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Editorial Board

Correspondence

Editor in Chief, Healthline Journal, Community Medicine Department, GCS Medical College, Hospital and Research Center, Opp. DRM Office, Nr. Chamunda Bridge, Naroda Road, Ahmedabad-380025, Gujarat. Telephone: 07966048000 Ext. No. 8351, Email: editorhealthline@gmail.com.

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Formal and Structured Partnerships in Community Medicine: A New Beginning?

Mohua Moitra
Associate Professor, Government Medical College, Surat, Gujarat, India
Correspondence: Dr. Mohua Moitra, E mail: mohuamoitra27@gmail.com

Community Medicine in its current form has evolved from the concept and practice of public health. However, there are frequent concerns and explicit queries leading to confusion in the minds of the post graduate students as well as some faculties as to... 'What is our role in improving or influencing the health situation in our area/ state/ country?' Many a times I have heard students say that they cannot exactly explain their branch to their friends, relatives or parents.

I think we are at a cross roads where we need to define our role with precision. Taking a step back always gives us a better and expanded viewpoint. If we relook at the definition of Public Health and try to understand its essence - "the science and art of preventing disease, prolonging life and promoting health and efficiency through organised community efforts....." Thus, we have to think of strong partnerships at different levels to develop this organised community effort.

We, as a standalone theoretical branch, in the confines of our academic institutions shall always fall short of the expectations. As a counter viewpoint, we cannot and should not become a complete service delivery sector. Thus, to complete our vision and mission, we need to work together with multiple agencies (both government and nongovernment), who share a common purpose for improving the health situation, to give momentum and contribute synergistically.

The next questions would be when, what, how, where and who!! As epidemiologists, we know that they are the 'honest serving men' who shall help us in learning.

To address the variable when, there is nothing better than the immediate present. Now, that 'when' has been taken care of, looms the 'what'. Only a select few places have the option of field based, hands on training in Community Medicine. A redeveloped curriculum defining the rational and practical approaches to the teaching and practice of Community Medicine is needed. The good part is that it is happening at the national level under the aegis of IAPSM. To execute it, we would need good teachers, with a grip on the basic understanding of the subject as well as have vast and varied field experience to inspire the post graduate students to redefine the future of the subject. To take it from a least understood branch to an intellectually stimulating branch, bettering the lives and health of people. Sounds good on paper, but near impossible to deliver alone. As Community Medicine experts, we do not seem to have a boundary and are expected to plan, develop, execute, monitor and evaluate anything that is envisioned by anybody who matter!! Not bad as a compliment to our broad spectrum skill sets but the vagueness has led to the current confusion. We have strong people who are working for a very long time in these varied fields and by partnering with them, we reduce the wastage of time and resources by avoiding duplication. Working together we contribute synergistically and compliment each other's growth.

The first concern raised is always about '**Clinical Skills**' ... the broadness of the term itself is daunting as it encompasses more than 20 specialties and super specialties. Which skill subset would be considered adequate for our specialty? Thus, instead of the Community Medicine teachers trying to impart it, a regular structured partnership with the major clinical branches in the teaching hospital needs to be fostered for one term during PG studies. Clear cut learning objectives with expected outcomes should be defined and maybe a list of 'basic medical officer

level' or other skill sets be framed. This structured partnership with our clinical faculties would also lead to better communication, respect and understanding between faculties and inspire multidisciplinary research. The confidence to deal with clinical cases may reduce a bit of the anxiety associated with becoming rusted in patient care and actually serve better in our community visits, surveys and health system monitoring. This partnership with clinical care could leverage referral systems from the field areas and increase our acceptability in the outreach areas. Private practice in the field of Community Medicine is another neglected area. Preventive cardiology, non communicable diseases like Diabetes, Hypertension, Rehabilitative care, Antenatal / Post natal care, Adolescent / Youth health, Immunisation, Communicable disease care are all potentially viable areas for a thriving practice. Field postings in RHTC and UHTC, shadowing clinicians as well as medical officers in their routine activity would strengthen practical skills. Learning by doing would result in more robust, confident and skilled specialists.

The next often quoted grievance is our exclusion from the **'Policy decisions'.** This could be bridged by an active partnership with the 'health and health service' department. We have a well established hierarchy with defined roles in health care delivery system. This partnership needs to be formalized in the lines of Regional Monitoring Team with specific terms of reference and role definition to generate important data and exemplify our role in generation of much needed evidence. In immunization we have allowed the paediatricians to take a pivotal role in policy making by our absence in effective positioning. We have faltered in terms of cutting edge research and documentation. Our health system research partnership with both the government and international agencies like UNICEF and WHO, could lead to stronger proposals relevant to the current needs and lead to the generation of new and relevant evidence on important contemporary issues affecting health. This proactive stance in turn would influence the decision makers and make them aware about our valued presence. These formal partnerships would work for our value addition in policy making. Similar partnerships with NGOs working for health would be valuable as we would be getting a third perspective. Such formal and sustainable Health System Partnerships would reduce the load at all levels by preventing work duplication and at the same time strengthening each other.

Biostatistics, Computing skills and Analytical skills are often discussed with fear and trepidation by a new post graduate registered for Community Medicine and sometimes by faculty too (if we are honest to ourselves). This is compounded by the fact that we do not have statisticians in most of our Community Medicine departments. The current recruitment rules for appointing post graduates of statistics in our department is restrictive and do not help our cause. So, a formal documented partnership with the department of statistics in the university to which the medical college belongs to, a good computer science department in the friendly neighbourhood engineering college could be thought of. A good back ground check would bring forward names who could additionally teach specific medical field related statistics or biostatistics as we prefer to call it. Another partnership could be the pooling of talent. The really strong teachers in these fields could be systematically invited as a part of long term partnerships where regional workshops could be done for developing skills in these areas.

Financial skills, Administration, Management and Logistics skills are another area where external mentors could help. The burgeoning fields of cost–benefit and cost-effectiveness analysis, mathematical modelling, grant writing, submitting utilization certificates and statement of expenditures, writing a budget proposal, tendering procedures, writing a final project report, inventory and condemnation procedures are becoming relevant when we are looking at jobs other than academics.

Formal partnership again is thus needed as most of the senior/ mid level teachers would not have had an exposure in these recently recognised fields. Not everyone needs to be an expert in everything. The concept of super specialization needs to be introduced in post graduate teaching where one term maybe designated to the advanced pursuit of the topic the candidate is interested in for help in his future job prospect. Some of the newer job opportunities can be seen in Medical Ethics, Mathematical Modeling, Health Economics, Health Insurance, Public Private Partnerships, Hospital Management and Geographic Information System in Health. Standard operating procedures, developing plan of action have become routine in hospital and field work.

Research Methodology, Writing skills and Comprehension skills are other fields in Community Medicine that is becoming more and more relevant in academics as well as private job ventures. Formal partnerships with the nationally recognised institutions leading to regular discourses at the regional level would help bridge this gap and lead to a thriving culture of academic excellence. Good research and generating evidence is the key strength of our discipline. The most important word here is 'GOOD' … thus; one has to strive for excellence and skill development.

Last but not the least – **teaching skills!!** We all mostly become teachers as a preset option when we join academics. We do not have the formal training to develop or hone our teaching skills. Thus formal partnerships have to be initiated with the medical education units, state level nodal centres for faculty development, education department in the university. We have to create opportunities to learn from stalwart teachers – who are role models to emulate. This would give a chance to strengthen one's teaching capacity and build confidence. Partnerships with leading institutions give exposure to the newer tools of technique and technology. This in turn would lead to more interesting, interactive and stimulating lectures or tutorials and minimize the stigma of 'boring lectures' in PSM.

While discussing 'what', much of 'where' and 'who' has been discussed. This leaves us with 'how' ….. Formal and well thought out systems have to be put in place for these partnerships to flourish. Strong advocacy at the state level needs to be done to expedite the process. State compliance is needed for formal permissions and budgetary support to keep these partnerships sustainable. Structured partnership requests needs to be drafted with our long standing partners like the UNICEF, WHO, PHFI, NGO partners, state and national nodal centres of excellence and relevant departments in the government and concerned university. In my opinion, IAPSM would be the best agency to draft, negotiate and execute these formal partnerships with inputs from experts. Mentors could be identified for each skill by the state chapters who could liaison for drafting formal and sustainable partnerships. National experts in each field maybe roped in for partnerships to develop a systematic and uniformly structured format. International partnerships also could be generated and the existing MoUs could be strengthened to enable them to conduct training for our faculties as part of their projects. Necessary modifications in university rules may also be thought of where experts from other institutions (state, national or international) could be enlisted as Co-guides to facilitate stronger study designs in research and dissertations.

We have to remember that many topics in Community Medicine can also be mastered by people from other fields too. Thus, one has to remember that mediocrity would bring one down; hence a proactive motivation towards excellence has to be there in oneself to be a leader in one's field. To keep our spirits up, we should realize and glorify that any success in health globally, be it from small pox eradication to polio elimination, is a direct outcome of the public health efforts and partnerships. So, now again we need to reiterate that "United we Stand".

Professionalism & Medical Ethics

Niti Talsania

Professor & Head, Department of Community Medicine, B. J. Medical College, Ahmedabad, Gujarat, India
Correspondence : Dr. Niti Talsania, E mail: nitibenok@gmail.com

Ethical sensitivity, when and how to teach ethics and teaching medical ethics in "four principle approach", (Respect for autonomy, Beneficence, Non-maleficence, Justice) to medical students in a pluralistic society is a challenging task. Teachers of ethics have obligations not just to teach the subject matter but to help to create an academic environment in which well motivated students have reinforcement of their inherent good qualities. Emphasis should be placed on the ethical aspects of daily medical practice and not just on the dramatic dilemmas raised by modem technology (the 'education of the heart').

MCI proposed basic curricular goals in medical ethics, the curriculum should not attempt to try to improve the moral character of future physicians, but to provide those of sound moral characters with the intellectual tools and interactional skills to give that moral character its best behavioural expression. Students face problems of coping with unethical behaviour by their superiors and of being pressured to carry out activities for which they are untrained or which they may believe to be unethical, as well as having to deal with a variety of other problems which for them may be burning issues.

Current article revolves around below mentioned questions.

- What is professionalism?
- How can it be implemented?
- How is it taught?
- How is it assessed?

Professionalism: Definition

It is not easy to define a profession, but it is likely to have all or some of the following characteristics:

- It is a vocation or calling and implies service to others
- It has a distinctive knowledge base which is kept up to date.
- It determines its own standards and sets its own examinations.
- It has a special relationship with those whom it serves – patients.
- It has particular ethical principles.
- Professionalism is a term which embodies numerous qualities of physicians as public servants.

It has been described by The American Board of Internal Medicine as: "Constituting those attitudes and behaviors that serve to maintain patient interest above physician self-interest". Professionalism aspires to altruism, accountability, excellence, duty, honour, integrity, and respect for other.

The concept of professionalism includes the following values as:

- Honesty
- Altruism
- Service
- Commitment
- Communication
- Commitment to excellence
- Accountability
- Life-long learning

The **elements of professionalism** required of candidates seeking certification and recertification encompasses :

- A commitment to the highest standards of excellence in the practice of medicine and in the generation and dissemination of knowledge.

- A commitment to sustain the interests and welfare of patients (and the community).
- A commitment to be responsive to the health needs of society.

Main Characteristics of Professional Conduct

- **Altruism** is the essence of professionalism. The best interest of the patients, not self-interest, is the rule.
- **Accountability** is required at many levels: individual patients, society and the profession.
- **Excellence** entails a conscientious effort to exceed normal expectations and make a commitment to life-long learning.
- **Duty** is the free acceptance of a commitment to service.
- **Honor and integrity** are the consistent regard for the highest standards of behaviour and refusal to violate one's personal and professional codes.
- **Respect for others,** like patients and their families, other physician and professional colleagues such as nurses, medical students, residents, subspecialty fellows.

"It will become increasingly difficult for professions to sustain the policy that qualification is for life. Most professionals need to make a commitment to lifelong learning"- Professor Eraut.

What is ethics?

Ethics or moral philosophy is the systematic endeavour to understand moral concepts and justify moral principles and theories. Ethics builds and scrutinizes arguments setting forth large-scale theories on how we ought to act, and it seeks to discover valid principles and the relationship between those principles.

Morality and ethics

The terms moral and ethics come from Latin and Greek, respectively (mores and ethos), deriving their meaning from the idea of "custom". There is also another Greek word ēthos which denotes a character feature. Aristotle called his ethics a study of character traits, in sense of virtues and vices.

The use of terms :

Some philosophers use these terms interchangeably, many others distinguish between them.

- I use "morality" to refer to certain customs and practices of people.
- I use "ethics" to refer to the whole domain of morality and moral philosophy which refers to theoretical and philosophical reflection on morality.

Medical ethics

- Is based on philosophical ethics
- It isn't any special ethics but rather ethics of special cases.
- Medical ethics does not concern only doctors but also patients and society.
- The central question of medical ethics is the doctor-patient relationship.

The nature of morality

- Moral acts are acts done to benefit others, they are altruistic and are not motivated by self-interest.
- Morality makes reference to right/wrong/ permissible behavior with regard to basic values.

The moral duties of the doctor

- The duty to help, cure
- The duty to promote and protect the patient's health
- The duty to confidentiality
- The duty to protect the patient's life
- The duty to respect the patient's autonomy
- The duty to protect privacy

- The duty to respect the patient's dignity

The moral rights of the patient

- The right to high quality medical service
- The right to autonomous choice
- The right to decide
- The right to be informed
- The right to privacy
- The right to health education
- The right to dignity

The standards used to determine the incompetence

- Inability to express or communicate a preference or choice.
- Inability to understand one's situation and its consequences.
- Inability to understand relevant information.
- Inability to give a (rational) reason.
- Inability to give risk/benefit related reasons.
- Inability to reach a reasonable decision.

Ethical Scenario

Is it ethically permissible to accept gifts from pharmaceutical representatives?

Gifts to Physicians from Industry.

- Any gift accepted by a physician should primarily entail a benefit to patients and should not be of substantial value.
- Individual gifts of minimal value are permissible as long as they relate to the physician's work.

How can it be implemented?

Role of the doctor within the health service

- Understanding of the health care system
- Understanding of clinical responsibilities
- Appreciation of doctor as researcher
- Appreciation of doctor as mentor or teacher
- Appreciation of doctor as manager including quality control
- Team work

Personal Development

- **Self learner**
- **Self awareness:** enquires into own competence, Emotional awareness and Self confidence
- **Self regulation**
  - Self care
  - Self control
  - Personal time management
- **Motivation**
  - Achievement drive
  - Commitment
  - Initiative
- **Career choice**

How Students Learn Professional values

1. Bring some to medical school with them
2. Learn some through the formal curriculum
3. Learn some from role models

How can it be taught?

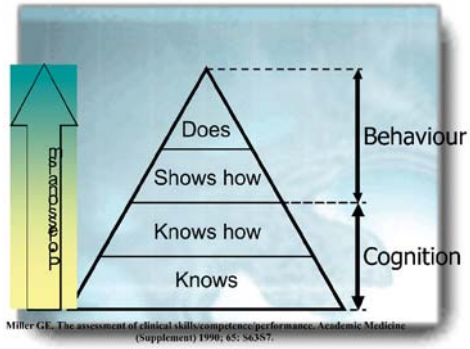
It can be taught by formal- (Explicit) Curriculum and informal-(Hidden) Curriculum. The other modes are as below.

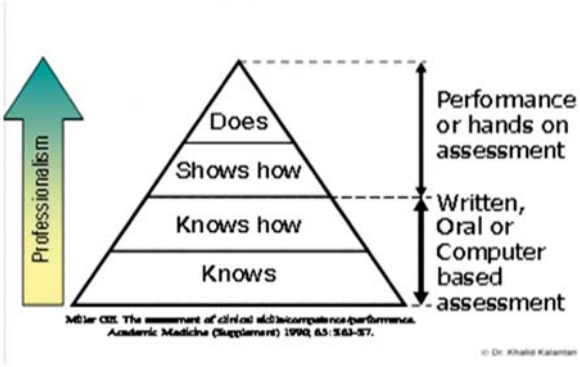
- Role modeling
- Role Plays
- Simulated Patients
- Small group discussions

How can it be assessed?

It can be assessed by

- Simulated patients
- Direct observation (rating scale, log books, Critical events)
- Portfolios
- OSCE (Objective Structured Clinical Examination) / OSPE (Objective Structured Practical Examination)





Summary

- Professionalism should be part of the formal curriculum.
- Professionalism must be taught and evaluated.
- Professionalism must be relevant to the society.

Childhood Obesity: Burden, Risk Factors and Interventions

Renu Agrawal[1], Geetu Singh[2]

[1]Associate Professor, [2]Assistant Professor, Department of Community Medicine, S.N. Medical College, Agra (UP), India
Correspondence : Dr. Renu Agrawal, E-mail: renua13@gmail.com

Introduction

Children are affected by a wide range of Non-Communicable Diseases (NCDs), such as cancer, diabetes, chronic respiratory diseases and congenital heart diseases. Most of the behavioral risk factors for NCDs start during childhood and often lead to intermediate risk factors such as obesity, hypertension and dyslipidemia early in life, even in childhood and adolescence. Among the risk factors, obesity is of particular concern in children as it is associated with a wide range of health complications and an increased risk of premature onset of illnesses, including diabetes and heart disease. Rising at an alarming rate, childhood obesity has recently been termed "exploding nightmare" by World Health Organization (WHO). Childhood obesity is complex and the effectiveness of interventions indicates that novel approaches are required. A combination of community partnerships, government support and scientific research is necessary in order to develop the best recommendations for prevention of obesity.

Burden of Childhood Obesity Worldwide and in India

Worldwide, the prevalence of combined overweight and obesity rose by 27·5% for adults and 47·1% for children between 1980 and 2013. Childhood obesity prevalence rates are higher in high-income countries (HICs) but in absolute numbers, there are more overweight and obese children living in low- and middle-income countries (LMICs) than in HICs. [1] In Asia, the 2010 prevalence rate of 4.9% equates to approximately 18 million children. [2] If current trends continue, over 70 million infants and young children will be overweight or obese by 2025, the vast majority living in LMICs. [1] These countries including India have had high rates of child undernutrition, but now childhood obesity is also rising rapidly. [3] Childhood obesity is often under- recognized as a public health issue in these settings, where culturally, an overweight child is often considered to be healthy.

With a rapid demographic and socioeconomic transition, India is becoming the epicenter of epidemics of both adult and childhood obesity, especially in urban populations. Although the age-standardized rates are low, in absolute terms India is the country with the third-highest level of obesity in the world. Over the years, epidemiological studies have reported a consistent increase in the prevalence of childhood overweight and obesity in the subcontinent. Age-standardized prevalence of overweight in children under 5 years of age, comparable estimates, 2014 is <5% for India. A systematic analysis conducted as part of the Global Burden of Disease study 2013 reported that 5.3% of males and 5.2% of females aged < 20 years in India were overweight. The overall prevalence of obesity among males and females in the above age category was 2.3% and 2.5% respectively. [1] A study conducted among 24,842 school children in south India showed that the proportion of overweight children increased from 4.94% in 2003 to 6.57% in 2005. [4] Socio-economic trends in childhood obesity in India are also emerging. A study from northern India reported a childhood obesity prevalence of 5.59% in the higher socio-economic strata when compared to 0.42% in the lower socio-economic strata. But now it is spreading in lower socio-economic groups as well. [5] Another school based study in 2011 reported the prevalence of overweight and obesity in 8 and 18 year old children, respectively, as 14.4% and 2.8% by International Obesity Task Force (IOTF) cutoffs, 14.5% and 4.8% by Center for Disease Control (CDC) cutoffs, and 18.5% and 5.3% by World Health Organization (WHO) cutoffs. [6]

Childhood Obesity: Pathophysiology, Determinants and Measurement

During childhood, level of body fat change begins from high adiposity during infancy. Body fat decreases for about 5.5 years until the period called adiposity rebound, when it's typically at lowest level. Adiposity then increase until early adulthood. Childhood obesity is a complex condition and increases the child's risk for psychological effects, gastrointestinal complications, asthma, musculoskeletal impairment, non-alcoholic liver disease, cardiovascular disease and diabetes. [7] Being obese as a child, increases the likelihood of being obese as an adult. In addition, childhood obesity can contribute to behavioral and emotional difficulties, lead to stigmatization and poor socialization and appears to impair learning. [8] Risks once thought to be either genetic or acquired may be a combination of both, i.e., environmentally induced effects on gene expression (epigenetic effects). [9] The growing body of literature about chronic disease suggests a life-course approach for tackling risk factors. The intergenerational passage of obesity risk is a newly recognized issue. It reveals how the epidemic of obesity, now evident in adults will be perpetuated into future generations.

Longitudinal studies suggest that for some NCD-related co-morbidities, the negative health consequences may present even if normal weight is attained in adulthood, suggesting that childhood obesity leaves a permanent imprint. Childhood obesity originates from the interplay between biological and contextual factors. The biological factors include parental factors such as maternal over and under nutrition prior to conception and during pregnancy, which change the way the child responds to nutritional experiences in early life. Evidence shows strong relationship between fetal undernutrition, early-life exposure to obesity and type 2 diabetes. [10]

During infancy, eating and exercise behaviors are established including the biological set-points for appetite and food preference have profound long-term consequences. [11] Individual obesity is a result of a complex interplay among genetically determined body habitus, appetite, nutritional intake, physical activity and energy expenditure. Environmental factors determine levels of available food, preferences for types of food, levels of physical activity and preferences for types of activities. Children today are developing and growing within an increasingly obesogenic environment that results in energy imbalance. Nutrition and physical activity transitions have resulted in the exposure of children to ultra-processed, energy-dense, nutrient poor foods, reduced opportunities for physical activity both in and out of school and an increase in the time spent on sedentary leisure activities. With globalisation and urbanization, the exposure to the obesogenic environment is increasing in both high income countries and low middle income countries.

