is essential to study are they have adequate knowledge for delivering the maternal health care services to community. At the same time, it is important to address the factors affecting the working of ASHA in the community to deliver maternal health care services. With this rationale, the present study was carried out with an objective to evaluate the knowledge and factors affecting maternal health care delivery by ASHAs in Bhojipura Block district Bareilly, India.

Objectives:

• Assessment of the knowledge of ASHA workers regarding antenatal care.

• To study the factors contributing the working of ASHA for Antenatal services.

Method:

The present cross sectional study was carried out in the rural field practice area of the department of Community Medicine, Shri Ram Murti Samarak Institute of Medical Sciences, Bhojipura (District Bareilly) during May 2014 to Sept 2014. The geographical area covered by this block is spread over 311.88 sq.km consisting 100 villages and 24 Subcentres. Bhojipura block has a population of 1,91,181 (population of Town area: 20784, Rural population: 1,70,397) according to census 2011. The study was examined and cleared by ethical committee of the Institution.

Figure 1: Map of the selected Villages



Bio-social characteristics	Number (%)				
Age (years)					
21-30	24(37.5)				
31-40	27(42.2)				
41-50	11(17.2)				
50+	2(3.1)				
Reli	gion				
Hindu	56(87.5)				
Muslim	8(12.5)				
Ca	ste				
General	10(15.6)				
Other Backward Class (OBC)	36(56.3)				
Scheduled Caste (SC)	18(28.1)				
Marita	l status				
Married 57(89.1)					
Widow	7(10.9)				
Educ	ation				
Primary	10(15.6)				
Middle	45(70.3)				
High School	5(7.8)				
Intermediate	4(6.3)				
Type of Family					
Nuclear	22(34.4)				
Joint	42(65.6)				
Socio economic status (modified B.G Prasad Classification)*					
Class II (upper middle)	33(51.6)				
Class III (middle)	28(43.7)				
Class IV (upper lower)	3(4.7)				

Table 1 :Distribution of ASHA according to their biosocial characteristics (n=64)

* All India Consumer Price Index (AICPI)=1120 (April 2014)

Sampling Technique for selection of villages: Out of 100 villages, all twenty-four villages having sub centre were selected randomly for the study. Sub centre is the most peripheral unit for providing Reproductive and Child Health (RCH) services. Thus all Sub centre were taken for the study. List of villages, situated at the distance of 3-5 km of their respective sub-centre, was obtained from block health office and 24 villages selected randomly for the study. Thus total of 48 villages were included in the study. (Figure I) **Sample size for ASHA:** All ASHA who were posted by Government of Uttar Pradesh, of the selected 48 villages of Bhojipura Block, were included in the study. Thus total 64 ASHA were interviewed.

Inclusion Criteria for ASHA:

- 1. All ASHA working under the selected villages of block Bhojipura.
- 2. Living within premises of allotted village.
- 3. ASHA who were willing to participate and ready to give consent.

Training and maintenance of record	Number (%)				
Duration of training provided to ASHA after selection					
<23 days	11(17.2)				
23 days	30(46.9)				
>23 days	23(35.9)				
Duration of actual training received by ASH	A				
<23 days	16(25.0)				
23 days	35(54.7)				
>23 days	6(9.3)				
Not received training	7(11.0)				
Maintenance of Antenatal record by ASHA					
Yes	54(84.4)				
No	10(15.6)				

Table 2: Training of ASHA and maintenance of record (n=64)

Table 5. Knowledge of ASHA regarding Antenatar Care (n=04)					
Antenatal Care	Number (%)				
Minimum ANC visits recommended					
Two visits	2(3.1)				
Three visits	61(95.3)				
Don't know	1(1.6)				
Time period of early registration of pregnancy					
First trimester	11(17.2)				
Second trimester	33(51.6)				
Third trimester	3(4.7)				
As early as possible	16(25.0)				
Don' t know	1(1.6)				
Doses of TT immunization					
Two doses	64(100%)				
Interval between two TT doses					
Two doses at one month interval	54(84.4)				
Two doses at three month interval	9(14.1)				
Don't know	1(1.6)				
Number of IFA tablets that should be given to a pregn ant women					
100	63(98.4)				
Don't know	1(1.6)				

Table 3: Knowledge of ASHA regarding Antenatal Care (n=64)

Data Collection: Data were obtained with the help of pretested and semi structured questionnaire. Primary data were collected by face-to-face interviews from Accredited Social Health Activists of the respective villages. Visits were made to all selected 48 villages with the help of Medico Social

Worker (MSW). ASHA were interviewed at their houses only.

Data analysis: The information collected was critically analyzed and tabulated using SPSS- 20 version software. Appropriate statistical tests of significance (Logistic regression) were applied to

Biosocial		Data	p value	Exp(β)	95% C onfidence		
Variables					Interval for Exp(β)		
	Frequency	(P)			Lower	Upper	
Age(years)	Age(years)						
21-30*	24						
31-40	27	0.365	0.571	1.441	0.407	5.102	
>40	13	0.317	0.691	1.373	0.288	6.544	
Religion							
Muslim*	8						
Hindu	56	1.920	0.017	6.818	1.410	32.966	
Caste							
General*	10						
OBC	36	-0.565	0.516	0.568	0.103	3.123	
SC	18	0.223	0.826	1.250	0.172	9.093	
Marital Status							
Widow	7						
Married*	57	1.609	0.052	5.000	0.983	25.437	
Education							
Primary*	10						
Middle	45	0.981	0.188	1.667	0.619	11.493	
High-school		0.288	0.764	2 2 2 2	0.204	8 708	
& above	9	0.200	0.704	2.333	0.204	0.700	
Type of Family							
Joint*	42						
Nuclear	22	1.043	0.139	2.839	0.713	11.311	
Socioeconomic Status							
Upper							
Middle*	33						
Middle	31	0.594	0.315	1.812	0.568	5.778	

 Table 4: Logistic regression on factors affecting knowledge of ASHA regarding time period for early registration

test and validate the findings of the study.

Result:

Predominantly 27 (42.2%) ASHA belonged to age group of 31-40 years, 56 (87.5%) were Hindu by religion, 36 (56.3%) belonged to OBC caste, 57 (89.1%) were married, 45 (70.3%) were educated up to middle class, 42 (65.6%) lived in a joint family and 33 (51.6%) ASHA from social class II (Upper middle). (Table 1)

Out of 64 ASHA, 30 (46.9%) ASHA knew that 23 days training is provided after selection. But when

ASHA were asked about how many days they received training after selection, 35 (54.7%) received training for 23 days and only 7 (11.0%) ASHA did not receive training. Maintenance of records by ASHA were found to be very high. Out of 64 ASHA, 54 (84.4%) maintained the Antenatal record. (Table 2)

When ASHA were asked about the services provided to pregnant women, 61 (95.3%) ASHA responded that minimum three ANC visits were recommended to pregnant women. Out of 64 ASHA, 33 (51.6%) said that the time period for early registration was second trimester. All 64 (100%)

Biosocial		Data			95% C onfidence	
Variables		Beta	p value	Exp(β)	Interval for Exp(β)	
	Frequency	(b)			Lower	Upper
Age(years)						
>40*	13					
21-30	24	0.848	0.265	2.381	0.519	10.932
31-40	27	0.859	0.279	2.492	0.511	10.284
Religion						
Muslim*	8					
Hindu	56	0.293	0.795	1.340	0.147	12.260
Caste						
SC*	18					
General	10	0.636	0.666	1.889	0.105	33.891
OBC	36	1.580	0.152	4.857	0.558	42.304
Marital Status						
Married*	57					
Widow	7	0.631	0.486	1.880	0.318	11.106
Education						
Primary*	10					
Middle	45	0.118	0.919	1.125	0.117	10.841
High -school	9	1.974	0.114	7.200	0.622	83.342
Type of Family						
Nuclear*	22					
Joint	42	0.856	0.308	2.353	0.454	12.19
Socioeconomic S	Status					
Middle*	31					
Upper Middle	33	0.405	0.563	1.500	0.380	5.921

Table 5: Logistic regression on factors affecting knowledge of ASHA regarding interval between two TT doses

ASHA knew that two doses of TT immunization has to be given to pregnant women. 54 (84.4%) ASHA knew the correct doses of giving TT immunization to pregnant women. Regarding IFA tablets, 63 (98.4%) ASHA had correct knowledge that at least 100 IFA should be given to a pregnant women. (Table 3)

Out of 64 ASHA, 16(25.0%) ASHA replied that as early as possible women should register for pregnancy. Applying the logistic regression on factors affecting knowledge of ASHA regarding time period of registration, age group 31-40 years, Hindu religion, SC category, Married ASHA, High-school educated ASHA, nuclear family, ASHA belonging to Class III (middle) socioeconomic status were the prime factors associated with knowledge regarding time period for early registration. (Table 4)

Among 64 ASHA, 54(84.4%) ASHA knew the correct interval between two TT doses. Applying the logistic regression on factors affecting knowledge of A S H A regarding interval between two TT doses, age group 31-40 years, Hindu religion, OBC category, widow ASHA, High-school educated ASHA, joint family, class II (upper middle) ASHA, were more likely to have knowledge regarding interval between two doses of TT. (Table 5)

Discussion:

Bio-Social Characteristics of ASHA: Majority i.e. 27 (42.2%) of ASHA were from age group 31-40 years. Although in the selection criteria of ASHA (according to Training Module of ASHA Workers-NRHM 2005-2012), the minimum age of selection is 25years but in our study, the ASHA in age group of 21-30 years were 24 (37.5%). Our study findings are similar to the findings of Singh et al^[5] where most of the ASHA 61 (45.2%) were in the age group of 30-35 years and only 11 (8.1%) ASHA were in the age group of 25-30 years. But contrary to this in the study done by Shashank K.J.^[6] where majority 71 (53.8%) ASHA were in the age group of 26 to 30 years.

In the present study out of 64 ASHA, 57 (89.1%) ASHA were married, 45 (70.3%) completed education up to middle class, 56 (87.5%) were Hindu by religion, 36 (56.3%) belonged to OBC by caste, 42 (65.6%) were from joint family. The above findings is similar to the findings of Garg et al $^{\scriptscriptstyle [7]}$ where out of 105 ASHA, 93 (88.57%) were married, 101 (96.19%) ASHA worker completed 8th standard of the schooling and 89 (84.76%) of ASHA worker were Hindus. Whereas Umrao Singh Rao^[8] also found in their study that majority (80%) of ASHAs were 8th class pass. This can be explained by the fact that selection criteria are 8th Class and at some places it has been reduced to 5th Class. Similar finding were also noted by Sarawati Swain et al $\ensuremath{^{[9]}}$ in Cuttack and study conducted by SIHFW Lucknow. [10] Whereas study done by Kansal et al ^[11] who found that out of 135 ASHA, 59 (43.7%) were from OBC caste and 42 (31.1%) were educated up to eighth standard.

