

ISSN-2229-337 X HEALTHLINE

VOLUME: 3 ISSUE: 2 JULY-DECEMBER 2012



healthline

THE JOURNAL OF INDIAN ASSOCIATION OF PREVENTIVE AND SOCIAL MEDICINE. GUJARAT



healthline

THE JOURNAL OF INDIAN ASSOCIATION OF PREVENTIVE AND SOCIAL MEDICINE,
GUJARAT CHAPTER

Volume 3 Issue 2 July- December 2012

Biannual Publication

Contents:	Page no.
<u>Editorial:</u>	
Vitamin D – Newer Perspective Sudha Yadav	3
<u>CME</u>	
Criteria for Causality Shobha Misra	6
<u>Initiatives:</u>	
Initiatives in Post-graduate training programme: experiences and lessons learnt, at PSMC, Karamsad Uday Shankar Singh, Rakesh Patel	11
<u>Original Articles:</u>	
Health and Nutritional Profile of School going Adolescents in Surat city Binita Desai, Priti Solanky, R. K. Baxi, Rakesh Bansal	14
Somatic Profile of North Kolkata school students Palash Das, Mausumi Basu, Gautam Dhar, Ranabir Pal	18
Self medication practice among adults of Ahmedabad city Bhavna Puwar	24
A qualitative approach to various factors affecting health of Seasonal Migrants Dayama Sonal, Kosambiya J. K., Kantharia S.L.	27
A Bayesian Approach in 2x2 Tables: An Application in Anemia Status in Pregnant and Lactating Women in India Atanu Bhattacharjee, Dibyojyoti Bhattacharjee	32
Awareness of cervical cancer and effectiveness of educational intervention programme among nursing students in a rural area of Andhra Pradesh Poonam R. Naik, K. Nagaraj, Abhay Subhashrao Nirgude	41

●
healthline

THE JOURNAL OF INDIAN ASSOCIATION OF PREVENTIVE AND SOCIAL MEDICINE,
GUJARAT CHAPTER
Volume 3 Issue 2 July- December 2012
Biannual Publication

<u>Contents:</u>	<u>Page no.</u>
<u>Original articles</u>	
Level of Education and Awareness about menopause among women of 40 to 60 years in Bhavnagar & Surat cities of Gujarat Vaghela Kishor, Bhalani Kailesh	46
A study on relationship between various anthropometric measurements used as indicators of acute malnutrition in a slum of Kolkata Ranadip Chowdhury, Abhijit Mukherjee, Somnath Naskar ¹ , Saibendu Kumar Lahiri	51
<u>Review Article</u>	
Current Health Status of Women in India - Issues and Challenges Jaishree Ganjiwale	60
<u>Short communication</u>	
Knowledge about Eye Diseases and Eye Care Needs in School going Children among Teachers and Children of a City located in Western India Shobha Misra, R. K. Baxi	64
<u>A report on First Annual IAPSM-GC PG meet:</u> Booster 2012 – Enhancing Experiences	67

The official website of
INDIAN ASSOCIATION OF PREVENTIVE
AND SOCIAL MEDICINE,
GUJARAT CHAPTER.
Renovated, rejuvenated, redesigned, redefined....
VISIT

www.iapsmgc.org

Editorial:**Vitamin D – Newer Perspective**

Sudha Yadav

Professor and Head, Department of Community Medicine

M. P. Shah Medical College, Jamnagar

Correspondence to Dr. Sudha Yadav: sudhabyadav@yahoo.com

Vitamin D is a fat-soluble vitamin that is naturally present in very few foods, added to others, and available as a dietary supplement. It is also produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis.^[1]

Vitamin D deficiency has been found to be widely prevalent in general population and also in school going children because of change in life style in last two decades. The prevention is easy but its deficiency occurs, when timely action is not taken it can lead to serious impact like osteoporosis and osteomalacia which result in bone fracture and causing adverse impact on quality of life of individual and family.

It is also needed for bone growth and bone remodeling by osteoblasts and osteoclasts.^[1, 2] Without sufficient vitamin D, bones can become thin, brittle, or misshapen. Vitamin D sufficiency prevents rickets in children and osteomalacia in adults.^[1] Together with calcium, vitamin D also helps protect older adults from osteoporosis.^[1]

Vitamin D has other roles in the body, including modulation of cell growth, neuromuscular and immune function, and reduction of inflammation.^[1, 3, 4] Many genes encoding proteins that regulate cell proliferation, differentiation, and apoptosis are modulated in part by vitamin D.¹

Other research studies also highlight the fact that vitamin D has other important roles for our health, apart from maintaining the density of bones.

1. Role in prevention of cancer:

Researchers working at the University of California San Francisco published research work suggesting genetic variations in the vitamin D receptor may explain the unusually high incidence of breast cancer in Marin County, California.^[5]

Various studies have shown that people with adequate levels of vitamin D have a significantly lower risk of developing

cancer, compared to people with lower levels. Vitamin D deficiency was found to be prevalent in cancer patients regardless of nutritional status, in a study carried out by Cancer Treatment Centers of America.^[6]

2. Role in immunity regulation:

Two studies published online in Pediatrics found that vitamin D deficiency is associated with more severe, longer lasting illness in children admitted to the hospital.^[7, 8]

Vitamin D is an important way to arm the immune system against disorders like the common cold, say scientists from the University of Colorado Denver School of Medicine, Massachusetts General Hospital and Children's Hospital Boston.^[6]

3. Reduction in the risk of developing Multiple Sclerosis:

Researchers at the Menzies Research Institute in Tasmania found that one of the main treatments for multiple sclerosis (MS) may increase the amount of vitamin D patients produce when exposed to sunlight.^[9]

Vitamin D reduces the risk of developing multiple sclerosis. Multiple sclerosis is much less common the nearer you get to the tropics, where there is much more sunlight, according to Dennis Bourdette, chairman of the Department of Neurology and director of the Multiple Sclerosis and Neuroimmunology Center at Oregon Health and Science University, USA.^[6]

4. Protection against lung function decline:

Researchers in Boston found that vitamin D deficiency in smokers is associated with worse lung function and more rapid decline in lung function over time.^[10]

Research published in the American Journal of Respiratory and Critical Care Medicine found that vitamin D deficiency may be linked with poor lung function in children with asthma.^[11]

Vitamin D reduces the severity and frequency of asthma symptoms, and also the

likelihood of hospitalizations due to asthma, researchers from Harvard Medical School found after monitoring 616 children in Costa Rica.^[6]

5. Protection against obesity, diabetes and insulin resistance:

Researchers from the Drexel University School of Public Health found that patients who are both obese and vitamin D deficient are at greater risk of insulin resistance than patients with either factor alone.^[12, 13]

Vitamin D is probably linked to maintaining a healthy body weight, according to research carried out at the Medical College of Georgia, USA.^[6]

6. Role in bone mineral density and reduction of risk of fractures among older adults:

A meta-analysis published in The New England Journal of Medicine reports that higher doses of vitamin D do in fact decrease the risk of fracture in older adults.^[14, 15]