Changes in food industry relate in part to social changes, fewer families routinely prepare food, food industry prepare meals with high levels of calories, simple carbohydrates and fat, price of many foods have declined, marketing pressure and consumption of high carbohydrates beverages. Working mothers or single-parent families may also increase the demand for take away foods or increase the frequency of eating out and cause reliance on pre-prepared foods. The higher per capita income also increases the family's economic capacity and thus the affordability to buy high calorie foods from restaurants. The variety of convenience foods available in the market, school canteens and the role of media in sensitizing the parents and children to these changes could have also undoubtedly contributed to childhood obesity.[12]

Mass media with deliberate, and sometimes unethical, target marketing strategies at children. Impulse marketing influences to buy unhealthy products. [13] Increasingly sedentary work style, pressure for academic performance has led to less of outdoor activities. The Central Board of Secondary Education (CBSE) 2007 fact sheet reported that only 30% of adolescents played regularly for at least 1 hour a day. [14] In addition, changing modes of transportation, that is, people prefer driving to

cycling or walking even for short distances, and increasing mechanization and use of labor-saving devices at home are also contributing factors. [15]

Overweight kids also suffer from sleep apnea, which means they do not sleep well at night, which in turn affects their performance in schools. Obese girls have more incidents of PCOD, often resulting in delayed and irregular periods, which causes hormonal changes as they grow and may also lead to infertility in the long run. Whereas male obese kids have more chances of developing Type 2 diabetes, hypertension and sleep apnea. When bullied, most obese kids suffer in silence. They suffer from poor body image, which leads to increased comfort eating, behavioral issues and poor academic performance. It is often seen that since they are laughed at by friends and classmates at school, they start missing school and instead spend more hours on internet or TV.

How to Measure Childhood Obesity

According to WHO, overweight and obesity for under 5 years defined as the proportion of children with weight-for-height Z-score values more than 2 SDs and more than 3 SDs, respectively, from the WHO growth standard median. Overweight and obesity for 5 to 19 years is defined as overweight is BMI for age > 1 standard deviation above the WHO Growth Reference median and obesity is greater than 2 standard deviations above the WHO Growth Reference median.

Body mass index (BMI) is a measure used to determine childhood overweight and obesity, For children and teens, BMI is age and sex specific and is often referred to as BMI for age. A child's weight status is determined using an age and sex specific percentile for BMI rather than the BMI categories used for adults. This is because children's body composition varies with age and sex. Therefore, BMI levels among children and teens need to be expressed relative to other children of the same age and sex. Although BMI is the simplest means to identify children who are overweight and obese, it does not necessarily identify children with abdominal fat deposits that put them at greater risk of health complications. [16]

The World Health Organization (WHO), U.S. Centers for Disease Control and Prevention (CDC), and International Obesity Task Force (IOTF) each have definitions of overweight and obesity in children and adolescents. At different ages, these criteria give somewhat different estimates of overweight and obesity prevalence. In preschool girls, the WHO BMI cut off points for overweight and obesity are much higher than those of the International Obesity Task Force. One recent Czech study found that using the International Obesity Task Force cutoff, about 15 percent of 5-year-old girls were overweight as compared to only about 3% by WHO. [17] There's clearly a need to harmonize these international standards for childhood obesity.

➢ **WHO Child Growth Standards (birth to age 5)** [18]

Obese: Body mass index (BMI) > 3 standard deviations above the WHO growth standard median

Overweight: BMI > 2 standard deviations above the WHO growth standard median

➢ **WHO Reference 2007 (ages 5 to 19)** [19]

Obese: Body mass index (BMI) > 2 standard deviations above the WHO growth standard median

Overweight: BMI > 1 standard deviation above the WHO growth standard median

➢ **US. Centers for Disease Control and Prevention (CDC)**

CDC Growth Charts [20]: In children ages 2 to 19, BMI is assessed by age- and sex-specific percentiles

Obese: BMI = 95th percentile or greater, Overweight: BMI = 85th to < 95th percentile

In children from birth to age 2, the CDC uses a modified version of the WHO criteria [21]

➢ **International Obesity Task Force (IOTF)** Provides international BMI cut points by age and sex for overweight and obesity for children age 2 to 18. [22] The cut points correspond to an adult BMI of 25 (overweight) or 30 (obesity).

Indian Scenario

Difference in body composition has been seen in Asian-Indian children living in Europe and the United States of America (USA). Despite small abdominal viscera and low muscle mass, Indian neonates preserve body fat during their intrauterine development and are relatively obese at birth compared to Caucasians. Studies showed that this "thin fat phenotype" persists in postnatal life and results in a significant difference in the body fat content of Indian children compared to other ethnic groups.[10,23,24] The pathogenesis of diabetes is influenced not only by the quantity of fat stored but also by its location. Excessive visceral fat, as indicated by abdominal obesity, is one of the strong predictors of insulin resistance and diabetes in Asian Indian adults. It is now evident that children and adolescents of Indian origin are also susceptible to abdominal obesity.

The coexistence of severe malnutrition and childhood obesity could have a pivotal role in the exponential increase in prevalence of diabetes among Indians. Further, body composition and fat distribution, which are influenced by both genetic and environmental factors, may contribute to the pathophysiology of diabetes in the Indian context. However, the magnitude of the problem among children and adolescents in India is unclear due to paucity of well-conducted nationwide studies and lack of uniformity in the cut-points used to define childhood overweight and obesity. Over the years, there has been a lack of consensus on the various cut-points or definitions used to classify obesity and overweight in children and adolescents. There is lack of national representative data on obesity in children from India with its widely varying geographical, social and cultural norms. A systematic review of prevalence data from 52 studies in India was done .The pooled data after 2010 estimated a combined prevalence of 19.3 per cent of childhood overweight and obesity which was a significant increase from the earlier prevalence of 16.3 per cent reported in 2001-2005.

The most commonly used definition for childhood overweight and obesity in India was IOTF, WHO and CDC. Others included Gomez classification, India specific cut-points were found in the Agarwal charts (used by Indian Academy of Paediatrics (IAP)), Eliz Health Path for Adolescents and Adults (EHPA) etc. [25,26] The key studies for children are from the National Family Health Surveys (NFHS) and National Nutrition Monitoring Bureau (NNMB) surveys.[27-31] In under-fives the prevalence of obesity was below 2 per cent in all the studies. In children above 5 year, the prevalence of obesity varied between 2 to 8 per cent.

Multi dimensional approach to fight against childhood obesity

Interventions aimed at preventing childhood obesity would lead to both a reduction in comorbidities in children and to a reduction of the long-term burden of NCDs. Life-course studies suggest that interventions in early life, when biology is most 'plastic' and amenable to change, are likely to have the greatest positive sustained effects on health.[32] This life-course model applies to both HICs and LMICs, and to populations in transition. New scientific evidence highlights the need for a multifaceted approach including a focus on the life-course dimension; thus the need to intervene even before conception and also to reduce the exposure of the pregnant woman, infant, child and adolescent to an obesogenic environment. No single intervention can halt the rise of the growing epidemic; therefore, actions that address both the obesogenic environment and developmental factors are required. Body image and the perception of healthy body weight, especially for infants and young children, can be influenced by cultural values and norms, and these will be important considerations in the development of interventions.

1. Tackle the obesogenic environment and norms

The major goals of addressing the environmental component include IMPROVING HEALTHY EATING AND PHYSICAL ACTIVITY BEHAVIORS. As the child enters the educational environment, nutrition and physical activity education should be included in the curriculum. Multisectoral approaches to improving

the intake of healthy foods and non-alcoholic beverages can be strengthened by standardized system of food labeling. Where access to healthy foods is limited, ultra-processed foods are often the only alternative available and affordable. There is evidence that unhealthy food and non-alcoholic beverage marketing is related to childhood obesity.[33] The increasing number of voluntary efforts by industry and communities suggest that the need for change is widely agreed. Any attempt to tackle childhood obesity should, therefore, include a reduction in exposure of children to power of marketing unhealthy foods.[34] Overall, the rationale for and effectiveness of taxation measures to influence consumption are well-supported by the available evidence.[35,36] Recently in India Kerala government is planning to tax junk food at 14.5%.The 'fat tax' will be levied on burgers, pizzas and processed foods served in organized fast-food outlets, including some international brands..

Recent evidence shows that physical activity declines from the age of school entry and less than 20% of the global population is sufficiently active, as defined by WHO guidelines of physical activity, by the age of 13-15 years. Low physical activity is fast becoming the social norm in most countries and is an important driver of the obesity epidemic. Physical activity behaviors can also be established in childhood and are subject to social and environmental factors. Furthermore, family and cultural factors can influence whether these behaviors are reinforced or not during the childhood period of continued plasticity. Urban planning and design has the potential to both contribute to the problem and the opportunity to form part of the solution, through increased recreational space and by supporting walking and cycling for active transport.

2. Preconception and pregnancy:

Evidence shows that maternal undernutrition, overweight or obesity, excess maternal hyperglycemia (including gestational diabetes), smoking or exposure to toxins are preconceptional or gestational influences that increase the likelihood of obesity during infancy and childhood. This period is also a good opportunity for promoting awareness of the importance of exclusive breastfeeding for 6 months and healthy complementary infant feeding. For example, appetite control and food preference are largely set early in life and exclusive breastfeeding and the timely introduction of appropriate complementary foods can influence those set points.

3. Infant and young child:

Breastfeeding is core to optimizing infant development and evidence supports that is prevents childhood obesity. Given changes in women's lifestyles and roles, the ability to breastfeed outside of the home and sustain breastfeeding is essential. Policies that establish rights of women and responsibilities of employers are needed. World Breastfeeding Week (2016) focused on this issue with theme" BREASTFEEDING AND WORK-LET'S MAKE IT WORK" Guidelines that address both under nutrition and obesity risk are clearly needed for some countries like India where both conditions co-exist. Family attitudes to eating and perceptions of body shape also appear to be important. Several strategies in this age group have also supported parents and caregivers to ensure minimal television/screen viewing, encourage active play, establish healthy eating behaviors and diets, promote healthy sleep routines and role-model healthy caregiver and family lifestyles.

Among the American Academy of Pediatrics (AAP) (2016) recommendations:

1. For children younger than 18 months, avoid use of screen media other than video-chatting. Parents of children 18 to 24 months of age who want to introduce digital media should choose high-quality programming, and watch it with their children to help them understand what they're seeing.
2. For children ages 2 to 5 years, limit screen use to 1 hour per day and parents should co-view media with children.

3. For children ages 6 and older, place consistent limits on the time spent using media, and the types of media, and make sure media does not take the place of adequate sleep, physical activity and other behaviors essential to health.

4. School-age child and adolescent:

There is an evidence base to support interventions in school settings .Increasing access to and promotion of, lower energy-density foods and to water as an alternative to sugar sweetened non-alcoholic beverages, are actions necessary to make the environment less obesogenic and to establish healthier behavioral norms. Physical activity provides fundamental health benefits for children and adolescents, including increased cardio respiratory and muscular fitness, reduced body fatness and enhanced bone health, as well as reduced symptoms of depression and improved psychosocial outcomes.

According to WHO, in order to improve cardio respiratory and muscular fitness, bone health and cardiovascular and metabolic health biomarkers, children and youth aged 5–17 should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily. Amounts of physical activity greater than 60 minutes provide additional health benefits. Most of the daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week. Increasing physical activity without decreasing caloric intake is unlikely to result in weight loss. It can increase aerobic fitness and decrease percent body fat even without weight loss. JUST AS FAMILY MEAL, FAMILY ACTIVITY IS RECOMMENDED.As stated before marketing of unhealthy food is highly influential in eating habits of children, it should be regulated.

5. Treat children already affected by obesity to improve their current and future health

There is no effective pharmacotherapy resulting in reversal of excess adiposity in children and adolescents. Evidence reviews of childhood obesity show that family-focused behavioral lifestyle interventions can lead to positive outcomes in weight, BMI and other measures of body fatness. The health sector in each country varies considerably and will have different challenges in responding to the need for provision of treatment services for those affected by obesity. Primary health-care services are important for the early detection and management of obesity and its associated complications, such as diabetes. Based on behavior change theories, treatment includes specifying target behaviors, self monitoring, goal setting, stimulus control and promotion of self efficacy and self management skills.

Conclusion

The challenge of childhood obesity is one that must be taken as urgent and serious in all populations. Experts warned that early prevention was the need of the hour to avoid an entire generation from falling prey to heart ailments, hypertension and diabetic complications. The increasing rates of childhood obesity cannot be ignored and governments need to accept their central role as the principal agents in addressing the issue. There is an understandable tendency to see obesity as a problem for the health sector, but preventing childhood obesity demands the coordinated contributions of government ministries and institutions responsible for policies on education, food, agriculture, commerce and industry, finance/revenue, sport and recreation, media and communication, environmental and urban planning, transport and social affairs.

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A Study of Subjective Perception of Stress and Burn out among Students of A Medical College in Ahmedabad, Gujarat

Sheetal Vyas[1], Mitali Solanki[2], Ronak Bhalodia[3], Jaydeep Bhatu [3], Ketul Chaudhari [3]

[1]Professor and Head, [2]Tutor, Department of Community Medicine, AMC MET Medical College, LG Hospital campus, Maninagar, Ahmedabad, Gujarat, India

[3]Final MBBS students, AMC MET Medical College, LG Hospital campus, Maninagar, Ahmedabad, Gujarat, India

Correspondence: Dr. Sheetal Vyas, E mail: dr_shvyas@yahoo.com

Abstract:

Introduction: Medicine is one of the most stressful fields of education and stress in medical students has multifactorial etiology. Students often suffer from burnout symptoms due to academic stressors and performance anxiety and can even resort to addictions and use of sleeping pills. However, students also employ various stress-management skills to cope up with such symptoms. **Objectives:** To determine prevalence of perceived stress/ burnout symptoms, factors affecting them, sleep disturbances, various coping mechanisms adopted by the students and role of parents/ friends in coping with such situations. **Method:** A cross-sectional descriptive study was carried out at AMC MET Medical College, Ahmedabad. 300 students were included in the study as selected by stratified random sampling. Pre-designed, pre-tested and validated proforma was used for collecting information. Data was analysed with Microsoft Excel program and suitable statistical tests were applied wherever applicable. **Results:** In the present study, 69% of the students were residing in the hostels and male: female ratio was 1.83. Perception of stress/ burnout symptoms was present in 40.33% students with no statistically significant difference between boys and girls. Mean sleeping hours normally were 7.83 $\pm$ 1.26 & during examination, it was 4.72 $\pm$ 1.63 (Standard Error {SE}) between the means =0.19, Z=16.36, p<0.01, Highly Significant {HS}). Further, 178 (59.33%) students were worried most of the time during examinations. 103 (34.33%) students were getting a feeling of low self-confidence during the examinations. Listening to music and watching TV were most commonly practiced coping mechanisms and only 7% students were performing Yoga. Students preferred to talk with their friends about their stress over family. Boys were more stressed as compared to girls with Odds Ratio (OR) of 1.2 times. **Conclusion:** The prevalence of perceived stress and burnout symptoms was high in medical students and they also had less sleeping hours during examination. The practice of coping mechanisms was poor. They should be encouraged to talk about their stress. Also they should be taught and motivated to practice stress relaxation mechanisms to cope with such situations.

Key words : Burn out Symptoms, Coping Strategies, Medical Students, Perceived Stress, Sleep Duration

Introduction :

Medicine is one of the most stressful fields of education because of its highly demanding professional and academic requirements. [1] Stress among undergraduate students is multifactorial, arising from both academic and non-academic factors, including socio-cultural, environmental and psychological attributes. [2] We would like to elaborate that such performance declines can be simply mental exhaustion, particularly among medical students, as overtime leads to an increased prevalence of stress-related disorders, depression and sadly, suicide. [3, 4] Lack of concentration, inability to focus, difficulty in retaining information, experiencing recurrent headaches, lack of sleep, feeling fatigued and helpless, not putting up the best efforts and experiencing unknown hesitation – these are simply burnout symptoms due to academic stressors and

performance anxiety. [5] Stress levels may escalate to significant proportions in some students, to present with symptoms of anxiety especially during tests and examination periods. [2] A study by Association of American Medical Colleges revealed that about 13.6% of medical students were suffering from major depression, and about 6% of them had suicidal ideations. [6] In a recent study, it was demonstrated that the most common sources of stress among medical students were related to both academic and psychosocial pressures. These included high parental expectations, frequency of examinations, vastness of the academic curriculum, sleeping difficulties, worrying about the future, and about becoming a doctor. [2]

Extensive medical curricula, frequent examinations and fear of failure are sources of constant stress and anxiety for medical students, who may cut short their leisure activities and hours of sleep in order to achieve their desired goals. [1] Students also employ various stress-management skills to cope up with such symptoms. Because medical students experience a considerable amount of stress during training, academic leaders have recognized the importance of developing stress-management programs for medical students. [7] The success of the current model of psychiatric care also depends on de-stigmatization of mental illnesses, highlighting the need for research on perception of mental illnesses. [8] Catering for the individual needs of the participant and promoting a safe environment are core elements of a successful self-care programme. [9]

In view of all these facts, the current study was carried out to study the prevalence of symptoms of stress and burnout as perceived by students, factors affecting them, duration of sleep and also to study various coping mechanisms for dealing with such symptoms. It was also aimed to co-relate the findings with certain selected socio-demographic variables. The role of parents/ friends in coping with such situations was also assessed.

Method:

A cross-sectional descriptive study was carried out at AMC MET Medical College, Ahmedabad. Total 300 students were included in the study as selected by stratified random sampling. Pre-designed, pre-tested and validated proforma was used for collecting information. The proforma was validated by two faculties of the community medicine department and a pilot study was carried out amongst 10 boys and 10 girls. After a pilot study, final version of the proforma was prepared and data collection was done. The proforma were distributed amongst the students and they were given 15-20 minutes time for filling the formats anonymously. The study was carried out during the year 2014. Data was analysed with Microsoft Excel program and suitable statistical tests were applied wherever applicable.