In the present study, 33 (51.6%) ASHA belonged to class II (upper middle) socioeconomic status according to modified B.G Prasad classification. On the contrary study done by Singh et al ^[5] where out of 135 ASHA, most of the ASHA, 93 (68.9%) belong to class IV (upper lower) socioeconomic status according to modified B.G Prasad Classification. On the other hand study done by Swapan Mazumdar ^[12] in Bihar showed that 58% of the ASHA had poor economic background and rests were from middle and higher economic background also. In the study conducted by Darshan et al ^[13] at Surendranagar, Gujarat found that 94.62% ASHA belonged to socioeconomical class IV and only 5.38% belonged to class III.

Training & Maintenance of Antenatal record by ASHA: In the present study out of 64 ASHA, 35 (54.7%) received training after selection for 23 days and 7 (10.9%) ASHA did not receive any training.

On the contrary, Garg et al ^[7] in their study revealed that out of 105 ASHA workers, 102 (97.14%) ASHA workers completed training before working as ASHA. ASHA envisage a total period of 23 days training in five episodes. It is said that ASHA training is continuous and that she develops the necessary skills & expertise through continuous on the job training.^[14]

In the present study, out of 64 ASHA, 54 (84.4%) maintained the Antenatal record.

Similar findings were reported by Charu Kohli^[15] where 51 (92.7%) ASHAs reported that they used to maintain antenatal register.

Knowledge of ASHA regarding services provided to pregnant women : The finding of the present study was similar with that of Waskel et al ^[16]where 136 (66.02%) ASHA had average knowledge for ANC. On the other hand, study done by SIFPSA ^[17] reported that 460 (100%) ASHA had knowledge regarding ANC registration, care during pregnancy and institutional delivery. Similar to this Shashank KJ, Mahabaleshwar and Mahantappa Angadi^[18] reported that all 132 ASHA workers were aware that Tetanus injection is to be given for all antenatal mothers and 105 (79.5%) ASHA knew that minimum of 4 ANC visits should be made by every pregnant mother.

Whereas in Charu Kohli^[15] study, 41 (74.5%) ASHA reported that minimum number of antenatal visits are 4 while 4(7.3%) said minimum visits to be 6. Awareness of their role in distribution and intake of tablet iron and folic acid was known to 47 (85.5%) ASHAs. 87% of ASHAs knew that iron tablets have to be taken for minimum 100 days during pregnancy. This is higher than reported by study conducted by Lodhiya et al ^[19]. in Gujarat in which only 47% health workers were aware of iron and folic acid tablets schedule in pregnancy.

Almost all ASHA workers were aware about their roles and responsibilities regarding maternal and child health services. Similar results were shown by a study conducted by Gosavi et al.^[20] in Wardha where all ASHAs knew about their role in TT immunization and antenatal services. About 3/4th ASHAs were aware that minimum numbers of antenatal visits were 4 as compared to that stated by a study carried out by Rashmi et al.^[21] where 81% community health workers were aware of recommended minimum number of ANC visits.

On the contrary, study done by Shashank K.J.^[6] who reported that out of 132 ASHA, 53 (40.2%) ASHA said that they do four ANC visits and another 53 (40.2%) of ASHA did three ANC visits and only 6 (4.5%) ASHA do two visits for every registered ANC cases with them.

Conclusion:

According to the study findings the knowledge level of ASHA regarding antenatal care is satisfactory but time to time monitoring and appraisal is needed to enhance the quality of services provided by ASHA to pregnant mother. Biosocial factors like age, religion, caste, education, type of family and socioeconomic status were the prime factors which affect the knowledge of ASHA regarding antenatal care. So monitoring should be made as an integral part of ASHA working in the field to ensure that knowledge is converted into practices as well. Trainings during job of ASHAs should be done in process to develop necessary knowledge and skills with recent updates. The Block level meetings should be utilized for the feedback, enhancing knowledge & solving the problem faced by the ASHAs.

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A Study on Prevalence of Initial Defaulters among Sputum Smear Positive TB Patients and Their Reasons under RNTCP in Jamnagar District, Gujarat, India

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Abstract:

Introduction: The smear positive TB patients who aren't put on treatment after diagnosis are called 'Initial defaulters'. Annually, many patients are diagnosed with TB under RNTCP, but many of them don't return to the program after diagnosis. This study is an attempt to identify reasons of such initial defaulting. The objective of the study is to measure prevalence of initial defaulters, its reasons and its association with socio-demographic factors. **Method :** It's a cross-sectional study covering all TB Units of Jamnagar district, and all TB patients diagnosed between 1st January, 2012 and 31st December, 2013. They were screened for initial defaulting. Data collected and field visits planned between 1st January 2016 and 31st September 1016. **Results:** Reported initial default rate was 5.12%, but actual default rate was only 2.39%. Initial defaulting rate was higher in Jamnagar TU compared to other TUs and in males compared to females. About 74.36% patients started anti-TB treatment from private institute. **Conclusion:** There was a discrepancy between reported ID patients and actual ID patients, as many were put on later in subsequent quarters. Majority TB patients started private treatment. Defaulting rate was higher in middle aged patients.

Keywords: Initial Default, RNTCP, Sputum Positive Cases, TB, TB Units

Introduction:

India is the highest TB burdened country in the world in terms of absolute number of incident cases occurring every year. It accounted for one-fourth of estimated global incidence of TB cases in 2013. ^[1] To overcome this enormous burden of TB, the DOTS strategy was introduced in the country in 1997 under Revised National TB Control Program (RNTCP).

The program is accountable for the outcome of every patient put on treatment and uses a standardized recording and reporting system. The key indicators of the program are monitored at every level of health system. ^[2] Patients diagnosed with smear-positive tuberculosis who do not initiate treatment (pre-treatment loss to follow-up or initial default) represent an important failing in the provision of care. ^[3] Bringing these patients into care could reduce tuberculosis transmission to others. ^[4]

While several studies have reported on initial default, there is little information about the extent of this problem globally. ^[5] The present study tries to identify reasons of such initial defaulting among newly diagnosed sputum smear positive TB patients under RNTCP.

Aims and Objectives:

- 1. To find out prevalence of initial defaulters among newly diagnosed sputum smear positive TB patients of Jamnagar district.
- 2. To find out the possible reasons of initial default among TB patients under RNTCP in the district.

Method:

This was an analytical cross-sectional retrospective study covering all TB patients of all TB units of Jamnagar district, diagnosed at all Designated Microscopic Centres (DMCs) between 1st January, 2012 and 31st December, 2013.

Initial defaulters or diagnostic defaulters are defined as TB patients diagnosed as sputum smear positive tuberculosis at accredited Designated Microscopic Centres (DMCs) by Revised National TB Control Program (RNTCP) but not registered under the program and not put on standard antituberculosis treatment.

TB registers and Laboratory registers of all TB Units of Jamnagar districts of both calendar years (2012 and 2013) were cross-checked to find out whether they were registered and put on treatment or not. If a TB patient was diagnosed, but not registered then we inquired whether he/she was initial default or not, by tracing contact details and address of the patient. Such TB patients were visited at their residences and asked whether any TB official contacted the patient, home visit paid etc. Then TU wise line- listing of such patients was carried out. Duration of data collection was from 1st January 2016 to 31st September 2016.

Inclusion Criteria:

All newly diagnosed sputum smear positive TB patients diagnosed at all DMCs of all TB Units (TUs) of Jamnagar district, registered from January 1st, 2012 to December 31st 2013. (Including all TB patients transferred from one TU to another TU within district).

Exclusion Criteria:

- i. All sputum smear negative and MDR TB patients diagnosed at all DMCs and TUs of Jamnagar district.
- ii. Patients died after diagnosis before he/she was put on treatment.
- iii. Patients reported as ID initially in one quarter, but put on treatment later.

iv. Patients moved out of district /state (Transferred out) after diagnosis.

Data collection Techniques and Tools :

Cases were interviewed by a proforma containing pre-tested semi-structured questionnaires which included questions about socio-demographic profile, past history of treatment with tuberculosis, reasons for not starting prescribed treatment etc. Training of field investigators included instructions and orientation about how to collect data using pretested proforma, importance of the study and orientation about the formats used.

Data Analysis: Data were entered and analysed using Microsoft Excel sheet, 2007. Descriptive statistics such as frequency, mean, standard deviation, median, minimum and maximum, etc were calculated as appropriate. Comparisons between groups were made using the Chi-square test or Fischer's exact test as appropriate for qualitative variables. Level of significance was set at 95%.

Ethical Considerations:

We obtained ethical clearance certificate from the Institutional Ethics Committee of M.P. Shah Govt. Medical College, Jamnagar after sanctioning the research project. The purpose for seeking information was explained in detail to every eligible patient and TB officials and TB workers and informed consent was obtained prior to interview. The data collected was presented as an aggregate and was not linked to any individual patient in the study. The data obtained during the study was securely held and confidentiality was maintained at every level.

Results:

Out of 167 patients identified and reported as Initial defaulters in their respective or subsequent quarters in years 2012 and 2013, we observed that 89 patients were either actually put on treatment in the subsequent quarter of the year or had died. Remaining 78 patients were those that had not been put on anti-TB treatment. Out of these 78 patients, We could trace only 39 patients In our study, thus 50 % patients could not be traced. (Figure 1)



Out of total 39 traced patients, majority of them (69.23%) belonged to Jamnagar TU. (Table 1)

Out of total 39 traced patients 53.85% patients were from urban area and 58.97% patients were above 45 year age.(Table 2)

The mean age of the interviewed ID patients was 47.68 years with Standard Deviation 14.71 years. Past history of treatment with anti-tuberculosis drugs has not been found to be associated with initial defaulting, as about 58.33% patients had not revealed any treatment with tuberculosis drugs in the past. Regarding the literacy status of the patients, more than one-forth (28.20%) of patients had their study up to primary schoolings, 23% were illiterate, whereas same proportion of patients had studied either higher secondary or more. When we inquired whether any TB worker visited their homes, about 72% patients replied that a TB worker visited their homes. (Table 3)

Out of total 39 traced patients, when asked about reasons for non-initiation of treatment, about 29 % patient said they started AKT (anti-tuberculosis therapy) from private providers, and 28% not started treatment because they felt the treatment course too lengthy(Figure 2).

Name of TU	Total no. of ID patients interviewed No. (%)
Jamnagar	27 (69.23)
Dhrol	5 (12.82)
Khambhaliya	7 (17.95)
Lalpur	0 (0.00)
Total	39 (100.00)

Table 1: TU wise distribution of ID patients interviewed.