Researchers from the Catholic University of Korea recently report on the connection between vitamin D, parathyroid hormone and bone mineral density in elderly Koreans.^[16]

7. Reduction in the risk of rheumatoid arthritis:

Vitamin D has been shown to reduce the risk of developing rheumatoid arthritis in women.^[6]

8. Vitamin D and brain function:

Vitamin D may have a key role in helping the brain to keep working well in later life, according to a study of 3000 European men between the ages of 40 and 79.^[6]

Clinical observations about vitamin D effects relate to alterations of mood and cognition, brain development, Alzheimer's, multiple sclerosis, depression, schizophrenia, autisms, and others.^[17]

9. Role in minimizing radiation damage:

A form of vitamin D could be one of our body's main protections against damage from low levels of radiation, say radiological experts from the New York City Department of Health and Mental Hygiene.^[6]

10. Vitamin D and Severe Early Childhood Caries:

Children with severe early childhood caries have been found to lower vitamin D levels and increased Para Thyroid Hormone (PTH) levels compared to age-matched controls.^[18]

Prevention is easy, which includes;

- Exposure to sunlight at least for 15 minutes daily, during this period one should have at least 20% of body surface uncovered.
- Eating food containing vitamin D e.g. Milk, cheese, butter and other foods fortified with vitamin D
- During rainy season when sun exposure is unlikely monthly supplemented through vitamin D.

References:

1. Institute of Medicine, Food and Nutrition Board. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: National Academy Press, 2010.
2. Cranney C, Horsely T, O'Donnell S, Weiler H, Ooi D, Atkinson S, et al. Effectiveness and safety of vitamin D. Report/Technology Assessment No. 158 Evidence prepared by the University of Ottawa Evidence-based Practice Center under Contract No. 290-02.0021. AHRQ Publication No. 07-E013. Rockville, MD: Agency for Healthcare Research and Quality, 2007. [PubMed abstract](#)
3. Holick MF. Vitamin D. In: Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, eds. Modern Nutrition in Health and Disease, 10th ed. Philadelphia: Lippincott Williams & Wilkins, 2006.
4. Norman AW, Henry HH. Vitamin D. In: Bowman BA, Russell RM, eds. Present Knowledge in Nutrition, 9th ed. Washington DC: ILSI Press, 2006.
5. Dalessandri KM, et al. Vitamin D receptor polymorphisms and breast cancer risk in a high-incidence population: A pilot study. Journal of American College of Surgeons. Aug 2012.
6. www.medicalnewstoday.com/articles/161618.php, Editor's choice, Medical News Today dated 24-8-2009, Written by Christian Nordqvist
7. Madden K, et al. Vitamin D deficiency in critically ill children. Pediatrics. Aug 6, 2012.
8. McNally JD, et al. The association of vitamin D status with pediatric critical illness. Pediatrics. Aug 6, 2012.
9. Stewart N, et al. Interferon- β and serum 25-hydroxyvitamin D interact to modulate relapse risk in MS. Neurology. June 2012.

10. Lange N, et al. Vitamin D deficiency, Smoking, and Lung Function in the Normative Aging Study. American Journal of respiratory and Critical Care Medicine. July 2012.
11. Wu AC, et al. The Effect of Vitamin D and Inhaled Corticosteroid Treatment on Lung Function in Children. American Journal of Respiratory and Critical Care Medicine. July 2012.
12. Kabadi SM, et al. Joint Effects of Obesity and Vitamin D Insufficiency on Insulin Resistance and Type 2 Diabetes: Results from the NHANES 2001–2006. Diabetes Care. June 2012.
13. Drexel University. Obesity and vitamin D deficiency may add up to a greater risk of diabetes. July 17, 2012.
14. Bischoff-Ferrari HA, et al. A pooled analysis of vitamin D dose requirements for fracture prevention. The New England Journal of Medicine. July 2012.
15. Science News: Higher but not lower doses of vitamin D are effective in fracture risk reduction in older adults, study finds. Science Daily. July 5th 2012.
16. Kim, Guilsen et al. Relationship between vitamin D, [parathyroid hormone](#), and [bone mineral density](#) in elderly Koreans. [Endocrinology, Nutrition & Metabolism](#), 2012.
17. Stumpf WE. Drugs in the brain—cellular imaging with receptor microscopic autoradiography. Review. Prog Histochem Cytochem. 2012 Mar;47(1):1-26.
18. The relationship between vitamin D and severe early childhood caries: a pilot study. Schroth R, Jeal N, Kliewer E, Sellers E. [Int J Vitam Nutr Res](#). 2012 Jan;82(1):53-62.

healthline

GLOBALLY INDEXED

PEER REVIEWED

OPENACCESS

BI-ANNUAL

SCIENTIFIC JOURNAL

CME**Criteria for Causality**Shobha Misra¹,¹Associate Professor,

Department of Preventive and Social Medicine, Medical College and SSG Hospital, Baroda, India

Correspondence to : Dr. Shobha Misra, E-mail ID - shobhamisra@rediffmail.com**Abstract:**

Epidemiology is the study of the distribution, determinants and deterrents of morbidity and mortality in human populations. Therefore, one of primary goals of epidemiology is to discover “causes”. Better understanding of “causes” frequently leads to more effective prevention and control measures, and consequently to a reduction of incidence, prevalence or severity of disease. Testing an epidemiologic hypothesis however, involves consideration of the concept of association between a particular exposure and disease. Multiple philosophies exist for evaluating causality. But, none are definite. A final decision regarding causation should be based on all relevant information and not on the basis of one or two studies. The set of causal criteria offered by Hill are discussed in this paper. They are useful to determine whether an association is likely to be causal. Of the six criteria, only correct temporal sequence is an absolute must, and the others are highly suggestive of causation.

Key Words: Association, Causation, Hill’s Postulates.

Introduction:

Epidemiology is the study of the distribution, determinants and deterrents of morbidity and mortality in human populations. ⁽¹⁾ Therefore, one of primary goals of epidemiology is to discover “causes”. Better understanding of “causes” frequently leads to more effective prevention and control measures, and consequently to a reduction of incidence, prevalence or severity of disease. The formulation of etiologic hypotheses most often occurs through the use of descriptive studies. While testing them is the primary function of the analytic study designs.

Testing an epidemiologic hypothesis however, involves consideration of the concept of association between a particular exposure and disease. **Association** refers to the

statistical dependence between two variables, the degree to which the rate of disease in those with specific exposure is either higher or lower than the rate of disease among those without the exposure. A Hypothesis is defined as a “tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation”. ⁽²⁾

An association does not necessarily imply that the observed relationship is one of cause and effect. In order to be considered a cause a change in the exposure must produce a corresponding change in the outcome. ⁽³⁾ A whimsical example is provided by Max Michael III, W. Thomas Boyce, and Allen J. Wilcox ⁽⁴⁾, they conducted a prospective cohort study to test a hypothesis that gambling causes cancer. They chose two states; in one gambling was legal and in the other it was not and they noted a significantly positive association. This association although real was not one of cause and effect. In one state actually tobacco and alcohol use was banned and this also showed lower cancer rate. The relationship shown was secondary association due to confounding by alcohol and tobacco use. These are non-causal associations or spurious and can lead to erroneous conclusion.