Results:

The present study was carried out amongst 300 students of AMC MET medical college. Out of the total sample, 50 (16.67%) students each belonged to all major batches of MBBS and from rest of the minor batches students were selected in the sample size corresponding to the number of students in that batch. 206 (69%) of the students were residing in the hostels. Male: Female ratio in the study population was 1.83. None of the students were taking examinations at the time of the survey. Out of the total study subjects, 121 (40.33%) students had self-perception that they are having stress/ burnout. 177 (59%) of students were in habit of carrying out their studies during day time whereas 123 (41%) had habit of studying during night hours. Perception of stress/ burnout symptoms among boys and girls was compared and it was observed that difference was statistically not significant ($\chi 2=0.306$, $P<0.5802$). (Table1)

Normally, 201 (67%) of students were in habit of sleeping for 7-8 hours. During examinations majority i.e. 245 (81.7%) students were sleeping for 3-6 hours. Mean sleeping hours normally (other than exam

Table 1 : Socio-demographic profile of study population

Sr. No.	Socio-demographic variable	No. of Students (n=300)	Percentage
1	**Semester of MBBS**		
	First	50	16.67
	Second	5	01.67
	Third	50	16.67
	Forth	15	05.00
	Fifth	50	16.67
	Sixth	15	05.00
	Seventh	50	16.67
	Eight	15	05.00
	Ninth	50	16.67
2	**Residence**		
	Hostel	207	69.00
	Local	93	31.00
3	**Gender**		
	Male	194	64.67
	Female	106	35.33
4	**Examination**		
	On Going	0	00.00
	Not On Going	300	100.00
5	**Perception of stress/ burnout**		
	Yes	121	40.33
	No	179	59.67
6	**Timing for studies**		
	Day	177	59.00
	Night	123	41.00

days) were 7.83 $\pm$ 1.26 & during examination it was 4.72 $\pm$ 1.63 (S.E. between the means =0.19, Z=16.36, $p<0.01$, HS) indicating that mean sleeping hours were statistically significantly less during examination as compared to normal days. (Table2)

As far as feelings and symptoms of burnout are concerned, 178 (59.33%) students were worried most of the time during examinations. 103 (34.33%) students was getting a feeling of low self-confidence during the examinations. Other feelings like upset, tearful, irritated, fear of failure, demotivation and being misunderstood were also there in the students during the examinations. (Table3)

Table 2 : Duration of sleep amongst study subjects

Sleeping Hours	During Normal Days (other than exam) (n=300)	During Exams (n=300) N (%)
1 to 2	0 (0)	24 (8)
3 to 4	0 (0)	122 (40.7)
5 to 6	45 (15)	123 (41)
7 to 8	201 (67)	28 (9.3)
9 to 10	47(15.7)	3 (1)
11 to 12	6(2)	0 (0)
13 to 14	1(0.3)	0 (0)

Table 3: Feelings in relation to stress/ burn out amongst students during examinations

Sr. No.	Feelings (stress/ burn out)*	Number	Percentage
1	Upset	46	15.33
2	Worried	178	59.33
3	Tearful	29	09.67
4	Irritated	66	22.00
5	Failure	26	08.67
6	De-motivated	23	07.67
7	Misunderstood	20	06.67
8	Lack of Confidence	103	34.33

*multiple responses

Regarding different coping mechanisms practiced by the students to deal with stress/ burnout, 168 (56%) of students were resorting to listening to music for the purpose of relieving stress. 130 (43.33%) students used to watch TV to feel stress free. Other activities performed by the students to relieve stress were playing sports and reading books and newspapers. The practice of performing yoga to relieve stress was very poor as only 21 (7%) students performed yoga to relieve or prevent symptoms of stress. (Table 4)

When asked specifically about discussion of their stress, 179 (59.67%) students admitted that whenever they subjectively felt stressed out, they did discuss about their feeling with somebody. Out of all those who did discuss about their feelings, majority i.e. 124 (59.27%) discussed with their friends, 87 (48.6%) discussed with their family about this. Only 15 (8.37%) students admitted that they discussed their problem with others, like their family doctor, teachers etc. (Table 5)

All the students at the time of survey were not taking their examination and the prevalence of perception of stress/ burnout was 40.3%. Insomnia was not present in any of the students at the time of the survey. Subjective perception of stress was more in boys as compared to girls with odds ratio of 1.2. Stress was perceived equally by the students

Table 4: Coping strategies for alleviating stress/ burn out amongst study population

Coping strategy*	<2 Hours	Percentage	>2 Hours	Percentage	Total N (%)
Yoga	21	07.00	0	00.00	21(07.00)
Reading books or News Paper	57	19.00	3	01.00	60(20.00)
Listening to Music	159	53.00	9	03.00	168(56.00)
Playing Sports	82	27.33	8	02.67	90(30.00)
Watching TV	115	38.33	15	05.00	130(43.33)

*multiple responses

Table 5: Discussion about stress/ burn out symptoms

Sr. no.	Detail about...	Total	Percentage
1	Discussion of stress (n=300)		
(a.)	No	121	40.33
(b.)	Yes	179	59.67
1.1	If yes whom (n=179)*		
(a.)	Family	87	48.6
(b.)	Friend	124	59.27
(c)	Others	15	8.37

*multiple responses

Table 6: Association of stress/ burnout with different variables

Sr. No	Variable	Total	Stress		Odds ratio
			Yes	No	
1	**Examination**				
	On going	0	0	0	0
	Not On going	300	121	179	
2	**Insomnia**				
	Yes	0	0	0	0
	No	300	121	179	
3	**Gender**				
	Boys	194	91	103	1.2
	Girls	106	45	61	
4	**Residence**				
	Hostel	207	85	122	1.06
	Local	93	37	56	
5	**Family Problems**				
	Yes	1	1	0	0
	No	299	120	179	

residing in hostels and those residing locally with their families. One student admitted of the social problem in the family and stress was present in that student. Rest other students did not have any type of problem in the family which could make them feel stressed out. (Table 6)

Discussion:

The present study which was carried out amongst 300 medical students of a medical college in Ahmedabad city had respondents selected by stratified random sampling with equal representation from all years of MBBS. Variables such as residence, gender, examination status, self-perceived stress and timing for studies were studied. In the present study, 64.67% respondents were males and 35.33% were females, which is similar to the findings in the other study. [10] In few other studies, more females were included in the study as compared to males.[1,11] In the present study, more students resided in the hostels which is similar to findings in the other study which followed similar sampling technique.[1,12]

In the present study, the prevalence of perceived stress was 40.33%, which was less than reported by Ahmed et al, which reported perceived stress level of 59.7% and Maria et al which reported 67.1%. [1, 11] The difference can be due to the fact that all students in the present study were not taking their examination at the time of survey. A study from Agha Khan University, Pakistan has reported that more than 90% of its students experienced stressed at one time or the other during their course. [13] A similar study from India reported that 73% of the students had perceived stress at some point or the other during their medical schooling. [14] In the present study majority of the students were sleeping poorly during the examination, as 89.7% students admitted that they were sleeping for less than 6 hours during the examination and 8% were sleeping for less than 2 hours. In another study, 70.2% students were poor sleepers. [1] In another study, the sleep disturbances were reported by 48% of the students [10] and in one more study, this was observed amongst 62% of medical students.[12] The prevalence of different feelings of burnout were ranging between 6.67%-59.33% in the present study. Most common negative feelings amongst students were sensation of feeling worried and having lack of self-confidence at the time before and during examinations. In a study, it was found that medical students were maximally stressed; anxious and depressed. [12] Majority of students with stress reported high scores of poor self-esteem in an another study by Dalia et al. [2]

Prevalence of stress relaxation practices by students was having range of 7.0%-56.0%, in the present study. The Yoga was practiced by only 7% of the medical students and the habit of playing regular sports was also poor amongst them. In a study by Ruchi et al, it was observed that medical students had the most unhealthy lifestyle. [12] They reported maximum sleepiness without any exercise or physical activities. Exercise promotes better ability to cope with stress as well as to have positive mental health.[15,16]The coping strategies commonly used by students as per another study were positive reframing, planning, acceptance, active coping, self-distraction and emotional support. Male students also resorted of alcohol/substance use and self-blame. [17] Lack of exercise, among medical students in the present study, may be due to time constraints and demanding curriculum.

In the world health day theme for the year 2017, the emphasis is on talking about the depression and the negative feelings. [18] In the present study, 59.67% students discussed about their perceived stress with family/ friends/ others. Majority talked with their friends about their problems. In our study boys had more perceived stress and burnout as compared to girls. It was found that females, younger students, those without a previous higher education qualification, and those not satisfied with their decision to study dentistry were significantly more likely to report perceived stress levels when compared to their counterparts. However, in other studies, men showed more stress (62.9%) than

women. However, females perceived significantly more stress in the interpersonal domain score than males.[2]

Conclusion:

The current study revealed a high prevalence of academic stress and poor sleep quality among medical students. Academic stressors contributed to perceived stress and the negative feelings of stress/ burnout during examinations. The practice of coping techniques and physical activities were poor. There is a need to address these stressors by student advisors, peer education and counseling. The students should be taught and motivated to practice different stress management techniques to improve their ability to cope with a demanding professional course. Prophylactic measures can be adopted to manage stress among students, to include early identification of individuals who may be more prone to it, and implementation of stress management workshops can be effective. We can work upon the precipitating events by introducing student support groups, provide professional mentors, and arrange for psychological support rather than judging or negatively evaluating those students who really need psychological help. Further, Catering for the individual needs of the participant and promoting a safe environment are core elements of a successful self-care programme.

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Knowledge, Attitude and Practice of Doctors regarding Acute Respiratory Tract Infection (ARI) / H1N1 Influenza in Rajkot District, Gujarat, India

Dhara V. Thakrar[1], Umed V. Patel [2] , Nirav K. Nimavat [3], Vaidehi S. Gohil [3]

[1]Assistant Professor, Community Medicine Department, American International Institute of Medical sciences, Udaipur, Rajasthan, India

[2]Associate Professor, [3]Resident, Community Medicine Department, P. D. U. Govt. Medical College, Rajkot, Gujarat, India

Correspondence : Dr. Dhara V. Thakrar, E mail: drdharathakrar@gmail.com

Abstract :

Introduction: In 2009, a novel strain of influenza A, H1N1 emerged from the USA and Mexico. The first confirmed case with the virus in India was documented in May 2009. After that, a large numbers of positive cases were reported throughout India. **Objective:** To assess Knowledge, Attitude and Practice (KAP) of doctors regarding influenza A, H1N1. **Method:** Out of 14 talukas of Rajkot district, a study was conducted in 7 talukas where positive cases of H1N1 Influenza A were reported by purposive sampling method during March 2015. Total 18 areas (taluka + their villages) were surveyed, which were having cases of H1N1 Influenza A cases. A total of 22 doctors were interviewed. **Results:** Among all 22 doctors that were interviewed, majority (54.55%) were M.B.B.S. According to doctors, majority of patients were of Acute Respiratory Infection (ARI). Only 40.91% doctors had correct knowledge of category A of influenza A (H1N1). Nobody had been advised to follow up on next day. Preventive advice was given in only 15% of ARI patients. **Conclusion:** Sensitization of doctors through personal visits of paramedical workers/doctors is done. Provide posters to doctors of Govt. and private sectors showing various categories of suspected H1N1 influenza and its management.

Keyword : Attitude, Influenza A H1N1, Knowledge, Practice

Introduction :

In 2009, a novel strain of influenza A H1N1 emerged from the USA and Mexico. In few weeks, the virus spread around the world, becoming the first pandemic of the 21st century. [1] Experts predicted that influenza A, H1N1 would be a highly virulent virus, which created a great social alarm. [2] Most countries rapidly developed and implemented pandemic influenza plans and the disease was detected and reported within a suitable time. [3] A large number of studies were conducted during the pandemic, showing a wide range in public perceptions [4] and the adoption of non-pharmacological preventive measures and vaccination.[5,6]

The first case of confirmed infection with the virus in India was documented in May 2009[7], but only few cases were reported till August 2009. After that, a large number of positive cases were reported throughout India. From Gujarat state, the first Influenza A, H1N1 confirmed case was reported in June 2009. [8] Saurashtra region, in the western part of Gujarat state, reported its first case in August 2009.[9] All patients with confirmed infection were quarantined in isolation ward to prevent spread in the general population. Although many individuals presented with mild, self–limited illness and no signs of pulmonary involvement, some people required intensive care and received maximal life support measures. [10,11]

Compliance with preventive measures, e.g. non-medical action, is dependent on the attitude and willingness of the population and on the specific actions recommended by health authorities. [12-14] Precautionary behaviour results from a combination of social and psychological factors such as personal values, socio-economic status and cultural background, gender, education, knowledge, and beliefs about the disease, including perceived risks

and perceived effectiveness of the proposed action.[13, 15-17] These factors may be specific to each target population and should be investigated to develop a locally adapted approach.[18,19] Understanding perceptions and reactions among the general public during pandemics may improve information and communication about health risks and help shifting attitudes among the general public. [20-22]

During the year 2015, large numbers cases of H1N1 Influenza were reported across the country. Gujarat also reported large number of cases, maximum from Kutch district and some cases from the Rajkot District also. To understand the Acute Respiratory Tract Infection (ARI) and its treatment scenario through Knowledge, attitude, practice among treating doctors and ARI patients, the present study was conducted in Rajkot district of Gujarat in 2015.

Objectives:

1. To assess the Knowledge of H1N1 Influenza and treatment practice among doctors
2. To study the treatment given to ARI patients

Method:

Rajkot district has a population of 38,04,558 and has 14 talukas according to Census 2011. List of confirmed cases of H1N1 Influenza A was obtained from Health Department, Jilla Panchayat, Rajkot reported during January and February 2015. Cross sectional study was conducted with purposeful selection of doctors practicing in areas where cases of H1N1 reported.

Out of these 14 talukas, a KAP study was conducted in 7 talukas namely Jasdan, Jetpur, Jamkandorana, Lodhika, Morbi, Halvad and Upleta where positive cases of H1N1 Influenza A were reported. Talukas were selected by purposive sampling method. Total 18 areas (taluka + their villages) were surveyed, which were having cases of H1N1 Influenza A cases. Physicians, Pediatrician, Family physician (M.B.B.S.) and AYUSH doctors were interviewed. A total of 22 doctors were interviewed who were treating Respiratory Infection cases and suspected cases Influenza A (H1N1). These were selected by purposive sampling method.

Two or three patients of ARI, who had taken treatment from the above mentioned doctors, were also interviewed, if these patients were available at the time of interview of doctors. All the taluka having positive cases and doctors practicing in these areas were willing, were interviewed. Total duration of study was 1 month i.e. March 2015.

H1N1 influenza has divided into 4 categories according to symptoms and treatment. Details are as follows (As per guidelines from Ministry of Health and Family Welfare Department, Government of India, 2015):

Category	Symptoms	Action
A	Mild fever, cough / sore throat, with or without body ache, headache, diarrhea & vomiting.	No Tamiflu, Symptomatic treatment, No testing, Home isolation
B1	Category A + High grade fever + severe sore throat	Home isolation + cap. Tamiflu may be given + No testing
B2	Category A + High risk group women, person >65 yrs, patients with lung, heart, liver, kidney diseases, Blood / cancer & HIV / AIDS	Home isolation + cap. Tamiflu should be given + No testing
C	Sign & symptoms of Cat. A& B+ following breathlessness, chest pain, drowsiness, Low BP, Sputum with Blood, Bluish Discoloration of Nails, Irritable child, Worsening of underline chronic condition.	Immediate testing, hospitalization & treatment

This study was conducted by Faculty members, Resident doctors and Medical Social Workers of Community Medicine department, PDU Govt. Medical College, Rajkot, using pretested semi-structured questionnaire. Study conducted among doctors and only on interview based. Government authority requested to do study. The data entry was done in Microsoft Office Excel 2007 and analysis was done using the software package Epi Info 7 (3.5.3).

Results:

Table 1 shows that among all 22 doctors that were interviewed, majority (54.55%) were M.B.B.S, 27.27% were AYUSH and 9.09% were Physician.

Figure 1 shows that 36.36% of doctors replied that in their OPD, proportion of ARI patients were 51-75%, 27.27% replied that proportion of patients were 0-25%, another 27.27% of doctors said that proportion of patients were 26-50% and 9.09 % replied that proportion of ARI patients were greater than 75%.

Figure 1: Correct knowledge of category A patients according to age group (n=22)

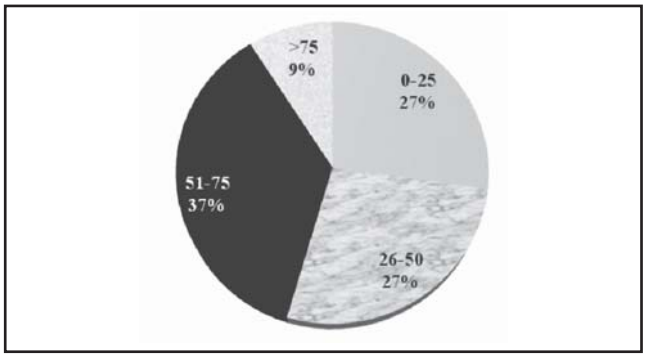

Table 2 shows that only 9 (40.91%) doctors had correct knowledge of category A of influenza A (H1N1) out of total [22 (100%)] numbers of doctors. Out of total practitioners, only 27% of doctors had correct knowledge of B1, B2 and C categories of influenza A (H1N1).

Table 1 : Specialty of interviewed doctors (n=22)

Specialty of Doctors	Government n (%)	Private n (%)	Total n (%)
Physician (M. D. Medicine)	00 (00.00)	02 (06.25)	02 (09.09)
M. B. B. S.	09 (100.0)	03 (18.72)	12 (54.55)
AYUSH	00 (00.00)	06 (50.00)	06 (27.27)
Medical Specialties other than General Medicine	00 (00.00)	02 (21.86)	02 (09.09)
Total	**09 (100.0)**	**13 (100.0)**	**22 (100.0)**

Table 2: Doctors' correct knowledge regarding categories and correct usage of Oseltamivir regarding Suspected Influenza A (H1N1) on the basis of symptoms

Categories of H1N1 influenza A	Government n (%)	Private n (%)	Total n (%)
A	06 (66.66)	03 (23.08)	09 (40.91)
B1	04 (44.44)	02 (15.38)	06 (27.27)
B2	04 (44.44)	02 (15.38)	06 (27.27)
C	05 (55.56)	01 (07.69)	06 (27.27)

Table 3: Follow up advice given by doctor to the patients of ARI (n=33)

Type of follow up	When to follow up	Frequency (%)
Routine Follow up	Next day	00 (00.00)
	2 days later	08 (24.24)
	3 days later	06 (18.18)
	>3 days	05 (15.15)
	No follow up advised	14 (42.42)
Doctor emphasized on immediate follow up if symptoms get worse		03 (09.09)

Table 4: Practice of health education given by doctors regarding ARI to the family members of patients (n=33)

		Frequency (%)	Actual advice	Frequency (%)
Preventive advice given	Yes	05 (15.15)	Home Isolation	00 (00.00)
			Frequent hand washing	05 (15.15)
			Wearing mask	00 (00.00)
			Plenty of water	00 (00.00)
			Use of handkerchief while coughing	00 (00.00)
			Rest	00 (00.00)
	No	28 (84.84)	–	–
Total		**33 (100.0)**	–	–

Table 3 shows that out of total ARI patients, nobody had been advised to follow up on next day, only 24 % had been advised to follow up after 2 days, only 18% had been advised to follow up after 3 days, only 15% had been advised to follow up after 3 or more days and 42% had been not given follow up advise. Only in 9% of ARI patients, doctor was given advised about immediate follow up if symptoms get worse.

Table 4 reported that preventive advice was given in only 15% of ARI patients. In this 15% of ARI patients, advise given was frequent hand washing. No any other advice given to these patients.

Discussion:

This study was conducted in Rajkot district, Gujarat, India. Among all 22 doctors that were interviewed, majorities (54.55%) were M.B.B.S, 27.27% were AYUSH and 9.09% were Physician. In study from medical college hospital of Delhi included total 334 health care providers. Among them 161 were doctors (57 senior residents, 61 junior residents and 43 interns) and 173 were staff nurses. [23] Doctors replied that in their OPD, proportion of ARI patients were 51-75%, 27.27% replied that proportion of patients were 0-25%, another 27.27% of doctors said that proportion of patients were 26-50% and 9.09 % replied that proportion of ARI patients were greater than 75%. Study from

Saurashtra region, Gujarat, India reported that out of total patients attended OPDs, 35% of patients had influenza A H1N1 and 65% had seasonal influenza A H1N1. [24] Only 40.91% doctors had correct knowledge of category A of influenza A (H1N1) out of total numbers of doctors. Out of total practitioners, only 27% of doctors had correct knowledge of B1, B2 and C categories of influenza A (H1N1). Study in Dar es Salaam city of Tanzania reported that 64% of health practitioners were not aware about various categories of swine flu and their treatment according to that. [25] Out of total ARI patients, nobody had been advised to follow up on next day, only 24 % had been advised to follow up after 2 days, only 18% had been advised to follow up after 3 days, only 15% had been advised to follow up after 3 or more days and 42% had been not given follow up advise. Only in 9% of ARI patients, doctor was given advised about immediate follow up if symptoms get worse. Preventive advice was given in only 15% of ARI patients. In this 15% of ARI patients, advise given was frequent hand washing. No any other advice given to these patients.

Conclusion:

One third of doctors replied that 50- 75% patients in their OPD are of ARI at present. Due to fear, all patients were coming for treatment very early and majority was regularly coming for follow up. Doctors from Govt. health set up have more knowledge of symptoms and Oseltamivir usage for category A, B1, B2 and C as compared to private sector. Majority of ARI patients from OPD of doctors were Cough and Fever. Majority of patients were give medicines for 2 days for ARI. Nearly half of doctors didn't advice for follow up. Only some of the patients were given heath education for prevention of ARI among family members. Major advice was frequent hand washing.

Recommendations:

1. Sensitization of doctors of private sectors through personal visits of paramedical workers/doctors with special focus on

a. Imparting health education about when to come back immediately (Awareness about warning signs).

b. Imparting health education about cough etiquette and hand hygiene.

2. Provide posters to doctors of Govt. and private sectors showing various categories of suspected H1N1 influenza and its management. Doctors should be asked to display such posters in their consulting room.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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A Cross Sectional Study on Water, Sanitation and Hygiene Practices among Urban Slum Dwellers of Petlad taluka of Anand District

Rujul P Shukla[1], Dinesh Kumar[2], Neha Das[3], Uday Shankar Singh[4]

[1] Tutor, Department of Community Medicine, GCS Medical College, Ahmedabad, Gujarat, India

[2] Professor, [3] Tutor, [4] Professor & Head, Department of Community Medicine, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India

Correspondence : Dr Rujul P Shukla, Email : rujulpshukla90@gmail.com

Abstract:

Introduction: About 17.4% of urban population is residing in urban slums. Living condition is poor in slums. Many of the most serious diseases in cities are 'environmental' because they are transmitted through air, water, soil and food or through insect or animal vectors and slum dwellers are at most risks to get exposed to these agents as they do not have protection measures against these. The concentration of people in areas where the provision of water, sanitation, garbage collection and health care is inadequate creates the conditions where infectious and parasitic diseases thrive and spread. **Method:** A cross sectional study was done using pre-tested questionnaire in notified slums of Petlad Nagarpalika. Sample size calculated was 224 using formula $(1.96)^2*p*q/L^2$. Households were the sampling unit. Duration of study was 2 months i.e. January-February 2015. **Result:** In the present study, 251 households of 8 notified slums of Petlad town were taken. 96.4 % (n=242) respondents were permanent resident of slum. 28.7 % (n=72) had pucca & 61.8% (n=155) had semi-pucca house. 79.3 % (n=199) owned the house. Overcrowding based on number of persons per room was seen in 57.8 % (n=145) houses. 69.3 % (n=147) belonged to class 5 of Modified BG Prasad socio-economic classification of families. 99.6% (n=250) had tap as major source of drinking water, of which 84.9% (n=213) had water supply located within premises. 35.9% (n=90) went for open air defecation, while 12.7% (n=32) used Sulabh Sauchalaya. 51.4% (n=129) had latrines at home, out of which 45% (n=113) had water seal latrine, while 6.4% (n=16) had pit latrine. Among households having children, in 43.4% (n=62) families child went to open air defecation near house. 48.6% (n=122) disposed their household waste in open. 49.8% (n=125) knew about scheme for latrines implemented by government & 37.1% (n=93) knew about Swacch Bharat Abhiyan. **Conclusion:** Study shows that 35.9% study participants went for open air defecation, 54.6% having open drainage facility, 48.6% disposed of household waste in open.