Table 2: Age distribution of cases among rural and urban communities

Age	Urban	Rural	Total	Statistics
distribution	No. (%)	No. (%)	No. (%)	
15-45 years	8 (50.00)	8 (50.00)	16 (41.03)	OR=0.77
>45 years	13 (56.52)	10 (43.38)	23 (58.97)	(0.18-0.34)
Total	21 (53.85)	18 (46.15)	39 (100.00)	χ ² =0.16
				P= 0.69

Character	Jamnagar	Dhrol	Khambhaliya	Average
	(n=27)	(n=5)	(n=7)	(n=39)
Mean Age in Years	44.55	45.4	53.10	47.68
(SD)	(17.49)	(19.73)	(19.19)	(14.71)
(95% CI)	(37.63-51.47)	(20.90-69.89)	(35.35-70.84)	(42.91-52.49)
Past History of TB	9 (33 34)	1 (20.00)	1 (14 28)	11 (41 67)
treatment[No. (%)]	5 (55.51)	1 (20.00)	1 (14.20)	11 (11.07)
Locality [No. (%)]				
Urban	21 (77.77)	0 (0.00)	0 (0.00)	21 (53.85)
Rural	6 (22.23)	5 (100.00)	7 (100.00)	18 (46.15)
Home visit by health				
workers [No. (%)]				
Yes	19 (70.37)	4 (80.00)	5 (71.42)	28 (71.79)
No	3 (11.11)	1 (20.00)	2 (28.58)	6 (15.38)
Don't know	5 (18.51)	0 (0.00)	0 (0.00)	5 (12.82)
Literacy Status				
[No. (%)]				
Illiterate	5 (18.51)	1 (20.00)	3 (42.85)	9 (23.07)
Primary	7 (25.92)	2 (40.00)	2 (28.57)	11(28.20)
Secondary	6 (22.22)	2 (40.00)	2 (28.57)	10 (25.64)
Higher Sec & above	9 (33.33)	0 (0.00)	0 (0.00)	9 (23.07)

Table 3: Socio-demographic profile of Initial defaulters in Jamnagar district





Discussion:

As many patients might have moved to new address or region and have changed their contact details, we were able to trace 39 TB patients that were diagnosed at DMCs of Jamnagar district, but failed to put on treatment under RNTCP. In a South Indian Study ^[6], of total reported initial defaulters, 47.5% had been actually placed on RNTCP treatment, and were incorrectly reported as initial defaulters due to non-reconciliation of records of patients referred for treatment elsewhere in the same district and delayed treatment initiation or registration for treatment in the subsequent quarter.

Nisar Ahmed Rao et al in his study in Pakistan in year 2007-08 reported an alarmingly high initial default rate which was as high as 27.67%. The most common reason being dissatisfaction with services rendered at the clinic (33.33%).^[7] Another study by Gopi PG et al in South India reported about 14.9% initial default rate, and major reasons for defaulting were loss of wages, dissatisfaction with services of health care providers and disease related issues like feeling well or too ill.^[6]

A study by Buu TN et al in Vietnam reported 8.3% initial default rate, with 79.5% defaulting due to issues related to health care provider.^[8] A most recent study from South Africa reported initial default rate of 17%.^[9]

We found many patients' incomplete addresses in address column of TB Laboratory registers of TU. And phone numbers were also missing or incorrect for many patients. In a study in Pakistan,^[7] 11.29% patients could not be traced. Sai Babu et al in Andhra Pradesh reported a high rate (51%) of untraceable defaulters in his study.^[10] In our study, about 74.36 % patients were taking treatment from private service providers. In a study by Sai Babu et al, initial default rate was higher in urban areas compared to rural areas.^[10] Moreover, they observed that about 5.5% of ID patients were taking treatment outside the program including private practitioners.

In a study by R.Balasubramanian in South India,^[11] rate of initial defaulters was equal among both males and females, and among smear positive patients diagnosed, rate of initial default did not differ by age or sex.

In our study, almost four-fifth of interviewed patients were males. Thus, we can say that males may undergo initial defaulting more than females. It may be due to sampling error as more male patients might have been traced and interviewed. We did not calculate sex specific default rate as we did not have denominator in terms of total number of male and female patients enrolled during the study period. In a study in Pakistan in 2009, observers found proportion of initial default among males more than females.^[12]

Past history of treatment with anti-tuberculosis drugs has not been found to be associated with initial defaulting, as about 58.33% patients had not revealed any treatment with tuberculosis drugs in the past. Recently in year 2016, Government of India has declared TB a notifiable disease, which is an appreciable step and will help supplement missing data about TB detection and cure rate. Dewan et al has proved that Public-private joint activities were associated with improved case notification, while maintaining acceptable treatment outcomes^[13].

Conclusion:

The initial default (ID) rate as reported by the program was 5.12% but actual ID rate was 2.39% as many patients were put on treatment later in the subsequent quarter, so they were erroneously reported as ID patients. Thus, there was a gap between reported ID patients and actual ID patients. The majority of patients interviewed belonged to Jamnagar urban TB Unit.

The major reason for initial defaulting was initiation of treatment from private institutes or clinics, followed by lengthy duration of treatment.

Incomplete address and contact details taken by Senior Treatment Supervisor (STS) and Senior TB Laboratory Supervisor (STLS) led to loss of many patients, who could have been traced and interviewed.

Recommendations:

Initial default or diagnostic default is a vital issue for better control of TB in the Revised National TB Control Program. Medical Officer (MO) or STS should regularly match laboratory registers with TB registers to identify and trace ID patients as early as possible, before they become untraceable. Reasons behind this behaviour should be sought and all attempts should be focused to bring these patients back in the program.

MO/ District TB Officer (DTO) should instruct STS/STLS to note correct and complete contact details of all TB patients, so that they can be easily traceable anytime if went missing from the system.

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Significance of initial defaulting in the program should be given due importance in the training of STS and STLS before their recruitment and even during their refresher training. MO/DTO should ask for any ID case to the STS/STLS and if present, all attempts should be made to put him on treatment as early as possible.

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Declaration:

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Conflict of Interest: Nil

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Utilization of Supplementary Nutrition Food Packets by Pregnant and Lactating Mothers in Urban Areas of Valsad, Gujarat

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Abstract:

Introduction: Supplementary Nutrition is provided under Integrated Child Development Scheme (ICDS) to pregnant and lactating mothers. Still the prevalence of malnutrition is high. The study conducted to find out reasons behind it. **Objectives:** 1. To study utilization of supplementary food packets by pregnant and lactating mothers. 2. To study perception of beneficiaries regarding quality of food packets. **Method :** A Cross sectional study was conducted from June 2017 to August 2017 in urban area of Valsad Municipal Corporation. 22 Anganwadi centers were selected from the service area of Urban Health Training Center (UHTC). Total 132 women, 3 pregnant and 3 lactating mothers from each Anganwadi, were selected by Purposive/ Convenient sampling. Verbal consent was taken. Data was entered in Microsoft office excel and were analyzed using Microsoft Office Excel and Epi Info. Ethical approval was taken from the institutional Ethics Committee. **Results:** 86% of beneficiaries utilized the food packets, amongst which 35.2% used it alternate day or twice a week, 24.3% of them used once a week.14% of them were not supplied/received the food packets. 29.7% of the total participants were using the food packets alone and 70.3% were sharing it with their family members. Majority of the study participants reported the taste of food packet good (56.80%) and 32.4% of them perceived it edible. **Conclusions:** Majority (85.6%) of the study subjects utilized the food packets and perceived it as good in taste and eatable. Food packets were shared by other family members of the beneficiary.

Keywords: ICDS, Pregnant Women, Quality of Food Packets, Supplementary Nutrition

Introduction:

Nutrition during pregnancy and lactation is one of the key for healthy outcome of pregnancy. Research studies in India and elsewhere have shown that if we identify pregnant women having reduction in habitual dietary intake or excess energy expenditure or whose body weight is less than 40 kg and give them adequate continuous food supplementation and antenatal care; there is substantial improvement in outcome of pregnancy, birth weight and neonatal mortality. Encouraged by such data, India has included food supplementation for pregnant and lactating women under the Integrated Child Development Services (ICDS) programme.^[1]

In pregnancy there is additional 350 kcal requirement and in first 6 month of lactation there is additional 600 kcal requirement and in 6-12 month there is 520 kcal extra required. ^[2] High calorie diet

during pregnancy is helpful in providing good maternal health and preventing Low Birth Weight (LBW) and prematurity. Supplementary nutrition provided through Anganwadi centers is very helpful to fight against malnutrition and its complication.

The "Supplementary Nutrition" is one of the six services provided under the ICDS Scheme which is primarily designed to bridge the gap between the Recommended Dietary Allowance (RDA) and the Average Daily Intake (ADI). Supplementary Nutrition is given to the children (6 months – 6 years) and pregnant and lactating mothers under the ICDS Scheme.^[3]

The Government of India, on 24.2.2009, has issued revised guidelines on nutritional and feeding norms. States/Union Territories have been requested to provide supplementary nutrition to children below six years of age and pregnant and lactating mothers, in accordance with the guidelines which have been endorsed by the Hon'ble Supreme Court vide its Order dated 22.4.2009.^[3]

Under ICDS programme supplementary nutrition is being provided, but its utilization has raised questions. With this background in mind, the current study was planned to find out utilization status of supplementary nutrition by pregnant and lactating mothers.

Aim:

To know the utilization status of supplementary nutrition by pregnant and lactating mothers in Valsad Municipal Corporation Area, Gujarat.

Objectives:

- 1. To study utilization of supplementary food packets by pregnant and lactating mothers.
- 2. To study perception of beneficiaries regarding quality of food packets.

Method:

It was a cross sectional study conducted at Anganwadi centres under Valsad Municipal Corporation Area, Gujarat during the time period of June 2017 to August 2017. With the permission of Child Development Project Officer (CDPO), 22 Anganwadi Centres (AWC) were visited from the service area of UHTC. From each Anganwadi, 3 pregnant and 3 lactating mothers were selected using the convenience sampling method and thus 132 beneficiaries were interviewed. Informed verbal consent was taken prior to data collection. The beneficiaries were questioned individually by visiting their home. Various information including bio data, registration at AWC, supply of nutritional food packets and frequency of its usage, amount used, side effects if any was taken. Then various aspects of nutritional supplement packets like storage condition, used/unused, hygiene, expiry date etc were observed. Ehical approval was taken from the institutional Ethics Committee. Data entry was done using Microsoft office excels and were analyzed using Microsoft Office Excel and Epi Info.

Results:

The mean age of the pregnant/Lactating women included in this study was 25.70 years (Standard Deviation (S.D.) =4.40). Majority of the beneficiaries were educated up to primary level (58.30%) followed by secondary level (23.50%) and higher secondary level (12.12%). However out of 132 study subject, 2 (1.5%) of them were illiterate. The mean of the number of family members in the participant's family was 5.48 (S.D.=2.68). (Table 1)

Table 1: Sociodemographic Profile of Study Participants: (n=132)

Variable	Frequency (%)	
Education		
Primary	77 (58.30)	
Secondary	31 (23.50)	
Higher Secondary	16 (12.12)	
Graduate	6 (4.55)	
Illiterate	2 (1.51)	
Religion		
Hindu	109 (82.58)	
Muslim	23 (17.42)	
Family members		
<u><</u> 5	81 (61.36)	
6-10	45 (34.09)	
>10	6 (4.54)	
TOTAL	132 (100)	

The mean of registered month of Pregnant/ Lactating mothers at Anganwadi centers was 7.77(S.D. =3.12).The mean of total number of packets received till now by participants was 27.02 (S.D. =15.44).The mean of total months of usage of food packets by beneficiaries was 6.65(S.D. =3.87).