One of the most important aspects in clinical research is the inference; that an association represents a cause and effect relationship. Making judgments about causality involves a chain of logic that addresses two major areas: whether the association is valid and whether the totality of evidence (taken from a number of sources) supports a judgment of causality. Assessing validity (true relationships between exposure and disease) is a matter of determining the likelihood that alternative explanations (chance, bias and confounding) could account for the findings. Judging if the association is causal extends beyond validity of the results of any single study and includes consideration of other epidemiologic data as well as the biologic credibility of the hypothesis.

Statistically significant associations between exposures and outcomes may be categorized into 3 types. **Spurious;** are false associations usually resulting from sampling error or bias (Random error: $\alpha=0.05$; 5 out of 100 even in well designed studies. And systematic error: bias). **Noncasual;** real but not causal. Usually represent secondary associations due to confounding factors. **Causal;** changes in the exposure produce changes in the outcome. However, this is a relative statement as in epidemiology we cannot 'prove' hypothesis; we can only make judgments using accumulated knowledge.

Causal Associations: A valid association is not due to chance, bias or confounding and is evaluated for effect-modification. Now the other area to understand is that "Is the 'valid' association causal? That is, "Is there sufficient evidence to infer that a causal association exists between the exposure and the disease? So, it is important to note that the process of causal inference/judgment of causality requires: valid statistical association and assessing whether exposure has actually caused the outcome where chance or uncontrollable force seems to have no assignable cause; is unforeseeable & unpredictable process.

Evaluating Causal Associations: Causality is a philosophical concept merged with practical guidelines. Epidemiology can never "prove" causality but can only infer it. The presence of a valid statistical association does not imply that it is a causal one. Therefore, a judgment of causality must be made in the presence of all available data, and reevaluated with each new finding. Remember, "Never to marry a hypothesis. Change your mind as the data change. A good scientist has an open mind and maintains objectivity".

Disease Etiology; Causation: Different criteria and philosophical views have been proposed to assess causality that is, there are several models of disease causation. All of them require the precise interaction of factors and conditions before a disease will occur. Models are guidelines that provide a framework for considering causation at a practical level. 'Cause' is a concept that is still

debated and that is why there are several models to try to explain it.

Cause of disease is defined as a factor (characteristic, behavior, event, etc.) that precedes and influences the occurrence of disease (not the opposite) and has a statistical dependence (here; time order, direction & association are important). In order to be considered a cause a change in the exposure must produce a corresponding change in the outcome⁽³⁾. Increase in the factor leads to an increase in disease, reduction in the factor leads to a reduction in disease. There are also inverse relationships.

Models of causation: We very well know about "Germ theory: Pasteur, Henle-Kock postulates" in the history of causation of disease, but all diseases are not infectious. Then came the "Epidemiologic triad (triangle) also known as Ecological model, a relatively simple paradigm for explaining infectious disease causation in terms of agent, host and environmental (brings the other two together; influences the route of transmission of the agent from a source to the host) factors. While useful in explaining infectious diseases, the model seems less applicable to many contemporary health issues and therefore has often been replaced by more complex models, including Holistic Models of health such as the Health Field Concept and the model of Evans and Stoddart⁽⁵⁾. Health is usually conceived as a state of well-being and positive functioning and not just the absence of disease.

It is important to note that multiple philosophies exist for evaluating causality but none are so far definitive. Having said this, let us come back to our focus on discussion of evaluating causal associations. A given association may not be clearly spurious, non-causal or causal. This is because sampling error can never be completely eliminated as a possible reason of an association in epidemiologic studies which are based on samples although it can be greatly minimized. The same stands true for bias and confounding. Thus, it is not an easy task for epidemiologist to determine which type of association is more likely. Also our main concern is to identify causal associations. So, some guidance is needed to determine whether an association is likely to be a causal one. In

practice, the determination of a cause-effect relationship is based on a review and judgment of all relevant information available, and never on the basis of one or two studies alone.

In 1965, Sir Austin Bradford Hill, Professor Emeritus of Medical Statistics with the University of London, delivered a landmark address where he outlined nine criteria that could be used to determine if statistical associations were likely to represent causal associations⁽⁶⁾. They are: Temporality, Strength of the association, Consistency with other research, Dose-response relationship, Biologic credibility/plausibility, and Experimental evidence (not always available or applicable in all settings). These are the six main ones; however process of determining causation is largely subjective except for temporality which is a must. The other three are: Specificity that implies; the more the diseases an exposure is related to (e.g., smoking), the less likely it is to be causal (faulty), Coherence (similar to consistency and plausibility), and Analogy.

These six criteria as postulated by Hill are discussed comprehensively in the following text.

1. Temporality/ Correct Temporal Sequence:

By definition, a cause of disease must precede onset of the disease. So, of all the criteria used to judge whether an association is causal or not, this is the only one that is an absolutely essential. This is reliable for prospective studies. But the problem is with cross-sectional studies (exposure and outcome occurring concurrently) and sometimes with case-control studies if not well designed wherein the existence of an appropriate time sequence can be difficult to establish. For example, in a cross-sectional study to determine if there is a relationship between prevalence of stress and overeating it may not be clear, that did stress lead to overeating or did overeating lead to stress?

2. Strength of the Association:

Generally speaking, the stronger the association, the less likely the relationship is due merely to an unsuspected or uncontrolled confounding variable/bias. This is not to say that those small associations cannot be causal

in nature. Ratio measures for e.g. Relative Risk (RR) may be comparatively small for common exposures and diseases (e.g. smoking and cardiovascular disease), but are causal. The other con is that strong but non-causal associations are common. For example, non-causal relation between Down's syndrome and birth rank, which is confounded by maternal age. The other point to be noted is that when there are many component causes for a disease, each may not have a very strong association with the outcome. The RR/OR (Odds Ratio) is not always informative in and of itself. Take for example; Relative risk = 2 means incidence rate of Disease is twice as high in exposed v/s unexposed. RR = also 2 when $p1/p2 = 0.02/0.01$ or $=0.000002/0.000001$, hence the term "relative" risk has been given. In the first case, incidence rate has increased from 1/100 to 2/100 at risk (difference in risk is $2-1 = 1/100$) and in the other, incidence rate has increased from 1/100,000 to 2/100,000 at risk (difference in risk is $2-1 = 1/100,000$). RR/OR is used to measure strength of association and used in judgment of validity and causal nature of an association. Whereas attributable risk (risk difference, absolute excess) are measures of difference that is the excess risk in the exposed group due to exposure and have significance from a public health perspective. Because of the cons as stated, several criteria are needed to judge causality.