Key words: Hygiene, Latrine, Open Air Defecation, Sanitation, Urban Slum, Water Facility

Introduction:

Access to improved drinking water, sanitation and hygiene is one of the prime concerns around the globe. According to 2011 census, 17.4% of total urban population resides in Slums.[1] Slums have problem of overcrowding, dilapidation, faulty arrangements and designs of buildings, narrowness of street, lack of ventilation, light, sanitation facilities or combination of these factors which are detrimental to safety, health and moral.

With urbanization, more and more people migrate to cities in search of job. Many of them do not have permanent job/work, moreover they have to change job/work and move to new place from time to time. Hence this people are forced to stay in outskirt / slum areas not having proper sanitation facilities. Also their houses are not good, lack basic sanitation facilities and water supply is not there. [2]

Living conditions in many urban slums are worse than those in the poorest rural areas of the country. This can be attributed to the slum's exceptionally unhealthy environment. Many of the most serious diseases in cities are 'environmental' because they are transmitted through air, water, soil

and food or through insect or animal vectors and slum dwellers are at the most risks to get exposed to these agents as they do not have protective measures against these. The concentration of people in areas where the provision of water, sanitation, garbage collection and health care is inadequate, creates the conditions where infectious and parasitic diseases thrive and spread. Around half the slum population is suffering from one or more of the diseases associated with inadequate provision of water and sanitation.[3,4]

Report of National Sample Survey 69th round states, 71% having tap as major source of drinking water, 31% slum having no latrine facility & no drainage system, 38% had no garbage disposal arrangement.[5] With these backgrounds in mind present study was conducted to assess Water, Sanitation & Hygiene (WASH) practices among urban slum dwellers.

Objectives:

- To assess water facility in urban slums.
- To assess sanitation facility in urban slums.
- To assess hygiene practices of people living in urban slums.

Method:

Study Setting- The present cross sectional study was conducted in 8 urban slums of Petlad taluka of Anand district.

Table 1: Socio-demographic profile of households of urban slum of Petlad (n=251)

Socio-demographic Character	Frequency (%)	Socio-demographic Character	Frequency (%)
Gender		**House type**	
Male	195 (77.7%)	Pucca	72 (28.7%)
Female	56 (22.3%)	Semi-pucca	155 (61.8%)
Religion		Kaccha	24 (9.6%)
Hindu	236 (94%)	**Main fuel used**	
Muslim	7 (2.8%)	LPG	126 (50.2%)
Christian	8 (3.2%)	Kerosene	31 (12.4%)
Highest Education in family		Biofuel	94 (37.5%)
Illiterate	11 (4.4%)	**Treatment of drinking water**	
Primary	52 (20.7%)	None	71 (28.3%)
Secondary	114 (45.4%)	Filter	161 (64.1%)
Higher Secondary	36 (14.3%)	Boiling	13 (5.2%)
Graduate	29 (11.6%)	Chlorination	6 (2.4%)
Post-graduate	9 (3.6%)	**Government Socio Economic Status**	
Type of family			
Joint	110 (43.8%)	APL*	35 (13.9%)
Nuclear	80 (31.9%)	BPL#	210 (83.7%)
3-generation	61 (24.3%)	None	6 (2.4%)
*APL - Above Poverty Line, # - Below Poverty Line			

Materials- Pre-tested questionnaire was used which was translated in Gujarati, so uniformity was maintained.

The study was started after taking permission from Human Research Ethics Committee and Petlad Nagarpalika. List of urban slums were obtained from Nagarpalika and 8 urban slums from all parts of Petlad town were selected with help of map of Petlad town. 2 slums from each direction, total 4 directions- north, south, east and west. Hence 8 slums were selected. In each urban slum depending on number of households randomly 10% of households were decided to be covered. For randomization alternate house were interviewed. Houses from first to last row of the slum were covered.

Sample size- Sample size was calculated using formula $(1.96)^2*p*q/L^2$, where p=% of population living in urban slums not having latrine at home i.e. 30%, [5] q=100-p i.e. 70 & L=20% of p i.e. 6%. Thus sample size obtained was 224. Data was collected from 251 households.

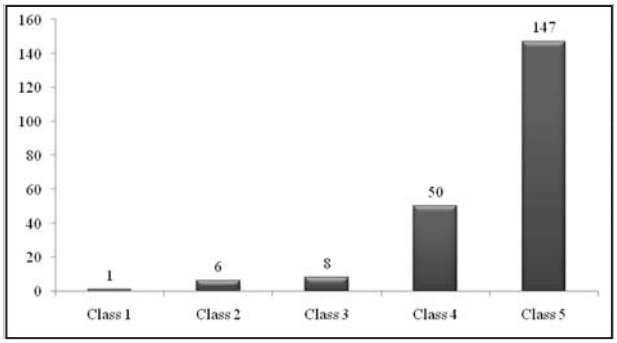
Statistical Analysis- Frequencies of data obtained, mean of age, Chi-square were calculated using Microsoft Office Excel 2007 and Statistical Program for Social Sciences 16.0 version.

Results:

In the present study, 251(n) households of 8 notified slums of Petlad town were taken. Head of the households were the respondents. Out of 251 respondents 77.7 % (n=195) were male and 22.3 % (n=56) were female. Average age of respondents was 54.45 (SD=12.887). 96.4 % (n=242) respondents were permanent resident of slums. 28.7 % (n=72) had pucca and 61.8% (n=155) had semi-pucca house. 79.3 % (n=199) owned the house as shown in **Table 1**. Overcrowding based on number of persons per room was seen in 57.8 % (n=145) houses.

39 persons didn't provide their monthly income. Out of remaining households, 69.3 % (n=147) belonged to class 5 of Prasad socio-economic classification of families as shown in Figure 1.

Figure 1: Distribution of households of urban slums of Petlad based on Socio economic status (B G Prasad Classification) [6] (n=212)



99.6% (n=250) had tap as major source of drinking water, of which 84.9% (n=213) had water supply located within premises. 84.1% (n=211) had water storage facility and 80.5% (n=202) told of adequate water supply throughout the year.

35.9% (n=90) went for open air defecation while 12.7% (n=32) used Sulabh Sauchalaya. 51.4% (n=129) had latrines at home of which 45% (n=113) had water seal latrine while 6.4% (n=16) had pit latrine as shown in **Table 2.** 108 households had no children. In remaining households, children in 45.5% (n=65) families went to open air defecation near house as shown in **Table 2.** Out of 251 households, 143 households had children of which 58 had toilets. Of those 58 households, 94.8% (n=55) household children utilized latrine for defecation.

56.2% (n=141) had bathing facility within premises while in 24.7% (n=62) it was outside premises. Open drainage facility was there in 54.6% (n=137). 48.6% (n=122) disposed their household waste in open. 93.4% (n=114) said this happened because of unavailability of common dustbin. Door to door waste collection facility was available in 20.3% (n=51) households. 11.6% (n=29) had domestic animal in house. 37.1% (n=93) participants informed of having mosquito breeding site within slum, while 15.9% (n=40) informed of mosquito breeding site within house. In 40.6% (n=102) households mosquito breeding site was found within 10 mt of house. 90.8% (n=228) washed their hand before cooking, 92.4% (n=232) before eating and 97.2%

Table 2: Place of defecation of households at urban slums of Petlad

Adult (n=251)		Children (n=143)	
Defecation place	**Frequency (%)**	**Defecation place**	**Frequency (%)**
Open	90 (35.9%)	Latrine	55 (38.5%)
Sulabh Sauchalaya	32 (12.7%)	Open near house	65 (45.5%)
Water seal latrine	113 (45.0%)	Open in defecation fields	23 (16.0%)
Pit latrine	16 (6.4%)		

Table 3: Hand washing practice performed by households at urban slums of Petlad

Hand washing	After Defecation		Before Cooking		Before Eating	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Water	61	24.3	107	42.6	108	43
Soap+Water	183	72.9	121	48.2	124	49.4
None	7	2.8	23	9.2	19	7.6

Table 4: Association between literacy & hand washing practice among households of urban slums (n=251)

Literate	Hand washing					
	Before cooking		Before eating		After defecation	
	No	Yes	No	Yes	No	Yes
Yes	1	10	1	10	0	11
No	22	218	18	222	7	233
Fischer Exact	1.000		0.587		1.000	

(n=244) after defecation as shown in Table 3. 49.8% (n=125) knew about scheme for latrines implemented by government & 37.1% (n=93) knew about Swacch Bharat Abhiyan.

No statistical significance was seen between education and hand washing following defecation, before cooking, before eating and after defecation at 95% confidence interval as shown in Table 4.

No association was obtained through statistical analysis at 95% confidence interval between education and disposal of waste. No association was obtained through statistical analysis at 95% confidence interval between education and drinking water treatment.

Discussion:

Assessment of safe water availability, latrine facility at home and basic hygiene practice is of prime concern for anyone to intervene. In present study, most people residing are permanent residents of those slums since generations (96.4%). In present study, 61.8% had semi-pucca house while 9.9% had kaccha house. According to Government of India (GOI) [7], overall in India 16% houses in urban slums were semi-pucca, while 5% had kaccha house. Overcrowding based on number of persons per room was found in 57.85% participants home.

In present study, 4.4% participants were such who had never enrolled in the school, while a similar study on urban slum by Subbaraman et al.[8], the study showed that 35% had never enrolled in the school. Half of the participants (50.2%) in this study used LPG as cooking fuel, while 12.4% used kerosene and 37.55 used biofuel like wood, cow dung, coal, etc. According to Government of India report [7], in urban slums 51.3% used LPG, 14% kerosene and 34.7% biofuel. In present study, 84.9% household had water supply within premises, while according to Government of India report [7], 57% households in urban slums have water supply located within premises.

According to Government of India report [7], 66% households in urban slums have latrine within premises. Amongst those who don't have toilet facility at home, 44.3% use public toilet while 55.7% defecate in open. A study by Khosla et al.[9] reported that 65% defecate in open in Delhi slums and a study by Joshi et al.[10] showed that 45% had toilets at their homes. In present study, 51.4% had latrines at home, 12.7% used public toilets, while 35.9% defecate in open. A study by Joshi et al. [10] showed that 75% didn't use any method of treatment for drinking water, while in our study only 28.3% didn't use any method of treatment for drinking water.

Perceiving that, alone education improves sanitation facilities is also not true which is evident from the study where it was found that even educated people went for open air defecation and threw waste in open. Usually it is perceived that as education increases does basic sanitation practice improves. But in our study possibly due to inhibiting environmental factors in slums sanitation practice didn't improve even with improved education.

Conclusion:

The present study is one of the studies done on assessment of Water, Sanitation and Hygiene practices in urban slums. As evident from the results, water facilities are satisfactory but sanitation facilities and hygiene practices are still unsatisfactory in urban slums. Though the condition of these slums is better compared to the report of Government of India about all slums throughout India, still Water, Sanitation and Hygiene conditions in these slums can be further improved.

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A Study on Breast Feeding and Weaning Practice in Infants Attending Well Baby Clinic of Tertiary Care Hospital in Jamnagar

Sumit Unadkat[1], Mubashshera Firdous Khan[2], Archana J Solanki[2], Mittal Rathod[3], Billav Rojasara[2], Vishal Vagadiya[2]

[1]Associate Professor, [2]Resident, [3] Tutor, Community Medicine Department, M. P Shah Govt. Medical College, Jamnagar, Gujarat, India

Correspondence : Dr. Mubashshera Firdous Khan, E mail: mubashshera_khan@rediffmail.com

Abstract:

Introduction: Infant feeding practices have significant effects on both mother and child. Breastfeeding improves the nutritional status of young children and reduces morbidity and mortality. Breast milk not only provides important nutrients but also protects the child against infection. The timing and type of supplementary foods introduced in an infant's diet also have significant effects on the child's nutritional status. This study was carried out to find out the early infant feeding practice and its determinant in well baby clinic of tertiary care hospital in Jamnagar. **Method:** this was a cross sectional study. 240 mothers with baby under one year of age attending the well baby clinic were included in the study and the data was collected using a pretested, structured questionnaire. The study was done for three month from October 2015 to December 2015. Results were analyzed using percentage and Chi Square test. **Results:** about 65% women had initiated breast feeding within 1 hour of delivery.55.8% mother had given prelacteal feed to their baby and the most common prelacteal feed given was honey. Literacy of mother, institutional delivery and normal vaginal delivery were some positively associated factor with early infant feeding practice. Most common reason of late initiation of breast feeding was caesarean section in present study. **Conclusion:** Sincere effort is needed to counsel the mother about early initiation of breast feeding practice and avoidance of prelacteal feed.

Key Words: Breast Feeding, Prelacteal Feed, Weaning.

Introduction:

Childhood malnutrition is a major factor for childhood morbidity and mortality. According to National Family Health Survey-3 (NFHS-3) data the level of under nutrition in children below three years of age was as high as about 45%. Under nutrition of these children is majorly related with breast feeding and complementary feeding practice. Early initiation of breast feeding (within an hour of birth) had found to decrease neonatal mortality by 22 %.[1]

The World Health Organization recommended exclusive breast feeding for the first six month of baby's life and addition of complementary feeds at six months with continued Breast Feeding (BF) till two years to reduce the burden of malnutrition. Correct Infant and Young Child Feeding (IYCF) practice plays a major role in reducing the morbidity and mortality of children.

Likewise, early initiation of breast feeding is very much essential for survival, growth and nutrition of newborn. In addition it is also known for good brain development and learning ability and protecting the child from infection.[2]

It has been said that infants aged 0-5 months who are not breastfed have seven-fold and five-fold increased risks of death from diarrhea and pneumonia, respectively compared to exclusively breastfed infants.[3]

Breast Feed is the first fundamental right of the child. The initiation of breast feeding and the timely introduction of adequate safe and appropriate complementary foods in conjunction with continued

breast feeding are of prime importance for the growth, development, health and nutrition of infants and children everywhere. However, there are many cultural practices associated with infant feeding of which certain undesirable practices need to be discouraged. One in every third malnourish child in world lives in India. [4] UNICEF and WHO launched Baby Friendly Hospital Initiative in 1992 as a part of global effort to protect, promote and support breast feeding. [5]

Education of mother, socioeconomic class of family, social customs like avoidance of colostrum and giving prelacteal feed etc. affect the feeding practices directly or indirectly. Current study has focused on some of the core indicators of IYCF practices to reflect upon the prevailing feeding problem in the urban area of Gujarat state.

The main objective of study was to know the early breast feeding and weaning practice in infants attending well baby clinic of tertiary care hospital of Jamnagar city.

Method:

Study design: A cross sectional study was conducted at Well-baby clinic of Guru Govind Hospital, Jamnagar following ethical clearance from institutional ethics committee

Study period: 3 month, from October 2015 to December 2015.

Study setting: Study was conducted in well baby clinic of tertiary care hospital of Jamnagar city.

Criteria for selection of sample: Children under one year of age who visited the well-baby clinic for the immunization were included in the study. The information about the breast feeding and weaning practice of children was collected from mothers after obtaining oral consent; those who were not willing to participate were excluded. The data was collected every alternate day. A pretested structured questionnaire was used for data collection over the period of three month. Mothers coming for immunization were interviewed. The questionnaire contains socio demographic data, detail on initiation and duration of breast feeding, also weaning practice.

Data entry was done using Microsoft office Excel 2007 and analysis was done in SPSS 20. Appropriate statistical test were applied during data analysis.

Following definitions were used in present study.

Early Initiation of breast feeding- The breast feeding should be started within first hour of birth.

Pre lacteal feeding is any food other than breast milk given to the new-born after birth before initiating breast feeding.

Exclusive Breast Feeding (EBF) is no other food or drink, not even water, except breast milk for 6 months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals and medicines).

Weaning is a gradual process starting around age of six month, because the mother milk alone is not sufficient to sustain growth beyond six month, it should be supplemented by suitable food rich in protein and other nutrients. These foods are called supplementary food. [5]

Results:

Current study involve 240 mother with their child lees than one year of age .Regarding the age distribution of mother, out of total 240 women, majority of women i.e. 43.3% belong to age group of 25-29 years, 35.8% belonged to 20-24 years,19.16% were $\geqslant$ 30 years and only 1.6% were $\leqslant$ 19 years. Religion wise, majority of the participant i.e. 73.3% were Hindu, rest were Muslim. **(Table 1)** In present study 23.7% were illiterate, 76.3% were literate. Very few (6.6%) were qualification graduate and above. Most of the women i.e. 87.9% were house wives, 8.3% were laborer and 3.8% were doing skilled job. Study revealed that almost all i.e. 98.8% women had taken antenatal care in their recent birth. Majority of women i.e. 80% delivered in government institution, 15% in private hospital and 5% delivered

at home. Out of total 240 women, 78.8% women were delivered by normal vaginal route and 21% were undergone caesarean section.

In present study, 56.3% infant were ⩾ 6 month of age and 43.8% were of less than 6 month of, age of which, 51.6% were male babies and 48.3% were female babies. Majority of babies i.e. 69.1% were of 1st order birth, 37.5% were of 2nd order birth and 18.35% were of 3rd order and above.

Table 1: Socio demographic profile of study sample (N=240)

Parameters		Number	%
Age of mother (in years)	≤19	4	1.6%
	20-24	86	35.8%
	25-29	104	43.3%
	≥30	46	19.1%
Literacy status of mother	Illiterate	57	23.7%
	Primary	32	13.3%
	Secondary	103	42.9%
	Higher Secondary	32	13.3%
	Graduate & Above	16	6.6%
Occupation of mother	House Wife	211	87.9%
	Labourer	20	8.3%
	Job	9	3.8%
Religion	Hindu	176	73.3%
	Muslim	65	26.7%
Age of the child (in month)	≥6	135	56.2%
	<6	105	43.7%
Gender of child	Male	124	51.6%
	Female	116	48.3%
Birth order of child	1	166	69.1%
	2	90	37.5%
	3 & above	44	18.3%
Place of delivery	Government Hospital	192	80%
	Private Hospital	36	15%
	Home	12	5%
Mode of delivery	Normal vaginal delivery	186	78.8%
	Caesarean section	51	21.3%

Table 2: Distribution of study participants according to breast feeding and weaning practice

Parameters		Number	%
Timing of initiation of Breast Feeding N=240	Within 1 hour	156	65%
	Within 24 hours	16	6.6%
	After 24 hours	64	26.6%
	No BF	4	1.6%
Prelacteal feed	Yes	86	35.8%
	No	154	64.1%
Most common prelacteal feed N=86	Honey	33	38.3%
	Water	20	23.2%
	Jaggery water	18	20.9%
	Other milk	15	17.4%
Initiation of weaning N=135	<6 month	22	16.2%
	6 month	79	58.5%
	>6 month	34	25.1%
Exclusive breast feeding practice N=135	Yes	94	69.6%
	No	41	41%
Feeding practice in infant <6 months N=105	EBF	96	91.4%
	BF + water	6	5.7%
	Other milk	3	2.8%

Table 3: Reason for late initiation of Breast Feeding (n=84)

Reasons	Number	%
Caesarean section	33	39.2%
Culture, beliefs	17	20.2%
Lack of prenatal guidance on advantage of BF	13	15.4%
HIV Infection	9	10.7%
Breast problem(inverted nipple, engorgement)	7	8.3%
Maternal complication(eclampsia, PPH)	5	5.9%

(Table 2) It was observed that 65% women had initiated breast feeding within one hour of delivery, 6.6% fed their babies within one day and 26.6% mother started breast feeding after 24 hours. In present study 4 mothers were not at all breast fed their babies. It was found that 35.83 %(n=86) mother had given prelacteal feed to their babies, most common prelacteal feed was honey (n=33), next come the plain water (n=20), jaggery water (n=18) and other milk (n=15). Other milk were formula milk, goat milk, cow milk.

Table 4: Association between maternal factors and initiation of breast feeding within 1 hour

Maternal Variable	Initiation of breast feeding within 1 hour						Statistics
	Yes		No		Total		
	No	%	No	%	No	%	
Maternal Education							
Illiterate	26	45.6	31	54.3	57	23.7	
Primary	24	75	8	25	32	13.3	Chi-square
Secondary	74	72,8	29	27.1	103	42.9	=13.889
Higher Secondary	22	68.7	10	31.2	32	13.3	P<0.05
Graduate and Above	10	62.5	6	37.5	16	6.6	
Religion							Chi square
Hindu	114	64.7	62	35.2	176		=0.015
Muslim	42	67.1	22	32.8	64		p>0.05
Mother age (in years)							
<19 yr	2	50	2	50	4	1.6	Chi square
20-24 yr	57	66.2	29	33.7	86	35.8	=0.474
25-29 yr	67	64.2	37	35.5	104	43.3	p>0.05
>30 yr	30	65.2	16	34.7	46	19.1	
Place of Delivery							Fischer
Institution	156	68.4	72	27.1	228	95	exact test
Home	0	0.0	12	100	12	5	P<0.001
Mode of delivery							Chi square
Normal vaginal delivery	139	73.5	50	26.4	189	78.8	=25.97
Caesarean section	17	33.3	34	66.6	51	21.3	P<0.001

Most common reason for late initiation (after 1 hour) was the caesarean section and culture, beliefs in present study. Other reasons were breast problem (inverted nipple, breast engorgement), maternal problem (eclampsia, PPH), lack of prenatal guidance on advantage of exclusive breast feeding (Table 3)

There were 135 babies aged ⩾6 month of age, of which 94 babies (69.6%) were exclusively breast fed for six complete month and 41 babies (30.3%) were not exclusively breast fed. Nearly half i.e. 79 babies (58.5%) were started on weaning food at correct age i.e. six month,22 (16.2%) mothers started weaning prematurely and 34(25.18%) did it after six month.