The food packets were found with only 100 out of 132 beneficiaries at the time of visit, but it was used by 111 beneficiaries (Table 2). With 88%

participants, the storage condition of food packets was good. With 71.2%, the food packets were used to half of the quantity, while in 12.6% only third or less portion had been used. (Figure 1)





Table 2: Availability and consumption of food packets by study participants(n=132)

Findings	Frequency (%)
Food Packets not supplied	19(14.4)
Packets supplied but not used	2(1.5)
Food packets used	111(84.1)

35.2% of the nursing women have preference of using food packets twice and 35.2% alternate in a week. However 24.3% of them preferred once a week usage and 1.8% of them have not used it at all. There are only 6 out of 111 participants who used the food packets daily. (Figure 2)

Figure 2: Frequency of food packets use in a week: (n=111)



Out of the total participant mothers using the food packet, 23.4% of them perceived that they gained weight. However 14.40% of the total beneficiaries in the study did not received the food packets at all. The reasons for not utilizing the food packets were- not aware about it/Not supplied, feeling it of suspicious quality and not willing to use. (Figure 3)

Figure 3: Reasons for Utilization and Non-utilization of food packets according to the beneficiaries



Food packets provided to pregnant and lactating mothers should be used ideally by them alone. However, it was found that 70.30% of the participants using the food packets were sharing it with their family members and rest used it alone. (Figure 4)

Figure 4: Sharing of food packets by study participants: (n=111)



The sharing of food packets with other family members ranges from single family member to more than 8 family members. In 62.5% the food packets were shared with 3 to 5 family members.

Majority of the study participants reported the taste of food packet good (56.8%). 32.4% of them

perceived it edible, while only 3.6% perceived it worst to taste (Figure 4). However 2 of 113 participants have never tasted food packets.





Discussion:

14.40% of the total participants in this study were not supplied/received food packets by Anganwadi centres. The mean of registered month of Pregnant/Lactating mothers at Anganwadi centers is 7.77. The mean of total number of packets received till now by participants is 27.02.

Extruded Fortified Blended Premix: Dense Micronutrient Fortified Extruded Blended Take Home Ration (THR) like Sukhdi (1 packet of 1 kg per month), Sheera (3 packets of 500 gm each) and Upma (2 packets of 500 gm each) are provided to pregnant women, lactating mothers and adolescent girls. 7.74 lakhs pregnant and lactating mothers and 11.61 lakhs adolescent girls received THR in 2016 (as per the ICDS MPR).^[4]

The mean of registered month of Pregnant/ Lactating mothers at Anganwadi centers is 7.77(S.D. =3.12). The mean of total months of usage of food packets by beneficiaries is 6.65(S.D. =3.87).So the average number of beneficiaries in the study is using the food packets since their registration at the Anganwadi. And according to a study the integrated nutrition interventions led to a significant decline in malnutrition among preschool children in the ICDS population compared with the non-ICDS groups that received nutrition, health care and education services through separate programmes.^[5] One of the established newspapers in India i.e. "The Hindu" (Karnataka Publication) reported in 2010 that "children and pregnant women have been rejecting the food served to them in the Anganwadi centres, and the Anganwadi workers urged the authorities to stop the supply of ready-to-eat food and restore the earlier system of supplying food grains."^[6] The other newspaper, the times of India (Mumbai publication) reported (July 2017) that children have complained about the unpalatibility of the food served at Anganwadi centres.

Other newspaper "The Hindustan Times" (Mumbai Publication) reported on July 2017 as follows 'several studies have shown that the ready-tocook food taste bad, cause indigestion and is mostly fed to cattle and other livestock. They also mentioned about the study conducted by NGO (RachnaKhoj) who concluded that around 98% of the children did not like the taste of the 'Take Home Ration' (THR) supplements. 40% of the families said that it smelled bad and was difficult to cook and some even found worms in the sealed packets.' Unlike the various news, in our study, we found that majority of the study subjects perceived the taste of the food packets as good to eatable. Moreover, all of the participants in our study have the positive view about the quality of the food packets. And its usage which is not matching the ideal guidelines is mainly due to lack of knowledge, unawareness and low financial status of the participants.

One more news which flashed in "The Indian Express Newspaper" (Mumbai Publication) in October 2016 highlighted that "the local Anganwadi gave the breakfast and lunch of "laddo" and "khichdi" that cost Rs 11 for a child, along with 'take home ration' of 1 kg sheera. But the entire family consumes the ration, meant to last a month, in just 10 days." We found the same in our study as 60.60% of the total participants in our study did not use the food packets alone.

Out of the total mothers using the food packet, 32.74% of them perceived that they gained weight. One of the study concluded that a comparison of unsupplemented ICDS group with non-ICDS women showed 44.2% reduction in pre-term births and

23.1% reduction in low birth weights, which were due to other inputs provided under ICDS. Increased weight gain in pregnancy, length of gestation, caloric intake and hemoglobin level were significantly associated with birth weight. Nutrition supplement given to pregnant women in ICDS area improved weight gain of women during pregnancy and birth weight of babies, with reduction in pre-term deliveries and incidence of low birth weight.^[7] The findings of one of the other study showed that complete utilization of all services resulted in significant improvement in nutritional status as assessed through anthropometric indices viz height/age, weight/age, and weight/height. Data on morbidity among children showed that the frequency and duration of illness were significantly lower when the services were utilized fully, than when utilized partially or not utilized at all. Thus major efforts should go into the convergence of services and their full utilization by the community.^[8]

During our informal conversation with the Anganwadi centres worker, we came to know about the loop-holes of the take home ration scheme implemented under ICDS. Anganwadi worker gave us the ideal data on distribution of the food packets and its regularity and also said that all the beneficiaries registered under the Anganwadi centres are made aware and counseled properly according to the guidelines for the use of take-home rations. However during our door to door visit to the beneficiary, we found that the amount of food packets was inadequate and they were lacking the knowledge about the proper use of food packets.

Conclusion:

85.60% of the pregnant and lactating mothers utilized the food packets and most of them have received the last food packets just 1 month ago. None of the study subjects have ever got the food packets which are not edible. Only one out 20 women used the food packets on daily basis. Most of the participants found the contents of food packets good to average in taste but prefer using it less frequently in a week. Moreover, many of the participants used the food packets as their family meal and share the food packets with other family members. None of the participants had any side effects by using food packets. On observation all the packets were found within the expiry date.

Recommendation:

Taste of the food packets should be improved at manufacture level. The women should be educated about different nutritious recipes from the food packets to avoid monotonous taste. The supplementary nutrition should be provided in a form which can be used on daily basis.

Limitations:

Because of time constrains, the sample size is small and the study will be expanded in future.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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A Study on Hypertension and Prehypertensive Status and Their Key Determinants among School Going Adolescents in Surendranagar City

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Abstract:

Introduction: "Primary Hypertension" is detectable in children and adolescents as in adults; it is associated with positive family history of hypertension, obesity, and life-style factors. There is plenty of evidence to suggest that hypertension begins in childhood and adolescence. The present study was undertaken to determine the prevalence of hypertension and pre-hypertension and the associated risk factors among school going adolescents in Surendranagar city. **Objectives** : To estimate the prevalence of hypertension and pre-hypertension among school going adolescents. Method : The study carried out was cross sectional and for categorization of hypertension for adolescents, the JNC 7 classification was used. All the students from 2 schools of Surendranagar city selected randomly aged 10-19 years were included as subjects in the study. This came down to 374 students from government schools and 404 students from private schools. **Results**: It was seen that nearly 28% of children from Government schools and 32.4% of children from Private Schools were in category of pre-hypertensive and about 2% of students from Government schools and 6% of students from Private schools were found to be hypertensives. Family History of Hypertension, BMI status, frequency of junk food consumption outside home, type and regularity of physical activity and influence of gender were found to be predictors and contributors to elevated blood pressure using logistic regression analysis. Conclusion : It is recommended that the interventions for prevention of life style disorders among adolescents to be started at young age at schools by inclusion in curriculums and promotion of healthy lifestyle and healthy diet in schools.

Keywords: Adolescence, Hypertension, Junk Food, Physical Activity

Introduction:

India is undergoing an epidemiological transition where non-communicable diseases (NCDs) are on rise. According to World Health Report 2002, cardiovascular diseases (CVDs) will be the largest cause of death and disability by 2020 in India.^[1] The growing burden of Cardio Vascular Diseases is being contributed largely due to multitude of risk factors which are with hypertension being one of them.

Primary Hypertension is detectable in children and adolescents and as in adults it is associated with

positive family history of hypertension, obesity and life-style factors. ^[2] Hypertension is a disease following rule of halves making it largely an underdiagnosed problem. ^[3] There is plenty of evidence to suggest that hypertension begins in childhood and adolescence. In an attempt to study and prevent the development of hypertension, there is a growing interest in measuring blood pressure in children. The aim of this is to detect and monitor those with a relatively high level of blood pressure. ^[4]

The causes for increase in blood pressure are attributed to obesity, change in dietary habits,

decreased physical activity and increasing stress. Elevated blood pressure, systolic or diastolic at any age, in either sex is a contributor for all forms of cardiovascular disease. Identifying and modifying risk factors reduces the incidence and complications in adolescents and adult. Prevalence of hypertension varies across countries and states. It is multifactorial disease, influenced by genetic, racial, geographic, cultural and dietary patterns. ^[5] The asymptomatic nature of hypertension in early phases of its onset during adolescence increases the chances of developing complications during adulthood. ^[6]

Several studies in India have reported the prevalence of hypertension to be ranging between 0.46% and 11.7% amongst children and adolescents. ^[7] Considering the detection of hypertension in adolescence as the best possible preventive intervention to avoid complication later in life, the present study was undertaken to determine the prevalence of hypertension and pre-hypertension and the associated risk factors among school going adolescents in Surendranagar city.

Aims & Objectives :

- 1. To estimate the prevalence of hypertension and pre-hypertension among school going adolescents.
- 2. To study the difference between the prevalence among students of Private and Government schools of the city.
- 3. To study the potential determinants and risk factors among the students for elevated blood pressure.

Method:

Out of the total 12 government and 8 private schools in Surendranagar city, one school each from government and private schools were selected using simple random sampling after enumerating them alphabetically. All the students of these schools who consented to be a part of the study were enrolled as participants and included in the study. Only those students who fell in the age group of 10 to 19 years were included in the study. This came down to 404 students from private schools and 374 students from government schools.

A written and oral consent was sought (for children below 18 years of age, consent of their parents was sought) before the start of the study.The study carried out was cross sectional and for assessment of obesity the WHO classification of BMI was used. For categorization of hypertension for adolescents, the Joint National Committee (JNC) 7^[8] classification was used.

An ethical clearance from the institutional ethics committee was taken before the commencement of the study.

The data were collected by examining the students for their physical parameters and directly questioned for collecting data for their dietary and exercise patterns and practices. The blood pressure of the students was recorded by taking an average of three readings while they were seated comfortably for 10 minutes.