3. Consistency of findings with other research:

Due to the "inexact" nature of epidemiologic investigations, evidence of causality is persuasive when several studies conducted by different investigators at different times and in different populations yield similar results. Take for example, in concluding that cigarette smoking is a cause of lung cancer, the Advisory Committee to the Surgeon General of the United States cited diverse epidemiologic and other studies showing a strong relationship between smoking and lung cancer⁽⁷⁾. The con is that some effects are produced by their causes only under unusual circumstances. Also, studies of the same phenomena can be expected to yield different results simply because they differ in their methods and from random errors. The possibility of publication bias, which is

publication of positive studies most of the times, should also be kept in mind.

4. Dose-response Relationship/Biologic Gradient:

Logically, most harmful exposures could be expected to increase the risk of disease in a gradient fashion (e.g. if a little is bad, a lot should be worse). Heavy smokers, (number of cigarettes smoked per day) for example, have been shown to be at a higher risk of lung cancer than light smokers. It is important to note that some associations show a single jump (threshold) rather than a monotonic trend. Below the threshold, there are no observed effects, copper for instance may be found in small quantities in drinking water demonstrates a threshold; that is, it has no adverse effects until it reaches a certain level. In fact, in very small quantities it is an essential mineral for growth and development. We cannot rule out confounders as possible explanation on the other hand. Once again, several criteria should be considered in making a judgment about causality.

5. Biologic plausibility of the hypothesis:

A known or postulated biologic mechanism by which the exposure might reasonably alter the risk of developing the disease is intuitively appealing. But, plausibility is often based on prior beliefs rather than logic or actual data. Also, what is considered biologically plausible at any given time depends on the current state of knowledge. In other words, what does not make sense today may make sense sometime in the future. From a contemporary vantage point, it seems difficult to understand as to why the theory of contagion was considered controversial as an explanation for the spread of epidemics during the Middle Ages.

6. Experimental Evidence:

Having experimental evidence to support an association between an exposure and an outcome strengthens the case for a causal association. Well designed randomized controlled trials and randomized community trials can provide strong corroboration of a suspected causal association for the reason that they virtually eliminate selection bias and confounding. Hence, can be powerful tools when establishing causation.

To conclude, multiple philosophies exist for evaluating causality. But, none are definite. A final decision regarding causation should be based on all relevant information and not on the basis of one or two studies. The set of causal criteria offered by Hill are useful to determine whether an association is likely to be causal. Of the six criteria, only correct temporal sequence is an absolute must, and the others are highly suggestive of causation. But these are also saddled with reservations and exceptions. Always keep an open mind when evaluating evidence from epidemiologic studies. I would like to end by quoting an important advice given by Medewar in 1979, in his own words, "I cannot give any scientist of any age better advice than this: the intensity of the conviction that a hypothesis is true has no bearing on whether or not it is true".⁽⁸⁾

Acknowledgement:

I acknowledge the learning from online course in "Clinical Investigation" which I was pursuing from University of South Florida (USF) in 2008. I render my sincere thanks to Dr. R. K. Baxi, Professor in the department, and acknowledge his incessant motivation and encouragement to prepare this article.

References:

1. William A. Oleckno. Essential Epidemiology, Principals & Applications, Waveland Press, Inc. Long Grove, IL, 60047-9580:2002; pp1.
2. Dr. William Pickett., Dept of Emergency medicine, Queen's University, Angada 3, Kingston General Hospital, Ontario, Canada;2002.
3. Valanis B. Epidemiology in Nursing and Health care. Norwalk, CT: Appleton and Lange; 1992.
4. Max Michael III, W Thomas Boyce, and Allen J Wilcox. Biomedical Bestiary: An Epidemiologic Guide to Flaws and Fallacies in the medical literature. Boston: Little, Brown, and Company; 1984.
5. Evans R G and Stoddart G L. Producing Health, Consuming Health Care. In why are some people healthy and some not? Determinants of Health of Populations, R. G. Evans, M.L. Barer and T. R. Marmor, Eds. New York: Aldine de Gruyter; 1994: pp 27-64.

6. Hill A B. The Environment and Disease: Association or Causation? Proceedings of the Royal Society of Medicine. 1965 (guidelines); 58: 295-300.
7. U.S. Department of Health, Education and Welfare. Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service. USPHS Publication No.1103. Washington, DC: U.S. Government Printing Office; 1964.
8. Medewar Peter Brian. Advice to a young scientist; Science- Vocational Guidance. Basic Books; 1979.



healthline

INDEXED WITH:

INDEX COPERNICUS

DOAJ

gilib.georgetown.edu

Open J-Gate

Cabi

For Details Visit : www.iapsmgc.org

Initiatives

Initiatives in Post-graduate training programme: experiences and lessons learnt, at PSMC, Karamsad

Uday Shankar Singh¹, Rakesh Patel²

¹Professor & Head, ²Resident doctor,

Department of Community Medicine, PS Medical College, Karamsad

There would hardly be a disagreement if I state that a post-graduate training programme is a crux of any speciality including the field of community medicine. New practitioners are trained and contributed to the future of discipline. So it becomes imperative to organize the post-graduate training programme in such manner that it not only imparts necessary knowledge and skills, it also produces graduates who could sustain and enhance the recognition which discipline has gained so far. So the onus is on the present to shape the future.

In the present description, I would provide an overview of an innovative teaching and assessment method for post-graduate students being practiced at my department following a brief mention of common elements of post-graduate programme.

Resemblance in difference:

Considering the broad purview of community medicine, it is an arduous task to draw a line around it. Efforts have been made at various levels to define such a boundary, one being recent guidelines for post-graduation in community medicine developed by Medical Council of India. Besides, different institutions have shaped their post-graduate curricula based on their perceived priorities, expected competence and available expertise and opportunities. As a result, inter-department variations are bound to result. However, this diversity is a blessing in disguise as there are always new things to share and to be learnt.

Despite of all the differences, if we look closely to each of these programmes they mainly train students in three major components:

A) Academic activities in the form of interactive sessions – seminar, journal club, recent public health advances, clinico-social case study and pedagogy – and involvement in under-graduate teaching

B) Field-based activities which include mandatory postings at rural and urban health training centres, week long village stay, outbreak investigation, field visit and postings at institutes of public health importance

C) Research activities, both thesis and non-thesis, quantitative and qualitative

Issues related to concurrent evaluation of post-graduate academic activities:

Academic activities form a major portion of our post-graduate teaching curriculum. Enhancement of academic competence is of utmost important to community medicine graduates whichever field they pursue, academic or non-academic. Compiling information, presenting it in a systematic manner, critically analysing it and, ultimately, getting the message across is an art that need to be learnt.

A post-graduate driven academic session is not an unusual scenario for any department. Such sessions are attended by entire department and usually involve interaction and feedbacks from faculty members. Sessions like clinico-social case study and pedagogy are also part of post-graduate university examination.

However, there are some inherent difficulties when it comes to evaluation. Though any suggestions or feedbacks given at the end of session are invariably for its betterment, there is usual lack of structured formative assessment. In this scenario, there is no uniformity in evaluation, either across sessions or across evaluators. Further, feedbacks, when given orally, are hard to compile and review. This often leaves a student with more questions than answers.