Most common reasons for early weaning were insufficient milk and lack of advice given about correct age of weaning by health personnel.

(Table 4) On seeing the factor associated with early initiation of breast feeding, it was found that literate mothers were more aware about early initiation of breast feeding. The association between literacy of mother and practice of early initiation was found to be significant at p<0.05. The women who delivered in institution were more (68.4%) practicing early initiation of breast feeding as compared to home delivery. In present study none of the women who delivered at home initiate breast

feeding within 1 hour. The association between place of delivery and early breast feeding practice was found highly significant statistically at p<0.001. Women with normal vaginal delivery (73.5%) had earlier started breast feeding as compared to women who delivered by caesarean section (33.3%). This comes out to be highly significant statistically. The reason behind that women who delivered by normal vaginal rout are more comfortable as compared to those who undergone caesarean section. Slightly higher proportions of Muslim women (67.1%) were started early breast feeding than Hindu women (64.7%).The above data was not found to be significant. On seeing the effect of mother age on early breast feeding practice, though it was found that as the age increases mothers were more practicing early breast feeding. But the association between age of the mother and early initiation of breast feeding was not found significant statistically.

Discussion:

According to guidelines of infant and young child feeding (IYCF), women should start breast feeding within 1 hour of delivery. [6] Present study was found that 65% women had started breast feeding within one hour of delivery. The data from National Family Health Survey-3 (2005-2006) shows that 30.3% mother's started early breast feeding in urban area. [1] This comparison shows that there has been major improvement in the mentioned indicator since 2006. Coverage evaluation survey (2009) [7] found that 50% women had initiated breast feeding within 1 hour of delivery in Gujarat. Another study conducted in Ahmadabad by Bhavik M Rana et al (2016) [8] found in his study similar result i.e. 66% mother initiated early breast feeding. Sunjay V Wagh et al (2013) [9] in Akola found more proportion (80.4%) of same indicator.

Khyati N (2016) [10] found (35.1%), Asif Khan et al (2013) [11] found (28.14%), Devang Raval et al (2011) [12] found (38.1%) of early breast feeding practice which is less than present study. Most common reason for late initiation of breast feeding were caesarean section and culture and beliefs in our study, other reason were maternal complication at the time of delivery, breast problem and lack of advice given by health personnel. Asif Khan et al (2013) [11] found in his study that either the mother did not know the importance of breast feeding or due to inability to express milk or mother illness were most common reason for late initiation of breast feeding. Sunjay V Wagh et al (2013)[9] found that, cesarean section, delivery complication, baby was in NICU and milk not produced immediately were the reasons of late initiation of breast feeding. This shows the lack of knowledge of advantage of early initiation of breast feeding.

35.83% mother or their relatives had given prelacteal feed to babies, it shows prelacteal feed is still a prevalent practice. NFHS-3(2005-2006)[1] data revealed that in Gujarat 57% women /relatives had the practice of giving Prelacteal feed to babies. It shows that there is substantial decrease in practice of giving prelacteal feed; it may be due to awareness created by health worker. Bhavik M Rana et al (2016)[8] in his study in Ahmadabad found that the number of mothers who gave pre-lacteal feed to their new born was 11 (2.75%). Devang Raval et al (2011) [12] found that 61.6% women given Prelacteal feed to their babies. The above studies show the lower proportion as compared to present study, it may be due to different area of study.

There is need to counsel the mother to avoid Prelacteal feed and start breast feeding as early as possible. Most common prelacteal feed given was honey followed by plain water, Jaggery water and other milk in present study. Wagh et al (2013)[9] revealed in his study the most common prelacteal feeds (61.5%) were honey , cow's milk(30.7%) and sugar water(7.68%). Other study also found the honey, sugar water and cow's milk the common prelacteal feed. [11]

In present study, 135 babies were ⩾ 6 month of age , and the exclusive breast feeding practice and weaning practice was explored in these babies. Of these 135, 69.6% babies were exclusively breast fed for complete six month. According to DLHS-3(2007-2008) [13] data of Gujarat 40% children were exclusively breast fed, this shows that there is

considerable increase in EBF practice and it may be due to counseling done by health personnel and created awareness among women while attending ANC &PNC services. Bhanderi et al (2011) [14] found the similar result, in his study found that 76.6% babies of age>4 month were exclusively breast fed. Asif Khan et al (2013) [11] found the proportion of EBF babies were 35% which is lower than present study. Bhavik M Rana et al (2016) [8] found the 66% of EBF practice, similar to present study.

In our study 58% women started weaning at correct age, this finding was similar to study done in Nigeria [15], in which 45% babies were started weaning at correct age. In contrast to these finding Asif Khan et al (2013) [11] shows that 35% mother started weaning at 6 month of age, 16.2% were started weaning prematurely before six month and 25% started after six month. It shows the lack of knowledge among mother about correct age of weaning. If weaning food is not administered at correct age it may adversely affect the babies' heath, premature administration lead to increase chances of infection whereas late initiation may lead to deficiency of nutrients and baby may prone to malnourishment.

In our study it was found that mother literacy status, place of delivery and mode of delivery was statistically significant with early initiation of breast feeding practice within 1 hour. Mother's age and religion of mother was not found significant. Khyati Nimavat et al (2016) [10] in her study conducted in same district found the similar result, a significant association between early initiation of breast feeding practice with place of delivery and mode of delivery.

Similar result was found in a study conducted by Bhanderi et al (2011) [14] in Anand district, in which place of birth and maternal education was found significant at $p<0.05$ with early initiation of breast feeding, mother age was not found significant in this study. These shows that institutional delivery has positive impact on early feeding practice, so mother should be motivated to delivered at institution. Government had initiated many schemes to increase institutional delivery but sustained effort is needed to achieve 100% institutional delivery. Mother came to Antenatal Care (ANC), Postnatal Care (PNC) to the health centre, it should be utilized as an opportunity to counsel the mother and make aware them about the advantage of early infant feeding, correct age of weaning practice.

Conclusion:

The current study provides a perspective regarding prevalent IYCF practices in urban area of India. The study shows that the IYCF indicators are not up to the mark and improvement in the IYCF indicators is the need of the hour to reduce Infant Mortality Rate (IMR) in India. There is need to educate mothers during antenatal advice about breast feeding and weaning practice. The observation reflects adversely on part of health worker in preparing the mother for the future role of motherhood. Also observation indicate that health worker have been unsuccessful in rooting out this deeply rooted unhealthy socio culture practice.

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Tobacco Consumption Pattern among Undergraduate Students in Rajkot and Morbi Districts, Gujarat, India

Z R Matariya[1], V S Gohil[1], U V Patel[2], H K Namera[1]

[1] Resident, [2]Associate Professor, PSM Department, P.D.U. Government Medical College, Rajkot, Gujarat, India

Correspondence : Dr. Vaidehi S. Gohil, E mail: dr.vaidehi.gohil@gmail.com

Abstract:

Introduction: Of the various drugs abused, the most widely distributed and commonly used drug in the world is 'Tobacco'. In India, the deaths attributed to tobacco, are expected to rise from 1.4% of all deaths in 1990 to 13.3% by 2020. It is suggested that three factors are associated with young people smoking: peer pressure, following the example of sibling and parents, and employment outside home. **Method:** A cross sectional study was carried out among 2000 students in 20 colleges of different streams of Rajkot and Morbi districts during February-March 2016 using self-administered questionnaire. Proportion of male:female was kept 3:1. **Results:** Prevalence of tobacco consumption among study participants was 8%. Most common tobacco product consumed was Mava/Faki. Mean age of initiation of tobacco consumption was 15.7 years. Influence from friends was commonest factor for initiation of tobacco consumption. Average expenditure on tobacco products was 33 rupees per day. **Conclusion:** Chewing products of tobacco products is consumed more than smoking products. Influence from friends was common reason to initiate consumption of tobacco.

Key Words : Addiction, Smoking, Tobacco

Introduction:

Of the various drugs abused, the most widely distributed and commonly used drug in the world is 'Tobacco'.[1] In India and world, commonest cause of preventable death is tobacco consumption.[2] Tobacco is the hazardous substance which is legally available and heavily promoted.[3] Most of new users of tobacco consumption in India are school children and those who begin to use in their mid-teens.Further, tobacco use may also give these students hypertension, heart disease, recurrent lung infections, asthma, cough and poor grading.[4] The prevalence of tobacco use among adults (15 years and above) is 35%.[5] The National Survey on Drug Use and Health estimates that each day, over 4,000 people under the age of 18 years try their first cigarette.[6]

In India, the deaths attributed to tobacco, are expected to rise from 1.4% of all deaths in 1990 to 13.3% by 2020.[5] It is suggested that three factors are associated with young people smoking: peer pressure, following the example of sibling and parents, and employment outside home. If a child's older sibling and both parents smoke, the child is four times as likely to smoke as one with no smoking model in family.[7]

In Gujarat state, usually students pass their higher secondary school and choose to study in colleges but for that they have to opt different locations from their hometown. So, they are more likely to develop bad habits during this period and intervention is necessary at this age only. So the study was conducted with objective to observe tobacco consumption pattern among undergraduate students. Permission to conduct study was taken from ethical committee.

Method:

A cross-sectional study was carried out by Community Medicine Department, P. D. U. Government Medical College, Rajkot during February-March 2016 in Rajkot and Morbi Districts, Gujarat. From website of Saurashtra University, list of all colleges of Rajkot and Morbi districts was obtained. For ensuring equal coverage; 10 Government and 10 private colleges have been

Table 1: Sex wise distribution of students consuming tobacco products (n= 1941)

Tobacco Consumption	Male N (%)	Female N (%)	Total N (%)
Yes	160 (11.2)	0 (0.0)	160 (8.2)
No	1260 (88.8)	521 (100.0)	1781 (91.8)
Total	**1420 (100.0)**	**521 (100.0)**	**1941 (100.0)**

selected randomly from the list of colleges. An attempt was made to select average 100 students from each college and overall sample size was kept 2000 students from all the 20 colleges. On the basis of more prevalence of tobacco consumption among males, it was attempted to keep proportion of male: female participants to 3:1. Principals of all the colleges were informed well in advance regarding the study and verbal consent was obtained.

The investigation team consisted of faculty, resident doctors and Medical Social Workers (MSWs). All investigators of the survey team were trained about proper technique of carrying out the survey beforehand. Before starting the survey, students were well explained regarding the objective of the survey and how to fill the details in the proforma. Verbal consent from the students was taken for participating in the survey. Few students had not responded to some of the questions, so denominator differs in some of the variables.

Survey tool: It was a self-administered questionnaire prepared in English translated to vernacular language (Gujarati) for the easy understanding of the students.

Data entry and analysis: Data entry and analysis was done using Microsoft Office Excel 2013 and Epi-Info 7. Proportions and chi-square test were used for analysis. P value <0.05 was considered significant.

Results:

A total of 2000 undergraduate students from 20 different colleges were included in the study. Out of all 1407 (70.4%) students were in 15-19 years age group and 28.9% students were in age group of 20-24 years. Male participants were 73.8% and almost equal proportion of students from both rural and urban area also equal students from both government and private colleges.

Out of 2000 students who were included in study, 1941students has responded for the question of tobacco consumption habit. Out of 1941 students only 160 students were consuming tobacco. So Prevalence among students who consumes tobacco was 8.2%. Prevalence in female was 0.0% for tobacco consumption but in male the prevalence was 11.2%. (Table-1)

Table 2: Type of product and its average daily consumption among students

Type of Product (n=160)	No. of students	%
Mava/Faki	100	62.5
Cigarette	52	32.5
Gutkha	17	10.6
Khaini	16	10.0
Bidi	14	8.8

Age at first time consumption of tobacco (n=52) Mean Age : 15.7 years	**No. of students**	**%**
<10 years	9	5.9
11-13 years	22	14.5
14-16 years	55	36.2
17-19 years	54	35.5
>19 years	12	7.9
Duration of tobacco consumption (n=52) Average duration =3.6 years	**No. of students**	**%**
<1 years	42	27.6
1-2 years	32	21.1
2-3 years	29	19.1
3-5 years	20	13.2
5 -7 years	12	7.9
>7 years	17	11.2
Amount spent on tobacco products (Rupees per day) (n=143) Average expenditure=33 Rupees/day	**No. of students**	**%**
≤10	52	36.4
11-25	34	23.8
26-50	42	29.4
51-100	10	7.0
>100	5	3.5
Influential factors to initiate consumption (n=151)	**No. of students**	**%**
Friends	113	74.8
Mental stress	21	13.9
Advertisement	15	9.9
Relatives	6	4.0
Father/Brother	2	1.3

Table-2 shows that, out of 160 students who were consuming tobacco, most common tobacco product used by the students was Mava/Faki (62.5%), followed by Cigarette (32.5%), Gutkha (10.6%), Khaini (10%) and Bidi (8.8%). Though Bidi consumers were lowest, average consumption per

Table 3: Distribution of students according to attitude towards habit of quitting tobacco

Attitude of students	No. of students	%
Want to quit tobacco product (n=146)		
Yes	135	92.5
No	11	7.5
Tried to quit tobacco products (n=150)		
Yes	124	82.7
No	26	17.3
Reasons to restart using tobacco products (n=56)		
Addictive Habit	22	39.3
Stress reduction	16	28.6
Friend	12	21.4
Self liking	4	7.1
Distribution of frequency of quitting tobacco products (n=73)		
Once	24	32.9
Twice	28	38.4
Thrice	7	9.6
Four time	2	2.7
Five or more times	12	16.4

day for Bidi was highest (4.8/day). Other products like Mava/Faki, Cigarette, Gutkha, Khaini were consumed in average 2-3/day quantity. Many students were consuming more than 1 product.Out of 152 students who had responded for question, 71.7% students had used tobacco product first time between 14-19 years of age. 5.9% students had used tobacco products first time before 11 years of age and 14.5% students between 11-13years of age.

Out of 152 participants who were consuming tobacco, majority (27.6%) were consuming since <1 year, followed by 1-<2 year (21.1%), 2-<3 years (19.1%). 17 (11.2%) students were consuming tobacco since >7 years. Mean expenditure on tobacco products was 33 rupees per day. 36.4% students had expenditure $\leq$10 rupees per day. 10.5% students had >50 rupees per day expenditure on tobacco.

Most common factor to encourage for starting tobacco consumption was friend (74.8%). Second most common reason for tobacco consumption was mental stress (13.9%), because of the belief that tobacco consumption decreases the stress. Some students had given more than 1 response. (Table-2)

As shown in the table-3, out of 146 students, 135 (92.5%) students wanted to quit tobacco products. Out of 150 students, 82.7% students had ever tried to quit tobacco products, but still 17.3% students had never tried to quit tobacco products. As large majority of tobacco consuming students want to quit tobacco, so the de-addiction activity should be strengthened in educational institutes.

Most common reason for restarting was addictive habit (39.3%) which can't be controlled, followed by stress reduction due to tobacco (28.6%)

and friends (21.4%). 29 (38.4%) students had tried to quit tobacco twice, 24 students had tried to quit once. 12 (16.4%) students had tried to quit it 5 times or more as shown in table-3.

Discussion:

In present study prevalence of tobacco consumption observed was among 8.2% students. Similar result was observed in study conducted in Kerala by of Jayakrishnan et. al.[8] Prevalence of tobacco user was 13.2% in the similar study of Sharma R et.al.[9] In the National Global Youth Tobacco Survey conducted in 2004 in India, the prevalence of current tobacco use was found to be 17.5% (with variation across states and regions).[2]

In a study conducted in Kerala,[8] most common tobacco product consumed was pan masala with gutkha, which is similar to Mava/Faki. In present study also Mava/Faki was most common product consumed by study participants. In the study conducted at Bangalore by Gururaj G et. al.[10] ,it was observed that chewing form of tobacco consumption was more common than smoking variety, similar pattern was also observed in the study of Reddy KS et. al.[3] which is matching to our study results. But in a study of Kumar V et. al. conducted in Delhi,[11] smoking was common than chewing, reason might be that consumption depend on availability of various products.

Amongst the students who were smoking cigarette, average consumption was 2.8 cigarettes/day, similar results were observed in the study of Kumar V et. al,[11] smokers were smoking 2-5 cigarettes/day. In a study conducted by Patel J et. al., average quantity of tobacco products consumed for smoking form was 12.63 per day while for smokeless form was 8.72/day [12] while in present average consumption of bidi was 4.8/day and for cigarettes it was 2.5/day, but average consumption of smokeless form of tobacco was 1.5-2.5/ day. Smokeless products were consumed less compared to smoking form of products; difference might be due to cost of different products.

Mean age of initiation of tobacco products in present study was 15.7 years, while in the study of Patel J et. al. mean age of initiation of tobacco products was 17.91 years in smoking form and 19.11 years in smokeless form of products. [12] Mean age was 11 years in a study conducted among adolescents in Kolkata,[13] which were similar to studies conducted in Noida[14] and Kerala [15] where the mean ages of onset were found to be 12.4, and 13.2 years, respectively. Adolescents are more vulnerable to initiation of tobacco use so a targeted intervention is necessary to reduce the tobacco uptake in this age group.

In present study average duration of tobacco consumption was 3.3 years, while in study of Patel J et. al. average duration of use was 4.18 years for smoking products and 3 years for smokeless products.[12]Peer influence is highest during adolescent stage, so students with greater number of peer who consume tobacco are more likely to start tobacco consumption. In one study conducted in Hyderabad, 72% students were offered first cigarette by friends. [6] Another similar study conducted by Makwana et. Al [16] in Jamnagar district, 62% of smokers said that friends to be commonest reason for initiating tobacco consumption, result was observed in our study that 74.8% students told that friends were most common influence for initiation of consumption.

Amongst the students who had started tobacco consumption, 92.5% students wanted to quit tobacco, the proportion was very less (34.4%) in a study conducted in Chennai by Madan et. al. among school students.[17] In present study 82.7% consumers had tried to quit tobacco products while in study of Madan et. al. 53.6% participants had tried to quit, proportion is quit lower than our study findings might be due to increase in awareness regarding hazards of tobacco products over a period of time.[4]

Conclusion:

Chewing products of tobacco products is consumed more than smoking products. Smoking form of products were consumed in larger quantity compared to smokeless products. Influence from friends was common reason to initiate consumption

of tobacco. Students who had quit tobacco restarted tobacco consumption due to addiction with tobacco products.

Declaration:

Funding: Government of Gujarat

Conflict of interest: Nil

Recommendations:

Tobacco awareness activities should be frequently conducted in educational institutes to stop initiation of tobacco consumption. De-addiction activities should be strengthened to help those who actually want to quit tobacco.

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Epidemiological Determinants for Malaria in Rajkot Municipal Corporation, Gujarat

H K Namera[1], V S Gohil[1], U V Patel[2], Z R Matariya[1]

[1]Resident, [2]Associate Professor, PSM Department, P.D.U. Government Medical College, Rajkot, Gujarat, India

Correspondence : Dr. Vaidehi S. Gohil, E mail: dr.vaidehi gohil@gmail.com

Abstract :

Introduction: : In recent years, Vector-Borne Diseases (VBDs) have emerged as a serious public health problem. Many of these, particularly Malaria, now occur in epidemic form almost on an annual basis causing considerable morbidity and mortality. About 95% population in India resides in Malaria endemic areas. The Malaria situation remains a major problem in certain states and geographical pockets of India. **Objectives :** To study epidemiological determinants for occurrence of Malaria in Rajkot city. **Method:** Study was done in Rajkot Municipal Corporation (RMC), Rajkot, Gujarat state in the year 2015 by using pre-formed, semi structured proforma. Data were collected from records available at Malaria department, RMC office. In the year 2015, total 105 malaria cases were recorded. Analysis was done by using Microsoft office Excel 2007. **Results and Conclusion:** This study demonstrates Malaria distribution in Rajkot Municipal Corporation with higher prevalence of P. vivax than P. falciparum. Malaria was seen relatively higher in males and most affecting age group was 15-30 years. Peak of malaria cases were found after major rainfall. West Zone having major Risk factors like irrigation canal, construction/development projects and industrial area reported highest malaria cases.