The data obtained was analyzed using MS Excel and SPSS v24 (free trial version).

Results:

The Socio-Demographic graph of figure 1 shows the different characteristics of the adolescents under the study. We can see that the age group from 12-14 years and 14-16 years had the maximum representation among the Government schools in the study which comprised of 10 to 19-year olds; whereas among the Private schools it was age group 10-12 yrs. Majority of the respondents in both Government and Private schools were boys (83% and 77%) as compared to girls (17% and 23%).

The parents' occupation and education from both the Government schools and Private schools were also assessed; it showed that in Government schools almost 43% fathers were laborers, while 72% mothers were housewives. In Private schools, fathers were mostly in Service and Business industries with 35% and 30% respectively while 92% mothers were housewives.

Prevalent Risk		School Type				
Factors for	Government	Percent	Private	Percent		
Hypertension	schools		schools			
Frequency of junk food co	onsumption *					
Not consuming junk	89	23.80%	112	27.70%	201	25.80%
food						
Once a week	163	43.60%	117	29.00%	280	36.00%
Twice a week	91	24.30%	108	26.70%	199	25.60%
Thrice a week	19	5.10%	23	5.70%	42	5.40%
> Thrice a week	12	3.20%	3	0.70%	15	1.90%
Everyday	0	0.00%	41	10.10%	41	5.30%
Total	374	100.00%	404	100.00%	778	100.00%
Frequency of physical act	ivity**					
Everyday	179	47.90%	38	9.40%	217	27.90%
Alternate day	48	12.80%	47	11.60%	95	12.20%
Twice a week	62	16.60%	169	41.80%	231	29.70%
Once a week	45	12.00%	77	19.10%	122	15.70%
No physical activity	40	10.70%	73	18.10%	113	14.50%
Total	374	100.00%	404	100.00%	778	100.00%
Family history of Hyperte	ension	I	I			
No family history of	305	81.60%	327	80.90%	632	81.20%
hypertension						
Father	10	2.70%	18	4.50%	28	3.60%
Mother	16	4.30%	16	4.00%	32	4.10%
Siblings	1	0.30%	1	0.20%	2	0.30%
Paternal relatives	35	9.40%	38	9.40%	73	9.40%
Maternal relatives	7	1.90%	4	1.00%	11	1.40%
Total	374	100.00%	404	100.00%	778	100.00%

Table 1 Prevalent Risk factors of hypertension among the adolescents (Government schools n=374; Private schools n=404)

*Junk food consumption included: PavBhaji, Pizza, Pasta, Maggi noodles, Soft drinks, sandwich and burger. ** Data of Frequency of Physical Activity was collected for the last month.

Category of BP	ry of BP Government Private Schools		ate Schools	Chi square	Р	Total	
recorded	Scho	Schools		value*	Value		
	No.	Percentage	No.	Percentage			
Normal	261	69.8	247	61.1	6.108	0.013	508
(<120/<80)							
Pre-hypertensive	104	27.8	131	32.4	1.738	0.1874	235
(120-139/8089)							
Stage 1 hypertension	6	1.6	26	6.4	6.361	0.0117	32
(140-159/9099)							
Stage 2 hypertension	3	0.8	0	0			3
(≥160/≥100)							
Total	374	100	404	100			778

 Table 2: Status of the students as per their blood pressure recorded

*Chi-squared test was used to find out the difference between the proportion in each category for government and private schools.

 Table 3:Determinants and contributors of adolescent hypertension among the adolescents using Logistic Regression analysis

Variables in the Equation							
Variables	В	S.E.	Wald	Sig.	Exp(B)	95% C.I. f	or EXP(B)
						Lower	Upper
Family history of	-0.141	0.47	0.09	0.764	0.868	0.345	2.183
Hypertension							
BMI Category	2.603	0.558	21.727	0.000	13.499	4.519	40.328
Frequency of consumption	0.732	0.358	4.189	0.041	2.080	1.031	4.195
of Junk food							
Frequency of physical	0.200	0.362	0.307	0.58	1.222	0.601	2.484
activity							
Sex	0.478	0.513	0.868	0.351	1.613	0.59	4.411

The risk factors preceding non communicable diseases like hypertension include routine junk food consumption, inadequate physical activity and family history of the disease. These risk factors were looked for (Table 1) in the study subjects as some of the habits like junk food and inadequate physical activity start right from the early age like adolescence. It was seen that nearly 70% of the adolescents had a habit of regular junk food consumption with varying frequency and nearly 60% had infrequent physical activity. It was also seen that nearly 19% of the subjects had a family history of hypertension and hence had an increased risk of contracting the disease





When the education of the parents in both school types were considered, about 55% of the fathers and 58% of the mothers were educated only till Primary or Secondary level and about 23% of mothers were illiterate among Government school going adolescents. In Private school goers too, maximum percentage of education that the fathers and the mothers had was Secondary level with 34% and 30%. Thus there wasn't much difference in Government and Private schools in this regard.

It can be seen from Table 2 that nearly 28% of children from Government schools and 32.4% of children from Private schools were in category of prehypertensive. Nearly 2% of students from Government schools and 6% of students from Private schools were found to have high blood pressure and in stage 1. Only 3 students from Government schools were found to be in stage 2 hypertensive.

The difference between two proportions was not found to be significant except for the normotensives. However, even though the numbers are statistically not significant, the numbers have a significant impact on the public health aspects of the disease at such an early age.The difference between two proportions for hypertensive showed that the prevalence in Private schools was much higher than the Government schools. (χ^2 =6.361, p=0.011)

(Table 3)The determinants and contributors of hypertension among the adolescents were analyzed

using Logistic Regression analysis, in which the determinants were chosen as per the table mentioned above which included their Family History of Hypertension, BMI status, frequency of junk food consumption outside home, type and regularity of physical activity and influence of gender. The P value and the beta exponential values were recorded and looked for. It was seen that the BMI status and frequency of junk food consumption were good predictors of hypertensive status whereas other variables even though were not having strong beta exponential values, but still could predict the outcome to an extent. As compared to normal BMI, those with elevated BMI had 13.5 times increased risk of developing hypertensive status and those having frequent consumption of junk food (more than twice a week) as compared to infrequent consumption of junk food (once a week) had 2 times higher risk of developing hypertensive status at such young age. Other variables even though not having significant P values are still known risk factors in development of hypertension.

Discussion:

Present study shows nearly 80% of subjects were males and 20% females, a study conducted by TanuAnand et al also showed similar results in urban Delhi.^[7] The overall hypertension in the present study was nearly 5% (4.5%). This was almost similar to the prevalence found in Tanu Anand et al in urban Delhi (7%).When the statistics of Government and Private schools were compared, it was seen that the prevalence in Government schools was 2.4% and that in Private schools was 6.4%. This difference in the two was statistically significant. This showed that the prevailing risk factors of hypertension like Family History, BMI Status, Frequency of Junk Food Consumption, Frequency of Physical Activity, etc. were found more among the Private schools as compared to the Government schools. This difference could be as the students in the Private schools are usually from a higher socio-economic class, are better off and thus involved in lesser physical activities and tend to have a more gadget friendly life as compared to the Government schools counterparts who are more involved in games involving routine physical activities like cricket, kabaddi, soccer etc. $^{[7]}$

Surveys which are small scale of similar types in India have suggested prevalence of 2 to 5% in school children. Study conducted by Buch et al in Surat suggested a prevalence of 6.48% in school going children. ^[5] These results are quite similar to the results found in the present study showing that the prevalence ranges from about 2 to 6% in school going children from different parts of the country.

Hypertension is a disease which shows an increase with the advancing age and shows a direct relationship with the variable.^[9] The present study showed that there was no significant association between age and hypertension. However, even though not significant, the prevalence among the different age groups ranged from 3.1 to 7.6% which is quite high; the overall average being 4.5%. Further analysis revealed that the prevalence doubled after the age of 16yrs. This shows the increased prevalence with advanced age. Study conducted by Buch et al showed similar findings of increased prevalence with advancing age.^[5]

The present study showed that the prevalence of hypertension was more in boys (4.8%) as compared to girls (3.2%) which is a little different from Banker et al which showed that the prevalence was similar in both the sexes.^[10]

Logistic regression analysis of the predictors revealed that the BMI status of the students and frequency of outside junk food consumption were strong predictors whereas the others even though were not that significant (statistically) but still had some contribution to the regression model and explained the variability in the model and hence were important factors for development of hypertension in adolescence. Thus, it is imperative that if the hypertension among the adolescents is to be reduced, the predictors are needed to be modified or controlled at the earliest. Further studies would be needed in the same area of research to develop better models of regression so that the predictors can be better identified and associated with the final outcome.

Conclusion & Recommendations :

It can therefore be concluded from the study that the prevalence of adolescent hypertension is a growing concern on account of the changing life style which includes change in diet and marked reduction in physical activities. The prevalence in the present study which is nearly 5% could be even more in other larger districts which are more developed and populous. It is therefore needed that studies of similar type be replicated in other districts and states so that the overall problem can be estimated.

After estimation, it is much imperative that the results must be shared with the relevant authorities so that either the specific interventions are amalgamated with the NCD programme or with school health in a way that necessary results are achieved in a phased manner.

A very important method of achieving the results especially in educational institutions is inclusion of these topics in the curriculum at an early age so that the students are aware of the life style disorders and their complications in adulthood and old age.

Health education sessions should be planned regularly in addition to training the students by inculcating the advantages of regular physical activities and promotion of healthy diet. Interventions planned early in the life of an individual will go a long way in reducing the impact of the lifestyle disorders in our country.

Declaration:

Funding: Nil

Conflict of Interest : Nil

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A Cross-Sectional Study of Assessment of Quality of Life among Adolescents with Type-1 Diabetes Mellitus in Bhavnagar, Gujarat

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Abstract:

Introduction: Diabetes mellitus is on the rise and is a prevalent chronic disease in middle and low income countries. Type-1 diabetes mellitus usually develops during infancy and adolescents and as a chronic condition has a hard impact on aspect of life of adolescents. Objectives : To assess the quality of life (QOL) of adolescents with type-1 diabetes mellitus in Bhavnagar. Method : A cross-sectional study was conducted among a convenient sample of 57 adolescents with type-1 diabetes mellitus who were registered in Juvenile Diabetes Association, from August-October 2016 with a self-administered questionnaire on Diabetes Quality of Life. Results : Among 57 adolescents, 54.3% were males and 45.7% were females. The mean age of the participants was 16.19+3.29 years. The mean duration of diabetes was 91.8+63.3 months. The mean glycosylated hemoglobin (HbA1c) was 9.21+2.02 %, among which 71.9% were in the range of 6-10% and 28.1% were in the range of 10-15% of HbA1c. Out of 57 adolescents, 94.7% were literate and 5.3% were illiterate. 91.2% adolescents reported having a poor quality of life. The median scores for each domain are as follows: Satisfaction 26, Impact 80, and Worries 22. No significant difference was found between the domains and age and glycemic control except between HbA1c and quality of life in worries domain. No association was found between the domains and gender and education. **Conclusion :** Most of the adolescents (91.2%) with type-1 diabetes were having poor quality of life. In worries domain, HbA1c had a significant effect on quality of life.