Initiative : Structured evaluation tools and our experience so far:

To overcome practical problem of evaluation of teaching sessions, our department has developed and endorsed

structured assessment tools to evaluate each form of academic activity. Five major forms of academic activities are evaluated: seminar, pedagogy session, critical appraisal of journal article, presentations on recent public health advances and clinico-social case study. Each of the faculty members are required to rate the session on certain pre-defined parameters specific for that particular type of activity. For each parameter, the score ranges from 1 to 10 divided under 4 categories ranging from poor to excellent. There is also room for additional comments in each tool. Scores are aggregated at the end of session and filled evaluation forms are filed for future review.

As far as clinico-social case study is concerned, as stated earlier, we already have assessment tool in place. Besides, we have also initiated a practice of conducting our clinico-social case studies in field settings. This not only creates a virtual examination scenario for a student, it makes comprehensive assessment possible for evaluators too.

Now elaborating more about parameters of assessment, a student is assessed on various dimensions. Contextual relevance of selected topic, comprehensiveness of preparation, clarity of presentation, ability to link present knowledge with past one, ability to engage audience, responding to questions and defending own perspective, appropriate use of audio-visual aids and, importantly, time management of session are major parameters taken under consideration. While assessing clinico-social case studies, emphasis is also given on skills related to medical interview, physical examination and counselling.

In our relatively short experience with assessment tools, we have already observed some positives. Having a structured tool in hand certainly makes the task of an evaluator easier one. It guides an assessor in having a systematic look at the presentation to identify deficiencies and recommend appropriate ramifications. Post-graduate students can also prepare their work in such a way that it responds to evaluation parameters. Future review is also possible for both students and faculty members during process of institutional appraisal.

Initiative to orient to Rural environment: Village stay program:

Postgraduate residents are exposed to village life twice in their tenure. Village-visit

(3 half days, 3 groups in 3 different villages) and village-stay (one week, 4 groups in 4 different villages) programmes are unique features of our field-based activities. Carried out once and twice a year respectively, programmes are intended to develop strong sense of community in students and provide them with practical experience of village administration and health system.

In first of exposure they not only stay along with villagers and faculties in villages but also practically study the health care facilities available, socio-environmental issues & health, village administration and govt. support to the poor, practice health education and providing health services in the backward and forward part of the village. In second such village stay, resident study plans, management, supervision and monitoring aspect of important national programs and other functions of a primary health centre and their implementation in service providing areas.

Institutional initiative for Six monthly appraisal and assessment of PG student

There is a postgraduate cell functioning in the institution which asks every department to fill up appraisal form six monthly for every enrolled resident to get the performance report and conduct year end written and oral examination in the pattern of university examinations to prepare them for finals.

Concluding remarks:

PSM is a multidisciplinary subject, and it is non-conventional compare to other disciplines of the Medical science. Three initiatives taken at the Pramukh Swami Medical College, Karmasad, Gujarat in Post Graduate studies may not be the complete solution to increase the quality of the study but it has definitely increased the effectiveness of the learning. We feel that many more initiatives needs to be incorporated to achieve the goal and objectives for competences development of PG students in PSM discipline.

Disclaimer

In present description, I have tried to provide an outline of what is being practiced at our institute as far as post-graduate teaching and assessment is concerned. This, by no mean, is comprehensive. Further, I do not want to claim

the exclusiveness of our practice. I also do not have the slightest of intention to belittle the structure of assessment in place at other departments. Rather aim is to share information on what is being practice at our department. I also opine that it is never too late

for inter-departments information sharing on their respective curricula to start. Such an exchange of knowledge would invariably strengthen the existing post-graduate training programmes and ultimately secure the future of the field of community medicine.

**The official website of
INDIAN ASSOCIATION OF
PREVENTIVE
AND SOCIAL MEDICINE,
GUJARAT CHAPTER.**

**Renovated, rejuvenated,
redesigned, redefined....**

VISIT

www.iapsmgc.org

Original Article

Health and Nutritional Profile of School going Adolescents in Surat city

Binita Desai¹, Priti Solanky², R. K. Baxi³, Rakesh Bansal⁴

¹Assistant Professor, Department of Community Medicine, Government Medical College, Surat

² Assistant Professor, Department of Community Medicine, GMERS Medical College, Valsad

³ Professor, Department of Community Medicine, Medical College, Vadodara

⁴ Ex-PG student, Department of Community Medicine, Government Medical College, Surat

Correspondance to: Dr.Binita Desai, Email ID: drbinitadesai@yahoo.co.in

Abstract:

Background: As the health remains a neglected issue in majority of times by school going adolescents and the data on prevalence of childhood obesity and blood pressure from India are scanty.

Objective: Present study was undertaken with the first objective to assess the nutritional status of school going adolescents by anthropometric measurements and to correlate their health status with their nutritional status. The second objective was to measure their blood pressure to look for the prevalence of hypertension among them.

Methodology: A cross sectional study was carried out which included anthropometric and blood pressure measurements among school going adolescents.

Data entry and analysis: Data was entered in Microsoft excel and analysis was done by using EPI 6 software.

Results: In all, 203 students from standard 7th to 12th in the age group of 11 to 17 years were examined. Out of total 203 students examined, 122 (60%) were boys and 81(40%) were girls. Out of total 203 children 105 (51%) were underweight, 10(5%) were overweight. It was found that 16 children (7.88%) were having hypertension.

Recommendation: There is a need to screen the school adolescents for parameters of overweight/obesity and hypertension, symptomatic or otherwise.

Keywords to index: Adolescent, Anthropometry, Hypertension

Introduction:

Adolescence is the period of psychological and social transition from [childhood](#) to adulthood. The word is derived from the [Latin](#) verb *adolescere* meaning "to grow up". Because biological and psychosocial growth and development are dynamic throughout adolescence, it is important that teenagers be screened for adequacy of nutritional and health status each

year. Over the past two decades, studies have also shown that "essential" hypertension (i.e., hypertension of unknown etiology); can be found among children and adolescents. These particular blood pressure (BP) patterns show a strong correlation to adulthood hypertension.¹ Although the prevalence of hypertension during childhood is lower than that seen in adulthood, this condition is not rare in adolescent, thus stressing the importance of evaluating BP.² Obesity is a main effector of BP in children. Hypertension, as well as dyslipidemia, type 2 diabetes, orthopedic problems, sleep apnea, and gall bladder disease are considered as complications associated with obesity in children.

As the health remains the neglected issue majority times by the school going adolescents and the data on prevalence of childhood obesity and blood pressure from India, which is also undergoing an epidemiological transition, is scant, the study was planned.

Objectives:

The present study was undertaken in an urban area of Surat with the objective to study the health and nutritional status of school going adolescents by anthropometric measurements and correlate their health status with their nutritional status and to look for the prevalence of high blood pressure among them.

Methodology:

The cross sectional study was carried out in one of the central board school of Surat city in September 2008 with prior permission from principal of the school. Verbal consent from each student was taken prior to their enrollment for the study. Students of class 7th to 12th were included in the study to cover the adolescent group. To get representative sample one division from each 3 divisions of each of the standards was chosen. All students who were present at the time of study of the selected division were enrolled. School students who did not meet with the above

criteria and who denied participation in the study were excluded from the study.