Key words : Epidemiological determinants, Malaria

Introduction:

In recent years, Vector-Borne Diseases (VBDs) have emerged as a serious public health problem in countries of the South-East Asia Region, including India. Many of these, particularly Malaria now occur in epidemic form almost on an annual basis causing considerable morbidity and mortality. [1]

Malaria is a life-threatening disease caused by Plasmodium parasites that are transmitted to people through the bites of infected mosquitoes. There are four parasite species that cause Malaria in humans: Plasmodium Falciparum, Plasmodium Vivax, Plasmodium Malariae and Plasmodium Ovale. Plasmodium Falciparum and Plasmodium Vivax are the most common. Plasmodium falciparum is the most deadly. [2] Transmission depends on climatic conditions that may affect the number and survival of mosquitoes, such as rainfall patterns, temperature and humidity. In many places, transmission is seasonal, with the peak during and just after the rainy season. [2]

Malaria has been a major public health problem in India. Intermittent fever, with high incidence during the rainy season, coinciding with agriculture, sowing and harvesting, was first recognized by Romans and Greeks who associated it with swampy areas. They postulated that intermittent fevers were due to the 'bad odor' coming from the marshy areas and thus gave the name 'Malaria' ('mal'=bad + 'air') to intermittent fevers. In spite of the fact that today the causative organism is known, the name has stuck to this disease. [3] About 95% population in the country resides in Malaria endemic areas.[4] India contributes 70% of malaria cases and 69% of malaria deaths in the South-East Asia Region. Overall, malaria cases have consistently declined from 2 million in 2001 to 0.88 million in 2013, although an increase to 1.13 million cases occurred in 2014 due to focal outbreaks.

The incidence of malaria in the country therefore was 0.08% in a population of nearly 1.25 billion. [5]

In India, screening of fever cases for Malaria is presently done under the National Vector Borne Diseases Control Programme (NVBDCP) covering about 10% of the population annually, of which about 1.5 million are positive for the Malaria parasite; around 45-50% of these cases are due to Plasmodium Falciparum. Though the Annual Parasite Incidence (API) has come down in the country, it varies greatly from one state to another. The Malaria situation remains a major problem in certain states and geographical pockets. [6] Malaria is showing rising trend in recent past in Gujarat. This is the reason to conduct this study.

Objective:

The objective of the present study is to study epidemiological determinants for occurrence of Malaria in Rajkot city.

Method:

Study Area:

Current study was conducted in Rajkot Municipal corporation (RMC) area, Rajkot, Gujarat state. Total population of Rajkot Municipal Corporation was 14,75,138 in year 2015. Rajkot city is divided in three zones; namely East zone, West zone and Central zone. Population of East zone was 4,50,549; west zone 6,06,597 and central zone 4,17,992 in the year 2015. There are 7 wards in East zone, 8 wards in West zone and 8 wards in Central zone. So there are total 23 wards. There are 19 Urban Health Center (UHC) in Rajkot Municipal corporation area.

Data collection tool:

Pre-formed, semi structured proforma was used for data collection. Details regarding cases and death of Malaria, blood smear collected, age and sex wise distribution of cases, details of rain fall and rainy days in year 2015 and details of risk factors for occurrence of Malaria cases during year 2015 were collected.

Data Collection:

The study was carried out based on the secondary data generated as a part of National Vector Borne Disease Control Program (NVBDCP) through active surveillance and routine health care at UHCs as passive surveillance. For active case detection of Malaria, field volunteers and USHA searched for cases of fever in their field areas. For passive case detection, fever cases reported at UHC were studied for Malaria. All Data were collected from records available at Malaria department, Rajkot Municipal Corporation Office.

Data analysis:

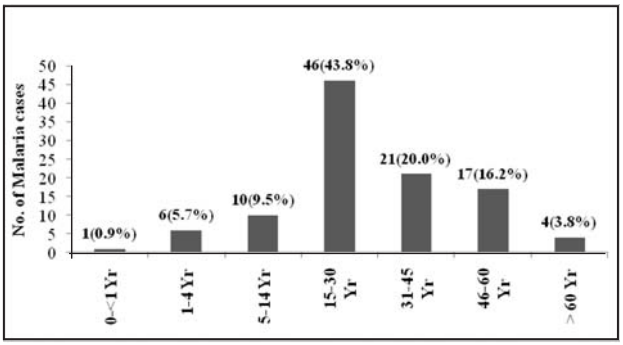
Secondary data regarding Malaria were collected and analyzed using Microsoft Office Excel 2007. Charts were prepared for showing trend of situation in Corporation/UHC.

Results:

In the year 2015, in Rajkot Municipal Corporation, total 105 Malaria cases were reported and no any deaths were reported due to Malaria. Cases included all Malaria cases reported from Urban Health Centres, P.D.U. Government Medical College and Hospital (Tertiary Care Center), P.K. Hospital (District Hospital, Rajkot). Out of them, 78.6% cases were due to P. vivax while 21.4% cases were due to P. falciparum.

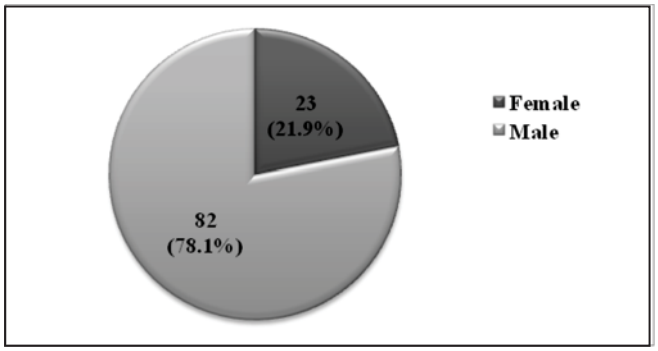
In our study, highest Malaria cases i.e. 46(43.8%) were observed in 15-30 years of age group followed by 21(20%) cases in 31-45 years of age. Overall, majority of malaria cases were reported in 15-60 years of age group. (Figure-1)

Figure 1: Age wise distribution of malaria cases during year 2015 in RMC



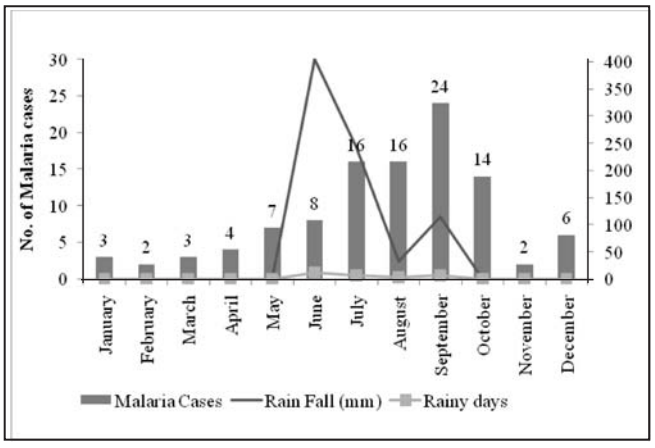
Malaria cases were found four times more common in males as compared to females in the year 2015. (Figure-2)

Figure 2: Sex wise distribution of Malaria cases in RMC during year 2015



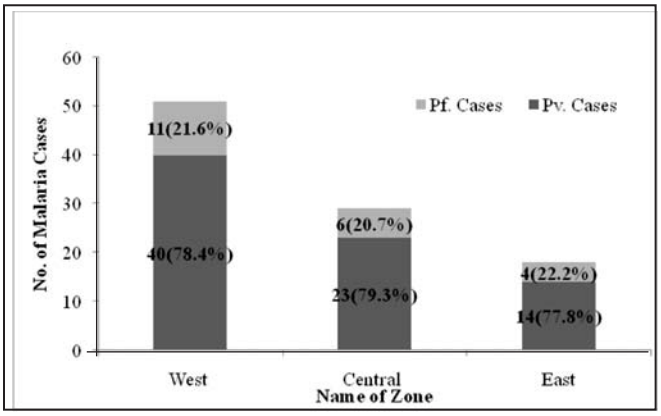
It was seen that in year 2015, total number of Malaria cases were ranged from 2-24 cases per month. Overall majority of Malaria cases were seen during July to October months. Highest Malaria cases were noted in September month (24 cases). Maximum rain fall as well as rainy days was seen during June months in the year 2015. After first major rain fall, more number of cases of Malaria were seen in next 2-3 months. (Figure-3)

Figure 3: Month wise Distribution of Malaria cases and rain fall & rainy days in year 2015 in RMC



Our findings show that maximum Malaria cases were seen in west zone followed by central zone in year 2015. Overall Plasmodium vivax cases were more observed as compared to Plasmodium falciparum cases. Lowest Malaria cases were found in East zone. (Figure-4)

Figure 4: Zone wise distribution of Malaria cases during 2015



All zones have one or more risk factors. Irrigation canal, more constructions and development projects and also more industries were also seen in west zones. This is the reason that most of the Malaria cases were reported from west zone. (Table-1)

Discussion:

This study was done in Rajkot Municipal Corporation area during year 2015. In this year 105 Malaria cases were reported.

In our study, 21.4% cases were due to P. falciparum while 78.6% cases were due to P. vivax. The dominance of P. vivax cases over P. falciparum cases may be due to several factors like parasitic load, vector density, vectorial capacity, host parasite interaction or fresh introduction of P. vivax from nearby areas by means of migratory population to this area. Our findings were supported by other studies done by Upadhyayula et al. [7], Chery et al. [8], Rashmi Sharma [9] and Sharma et al.[10] in which also majority of cases were due to P. vivax. But in some other studies done by Rabha et al. [11] and Singh et al.[12] P. falciparum cases detected were higher than P. vivax.

We observed highest Malaria cases i.e. 46(43.8%) in 15-30 years of age group. In study done by Rashmi Sharma [9], highest cases were seen among 5-15 years of age group. Farnert et al.[13] reported Malaria incidence highest among the youngest children and decreased with increasing age. In study done by Singh et al.[12], 50% of the cases were reported in children less than 8 year of age group.

Table 1: Zone wise risk estimation of Malaria in 2015

Name of Zone	Risk factors					Malaria cases n (%)
	Major Dam/ Lake (Yes/No)	Major irrigation canal passing in area (Yes/No)	No. of Major water logging present	No. of construction or development projects	No. of Industries	
West	No	Yes	1	130	1125	51 (52.0)
Central	No	No	4	129	613	29 (29.6)
East	Yes	No	4	53	1168	18 (18.4)
Total	**-**	**-**	**9**	**312**	**2906**	**98 (100.0)**

In this study, males were more affected as compared to females. Similar findings were found in a study done by Kumar et al.[14], Karlekar et al.[15] and Pathak et al.[16]

It is observed from the study, that the disease transmission occurred throughout the year but, average to higher number of case were recorded in rainy season i.e. in July to October month and highest cases were reported in September month. Maximum rainfall was seen during July month and rainfall occurred from July to September month. According to WHO report, moderate rainfall, instead of high volume, was found to be more congenial for malaria incidence.[17] The factor of rainfall influences the transmission of malaria by creating the breeding sites and also increases the relative humidity, which is favorable for mosquito, parasite development and disease transmission. On the other hand, abundant rainfall wash out the breeding sources which may lead to decrease in the mosquito population and reflects on decrease in number of malaria incidences.[7] In other than rainy season, malaria cases were also occurred. This is due to the availability of vector habitation, existence of permanent water bodies, such as slow-flowing rivers and lakes which provide suitable breeding sites for malaria vectors.

Rainfall and number of rainy days also showed positive correlation with the number of malaria cases in a study done by Upadhyayula et al.[7] and Qayum et al.[18]. R Sharma et al.[10] also found June-July month is the peak season for malaria. Goswami et al.[19] found peak of malaria cases in the monsoon months (June-September). But Bhattacharya et al.[20] found that not only rainfall directly correlates with malaria but temperature and humidity conditions also affect mosquito development during this period.

Rajkot Municipal Corporation is divided in 3 zones (west zone, central zone and east zone). Out of them more than 50% of malaria cases were occurred in West zone. This may be due to more number of major industries, construction/development projects, presence of water logging and also due to passing of irrigation canal in that area. Migrant laborers are working in majority of industries and developmental projects.

One potentially important factor in the spread of malaria in India, particularly P. falciparum, is human migration. For South Asian malaria control experts, the link between human migration and the importation of malaria into urban settings is of enormous interest. Migrants may not have access to government health services and may therefore be exposed to preventive and treatment strategies different than national malaria control recommendations (e.g., use of ITNs and correct choice of anti-malarial drug/drug regimens).[21] The construction and infrastructure development projects also attract migrants from other areas. Enhanced malaria risk has also been related to

construction activities, such as the local production of bricks and road works that create vectors' habitats.[22]

Conclusion:

Our study demonstrates Malaria distribution in Rajkot Municipal Corporation with substantially higher prevalence of P. vivax than P. falciparum. Malaria was seen relatively higher in males and affecting 15-30 years of age group more. Peak of malaria cases were found after major rainfall. West zone having more risk factors like irrigation canal, construction/development projects and industrial area has high risk of malaria.

Recommendations:

Morbidity and mortality burden of malaria could be reduced by strengthening Malaria Surveillance. Risk factor assessment during pre-monsoon period and there after required. Pre-monsoon preventive actions need strengthening. More focus requires in industries and developmental projects. Large water bodies needs to be treated with suitable methods recommended under National Vector-Borne Disease Control Programme.

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Conflict of Interest: Nil

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An Epidemiological Study to Measure the Prevalence of Risk Factors of Diabetes and Hypertension and to Find the Association between Them: A Cross-Sectional Study in Gandhinagar

Rajendra N. Gadhavi[1], Arjunkumar Jakasania[2], Dipak Solanki[3]

[1]Tutor, [2]Resident, Department of Community Medicine, B. J. Medical College, Ahmedabad, India
[3]Professor and Head, Department of Community Medicine, GMERS Medical College-Gotri, Vadodara, Gujarat, India

Correspondence : . Dr. Arjunkumar Jakasania, E mail: aarrjjuunn999@gmail.com

Abstract :

Introduction: The prevalence of hypertension and diabetes is on the rise in developing countries like India. There are many risk factors which are associated with diabetes and hypertension like tobacco consumption, physical inactivity etc. The present study was conducted to measure the prevalence of risk factors and their association with diabetes and hypertension. **Objective:** To measure the prevalence of risk factors among government employees in Gandhinagar, Gujarat and to find an association of risk factors with diabetes and hypertension among the study group. **Method:** A cross-sectional study was carried out by randomly selected 775 employees working in new Sachivalay, Gandhinagar in Gujarat. The predesigned and pretested questionnaire was used to collect data regarding socio-demographic profile and standard procedures were followed for anthropometric examination, blood sugar estimation and blood pressure monitoring. **Result:** Majority of the participants were male (88%) and from the age group of 41-49 years (63%). Half of the participants were studied up to graduation. Family history, physical activity and education status found to be statistically significantly associated with hypertension while only family history was found to be statistically significantly associated with diabetes. There was no association found between Per capita income and tobacco usage with hypertension and diabetes in the study group. **Conclusion:** The prevalence of risk factors for diabetes and hypertension were found very high in the study group. The association of risk factors with diabetes & hypertension was found significantly associated. Health education should be given to the government employees for diabetes, hypertension and their management. Periodic screening should be conducted for early diagnosis.

Key words: Association , Diabetes, Hypertension, Risk factors

Introduction:

Diabetes is endemic in India.[1-3] The International Diabetes Federation has estimated that India currently has more than 65 million people with type 2 diabetes and the numbers are poised to double in the next 20 years. [1] It has been reported that the prevalence of diabetes among urban participants in India is among the highest in the world and comparable to the high prevalence countries of West Asia and the Pacific. [3,4] Hypertension is also one of the important public health challenges worldwide because of its high frequency and concomitant risks of cardiovascular and kidney disease. [5, 6] It has been identified as a leading risk factor for mortality and ranked third as a cause of Disability-adjusted life-years. [7] The accelerating epidemic of hypertension in India was documented by studies done at various places across the country. [8] The National Nutrition Monitoring Bureau (NNMB), which monitors the nutritional status of the population in nine States of India has estimated the prevalence of hypertension among the rural adult (aged 18 and above) population of India to be 25 per cent during 2004-2005. [9] The epidemic of diabetes and hypertension in India is due

to the rapid epidemiological transition attributed to changes in dietary patterns and decreased physical activity apart from the role of genetic factors in the disease causation. Diabetes and hypertension both are major public health diseases and there are known risk factors like tobacco consumption, physical inactivity are prevalent in the community. With this background the present study was conducted to measure the prevalence of risk factors and their association with hypertension and diabetes.

Method:

A cross-sectional study was conducted in Sachivalay, which is cluster of State Government offices in Gandhinagar, the capital of Gujarat. At an expected prevalence of hypertension in adults of 20 percent, [10] with an absolute precision of 3 percent and design effect of 1 at 95 percent significance level (alpha risk of 5 percent), the required sample size was calculated as 682, by using formula, $N=Z^2p(1-p)/D^2$ [Where p is prevalence and D is absolute precision (Z=1.96)]. [11] Anticipating a refusal rate of 10%, the final sample size obtained was 750. Thus, we have included 775 participants for hypertension. At an expected prevalence of diabetes in adults of urban India of 14%, [12] with an absolute precision of 3% and a design effect of 1 at 95% significance level, the required sample size was calculated as 535. Anticipating a refusal rate of 10%, the final sample size obtained was 588.Thus, finally we have included 590 subjects. We measured blood pressure of all 775 study participants and out of them 590 were tested for diabetes. Venous blood was collected for fasting and postprandial blood glucose estimation by using Oral Glucose Tolerance Test. Oral glucose tolerance test and diagnosis was done as per guideline of American Diabetes Association. [13] Blood pressure was measured as per guideline of American Heart Association [14] and diagnosis was done based on JNC VII guideline. [15] A pre-tested and pre-designed questionnaire was used to collect data regarding socio-demographic profile and personal history. Weight and height were measured by standard techniques using calibrated adult weighing scale and stadiometer respectively. Respondents were asked whether they are consuming tobacco in any forms (Smokeless & smoking), based on this they were classified in current tobacco user, ex-user or non-user. Ex-user and non-user were grouped together for analysis as non-user. The Per Capita Income(PCI) was then divided into three categories, namely upper (PCI > Rs. 5000), middle (PCI > Rs. 2500 and ⩽ Rs. 5000), and lower (PCI ⩽ 2500). Physical activity was measured as per Leisure Time Physical Activity Questionnaire.[16] Based on this,they were divided into four groups. In government offices, employees were ranked as per their position, educational status and salary scale. Cadre-I suggests highest ranked employees and Cadre-4 as lowest ranked. An informed written consent was taken from the each participant.

Statistical analysis: The collected data were entered and analysed in Microsoft Office Excel and Epi-Info.7.

Result:

The present study was conducted in new sachivalay, Gandhinagar by randomly selected 775 government employees. Table 1 shows that, out of 775 study participants, 676 (87.22%) were male and 99(13.78%) were female. Majority participants (63%) were from the age group of 41-49 years and 61.5% found to be working as cadre-3 employees.

Table 2 is showing that 275(35.48) out of total 775 study participants checked for blood pressure were found to be hypertensive. Out of them, 18.7% were found to be tobacco users. Prevalence of tobacco consumption is 21.45 % in hypertensive and 17.2% in non-hypertensive subjects but the difference was not found statistically significant as per chi-square test. 97(35.27%) hypertensive subjects have positive family history of hypertension. An association between family history and prevalence of hypertension was found statistically significant in the present study as per chi-square test. Per capita income of study participants were not found associated with hypertension as per chi-square test. Physical activity was measured as per Leisure Time Physical Activity Questionnaire[16] and based on this,they were divided into four groups. An association between level of physical activity and hypertension prevalence was found statistically significant as per chi-square test.

Table 1: Socio-demographic profile of study participants

Sr. No.	Variable		Male(n=676)	Female(n=99)	Total(N=775)*
1	**Age**	<40 Years	83	9	92 (11.9)
		41-49 Years	419	69	488 (63)
		>50 Years	174	21	195 (25.2)
2	**Cadre**	1	67	9	76 (9.8)
		2	101	13	114 (14.7)
		3	406	71	477 (61.5)
		4	102	6	108 (13.9)
3	**Education**	Primary	49	9	58 (7.4)
		secondary	152	29	181 (23.5)
		Graduate	336	51	387 (49.9)
		Post-graduate	139	10	149 (19.2)
4	**Per Capita Income**	Upper	121	20	141 (18.1)
		Middle	307	52	359 (46.4)
		Lower	248	27	275 (35.5)
	Total		676 (87)	99(13)	775 (100)

*Figures in parenthesis is showing Percentage values (%).

(Table 3) 590 study participants out of total 775 government employees who were included in the study were checked for diabetes with Oral Glucose Tolerance Test. 79(13.39%) out of total 590 study participants checked for blood sugar were found to be diabetes. Out of them, 21.51% were found to be tobacco consumers but the difference was not found statistically significant as per chi-square test between the prevalence of diabetes among tobacco users & non-users. 39(49.37%) out of 79 diabetics have positive family history of diabetes. An association between positive family history of diabetes and prevalence of diabetes was found statistically significant in the present study as per chi-square test. Per capita income and education of study participants were not found associated with Diabetes as per chi-square test. Physical activity as per Leisure Time Physical Activity guideline [16] was recorded they were divided into four groups and association between physical activity and Diabetes was not found statistically significant as per chi-square test.