Keywords: Adolescents, Quality of life, Type-1 Diabetes Mellitus.

Introduction :

Diabetes mellitus is a demanding disease and its prevalence is steadily increasing in low and middle income countries. Currently, an estimated 422 million people have diabetes worldwide, and this number is predicted to rise to 592 million by the year 2035.^[1]Rapid lifestyle changes, aging of the population, and environmental changes have contributed to a significant increase.

India accounts for most of the children with type-1 diabetes mellitus (T1DM) in South-East Asia. Type-1 diabetes is also on the increase as Type-2 diabetes, but not in the same proportion.Type-1 diabetes mellitus is caused by insulin deficiency which may be autoimmune or idiopathic in nature and cannot be prevented. It usually occurs during infancy and adolescence. The prevalence of diabetes (Type - 1) in India is variable, and three sets of data show 17.93 cases/100,000 children in Karnataka,^[2]3.2 cases/100,000 children in Chennai^[3], and10.2 cases/100,000 children in Karnal (Haryana).^[4] Intensive treatment is required to prevent or delay acute and chronic complications of T1DM, which involves multiple daily injections of insulin (or insulin infusion), monitoring daily blood glucose, carbohydrate consumption and involving in regular physical activity. For this, diabetes in children and adolescents poses serious physical, mental and emotional challenges. In general, T1DM and its complications may affect adolescents' living conditions over the years and may also influence their quality of life (QOL) as adolescents are more resistant to accepting the disease, because they no

longer depend on their parents or guardians for their care and are responsible for their own health. Quality of life among adolescents with T1DM has not been studied in Gujarat. Hence, the present study attempts to assess the Quality of Life among adolescents with Type-1 Diabetes mellitus in Bhavnagar city, Gujarat.

Method:

Study setting: This study was conducted at Government Medical College, Bhavnagar in collaboration with Juvenile Diabetes Association.

Study design : It was a cross-sectional study conducted among adolescents with type-1 diabetes mellitus.

Study duration: The study was conducted for a period of 3 months from August– October 2016.

Sample size: All 57 adolescents who were registered under Juvenile Diabetes Association and have participated were included in the study.

Sampling Method: Convenience sampling method was used in this study.

Data Collection: The purpose of the study was explained to the participants. A written informed consent was taken from the willing participants. The willing participants gave data via the completion of a structured questionnaire, which consisted of questions regarding Diabetes Quality of life.^[5] The Questionnaire was divided into three sections: Satisfaction, Impact and Worries consisting of a total of 32 questions. The socio-demographic profiles of the participants were also elicited. Satisfaction section consists of two domains including treatment and diet using a scale of 1-5 (1-very dissatisfied, 2moderately dissatisfied, 3-neither dissatisfied, 4moderately satisfied, 5-very satisfied). Impact section consists of three domains including impact on physical health, general health and emotional health using a scale of 1-5 (1-always, 2-frequently, 3often, 4-sometimes, 5-never). Worries section consists of two domains including symptom suffering and financial worries using a scale of 1-4 (1-alot, 2highly little, 3-very little, 4-not at all). The total score

is the sum of the domain scores. There was no cutoff score for this questionnaire^[5]. Thus the median score of each section has been taken, and the value more than the median value corresponds to good quality of life.

- 1. Total Quality of Life: A score of >239 indicates a good quality of life.
- 2. Satisfaction: A score of >26 indicates a good quality of life.
- 3. Impact: A score of >80 indicates a good quality of life.
- 4. Worries: A score of >22 indicates a good quality of life.

Inclusion criteria: The adolescents aged 10-19 years who were registered in Juvenile Diabetic Association in Bhavnagar and were willing to participate.

Ethical issue: The study was conducted after due ethical and institutional permission. A written informed consent was taken from their parents.

Statistical Analysis: Data entry was done in Microsoft Excel and data analysis was done in SPSS version 21. Frequencies, Percentages, Means and Standard Deviation were calculated. Chi square test and Student's t-test were applied. The value of p<0.05 were considered statistically significant.

Results:

The present study is based upon responses received from the 57 adolescents who were registered in Juvenile Diabetes Association and has given consent. The mean age of the participants was 16.19 ± 3.29 years. The socio-demographic profiles of the adolescents have been elucidated in Table 1. As shown in the table, 54.3% were males and 45.7% were females. The mean duration of diabetes was 91.8 ± 63.3 months. The mean glycated hemoglobin (HbA1c) was 9.21 ± 2.02 %, among which 71.9% were in the range of 6-10% and 28.1% were in the range of 10-15% of HbA1c. Among the participants, 94.7% were literate and 5.3% were illiterate.

Characteristics	Category	Frequency (%)	
Age	10-14 years	17(29.8)	
nge	15-19 years	40(70.1)	
Gender	Male	31(54.3)	
Gender	Female	26(45.6)	
Education	Literate	54(94.7)	
Lucation	Illiterate	03(5.2)	
	1-5 years	25(43.8)	
Duration of Diabetes	5-10 years	15(26.3)	
	10-15 years	11(19.3)	
	15-19 years	06 (10.5)	
HbA1c (%)	6-10	41 (71.9)	
	10-15	16(28.1)	

Table 1: Socio-Demographic profile of the adolescents (n=57)

Table 2: Frequency distribution table of Total Quality Of Life (QOL), Satisfaction, Impact and Worries domains.

Domains		Frequency (%)	2x1 Chi	p-value
			square value	
Total Quality of	Poor QOL	52(91.2)		
life	Good QOL	05(8.8)	38.754	< 0.001
Satisfaction	Poor QOL	31 (54.4)		
	Good QOL	26 (45.6)	0.439	0.508
Impact	Poor QOL	29 (50.9)		
	Good QOL	28 (49.1)	0.018	0.895
Worries	Poor QOL	31 (54.4)		
	Good QOL	26 (45.6)	0.439	0.508

(Table 2) 91.2% adolescents with T1DM had poor quality of life and 8.8% had good quality of life, which is statistically highly significant (p<0.001). For satisfaction domain, 54.4% have opined that they had poor quality of life as compared to 45.6% who replied that they had good quality of life.Observation depicts that regarding impact domain, 50.9% of adolescent had poor quality of life in contrast to 49.1% who had good quality of life. It was noticed in the study that for worries domain, 54.4% of adolescent had poor quality of life, while 45.6% had good quality of life.

Table 3 shows Domains of quality of life (Satisfaction, impact, worries and total quality of life) versus age and HbA1c. As demonstrated in the table,

1. Quality Of	Poor QOL	Good QOL	p-value
Life(QOL)	Mean(<u>+</u> SD)	Mean(<u>+</u> SD)	
Age	16.06(<u>+</u> 3.40)	17.60(<u>+</u> 1.34)	0.070^{+}
HbA1c	9.34(<u>+</u> 2.033)	7.79(±1.372)	0.102*
2. Satisfaction			
Age	15.45(<u>+</u> 3.623)	17.08(<u>+</u> 2.667)	0.057^{+}
HbA1c	9.32(<u>+</u> 1.984)	9.067(<u>+</u> 2.10)	0.640*
3. Impact			
Age	15.72(<u>+</u> 3.442)	16.68(±3.151)	0.279*
HbA1c	9.41(<u>+</u> 2.162)	8.99(<u>+</u> 1.884)	0.436*
4. Worries			
Age	15.48(<u>+</u> 3.604)	17.04(<u>+</u> 2.720)	0.069 [†]
HbA1c	9.84(<u>+</u> 2.323)	8.44(<u>+</u> 1.262)	0.006†

 Table 3: Independent sample +test between QOL domains and variables (Age & HbA1c)

Independent sample test; *Equality of variances assumed as Levene's test p -value >0.05;

†Equality of variances not assumed as Levene's test p-value<0.05

those adolescents who had poor quality of life had a mean age of 16.06 (\pm 3.40) years. By comparison, those adolescents who had good quality of life had a higher mean age of 17.60 (\pm 1.34) years. To test the hypothesis that those with a poor quality of life were associated with a statistically significantly different mean age, an independent sample t-test was performed. The assumption of homogeneity of variances was tested and was satisfied via Levene's F test.

The independent samples t-test was associated with a statistically insignificant effect, p=0.070. The independent t-test has also been performed for the domains (satisfaction, impact and worries), so as to test the hypothesis that those adolescents with a poor quality of life were associated with a statistically significantly different mean age. It was also associated with statistically insignificant effect. Thus there was no association between the domains of quality of life of the adolescents and their age. Similarly, on applying independent sample t-test, there was no statistically significant difference between HbA1c and total quality of life, satisfaction and impact domains. However, there is a statistically significant difference between those adolescents with a poor quality of life and worries, p=0.006.

Table 4 shows Domains of quality of life (satisfaction, impact, worries and total quality of life) versus gender and education. The association between these variables was statistically insignificant, shows that there was no association between the domains of quality of life of adolescents and gender and education.

Discussion:

The research focused on the assessment of quality of life of the adolescents with type-1 diabetes mellitus who were registered in Juvenile Diabetic Association in Bhavnagar. The current study found that most of the adolescents (91.2%) had poor quality of life. This was in contradiction with what the study by Costa LM, et al.(2015)^[6]found that the adolescents consistently reported having a good quality of life. The present study found that there was

		Poor QOL	Good QOL	Chi	p- value
	QOL	n (%)	n (%)	Square	
Variables				value	
Gender	Male	29(93.6)	2(6.5)		
	Female	23(88.5)	3(11.5)	0.457	0.651
Education	Literate	49(90.7)	5(9.3)		0.7553
	Illiterate	03(100)	0		(Mid-P Exact)
Satisfaction	1		L	1	
Gender	Male	18(58.1)	13(41.9)	0.371	0.600
	Female	13(50)	13(50)	_	
Education	Literate	28(51.9)	26(48.1)		0.1536
	Illiterate	03(100)	0	1 —	(Mid-P Exact)
Impact					
Gender	Male	15(48.4)	16(51.6)	0.169	0.792
	Female	14(53.8)	12(46.2)	_	
Education	Literate	26(48.1)	28(51.9)	_	0.1249
	Illiterate	03(100)	0	_	(Mid-P Exact)
Worries			L	1	
Gender	Male	18(58.1)	13(41.9)	0.371	0.600
	Female	13(50)	13(50)	1	
Education	Literate	29(53.7)	25(46.3)	0.193	1.000
	Illiterate	02(66.7)	01(33.3)	1	(Mid-P Exact)

 Cable 4: Association by Chi square test between the QOL domains and variables

no association between the gender and quality of life. This was again in contradiction with what the study by Costa LM et al. (2015)^[6] which found that there wasan association between quality of life and female gender. The study by Abolfotouh et al.^[7] in Alexandria found that there was an association between male gender and quality of life. Some other studies also demonstrated that diabetes had more impact on girls ^[9-12]. The present research found that there was no statistically significant difference between age and the domains of quality of life. This was supported by a study conducted by Eman M.M. Monazea, et al.^[8] (2012) which revealed no significant association between age and total quality of life, but study conducted in Alexandria by Abolfotouh et al.^[7] (2011) found that there is a significant association between age and QOL.The current study found that there is no association between HbA1c and quality of life, except the finding of worries domain, which revealed that there is an association between HbA1c and poor quality of life. Al-Akour et al.^[13] found that higher HbA1c values were associated with lower scores of QOL. Hoey et al.^[14] reported a significant positive association exists between improved glycemic control, even over a short time period and improved QOL in patients with diabetes. Other researchers found no association between QOL and metabolic control. ^[15-17] It would be expected that the quality of life would be positively correlated with age, gender, glycemic control and education but the current research could not establish any such association.