Pretested, pre designed semi-structured proforma was used which included the anthropometric measurements (height, weight, BMI, waist circumference, hip circumference) and blood pressure measurement. As the waist hip ratio is associated with increased risk of metabolic complication, the waist hip ratio was calculated.³ BMI was calculated from height and weight and classification of BMI was applied.⁴ Proforma also included questions regarding any recent health complaints that they were having. Anthropometric and blood pressure measurements were taken by the same set of observers to avoid the inter observer variations. To avoid biological variations in blood pressure measurements three readings were recorded and mean of these three measurements was considered for analysis. All investigators were trained for the methods of measurement to minimize the variation. The participants who got abnormal results were referred to the pediatric O.P.D. New Civil Hospital, Surat with referral slip and the class teacher was also informed regarding the health status of the children. Data entry was done in Microsoft Excel and analyzed with the help of EPI 6.

Observations and discussion:

As it was decided to include all present students of selected divisions of class 7th to 12th, accordingly total 203 children were included in the study, out of them 122(60.09%) were boys and 81(39.91%) were girls.

Table1: Age wise distribution of school adolescents

Age group	Boys	Girls	Total
11-12	23	24	47
13-14	43	26	69
15-16	44	25	69
= 17	12	6	18
Total	122	81(39.91%)	203(100%)

Table 1 shows age wise distribution of adolescents. Out of total 203 study participants 105 (51.72%) were underweight while 10 were overweight (4.92%). The prevalence of obesity

was 7.4 % in a study conducted by Kapil U et al among affluent school children in Delhi.⁵

Table 2: Height and weight distribution of school adolescents

	Boys	Girls	Total
Mean Height(m)	1.62± 0.113	1.54± 0.103	1.59± 0.112
Mean Weight(kg)	49.3± 11.15	46.79± 10.82	48.3± 11.15

As mentioned in table 2, mean height of boys was 1.62 m and that of girls was 1.54 m while mean weight was 49.3kg and 46.79kg for boys and girls respectively.

Table3: Distribution of school adolescents according to waist hip ratio:

Sex	Waist hip ratio	Number of children
Boys	>1	01(0.81%)
Girls	>0.85	11(13.58%)

Around 13.58% of girls were having waist hip ratio>0.85(p<0.01) as shown in table 3 which is an approximate index of increased intra abdominal fat mass and total body fat. The increase waist/hip ratio was also considered as one of the risk factor for cardio vascular and other metabolic diseases.

Out of these 203 participants, 10 participants (4 boys and 6 girls) had systolic hypertension. It was found that 10 children (4 boys and 6 girls) had diastolic hypertension. Out of them who had these 20 participants, 4 had both systolic as well as diastolic hypertension, so total 16(7.33%) participants were found to be hypertensive.⁶

As the large amount of school going adolescents were found hypertensive in this study in urban area at an early age it, therefore, necessitates the regular screening and tracking of blood pressure among this age group adolescents.

Table 4 classifies hypertensive school adolescents according to weight, which shows that hypertension is significantly associated with higher weight (p<0.05). The cut off point for higher weight was taken according to NCHS standards.

Table4: Distribution of hypertensive school adolescents according to weight:

Weight	Total children	Hypertensive adolescents
Having >95 th percentile weight (NCHS standard)	07	04(57.14%)
Having <95 th percentile weight (NCHS standard)	196	12(6.12%)
Total	203	16(7.88%)

$X^2 = 17.71, p < 0.05$

Table 5 shows that out of total overweight children, 50% had hypertension, and this association was also found to be statistically significant ($p < 0.05$).

Table5: Distribution of hypertensive adolescents according to BMI:

BMI	Total Number of children	Number of hypertensive adolescents
Underweight	105	01(0.95%)
Normal	88	10(11.36%)
Overweight	10	5(50%)

$X^2 = 10.34, p < 0.05$

As mentioned in table 6, when participants were asked to mention any health complaints, it was least reported by overweight children while out of the total health related complaints maximum were reported in underweight children (57.14%).

Table 6: Distribution of school adolescents according to BMI and health related complaints that they have reported:

BMI	Reported health related any complaints
Underweight	20(57.14%)
Normal	14(40%)
Overweight	1(2.86%)
Total health complaints	35(100%)

Out of total 16 hypertensive children, 15 children did not report any of the health related complaints. It reveals that overweight

children though suffer from hypertension do not come out with health related complaints.

Recommendation:

The present study reveals the need of large scale screening among urban school going adolescent. Adolescents are now-a-days facing dual problem of under nutrition as well as over nutrition. Out of 203 children 16 were found to have hypertension which is more significantly associated with overweight. Though 7.88% children had hypertension, large numbers (15 out of 16) of them were asymptomatic. Hypertension is a well-established risk factor for coronary & cerebral atherosclerotic disease in adults. According to the recommendations of the 1996 task force report on BP in children and adolescents, BP measurements should be incorporated into routine pediatric examination of children.¹ Further, the long, steady slow course of it in adults suggests that it perhaps has its origin in childhood but probably goes undetected during this period. School Health Programme (SHP) has to include blood pressure measurement to screen the hypertensive adolescents as early as possible for tracking of blood pressure and better management as large number of asymptomatic adolescents in urban area were found to be hypertensive in our small study. If it is not possible to measure the blood pressure in all the school going adolescents, at least measures should be directed to record the blood pressure and track it in those who are overweight or having high BMI to get maximum yield. As the treatment modalities are available easily, if hypertension is detected early in asymptomatic children it will prevent the complication/s associated with hypertension and give the quality of life to these future assets of our nation. Large scale studies should be planned to look for the actual prevalence of hypertension in Indian children both in rural as well as urban area. Studies in India has shown high prevalence of obesity, hypertension, hypercholesterolemia and high fat diet among adolescents.⁷

Limitation of the study: Because of the time constraint the sample size of the study was small and due to small sample size it was not possible to calculate age or age group wise statistics. The findings of the study can not be generalized as the sample size is small and it is not representation of the urban

Surat. Only selected health and nutritional indicators were studied.

References:

1. National High Blood Pressure Education Program Working Group on Hypertension Education in Children and Adolescents: Update on the 1987 task force on high blood pressure: A working group report from the National High Blood Pressure Education Program. *Pediatrics* 1996, 98:p.649-658.
2. Falkner B, Sadowski RH: Hypertension in children and adolescents. *Am J Hypertens* 1995, 8:106S-110
3. WHO (2003), Tech.Rep.Ser.No.916
4. Aykroyd, W. R. and J. Mayer (1968).Food and Nutrition terminology. In: WHO Doc NUT/68.6, Geneva.
5. Kapil U, Singh P, Pathak P et al. Prevalence of obesity amongst affluent school children in Delhi. *Indian Pediatrics*, May 2002; 39 (5): p. 449-452.
6. National High Blood Pressure Education Program Working Group. The fourth report on diagnosis, evaluation and treatment of high blood pressure in children and adolescents. *Pediatrics* 2004; 114 (suppl.):p. 555-576.
7. Gupta R, Goyle A, Kashyap S et al. Prevalence of atherosclerosis risk factors in adolescent school children. *Indian Heart J* 1998; 50: p. 511

"How do we create a harmonious society out of so many kinds of people? The key is tolerance -- the one value that is indispensable in creating community.