Discussion:

In our study, the majority of subjects were males (88%) and in the age of 41-49 years (63%). This was similar to the study conducted by Ramachandran et al. [17] The literacy rate in our study subjects was high (86.5%) and another study conducted by Shah V et al has reported literacy rate 64%. [18] Our study was conducted among employees, which might be reason for higher reported literacy rate. Our study showed the prevalence of diabetes to be 13.38%. The study conducted by Ramachandran et al has also reported prevalence of diabetes 14%, which similar to the reported prevalence of present study. [17] The prevalence of diabetes was found nearly 11% in female and 13% in male but in our study, there is no statistically significant difference was found with gender and diabetes. Similar findings were reported in a study conducted by Pushpa et al in Karnataka, India. [19] It differed from the earlier

Table 2: An association of Risk factors with Hypertension in study population (N=775)

Sr. No.	Risk factors		Hypertension		Total*	χ^2 value	P-value
			Yes	No			
1	Tobacco product user	Yes	59	86	145(18.7)	2.11	0.146
		No	216	414	630(81.3)		
2	Family history	Positive	97	105	202(26)	18.75	<0.05
		Negative	178	395	573(74)		
3	Per Capita Income	Upper	59	82	141(18.1)	4.54	0.1
		Middle	115	244	359(46.4)		
		Lower	101	174	275(35.5)		
4	Physcial activity	Grade 1	116	263	379(48.9)	9.27	0.025
		Grade 2	143	214	357(46.1)		
		Grade 3	16	21	37(4.8)		
		Grade 4	0	2	2(0.3)		
5	Education	Primary	19	39	58 (7.4)	10.7	0.01
		Secondary	61	120	181(23.5)		
		Graduation	125	262	387(49.9)		
		Post Graduation	70	79	149(19.2)		

*Figures in parenthesis is showing Percentage values (%).

estimate that prevalence of diabetes was more amongst males in a study conducted by Ramachandran et al.[17] In our study the overall prevalence of diabetes was 13.38% and the prevalence increased as age advanced. Similar results were seen in a house to house survey carried out in New Delhi by Verma et al, the peak prevalence was in the age group of 60-65. [20] Our study showed less prevalence of diabetes and hypertension in subjects doing regular physical exercise which is similar to findings the study carried out by in Singapore L Wong et al [21] and study conducted by Pushpa et al [19] In Karnataka, India. Our study did not show any significant association between the occurrence of Diabetes, Hypertension with tobacco consumption. Similar results were seen in a study carried out by L Wong et al [21] and in a study conducted by Pushpa et al[19] in Karnataka, India. 50% of the all diabetics have positive family history and association between diabetes and family history was found statistically significant (p<0.001). This finding was similar to the study done by Ramachandran et al [17] and in a study conducted by Pushpa et al [19] in Karnataka, India. In the present study, there is no association found between education and Diabetes. Similar findings were reported in a study conducted by Pushpa et al in Karnataka, India. [19]

Conclusion and Recommendations:

Thus, in present study prevalence of known risk factors of Diabetes and Hypertension were found to be very high than state average figures. [22] There was statistically significant association found between prevalence of Hypertension and Diabetes with positive family history of that disease. The findings were consistent with other studies. The decreased physical exercise was found to have a significant association with hypertension. The

Table 3: An association of Risk factors with Diabetes in study population

Sr. No.	Risk factors		Hypertension		Total*	χ^2 value	P-value
			Yes	No			
1	Tobacco product user	Yes	17	83	100(16.9)	1.353	0.245
		No	62	428	490(83.1)		
2	Family history	Positive	39	90	129(21.7)	40.38	<0.01
		Negative	40	421	461(78.3)		
3	Per Capita Income	Upper	21	177	198(33.6)	2.00	0.36
		Middle	41	238	279(47.3)		
		Lower	17	96	113(19.1)		
4	Physical activity	Grade 1	37	237	274(46.4)	0.33	0.95
		Grade 2	38	248	286(48.5)		
		Grade 3	4	24	28(4.7)		
		Grade 4	0	2	2(0.4)		
5	Education	Primary	2	36	38(6.4)	2.56	0.46
		Secondary	19	109	128(21.7)		
		Graduation	43	263	306(51.9)		
		Post Graduation	15	103	118(20)		

*Figures in parenthesis are showing Percentage values (%).

employees must be encouraged to adopt healthy lifestyle like to increase physical activity. Knowledge about diabetes mellitus is a prerequisite for individuals to increase awareness and to take self-action in adopting control measures against them. Periodic screening should be done for early detection and treatment of the disease like diabetes and hypertension.

Limitations of the study:

The study was conducted among the employees of the government and which are mainly involved in the sedentary work. Thus, results of the present study couldn't be generalised as the sample of the study is not representing the entire community. Only few variable of interest were included in the study. But, the result of the present study can be helpful to conduct the large-scale study.

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Declaration:

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Conflict of Interest: Nil

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Effect of Health Education on Grass Root Level Health Workers regarding Medical Termination of Pregnancy Act (MTP Act)

Rahul D. Khokhariya[1], Nikhil J. Patel[2], Sangita Patel[3], Maitri Shah[4]

[1]Resident, [3]Associate Professor, Community Medicine Department, Government Medical College, Baroda, Gujarat, India
[2]Assistant Professor, Community Medicine Department, Parul Institute of Medical Sciences and Research, Waghodia, Gujarat, India
[4]Associate Professor, OBGY Department, Government Medical College, Baroda, Gujarat, India
Correspondence : . Dr. Nikhil J.Patel, E mail: patel.nikhil78@gmail.com

Abstract :

Introduction: Despite being legally available in India since 1971, barriers to safe and legal abortion remain and unsafe and illegal abortion continues to be the problem. For proper knowledge of legal abortion medical, paramedical and grass root level health workers must have proper knowledge about the MTP Act. **Objective:** To Assess the knowledge of grass root level health workers regarding MTP Act and to measure the improvement in knowledge after health Education. **Method:** An interventional study was carried out at Sahaj trust, Baroda. 30 workers who attended a workshop on 9th July, 2015 were administered a pre and post test questionnaire. All workers were from different Non Governmental Organizations (NGOs) from all over Gujarat and all were working in maternal and child health services. After completion of their pre test, all 30 participants were given an interactive talk on MTP Act by experts. All participants were asked to answer a similar questionnaire after giving health talk and the difference in the knowledge between pre and post was calculated by applying a paired t-test. **Analysis:** Analysis was done using MedCalc software. Means and SD of pre and post intervention scores were calculated and paired t-test was applied. **Results:** Mean ± SD of pre-intervention questionnaire score was 10.30 ± 2.88 and Mean ± SD of post-intervention scores was 14.30 ± 2.95(Total score was 20). Analysis of these data on applying paired t-test showed that there was significant improvement in the knowledge of health care workers after educating them on MTP Act. (p=<0.0001) **Conclusion:** Health Education of Grass root level health workers resulted in improvement of their knowledge about MTP Act. **Implication:** It is necessary to empower grass root health workers by giving them health education on MTP Act and improving their knowledge on regular interval.

Key words: Grass root level Health Workers, Health Education, Medical Termination of Pregnancy Act

Introduction:

Abortion in India is legal only up to twenty weeks of pregnancy under specific conditions and situations. Recently, the Supreme court permitted a rape survivor to terminate her pregnancy at 24 weeks, which beyond the permissible 20 weeks limit prescribed under the medical termination of pregnancy act, 1971.[1] An adult woman requires no other persons consent, except her own.[2] In many parts of India, daughters are not preferred and hence sex- selective abortion is commonly practiced, resulting in an unnatural male to female population sex ratio due to millions of developing girls selectively being targeted for termination before birth.[3] The Indian Pinal Code, enacted in 1860 and written in accordance with contemporaneous British law, declared induced abortion illegal. Induced abortion was defined as purposely "causing miscarriage."[4] The penalty for abortion practitioners was either three years in prison or fine or both; for the woman availing an abortion, the penalty was either seven years in prison or a fine or both.[4] The only exception was when abortion was induced in order to save the life of woman.[4]

The prevalence of illegal abortion, combined with the idea that abortion could be a mode of population control, caused the Government to reconsider the law.[4] In 1964, the central Family Planning Board of the Government of India met and formed a committee to examine the subject of abortion from the medical, legal, social and moral standpoints.[4] The committee submitted its report in December 1966. This report suggested that the penal code was too restrictive and recommended that exemption under which abortion was permissible be increased and liberalized. Many of the report's suggestions included in the subsequent Medical Termination of Pregnancy (MTP) Act[4] The Indian abortion laws falls under the medical termination of pregnancy (MTP) Act, which was enacted by the Indian parliament in the year 1971 with the intention of reducing the incidence of illegal abortion and consequent maternal mortality and morbidity.[5]

The MTP Act came into effect from 1st April 1972 and was amended in the years 1975 and 2002. Pregnancies not exceeding 12 weeks may be terminated based on a single opinion formed in good faith. In case of pregnancies exceeding 12 weeks but less than 20 weeks, termination needs opinion of two doctors. [6] Medical termination of pregnancy act of India clearly states the conditions under which a pregnancy can be ended or aborted, the persons who are qualified to conduct the abortion and the place of implementation. [7] Some of these qualification are as follows: Women whose physical and or mental health were endangered by the pregnancy,[4] women facing the birth of potentially handicapped or malformed child,[4] rape, Pregnancies in unmarried girls under the age of eighteen with the consent of a guardian,[4] Pregnancies in lunatics with the consent of guardian and pregnancies that are a result of failure in sterilization.[4] lpas, India reported in 2013 that unsafe abortion killed one woman for every two hours in India (approximately 4000 deaths a year),[8] according to estimates and calculations correlating data on maternal mortality ratio and sample registration system data.. A lancet paper in 2007 said there were 6.4 millions abortions, of which 3.6 million or 56 % were unsafe. According to 2011 census, institutionalized abortion varied among Indian States from 32% in Chhattisgarh to 73.9% in Assam. However, over 40 years after the implementation of a liberal MTP Act, unsafe abortions continue to outnumber safe and legal abortion in India. In the absence of safe legal options, women opt for backroom procedures which can be fatal. The proposed amendments to the MTP act are aimed at increasing the availability of safe and legal abortion services. This was vital, as morbidity from unsafe abortion continues to remain high.

In terms of accessibility of safe abortion services in the public health system where a MTP is available, only 73% districts hospital in major states had this facility. In Bihar, it was only 35% districts hospital and Uttar Pradesh 48.5%, the lowest in the country.[8] Though the availability of safe and legal abortion services in hospitals most of the woman opt illegal abortion services and there is fatal outcome. Our study was conducted at Sahaj Trust, Vadodara (Gujarat) to assess the proper knowledge of grass root level health workers regarding MTP Act.

Objectives:

- To assess the knowledge of grass root level health workers regarding MTP Act
- To measure the improvement in knowledge after education

Method:

The study was approved by Scientific and Institutional Ethics Committee for Human Research,Medical College and SSG Hospital, Baroda. Interventional study was conducted at Sahaj trust, Vadodara. Workshop was done on maternal and child health on 9th July, 2015. Sahaj trust contacted about 100 NGOs related to maternal and child health from all over Gujarat. These NGOs were requested to send their workers whoever active in maternal and child health to the Sahaj trust facility in Vadodara. On the Day of workshop, 9th July, 2015, 30 grass root workers working in maternal and child health were come and they were segregated and involved in the study. Out of these 30 Grass root level health workers 22 were females and only 8 were male health workers. To

evaluate their knowledge regarding MTP Act they were introduced to a pre-tested semi structured questionnaire after taking their oral consent. There were total 10 questions. Each question carried 2 marks. After completion of their test, all 30 participants were shown a video of 10-15 minutes. The video contained the information regarding unsafe abortion, problems which are created after unsafe abortion, sex ratio and information regarding MTP Act, after completion of the video they were given an interactive talk in which the topics covered were; what is unsafe abortion? What are the common complication after unsafe abortion? What is the legal provision under MTP Act? And discuss about current sex ratio and in which condition we can terminated pregnancy? To prove the presumption that the education had helped in improvement in knowledge, all participants were asked to answer a similar questionnaire again. Analysis was done using MedCalc software. Means and SD of Pre and Post intervention scores were calculated first. Then a paired t-test was applied on these data to see if the improvement in knowledge is significant or not.

Results:

In our study out of these 30 participants 22 were female and 8 were male. Age of the participant ranged between 21 to 45. Majority of the participants were between 30 to 40 years of age group. Mean age of the study participants was around 33.13 year (SD=6.16). Most of the participants were educated up to graduation (18) followed by 12th(9) and 10th(3) standard. 50 % participants had income between Rs 5000 to Rs 10000.

Table 1 shows the socio-demographic profile of the participants. Results of Pre-intervention questionnaire showed that grass root workers could score only 10.30 (mean) marks out of maximum of 20 marks. They were given 2 marks for correct answer and Zero for wrong answer. Before health education

76.6% of participants couldn't answer when the pregnancy can be terminated under MTP Act and only

Table.1 Socio Demographic Factors (N=30)

Variable/Factor		Number (%)
Age (Mean ± SD) in years		33.13 ± 6.61
Sex	Female	22 (73.33%)
	Male	8 (26.66 %)
Age group in years	21-25	4 (13.33 %)
	26-30	8 (26.66 %)
	31-35	9 (30 %)
	36-40	3 (10 %)
	41-45	6 (20 %)
Education	Secondary School Certificate (SSC)	3 (10 %)
	Higher Secondary Certificate (HSC)	9 (30 %)
	Graduate	18 (60 %)
Monthly Income (in ₹.)	<3000	5 (16.66 %)
	≥3000	4 (13.33%)
	≥5000	15 (50 %)
	≥10000	6 (20 %)

Table 2: Knowledge of the participants regarding legal termination of pregnancy

Sr. No	Question	KNOW		DON'T KNOW	
		Pre Workshop N (%)	Post Workshop N (%)	Pre Workshop N (%)	Post Workshop N (%)
1.	When pregnancy can be terminated?	07(23.33)	18(60)	23(76.66)	12(40)
2.	Who can terminate pregnancy?	28(93.33)	30(100)	02(6.66)	00(0)
3.	Where pregnancy can be terminated?	29(96.66)	30(100)	01(3.33)	00(0)
4.	Is it necessary to take permission for termination of pregnancy from husband, mother in law or any other family member?	17(56.66)	24(80)	13(43.33)	06(20)
5.	If mentally ill woman come for termination of pregnancy than who will give permission	15(50)	21(70)	15(50)	09(30)
6.	If woman is pregnant due to rape than, Is she get permission?	06(20)	23(76.66)	24(80)	07(23.33)

23.3% participants had given correct answer and after health education correct response was increase to 60% and 40% had given incorrect response. Most of the participants in our study knew that who can perform medical termination of pregnancy, 93.3% participants gave correct response and this response increase to 100% after health education. Most of the participants knew where pregnancy should be terminated. Response was correct in 96.6% of the participants before health education and it was increased up to 100% after health education. 43.3% of participants didn't know that there must be registration of the place for abortion. And if there is no registration than what is the legal punishment. 50% participants gave only one correct answer and 6.6% gave both answers correct. After Health education, correct response was increased. Before health education, 56.6% participants knew that for termination of pregnancy, the permission of only pregnant woman is required; there is no need to take permission from husband, mother in law or any other person and this response was increased up to 80% after health education. 50% of participants had no knowledge that if mentally ill pregnant female came for termination of pregnancy than who can give permission for termination of pregnancy. After health education, correct response was increased to 70%. Most of the participants in our study had no knowledge about the legal provision of the Medical Termination of Pregnancy Act. 6.6% participants couldn't answer the question regarding if mother comes with 13 weeks of pregnancy and after ultrasonography if we knew that baby is suffering from some serious health disease, than can we terminate pregnancy according MTP Act 1971 and Second part of the question was, if pregnancy was more than 12 weeks than opinion of how many doctor needed 46.6% participants gave only one correct answer about if after ultrasonography we knew that baby is suffering from some serious health disease than we can terminate the pregnancy and 46.6% participants gave both correct answer and both correct response was increased to 70% after health education.80% of the participants had no knowledge that if pregnancy is due to rape than, can pregnancy be terminated legally. And after health education 76.6% participants gave the correct answer. Significant differences were seen between before and after the

health education. Table 2 shows the knowledge of the participants before and after intervention.

Mean ± SD of Pre-intervention questionnaire score was 10.30 ± 2.88 and Mean ± SD of Post-intervention questionnaire score was 14.30 ± 2.95. Analysis of these data on applying paired t-test showed that there is a significant improvement in the knowledge of health care workers after educating them on MTP Act (p= <0.0001).

Discussion:

This study revealed that mean knowledge score regarding MTP Act among grass root level health workers was 10.30 and there was significant increase to 14.30 after health education(p=<0.0001). Main source of spreading knowledge among lay people and illiterate people are grass root level health workers. In rural India for most of the people source of information were grass root health workers. Most of the participants were lacking the proper knowledge regarding MTP Act, this was contrast to the study conducted in Maharashtra and similar to the study conducted in Gujarat.[9] Despite 30 years of liberal legislation, the majority of women in India still lack access to safe abortion care. Proposed amendments to the MTP Act to prevent sex-selective abortions would have been unethical and violated confidentiality and were not taken forward. Continuing problems include poor regulation of both public and private sector services, a physician only policy that excludes mid-level providers and low registration of rural compared to urban clinics. Poor awareness of the law, unnecessary spousal consent requirements, contraceptive targets linked to abortion, and informal and high fees also serve as barriers.[10]One study conducted in Rajasthan showed that there is greater role of community health workers in making safe abortion information and services accessible to women so it is necessary that community health workers have proper knowledge about the legal provision of MTP Act.[11] Abortion has been legal in India since 1971 and the availability of safe abortion services has increased. However, service availability has not led to a significant reduction in unsafe abortion. Study conducted in Jharkhand and Bihar showed that poor women have limited exposure to mass media. Instead they relied on community health workers, family and friends for health information.[12] 93.3% of the participants in our study knew that who can terminated pregnancy correct. And response was increased to 100% after intervention. 23.3% participants knew that when women had terminated pregnancy. And correct response was increase after intervention. 96.6% of the participants knew that where pregnancy should be terminated. And correct response was increase to 100% after intervention. 56.6% of participants knew that for termination of pregnancy only pregnant woman is giving permission, there is no need to take permission from other family member and this response was increase to 80% after intervention. 50% of the participants had no knowledge that if mentally ill pregnant woman came for termination of pregnancy than who can give permission for termination of pregnancy. After intervention correct response was increase to 70%.

Conclusion:

Health education of the grass root level health workers result in improving their knowledge about MTP Act.

Recommendation:

Grass root level health workers are in direct contact with community and if they don't have proper knowledge; how can they convey right message to the community. Most of the illegal abortion occur in villages and there are not proper health facility and people are illiterate so fatal outcome due to illegal abortion are more common in villages. These people are worked at that level so they must have proper knowledge and convey right message to the people. And it is necessary to empower grass root level health workers by giving them health education and improving their knowledge on regular interval.

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Declaration:

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Conflict of Interest: Nil

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Evaluation of Vaccine Cold Chain in Urban Health Centers (UHCs) of Jamnagar Municipal Corporation (JMC), Gujarat

Nirmika Patel[1], Sumit Unadkat[2], Dipesh Parmar[3], Mittal Rathod [4]

[1]Tutor, Community Medicine Department, GMERS Medical College, Sola, Ahmedabad, Gujarat, India
[2]Associate Professor, [3]Professor, [4]Tutor, Community Medicine Department, Shri M P Shah Government Medical College, Jamnagar, Gujarat, India

Correspondence : . Dr. Sumit Unadkat, E mail: drsumitpsm@gmail.com

Abstract :

Introduction: Immunization is a well-known and effective method of preventing childhood diseases. With the implementation of Universal Immunization Programme (UIP), significant achievements have been made in preventing/ controlling the Vaccine Preventable Diseases (VPDs).An important element in immunization perceived as backbone of the program is cold chain and vaccine logistic management. **Objective:** To assess the status of various cold chain elements e.g. cold chain equipment and its maintenance, temperature maintenance, vaccines arrangement etc. at Urban Health Centers (UHCs) of Jamnagar Municipal Corporation (JMC). **Method:** It was cross sectional observational study, done at sites where vaccines are stored and at outreach sessions where immunization services are provided. Out of 11 UHCs under JMC, only 6 are having cold chain points and all of them are included in present study. Pretested fully structured specially designed checklist was used to collect the data. **Results:** Responsibility of cold chain handling is given to trained personnel at 50% UHCs. Proper maintenance of cold chain equipment was observed at 66% UHCs. Proper arrangement of vaccines was maintained at 60-70% of UHCs. Temperature record books were available at all 6 UHCs but its maintenance was up to date at only 4 centers. External and internal monitoring were observed at 50% and 66% of UHCs respectively. **Conclusion:** Overall maintenance of cold chain equipment, arrangement of vaccines, monitoring of cold chain at UHCs in JMC was satisfactory except at few pointslikes lake of training of cold chain handlers, lake of regular up to date of temperature record books & lake of monitoring by concerned medical officers at all urban health centres(UHCs).

Key words: Cold Chain, Urban Health Centres (UHCs), Vaccine

Introduction:

Immunization is one of the best efforts that India is putting forward currently to fight against various vaccine preventable diseases (VPDs).[1] The country spends a lot of resources every year on immunization.[1] The success of this program depends highly on the level of cold chain maintenance of the vaccines right from the site of manufacturing up to its administration.[1] Urban Health Centers (UHCs), set up under various Municipal Corporations, have been the backbone for delivering services related to immunization in urban areas in India. It is thereby important that cold chain system be adequately maintained at these centers. It is repeatedly found that cold chain is not maintained properly in India. [2-4] Here, we attempted to evaluate the loop holes in the maintenance of cold chain of vaccines and assessed the training and practices adopted by the cold chain handler for the same at UHCs in Jamnagar city.