Conclusion:

We conclude from the study that majority of the adolescents with type-1 diabetes mellitus was having poor quality of life. We also concluded that HbA1c was correlated with poor quality of life in worries domain. The study also highlighted that the quality of life was not associated with age, gender, education and glycemic control. Regular visit to health centers and counseling intervention might improve the quality of life.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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An Epidemiological Investigation of Acute Diarrhoeal Disease Outbreak in Sojitra Village of Anand District by Rapid Response Team of B. J. Medical College, Ahmedabad

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Abstract:

Introduction : Acute Diarrhoeal Disease (ADD) affects millions of people around the world especially in second world nations. Most of the pathogenic organisms that cause diarrhoea, are transmitted primarily or exclusively through feco-oral route. We have investigated an outbreak of Acute Diarrheal Disease in Sojitra Village of Anand District-Gujarat, to identify the etiological agent, mode of transmission and various control measures taken by the authority. **Objectives :** 1. To confirm the existence of an outbreak, 2. To know the magnitude and distribution of the outbreak with reference to time, place and person, 3. To identify the source of infection, mode of transmission and implement control and preventive measures. **Method :** A Cross Sectional Epidemiological study was carried out to investigate the outbreak of acute diarrhoeal disease cases in Sojitra Village. We obtained required information from the CHC, conducted house to house survey and also inspected the sanitation and water supply of the affected area. **Results :** There were 57 cases of acute diarrhoeal disease. The overall Attack Rate was 1.51%, with higher attack rate among Muslims. The Attributable risk was found to be 40% among the Muslims who consumed non vegetarian feast post Ramadan Eid from 24th to 26th week of 2017. Majority of the affected population used non-chlorinated water for drinking. **Conclusion :** The underlying cause for the outbreak of acute diarrhoeal disease may be due contaminated water and food.

Keywords: Acute Diarrhoeal Disease, Epidemic Investigation, Ramadan, Rapid Response Team, Sojitra

Introduction :

Diarrhoea is an important cause of morbidity and mortality in developing nations. In spite of many advances in health technology, improved management and increased use of Oral Rehydration therapy in the past decade, morbidity due to diarrhoea has not shown a parallel decline in comparison to mortality trends in India.^[1] There are multiple reasons for this, but mainly it is due to environmental and sanitation issues. Unfortunately, Indian data in morbidity and mortality from Diarrhoeal Disease is deficit in many ways. Most of the diarrhoeal disease is caused by 20-25 pathogenic organisms that are transmitted primarily or exclusively through feco-oral route (water borne, food borne, fomites).^[2] Chlorine persist in water as residual chlorine after dosing and this helps to minimize the effect of recontamination by inactivating microbes which may enter the water supply after chlorination.^[3] Effective management of Diarrhoea is by prompt rehydration of patients. Mild and moderate cases can be successfully treated with ORS.^[4]

An Outbreak is defined as the unusual occurrence in a community or region of disease, specific health related behaviour or health related events clearly in excess of "expected occurrence".^[2] The prime purpose of an outbreak investigation is to control, limit its spread and plan preventive strategies to reduce or eliminate the risk of such outbreaks in future.

Epidemiological description of the affected area:

On 7th July 2017, there was an outbreak of Acute Diarrheal Disease in Sojitra village, Anand district. The Rapid Response Team (RRT) from B.J. Medical College, Ahmedabad, reported to investigate this outbreak.

Sojitra village had a total population of 16713. 69.89% were Hindus and 29.04% were Muslims. 3786 was the affected population, among which 33.1% were Hindus and 66.9% were Muslims. Primary cases of diarrhoea and vomiting were reported on 26^{th} June 2017.

Administration of basic amenities like water supply and sewage disposal of this village was taken care by the Municipality. In the affected area water supply was done through an overhead tank by the municipality, but most of the people of this village preferred to buy water from 2 private water suppliers namely Jaldhara and Madrasa who did not chlorinate their water resources till 30th June 2017.

The Village had both open and closed drainage systems. The hygienic condition of Sanitation and Excreta Disposal were not satisfactory.

Acute Diarrhoeal Disease outbreak occurred after Ramadan Eid. There was a mass feast for Eid celebration on 26th June consisting mainly of nonvegetarian food and the hygienic condition of the slaughter house from where the meat was distributed also didn't seem to be satisfactory.

Method:

At the Epidemic site, RRT contacted the Epidemic Medical Officer, Epidemiologist, Block Health Officer and other Medical Officers. All the details of area and the cases were obtained. The data has been collected from them with the due consent. No active case was observed during our field visit.

Description of control measures were taken by the authority after 30^{th} of June.

Total five water samples were sent to WASMO (Water And Sanitation Management Organization) for investigation and from them two were found unfit for drinking (Khatkiwad and Chokshi Bazar area).

Administrators have chlorinated the water tank of Nagarpalika and have asked private water distributors to do the same under their supervision. House to house chlorine tablets were distributed in affected areas by health workers and ORS distribution was done in affected houses with ADD cases. Health education regarding how to prevent occurrence of Diarrhea and hygienic practises was given to the people via different mass media like posters, loud speakers and surveillance regarding new cases was undertaken by health team.

Result:

Our study results identified 3786 affected population. There were 57 cases of Acute Diarrhoeal Disease with an attack rate of 1.51%, 27 of them were hospitalised. As per the spot map (Fig 1) provided by the concerned authority the clustering of cases amounting to 30(52.63%) were found in Khatkiwad which is predominantly populated by Muslims.

Figure 1 : Spot map showing boundaries of Sojitra village with water resources, health facilities in the village and Clustering of 33 cases in Khatkiwad area



Age group in	Diseased	Non -diseased	Total	
years				
0-5	7(0.38%)	1816	1823	χ ² =87.05
6-14	3(0.12%)	2498	2501	df=3
15-49	36(1.24%)	2863	2899	p value <0.05
>50	11(0.11%)	9479	9490	
Total	57	16656	16713	

Table 1: Age group wise comparison of Diseased and Non-diseased among total population

(Table 1)Majority of cases were found between 15 to 49 years of age group. (n=36; 63.15%). Among total cases 27(47.37%) were male and 30(52.63% were female, but the difference is not statistically significant. Attack rate in male and female was found to be 1.29 and 1.76 respectively.

Affected population had high proportion of Muslims (2534; 66.9%). Attack rate among the Muslims and Hindus was 1.7% and 1.03%. respectively. As per the figure 3 we found that, there was a sudden rise of acute diarrhoeal disease cases from 24 to 26 weeks of 2017 as compared to 2016.^[5]

Figure 2: Age wise distribution of cases. (N=57)



Date	Residual Chlorine test		Chlorine tablet	ORS distribution
	Positive	Negative	distribution	
30/06/2017	56	42	1500	52
1/07/2017	68	11	800	20
2/07/2017	97	11	600	35
3/07/2017	129	50	800	43
4/07/2017	110	35	800	46
5/07/2017	51	9	350	19
6/07/2017	117	33	180	19
7/07/2017	106	13	350	31
Total	734	204	5380	265

Table 2: Preventive measures taken by the authority in affected area of Sojitra village

Cases ranged widely from 6 months to 85 years of age (As per Fig 2)with mean age group of 33 (SD \pm 19.22).



Figure 3: Week wise distribution of cases in year 2016 and 2017

Chlorination was done throughout the affected area by the authority after the outbreak but still residual chlorine testing showed that there was ineffective chlorination in 234 samples (21.75%) as dated on 07/07/2017. ORS was also distributed in the affected population efficiently. (Table 2)

1 2 3 4 5 6 7 8 9 1011121314151617181920212223242526

Discussion:

Anand is known as milk capital and is situated 60 km from Ahmedabad city. Anand district is divided into 8 Talukas or sub district, one of them is Sojitra which has 1 CHC and 2 PHCs (Dabhou and Deva Talpad). Anand district is more prone towards water borne disease. Our study was done at Sojitra village as a part of an epidemic investigation done on a rapid basis with short duration exposure to that area. Total 57 cases of acute diarrhoeal disease were confirmed by the authority till the day of visit. There was no death reported. The cases ranged from age of 6 months to 85 years with the mean age of 33 (SD±19.22). Age wise distribution of affected cases compared to the general population was found statistically significant with the chi square value of 87.05 (p<0.05, df = 3). A hospital based study of Bangladesh reported that diarrhoeal cases were more common in children greater than 5 years of age. ^[6] There were 27 (47.5%) males and 30 (52.63%) females. Nearly similar distribution of male and female was found in a study done by Arti et al in Madhya Pradesh.^[7]

Total affected population was 3786 with the attack rate of 1.51%. Attack rate among Muslims and

Hindus were 1.74 and 1.03 respectively. Clustering of cases was seen in Khatkiwad comprising a total population of 668 with the attack rate of 4.93%. In a study done at Dharmashala (Himachal Pradesh) overall attack rate was found to be 14% among the residing hostellers.^[8]

Attributable risk among the Muslims having nonvegetarian food post Ramadan was found to be 40%. Similar were the findings in a study by Surendra et al which showed that eating beef outside was the most important risk factor for Acute Gastroenteritis with an attributable risk of 71% in the population.^[8]

Week wise distribution of acute diarrhoeal disease cases clearly indicates that Sojitra Village is an endemic area for Acute Diarrheal Disease but there was a sudden rise in the number of cases from 24 to 26 weeks of 2017 as compared to 2016 data. This may be due to non-chlorinated, contaminated water supply or eating of contaminated non vegetarian food post Ramadan. Chlorine persists in water after dosing and this helps in minimizing the effect of recontamination. When there is a risk of acute diarrhoeal disease outbreak, residual chlorine should be maintained at all points above 0.5mg/L.^[9] In Sojitra village only 20% used chlorinated water supplied to them by the municipality. Nearly 5380 chlorine tablets were distributed in affected households yet 21.74% dwellers were not using chlorinated water due to its odd taste.