We must address and master the future together. It can be done if we restore the belief that we share a sense of national community, that we share a common national endeavor. It can be done. "

Barbara Jordan

"World peace, like community peace, does not require that each man love his neighbor - it requires only that they live together with mutual tolerance, submitting their disputes to a just and peaceful **settlement."**

John F. Kennedy

Original article**Somatic Profile of North Kolkata school students**Palash Das¹, Mausumi Basu², Gautam Dhar³, Ranabir Pal⁴¹Associate Professor, Associate Professor, Department of Community Medicine, Medical College, Kolkata, West Bengal²Associate Professor, Department of Community Medicine, PGIMER and SSKM (PG) Hospital, Kolkata³Associate Professor, Department of Community Medicine, NRS Medical College, Kolkata⁴Professor, Department of Community Medicine, Sikkim Manipal Institute of Medical Sciences (SMIMS), Gangtok, Sikkim- 737 102Correspondence to: Dr. Mausumi Basu, E-mail ID - basu.mausumi544@gmail.com**Abstract**

Background: School students of North Kolkata have been investigated for their bio-physical characters to assess the present status of their health and nutrition with morbidity findings if any. **Objective:** The study was conducted to assess the health and nutritional status of school children in the age group of 12 -17 years and to find out their morbidity pattern.

Methods: Nine hundred and eighteen students of class VI to XII of one higher secondary school for boys of North Kolkata were selected through simple random sampling from the list of three schools of this area. It was a cross-sectional descriptive study. Pre-designed and pre-tested schedule was adopted to collect data through interview and medical examination. Height, weight, medical morbidities were the variables of the study. Simple mean and proportions were the statistical application in the study. **Results:** Nutritional deficiency disorders were found among the students of all standard of the school. Anemia and Vitamin B complex deficiency was found in 32.79% and 3.92% respectively in the study population. Height and weight of the students of all classes except XII (7.84%) was found below normal. Accordingly BMI was also found below normal (92.12%) except class XII. Among the students, problem of acuity of vision from 20 feet / 25 feet onwards in any or both of the eyes in the best corrected vision was found to be 24.62 percent.

Conclusions: The study revealed the poor health and nutritional status of school children including presence of anemia, vitamin deficiency, low BMI along with poor acuity of distant vision. This identified a student group

for targeted services aiming at improvement of their overall health and nutritional status.

Key Words: Bio-physical characters, Health and Nutrition, North Kolkata

Introduction:

The health problems of a school child vary from place to place and several studies conducted in India revealed that the main morbidity conditions include infectious diseases, malnutrition, helminthiasis, diseases of the skin, eye & ear and dental caries.^[1] The school taken in our project will fall in the middle tire in respect of economy, cultural behavior etc. The nutritional and health status of students was found poor in our country.^[2] Obesity and under-nutrition co-exist in Pakistani school-children.^[3] Nutritional status of middle and high socio economic status (MHSES) children in India needs attention especially with respect to the high prevalence of anemia, overweight and obesity. There are indications that micronutrient deficiencies exist, but sufficient data are lacking.^[4] Health of the students should be optimum for a healthy society. The health of our youth to a large extent determines the health of our society.^[5] Seventy percent of the world's malnourished children live in Asia.^[6] The school age children and adolescents have to be considered a priority area as severe visual loss in children can affect their development, mobility, education and employment opportunities with far reaching implications on their quality of life and their affected families.^[7]

Morbidity of the students exists among them without their concern. These must be defined among them and teachers of the schools and also to the health administrators so that the health administrators can take some or other actions to minimize the problem and to

prevent the emergence of these problems in future. Keeping the above observations in view the present study was designed and conducted with the aim to understand the current magnitude of health problems, their pattern and nutritional status of school children in the age group of 12 -17 years and to find out their morbidity pattern that may contribute in the preventive and control activities in future as well as help in the implementation of educational programme for this group.

Materials and methods:

Study Design and Settings: A descriptive cross-sectional study was conducted among 918 male students of class VI to XII. One higher secondary school for boys of North Kolkata was chosen randomly for the study.

Study Period: Concept and study design, formulation of schedule and clinical examination items, data collection and analysis were done during November 2010.

Study Instrument: The pre-designed and pre-tested data collection tool was an interview schedule that was developed at the institute with the assistance from the faculty members and other experts. This close-ended anonymous questionnaire contained questions relating to the socio-demographic situation prevailing in East India. By initial translation, back-translation, re-translation followed by pilot study the questionnaire was custom-made for the study. The first part of the interview schedule was on socioeconomic and demographic characteristics. This included the variables – age, sex, religion, community status, educational status and per-capita monthly income. The second part of the interview schedule was on the morbidity pattern.

Sample Size and Sampling Design: Total strength of school students was 979. All the students were the targets for investigation. The day of students' medical examination was earlier declared so that all students could be reached. Taking the prevalence rate of anaemia around 0.3 and allowable error 0.03, the sample size of students became 933. The authors adopted the rate of anaemia (20 – 40%) in adolescent group found in a study conducted by IPHA in West Bengal in the similar socio-economic strata of general people.^[7A] All the students attended the school on the day of medical examination and 918

students were our ultimate study population excluding schedule with missing data.

Main Outcome Variables: height, weight, BMI, anemia, angular stomatitis, chielosis, glossitis, visual acuity etc.

Data Collection Procedure: After decision making and concept development of this particular study, investigators made a meeting with head of the institution. The permission to conduct the study in the school was taken well ahead of data collection. Institute Ethics Committee approved the study. Date and time was fixed up. All the participants were explained about the purpose of the study and were ensured for strict confidentiality, and then verbal informed consent was taken from each of them before the interview. The participants were given the option of not to participate in the study if they wanted. Then on the day of investigation, data were collected through interview followed by detailed health examinations. Height was measured by a WHO approved wall-mounted height measuring scale. A calibrated and standardized mechanical weighing scale was used to measure weight. The reference data used to identify the cut-off points were taken from the CDC 2000 dataset for BMI.^[8]

The investigators collected the data in the winter season of 2010 and disseminated the information on morbidity in health education sessions to complement the findings of the study.

Statistical Analysis: The collected data were thoroughly cleaned and entered into Excel spread sheets and analysis was carried out. Compilations of data was done through tabulation and then mean of the observed findings in respect of height, weight, body mass index (BMI), pulse rate and simple proportion were calculated in other variables used in data analysis.