Method:

The present study was a cross sectional observational study, done during July 2014 at UHCs where vaccines are stored. There are 12 UHCs under Jamnagar Municipal Corporation (JMC) and out of which only 6 are having cold chain point and the same have been included in present study. Pretested fully

structured specially designed checklist was used to collect the data. Ethical approval was taken before the commencement of the study from the ethical committee of the concerned institution.

Detailed information regarding various elements of cold chain like equipment, maintenance, power supply, storage/ supply of vaccine, record keeping etc. were collected by using pretested structured proforma. Selected UHCs were personally visited and equipment Deep Freezers (DFs) Ice Lined Refrigerators (ILRs) Vaccine carriers, cold boxes, etc) and records were examined. Responsible person looking after vaccine supply, storage and cold chain maintenance and the Medical Officer (MO) of UHCs were interviewed to collect the relevant information.

The data entry was done using Microsoft Office Excel 2010 and data analysis was done using EPI INFO and in Microsoft Office Excel 2010.

Results:

Jamnagar Municipal Corporation (JMC) is divided into total 19 wards with 12 UHCs, but only 6 of them have cold chain point. All 6 of them are covered in present study. Responsibility of cold chain handling is assigned to single individual in all UHCs. Among them only halfof them have gone through cold chain training.

Table 1 shows the maintenance of the cold chain equipment at studied UHCs. Do and don't stickers were fixed on body of all ILR and DFs while only 50% of these equipments were locked at the time of visit. Working digital thermometer were present in only 33.33% of them. Proper defrosting status and crisscross icepacks arrangement were maintained in 4 (66.7%) Deep freezers (Dfs).

Table 2 shows the vaccine status and arrangement in ice lined refrigerators at UHCs. At one of the UHC, other than vaccines such as anti-sera, food or water, HIV kit were not put in the ILRs, at remaining 5 UHCs ILR was utilized exclusively for UIP vaccine storage. Placement of 'T' series vaccines at all UHCs was as per the guidelines except at 1 where Hepatitis B vaccine was not put at top most level. At 4 UHCs, OPV vaccine were put at the bottom of the ILRs.

Figure 1 shows temperature maintenance of cold chain equipment at studied UHCs. Temperature record book was available at all UHCs, but was put

Table 1: Maintenance of electric cold chain Equipment at urban health centers (N = 6)

Variable	Frequency (%)
Equipment(DF/ILR) locked at the time of visit	3(50)
DO and DON'T sticker fixed on ILR & DF	6 (100)
Working Digital thermometer present in DF & ILR	2 (33.3)
Proper defrosting status of DF	4(66.7)
Crisscross icepacks arrangement in DF	4(66.7)

Table 2: Vaccine status and arrangement in Ice Lined Refrigerator at UHCs (N = 6)

Variable	Frequency (%)
Anti-sera, HIV kit or other than vaccines	0 (0)
Hepatitis B at top most level	1(50)*
Placement of T series vaccine properly	5(83.3)
Placement of OPV properly	4(66.7)

*Hepatitis B vaccine was available only at 2 UHCs

Table 3: External and internal monitoring of cold chain at UHCs (N=6)

Variable	Frequency (%)
External cross checking & record available	2(40%)*
Cross checked by Medical Officer (MO)	5(83.3)
Frequency of cross checking of temperature record by MO 4 times or more in month	4(66.7)

*out of 6 UHCs, 1 was established recently, so there was no availability of last one year records

near DFs/ ILR in 83.3% of total UHCs. Temperature record books were maintained up to date in 4 (66.7%) UHCs. Morning temperatures were noted in all UHCs except 1 UHC. Availability of temperature record book for last 1 year was available at 5 UHCs. Record of power failure was noted in temperature record book at 5(83.3%)UHCs.

Figure 1: Temperature maintenance in electric cold chain equipment at UHCs (N = 6)

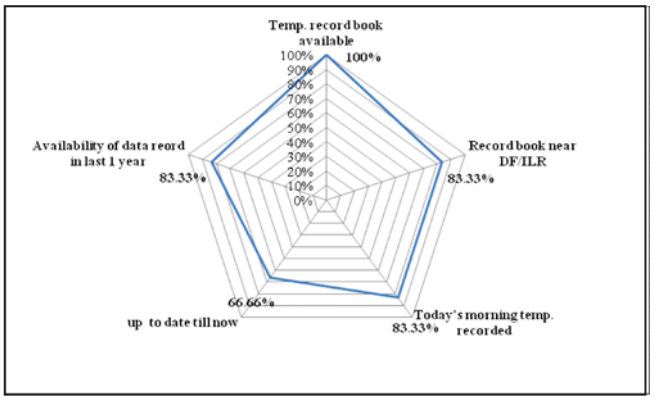

Table 3 shows the external and internal monitoring of cold chain at UHCs. External cross checking by RCHO(Reproductive & Child Health Officer), SMO(Surveillance Medical Officer)was recorded in only 50% of UHCs. Cross checking by Medical Officer of concerned UHC was recorded in 5(83.33%), but 4 or more times in a month in 4 (66.66%)UHCs.

Discussion:

According to census 2011, population of the Jamnagar district is 21, 59,130 which includes 5,29,308 urban population under Jamnagar Municipal Corporation being served by 12 UHCs.[5] JMC is divided into 19 wards, and all these wards are covered under 12 UHCs, however, the availability of cold chain point was restricted to only 6 UHCs, remaining 6 UHCs are provided vaccines for outreach sessions from nearby cold chain point. Cold chain responsibility has been assigned to single individual at all UHCs, but only half of them have undergone its training. Only half of the electric cold chain equipments were locked at the time of the visit. We found all the equipment at various health facilities having do and don't instruction sticker on lid or body. In present study, working digital thermometer were present in only one third of total ILRs and DFs. When compared it was slightly different in Kapil et al [6] where 29 (63%) DF and 27(65.83%) ILR in selected UHCs had digital thermometer in working condition.

The temperature in the ILR/freezer can rise if there is a thick layer of ice around the freezer or along the walls and bottom of ILRs.[1] It is therefore necessary to defrost them periodically. This should be done if the ice in the freezer is >5 mm thick. [1] The present study showed that thickness of ice on the side walls was >5 mm in the one third of deep freezers of the health centers. It suggests regular defrosting of deep freezer by the cold chain handlers at every UHCs. Ice packs should be stacked on the floor of the deep freezer horizontally (not flat) on its edge by keeping 1-2 mm space from each other for air circulation, in a crisscross manner.[1] Yet, in our study, we found this in only two-third of the UHCs.

It is mandatory, not to keep other drugs and vaccines not used in UIP, in ILR.[1] In our study, At none of the UHCs except one, other items or antisera or HIV kit or blood samples were kept in ILRs/DFs. This was

much less than what Sachdeva, et al. observed in their study (53.12%). [7] Vaccines lose their potency due to exposure to excessive heat or cold. OPV and measles vaccines can be kept at bottom of the basket while BCG, DPT, DT and TT vaccines should be kept in upper part of the baskets. [1] In present study, Hepatitis B vaccines were available at 2 UHCs, but it at the top most level at one UHC. Sachdeva, et al. stated in their study that heat-sensitive vaccines were stored correctly in all, while, freeze-sensitive vaccines were stored correctly in 62.5% health facilities only.[7] The ILR and deep freezers each should have a separate thermometer and temperature record book.[1] It was heartening to find that in our study, temperature was being recorded twice a day for both deep freezer and ILR in all the health centers in separate temperature record books. Temperature record book was available at all the UHCs, but was maintained up to date in 3/4 of UHCs. In study by Ateudjieu J et al [8] the temperature monitoring chart was pasted on 27 (96.4%) out of total 28 the cold chain equipment. On 16 (59.3%) of these charts, the temperature was recorded twice daily as recommended. Availability of temperature record book of last one year and record of power failure were noted in temperature record book in most of the UHCs except at one UHC. In study by Ateudjieu J et al [8], the temperature monitoring chart was pasted on 27 (96.4%) out of total 28 the cold chain equipment. Regular recording of temperature twice a day is important for proper maintenance of cold chain and recording of power failure has also equal importance for maintaining the efficacy of the vaccines. Monitoring is always required to know the achievements of objectives and for overview of processing. For these reasons external and internal monitoring of cold chain have equal importance. External monitoring observed in present study at half of total UHCs, while Adequate monitoring (4 times or more/month) by Medical Officer of concerned UHC was observed at two third of total UHCs. Kapil et al [6] showed almost similar findings where (89.3%) UHCs were having temperature record books cross checked by Medical Officer) with slightly different results were found for external cross checking (75%).

Conclusion:

Availability of cold chain points in JMC are less as compared to demand. Overall cold chain management, vaccines arrangement, temperature maintenance and monitoring of cold chain were satisfactory at UHCs of JMC except few points like lack of trained cold chain handlers, non-working digital thermometer, no up to date records of temperature record book, inadequate monitoring of cold chain by concerned Medical Officer.

Recommendations:

The present study contemplates for induction training to all cold chain handlers and periodic refresher training as capacity building measure for cold chain maintenance. Medical Officers should be actively involved in the monitoring and supervision of the cold chain system.

Declaration:

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Conflict of Interest: Nil

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Eating Habits and Other Risk Factors: Are the Future Health Care Service Providers Really at Risk for Life Style Disorders?

Sukesha Gamit[1], Binita Desai[1], Mitesh Dabhi[2], J. K. Kosambiya[3]

[1] Assistant Professor, [3] Professor & Head, Department of Community Medicine, Govt. Medical College, Surat, Gujarat, India
[2] Medical Officer, Community Health Centre-Dhanera, Banaskantha, Gujarat, India
Correspondence : . Dr. Sukesha Gamit, E mail: sukeshagamit@yahoo.com

Abstract :

Introduction: Adolescence period is crucial period in life, characterized by rapid rate of growth. It is need to study risk factors among this group to apply primary prevention and to know whether future care providers are having any risk of acquiring life style disorders as they are the future role models of society. **Objective:** To study the dietary and other risk factors for acquiring life style related disorders and to correlate anthropometry measurements with these risk factors. **Method:** Medical, Physiotherapy and Nursing students met with age criteria of adolescent (17-19) as per WHO were included in the study. Prior permissions from the head of institute were procured. Pre tested structured self-administered questionnaire used, containing questions on various risk factors of acquiring life style related disorders with anthropometry measurements to correlate. Data were entered and analyzed in MS excel. Appropriate statistical tests were applied. **Results:** Total 290 participants enrolled, out of them 240 (82.76%) females and 50 (17.24%) males. Out of those, 153 (52.75%) were having habit of eating outside home at least once in a week. 80(27.5%)participants reported ,they never play outdoor games, while 18(6.21%) reported ,they never do exercise. 21 participants (7.24%) were having Body Mass Index (BMI) $\geqslant$ 25, from this, 17(5.86%) were females and 4 (1.38%) were males. Out of total 240 females, 20 were having Waist Hip Ratio (WHR) > 0.85, while no male was having WHR > 1. **Conclusion:** Eating habits and physical activity were good among medical students, BUT it's essential to promote healthy lifestyle practices.

Key words: Adolescent, Life Style Related Diseases, Risk Factors

Introduction:

Lifestyle diseases in adults have been related to the prevalence of risk factors in childhood and adolescents.[1] India is faced with double burden of communicable and non-communicable diseases. By 2020, 57% of disease burden of India will be due to non-communicable diseases. Adolescents between the ages of 10 to 19 years form about 30% of the population in the World and 35% in India. [2]

Changes in food processing, production and type of food (fast food) have affected health in the majority of countries in the Region.[3] Obesity and overweight are an increasingly prevalent nutritional disorder among children and adolescents in the world.[4,5]

Overweight and obesity are strongly associated with certain types of diets, such as those that include large amounts of fats, animal-based foods and processed food stuffs.[6] Sedentary lifestyle is also an important factor, including spending no time for outdoor sports and participating in little or no physical activity during leisure time.[7,8]

Medical students are future health care providers. Medical students are more prone to poor eating habits, lack of sleep or acquisition of new habits, such as smoking and alcohol. All these factors do not contribute positively to the development of healthy lifestyles. Research related to these risk factors among medical students is essential, considering their role as future physicians and as a model in public health intervention programmes.[4]

The study was conducted to know the dietary habits and other risk factors for acquiring life style related disorders among future health care providers and to compare the actual BMI with their perception about themselves. To correlate various anthropometry measurements with these risk factors.

Methodology:

A cross-sectional study was conducted in January 2013 among students from Medical, Physiotherapy and Nursing between age group of 17 to 19 years in Govt. Medical College and New civil hospital, Surat in Western India. Before starting of the study, permission was taken from the head of the institute as well as principal of Physiotherapy College. After giving the information regarding study objectives, informed consent was taken before filling up of the forms. Purposive sampling was done. Students who willing to participate were included in the study.

All the information was collected using predesigned pretested self-administered questionnaire. The questionnaire was validated by expert faculties. Confidentiality was maintained. The questionnaire consisted of information regarding socio-demographic factors as well as detailed history about their preference for food on weekly, monthly ,yearly and never basis, time spend in different physical activities in a week like computer/net, indoor game, outdoor game & exercise with actual hours included. Weight and height were measured and collected from the participants. Body Mass Index (BMI) was calculated as weight in kilograms divided by the square of height in meters. These BMI values were then categorized into four categories, that is, "underweight with BMI less than 18.5'," normal weight with BMI between 18.5 to 24.9', 'overweight with BMI from 25 to 29.9', and 'obese with BMI more than 30'.[9] After the BMI calculation it was compared with their perception. The Waist Hip Ratio also calculated. The data was collected from these adolescents under close observation of investigators.

Data collection & analysis:

After data collection it entered and analysed in M S Excel. Frequency and chi square test were used to analyse the data. A p-value <0.05 considered was accepted as statistically significant.

Result:

Total 290 participants were enrolled, out of them 240 (82.76%) were females and 50 (17.24%) were males. Out of those, 153(52.75%) were having a habit of eating outside the home at least once in a week while 42.07% of them were having habit of outside meal at least once in a month. On asking about taking snacks outside, 17.24% adolescent reported that they were taking snacks outside daily, while 52.76% reported that they were taking it outside at least once in a week.

The table -1 shows the different food preferences by study participants mostly on weekly and monthly basis. Almost all the items preferred on weekly basis except bread & related items that constitute 30% (87). The items which were never preferred even include the healthy food items like milk in 32 (11.03%). The preference for monthly basis for cold drinks, farsan (fried Indian food) and bread related items indicate good control over fast foods. As per the table most of the students preferred vegetables 289 (99.66%), salads 277 (95.51%), pulses 270 (93.1%), fruits 258 (88.97%) & milk 233 (80, 34%) on weekly basis.

Table 2 shows the time spend on different activities in a week. As per this 80 (27.5%) participants reported that they never play outdoor games, while 18 (6.21%) reported they never do exercise. It was nice to know that 70 (24.14%) spend more than 14 hours in a week for exercise & 89 (30.69%) spend time between 7-14 hours in a week.

On asking about study related stress, 68.62% reported that they had a stress while 10% reported family related stress. Out of total 21(7.24%) were having BMI $\geqslant$ 25, from this participants, 17(5.86%) were females and 4 (1.38%) were males.

Table 1: Distribution of adolescent participants according to their preference for food and frequency of consumption

Food item	Frequency of Consumption			
	Never	Weekly	Monthly	Yearly
Bread & related items	13 (4.48%)	87 (30%)	174 (60%)	17 (5.86%)
Bakery items	4 (1.38%)	196 (67.59%)	86 (29.66%)	4 (1.38%)
Farsan (Fried Indian food)	2 (0.69%)	186 (64.14%)	99 (34.14%)	3 (1.03%)
Cold drinks	32 (11.03%)	111 (38.28%)	133 (46.86%)	14 (4.83%)
Vegetables	0	289 (99.66%)	1 (0.69%)	0
Salads	3 (1.03%)	277 (95.51%)	9 (3.1%)	1 (0.69%)
Pulses	4 (1.38%)	270 (93.1%)	16 (5.51%)	0
Fruits	3 (1.03%)	258 (88.97%)	29 (10%)	0
Milk	32 (11.03%)	233 (80.34%)	22 (7.59%)	2 (0.69%)

Table 2: Distribution of adolescents according to hours spend on different activity in week

Activity	Never	< 7 hrs	7 -14 hrs	> 14 hrs
Computer/Internet/Phone	8 (2.76%)	149 (51.38%)	83 (28.62%)	50 (17.24%)
Indoor game	150 (51.72%)	109 (37.59%)	26 (8.97%)	5 (1.72%)
Outdoor game	80 (27.59%)	191 (65.86%)	18 (6.55%)	1 (0.34%)
Exercise	18 (6.21%)	113 (38.97%)	89 (30.69%)	70 (24.14%)

Table 3: Comparison between actual weight and their perception regarding their built among adolescent

Perception about their built	Actual Built			
	Average	Thin	Overweight/ Obese	Total
Average	148 (70.81%)	51 (24.4%)	10 (4.78%)	209(100%)
Thin	6 (10.17%)	53(89.83%)	0	59(100%)
Overweight/Obese	11 (50%)	0	11 (50%)	22(100%)
Total	165 (56.9%)	104 (35.86%)	21 (7.24%)	290(100%)

Table 4: Relation between exercise and weight among adolescent

Exercise (Hrs in a week)	Overweight	Not overweight	Total
< 7 hrs	13 (61.9%)	204 (75.84%)	217(53.82%)
7 to 14 hrs	7 (33.33%)	52 (19.33%)	59 (20.34%)
> 14 hrs	1 (4.76%)	13 (4.83%)	14(4.82%)
Total	21 (100%)	269 (100%)	290 (100%)

Table 3 is illustrating relation between perception of their weight and actual weight among adolescent. Out of total, 21 (7.24%) were obese but, as per their perception, 11 (50%), they perceived themselves as obese, while 10 (4.78%) perceived themselves as averagely built. Out of 209 students having average built of body, only 148 (70.18%) were having true perception about their built. Out of 59 thin built student, 53 (89.83%) were having true perception. From 22 students, who were obese, 11 (50%) were having true perception about their built.

Table 4 is showing relation between hours spend on exercise and bodyweight. Those who spend 7-14 hrs in a week for exercise, 7 (33.33%) were still overweight, while the 1 (4.76%) was overweight still after spending more than 14 hours in a week for exercise. Out of total participants, 21 (7.24%) were overweight, while 269 (92.76%) were not overweight.

Out of total 240 females, 20 were having waist hip ratio (WHR) > 0.85, while no male was having WHR > 1. So, as per an anthropometric measurement the criteria of obesity can be applied & compare the results.

The chi square statistic is 2.3827. The p value is .303804. The result is not significant at p <0.05. The relation between physical activity and overweight (obesity) was not found to be significant.

Discussion:

More than Half adolescents (52.17 %) were having a habit of eating outside the home at least once in a week and from 10 % to 60 % were having habit of outside meal at least once in a month like bread related items, cold drinks, farsan and fruits. On asking about taking food on monthly basis included pulses 16 (5.51%), 29 (10%) and 22 (7.59%). Singh A K et al in a study found that about one-third of the adolescents (34.4% boys and 29.4% girls) ate fast food more than three times a week. [10] D Kumar et al documented that samosa, a deep fried Indian snack, was the most preferred (99.2%) fast food item and pizza (22.8%) came out to be the last preferred item. [11]

Four Fifth 80 (27.5%) participants reported that they never play outdoor games, 18 (6.21%) reported that they never do exercise. Nationwide 18.4% of students were physically active doing any kind of physical activity.[12] Outdoor activities , which is considered healthy, was preferred by very few of the college going (5.9%) and out of college (4.7%) adolescents.[13]

In our study, study related stress felt by 68.62% while in Eliza Omar Eva et al it was 54%. [14] Mean while10% reported family related stress. In this study 21 (7.24%) were having BMI $\geqslant$ 25, of this 21 participants, 17(5.86%) were females and 4 (1.38%) were males. In contrast to this study done by Zeeshan Nasir Khan et al found 30.5% males and 16% females had BMI $\geqslant$25.0. [15]

In our study 8.3% females (20 out of 240) were having waist hip ratio (WHR) > 0.85, while no male is having WHR >1, while according to Zeeshan et al. 46% (39 of 85) of males (WHR $\geqslant$ 0.90) and 31% (49 of 159) of female (WHR $\geqslant$ 0.85).[15] According to our study those who spend 7-14 hrs in a week for exercise, 7 (33.33%) are still overweight. So, there is no association between exercise & overweight. The study by SV Saranya et al.found the same results. [16]

Conclusion:

Childhood obesity along with its associated health related problems like lifestyle diseases can be attributed to the transformation in the lifestyles of young adolescents. Routine physical activities & consumption of homemade food should be encouraged.

Recommendation:

The eating habits of adolescents definitely affect their present as well as future health. In this age group they like outside food more compare to homemade food due to peer pressure and more occasions of outing which ultimately lead to further continuation of such unhealthy eating habits. To

prevent such life style disorders the group should be sensitized since childhood and more emphasis in adolescent age. With regular physical exercise, participation in household activities and involvement in outdoor games definitely prevent the overweight and its associated effects.

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Declaration:

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Conflict of Interest: Nil

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