As found in Bholakpur, India, bacteriological pollution of drinking water supply, due to infiltration of contaminated water through cross connection, leaking points and back siphoning cause diarrhoeal illness. The significant risk factor was water transportation and poor handling of water at house hold levels.^[10]

Although diarrheal disease with known aetiologies are under regular surveillance by Intensified Diarrhoea Control Fortnight, India, Only limited food borne/ water borne outbreaks were subjected to epidemiological study. Nearly 1.7 billion cases of diarrhoeal disease are reported every year which are significantly clustered in summer and monsoon months. ^[11] In India the proportionate mortality rate of diarrhoea was 9.1% and estimated projection of year of life lost (YLL) due to diarrhoeal diseases will increase to 1,95,046 in 2016. ^[12]

The results of our study suggest that non chlorinated drinking water might be the source of infection in this village, but they were drinking the same water since long time. If water was the only source of outbreak then cases would have been distributed uniformly in the entire area and all the age groups would be equally affected. On the contrary, the cases were clustered in a particular small area called Khatkiwad where majority of the population were Muslims. Secondly, children were less affected here. Third, the outbreak happened just after Ramadan Eid. This signifies that cases might have occurred due to consumption of contaminated food.

Conclusion:

The most probable cause of acute diarrhoeal disease could be consumption of contaminated food post Ramadan Eid celebration. This outbreak affects substantially Muslims, clustered in Khatkiwad area of Sojitra Village but could not be confirmed due to lack of laboratory evidence during epidemic.

Recommendations:

Effective chlorination of all the water sources is plays a crucial role to prevent outbreaks. Distributing chlorine tablets in affected and unaffected households can reduce the incidence of cases. Proper surveillance and prompt treatment can reduce the mortality and disease burden. Periodic inspection of all slaughter houses for proper hygiene by concerned authority should be done to maintain hygienic slaughtering practices. Relevant health education and continuous surveillance in the area is pivotal.

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Baal Doctor: A Health Change Agent in School

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Every child is different and carrying tremendous capabilities within him. To increase and flourish his talent, the overall health of child is the most important determinant. Being health care personnel, it is our moral responsibility to enhance the healthy life styles among children and keep them updated with new fruitful initiatives. Although, a lot of health services and screening amenities are being provided to children, there was a need to add something new in order to increase the interest for health and the awareness about health among children. The concept of "Baal Doctor" is one of these efforts of health care services. Under this concept, every Primary school (Government) is supposed to create one "Baal Doctor" in every class. Departments of Health and Education of Government will jointly work on this concept.

School is another important world for a child, outside his home, where friends play a major role, just like family members. It is the second place after home where every child spends a lot of time and interacts with peers. Every child feels more comfortable and affected with children of same age group and can easily share the problems which he may not do with teachers or his parents. "Baal Doctor" is a "health guide and monitor" from same class and of same age who will facilitate the free interactions and sharing of health related issues with peers. He is trained to screen ailments under guidance of teacher and able to link such children with medical doctors for early treatment of health conditions.

Following actions will be carried out by "Baal Doctor":

- 1) To develop healthy habits in all students.
- 2) To educate all students regarding importance of hand washes and makes them to practice it in "Mid-Day Meal" on daily basis.
- 3) To make all students aware regarding importance of IFA tablets being distributed under Weekly Iron Folate Supplements (WIFS) on every Wednesday.

- 4) To work on de-addiction in affected child.
- 5) To provide primary information regarding Seasonal diseases and its prevention.
- 6) Send the child to school teacher if he/she is suffering from common illness.

Every Baal Doctor will be given an apron to create credibility and image of health care providers and well acceptance of health educational messages in peers. "Baal Doctors" will teach their peers to develop good practices of hygiene on daily basis like cutting nails, taking bath, brushing the teeth, washing hands before having meal, staying away from addiction etc. They will also share the information regarding proper way of cooking, importance of hygiene, use of nutritious food substance in routine meals etc. Additionally, Information, Education and Communication (IEC) materials will be provided to them for effective health education. They will not be provided any medicines or drugs to distribute. The main role of a "Baal Doctor" is as a peer health educator. Also they are bridge between child and teacher as well as Medical Doctor. They will also facilitate the prompt interventions in case of any ailments. By this initiative, every child will develop the understanding to occurrence of diseases and skills to prevent them. Apart from this, this concept will also facilitate establishment of the "Doctor" as a role model in a child's mind, instead of any Celebrity which usually children carry in their fantasies.

Thus, if these children are brought up with good health education to inculcate healthy habits and develop morals to build good character, it will go a long way in building healthy citizens and prosperous country. When the child himself gets involved in health related matters, it can certainly result in fruitful outcomes. So this initiative will indeed come out with positives and very prompt results in near future.

Join Hands and Kill AIDS

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(Current article had won the award at the Essay Competition on HIV/AIDS Day-2016 celebration, organized by IAPSM & IAPSM-GC)

"Stay away from that boy", advised her mother while bidding goodbye to her only daughter on the first day of school. A small sentence that carried the baggage of destroying a human life. The boy, a mere child of eight years, was a decent lad, just as sane, just as innocent as any other soul. Yet when he stepped into the outer world, everyone knew better than to be friends with him- reason being he was HIV positive. What was the boy's fault? That he was born in a family that was unaware of the transmission of HIV from parents to children? That his father had met with an accident and was transfused blood having HIV virus in the window period, when they could not be detected? That his parents unaware of this had unprotected intercourse rather than opt for other means of fertilization?

"AIDS doesn't kill a person, society does." There are plenty of such cases, all arising due to the backward mindset of this supposedly small caring family of ours - 'society'! A person down with malaria or a heart attack or even an infectious and contagious disease like chickenpox are treated with love and respect, nurtured with overflowing attention to help them combat their illness, but the moment a person is tagged as PLHA, his death sentence is fixed, at the hands of this society. My question is, does AIDS spread by touching a person? Or sharing food with them? Or working with them? Or being a decent human being and treating them with the respect they deserve? Everyone, educated or not, would know the answer to these questions- It is a big NO. Despite knowing this, we still shun people with AIDS cause we follow the herd and don't think for ourselves.

"Live life, before we leave life" is the motto of any human on this planet. Sadly, people living with HIV-AIDS aren't even given a fair chance at life. Be it a woman in the US, who was looked down upon and called a prostitute for being HIV positive to a man in kerala, the most educated state in India, who was thrown out from his teaching job for being a HIV carrier. Till date, women in rural India are blamed for transmitting HIV to their kids by those in laws who deny her the antenatal visits at a hospital that could have prevented the cycle and counseled accordingly. The probability of the child from harboring HIV would have fallen directly to a mere 1% from 30% if the expecting mother had been given what she truly deserved. As of September 2015, 11 countries still have laws that restrict the entry, stay and residence of people living with HIV.^[1]

Slowly and steadily, as the light of development engulfs this 21st century, and awareness carves its path, people have started seeing the scenario with open minds. With the combined perseverance of the World Health Organization and the governments of different countries, a ray of hope for a better future is shining upon us. People who were earlier cast into depression, after being out casted by the society, now have the government to go to. From free medicines to one on one counseling overflowing with understanding, compassion and knowledge, people are learning to fight this illness, which they earlier succumbed to. Today, a man living with HIV in China stood up for himself and filed a lawsuit in 2012 after he was denied a job as a primary school teacher when the employer found out he was HIV-positive. In January 2013, he won the case and received compensation. ^[2] Various Non-Government Organizations have been founded who hold their hands and walk with them every step of the way. Programs like National AIDS Control Program, started by the Government of India in 1992, have established blood banks, STD (Sexually Transmitted

Disease) clinics, and flagged off its largest national campaign to date, in the form of a seven-coach train the Red Ribbon Express (RRE) that travelled across 24 states reaching around 6.2 million people with HIV/AIDS education and awareness.^[3] Yet a lot still has to be done and the government alone can't accomplish this cumbersome task without community participation.

It is aptly said that "Prevention is better than cure". We cannot just sit idle and wait to fight AIDS when we are down with it. It is an active effort on our part to cease the high risk behavior- use condoms while having intercourse, to not reuse a used syringe, make use of better blood screening methods like detecting of p24 antigen of the HIV virus instead of waiting for the antibodies to be captured via ELISA, and above all, spread this knowledge to as many people as we can. Another dimension to this is of post exposure prophylaxis, which aims at preventing the replication of HIV virus if the person exposed to it takes antiretroviral treatment within 72 hours.^[4] However the bottom line is still awareness without which none of this is possible, because HIV-AIDS doesn't discriminate between people, it attacks those who are not cautious enough.

Today, more funds are being allotted to the research for a cure for AIDS as a result of which promising advances have taken place. We have also witnessed a miraculous cure of AIDS in a person known to us as the infamous 'Berlin patient' who was diagnosed with HIV in 1995. He had been taking Anti Retroviral Therapy (ART) for 11 years to control his infection before learning that he had developed leukemia. He was given chemotherapy but it failed, so physicians decided to proceed with a bone marrow transplant. The treatment successfully cured his cancer, but interestingly the virus dropped to undetectable levels in his blood and never bounced back, despite ditching ART. Scientists believe that he was given a transplant from an individual with rare a mutation that altered one of the receptors HIV uses to get inside white blood cells. Also his own immune system was destroyed by chemotherapy and radiation to prepare him for the transplant. This process could have killed all the HIV infected cells in his body. Finally, the transplanted cells could have attacked Brown's own cells, which is known as graft versus host disease, and hence destroyed any remaining HIV reservoirs.^[5] This case gave birth to a whole new research project, adding another direction for obtaining cure, another ray of hope for the future.

Our researchers are leaving no stone unturned in trying to uproot this disease from its roots. Another bold venture has led the scientists to develop vaccines for preventing this disease-Cytotoxic tlymphocyte inducing vaccine, recombinant adeno associated virus vaccine, AIDSVAX. ^[6] It has not emerged victorious but it is a live proof that nothing is impossible if we put our mind to it. All we have to do is to try and try till we succeed because god helps those who help themselves and good things don't come easy.

A hundred years ago, going around the world was a just a theory, a never to come true dream until the Wright brothers came up with the airplane. Moon was the only source of light in the blanket of night's darkness, until Thomas Alva Edison invented the bulb. The virtual world of internet was a mere thought which turned into reality in the blink of an eye. The menace of small pox, a horror story until Edward Jenner came up with its vaccine and then hundred years later, the disease was eradicated from the face of the earth by sheer perseverance. When the world was rejoicing the death of smallpox in 1980, a deadly disease was born, wiping the smiles from people's faces. 1981- the first case of AIDS came up in USA, slowly spreading its vast roots in the vulnerable population of the planet. It only grew stronger by the day, feeding off of people's happiness and engulfing the sky in its dark cloud. In no time, it reached its peak in 1996 that engulfed the lives of 2.5 million people in 1997.^[7] This created mayhem amongst the innocent sufferers and called for international level precautions to curtail this menace. Since then, there has been a gradual improvement and progress towards a better future. At the advent of small pox, a highly contagious and deadly disease, people feared their doom, but through sheer determination, it was overcome. Similarly polio, a crippling communicable disease created its share of fear among people before succumbing to an inevitable death by the hands of the oral and injectable polio vaccines, in the near future. This gives us a ray of hope that someday HIV-AIDS will meet the same fate, provided we join our hands and work in union because United we stand, divided we fall!

"Don't harm yourself with, but arm yourself against AIDS."

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