Results:

School students of north Kolkata were investigated during winter season of 2010. Nine hundred and eighteen students were present and their age range was 12 to 17 years. Nutritional deficiency disorders were found among all standard students of school. Pallor (equivalent to anaemia) was found high (32.79%) with variation of different class group. Class VII standard students showed highest (43.89%) and Class XII standard students showed lowest (16.90%). Vitamin B

complex deficiency disorders were also found among students (3.92%). No one was found with this sign of Vitamin B complex deficiency disorders among students of class

VIII and XII. 63.29% students of all classes were found normal. (Table 1)

Table I: Distribution of students according to nutritional deficiency signs

Standard (n, %)	Pallor / Anaemia (%)	Angular stomatitis / Chielosis / Glossitis (%)	Normal (%)
Class VI (198, 21.57)	65 (32.83)	7 (3.53)	126 (63.64)
Class VII (180, 19.61)	79 (43.89)	5 (2.78)	96 (53.33)
Class VIII (121, 13.18)	50 (41.32)	0 (0.00)	71 (58.68)
Class IX (155, 16.88)	52 (33.55)	18 (11.61)	85 (54.84)
Class X (193, 21.02)	43 (22.28)	6 (3.11)	144 (74.61)
Class XII (71, 7.73)	12 (16.90)	0 (0.00)	59 (83.10)
Total (918, 100)	301 (32.79)	36 (3.92)	581 (63.29)

The median pulse rate (per min.) was found 81 with gentle variations in different classes. Mean weight (both individual class and all students) of the students was found low (92.16%) except Class XII. Mean height (both individual class and all students) of the students was found low (92.16%) except Class XII. Mean BMI (both individual class and all students) of the students was found low

(92.16%) except Class XII. The cause of this variation was not studied. In one sentence it can be said that weight, height and deducted BMI was found low in most of the students (92.16%). (Table 2)

Table 2: Distribution of weight, height, BMI and pulse rate

Standard (n, %)	Mean Weight (Kg)	Mean Height (Meter)	Mean BMI	Median Pulse Rate / Min
Class VI (198, 21.57)	27.03	1.36	14.48	82
Class VII (180, 19.61)	32.27	1.43	15.59	79
Class VIII (121, 13.18)	37.6	1.50	16.20	82
Class IX (155, 16.88)	41.69	1.57	16.81	80
Class X (193, 21.02)	31.75	1.39	15.93	82
Class XII (71, 7.73)	53.83	1.66	19.22	77
Total (918, 100)	35.02	1.46	15.99	81

Among the students of all classes the problem of acuity of vision from 20/25 onwards in any or both of the eyes in the best corrected vision was found to be 24.62 percent. Variations were noted in different classes from highest 35.49 percent in class IX to lowest 9.37% in class X. The findings were

alarmingly high. The cause of this variation was not studied. (Table 3)

Table 3: Distribution of acuity of distant vision in any or both eyes

Standard (n, %)	Normal (20/20) (%)	20/30 to 20/60 (%)	20/80 onward (%)
Class VI (198, 21.57)	145 (73.23)	41 (20.71)	12 (6.06)
Class VII (180, 19.61)	133 (73.88)	42 (23.33)	5 (2.78)
Class VIII (121, 13.18)	86 (71.07)	30 (24.79)	5 (4.13)
Class IX (155, 16.88)	100 (64.52)	48 (30.97)	7 (4.52)
Class X (193, 21.02)	175 (90.67)	11 (5.70)	7 (3.63)
Class XII (71, 7.73)	53 (74.65)	18 (25.35)	0 (0.00)
Total (918, 100)	692 (75.38)	190 (20.70)	36 (3.92)

Discussion:

A cross-sectional descriptive study was done in winter season of 2010. North Kolkata school students (boys) were investigated for their bio-physical characters to assess the present status of their health and nutrition with morbidity findings if any. Socio-economic status of the local people who send their wards to this school belonged to middle class. Social structure included middle class people with mixed culture, high variation in education and under control of municipal organization. The age limit was from 12 to 17 years.

In this study pallor (equivalent to anemia) was found in 32.79% of all students. This was found in all class students. In Tirupati study, 84.3% of children were found to have one or more morbid conditions. The prevalence of clinical anemia was 8.5% and 5.8% respectively in boys and girls. In one similar study done at Ludhiana, the anemia was found 22.9% among male students and 30.50% among female. This is notable to that reported in Hyderabad (68.0%)^[10] and in Gujarat (60.0%);^[11] a lower prevalence of 8.2% was found in Chittoor.^[9] The proportion of angular stomatitis in the present study (3.92%) corresponded well with Chittoor study (2.7%).^[9]

Weight, height and resultant BMI were found low as per ICMR standard among 92.16% of students except class XII students. In Ludhiana study, the expected height for age as per ICMR standard was also less in both boys and girls.^[2] In Karachi study among 284 students, 52% were found to be underweight. Of this study population, 6% were obese and

8% were overweight.^[3] In sharp contrast to this study result, the majority of students rated their health as good, very good or excellent (males 94.2%, females 90.3%) in one similar study of New Zealand.^[5]

One or both the eyes were found with refractive error among 24.62 percent students of all classes in our study. This was definitely an alarming finding among school students. This low vision influences school performance among students. In a Surat school study, overall prevalence of refractive error was found to be 15.22 percent; Refractive error was observed higher among the Muslims (54.05%) and in general caste (50.98%). Associated ocular morbidity was noted in 20.35 percent cases of participants along with the refractive error.^[12] A south Indian study among children aged 15 years or younger for visual acuity measurements noted that 6.2% of 10,000 children were blind.^[13] The Tirupati study reported the defective vision to be 4.4% and 4.7% in school going boys and girls.^[1] In contrast to our study finding, lower proportion of students showed refractive errors in few of the studies ranging from 2.60% (Andhra Pradesh)^[14] to 3.65% (Darjiling of Bengal).^[20] Some studies found the refractive errors in between our findings and the mentioned low findings were ranging from 6.43% (Pokhra, Nepal)^[16] to 9.80% (Hyderabad).^[17] Much more studies found the similar results in their studies ranging from 17.10% to 34.20%.^[18, 19, 20, 21]

There were several limitations. Magnitude of morbidity in a specified geographic area was not attempted in all the pediatric and adolescent population age

groups; instead it described the types and characteristics of a specified population group.

The findings of the present study cannot be generalized to the entire population as it is specific to the school children. In order to keep the anonymity, the reasons for incompleteness of responses could not be sorted out. There were variations in the pulse rate, mean weight, mean BMI and problem of acuity of vision in different classes. Follow up studies can resolve the variations.

Recommendations:

Secondary school children are in the receiving end of knowledge percolation and habit formation. High school stage is a period where individual in the physical, psychological, intellectual role develops. They are the backbone and future treasure of nation. The study revealed the poor health and nutritional status of high school children with poor acuity of distant vision identifying this student group for targeted services aiming at improvement of their overall health and nutritional status. An integrated approach to control the health problems in this age-group should be the goal of their caregivers. As the school is an indispensable part in the life of this growing population, we have to include and promote optimum healthy life-style. Interventions that augment parental self-efficacy in conveying and enforcing approach to shape their children could reduce health problems of this age. Healthy life style campaigns, focusing on youth, are essential to reduce the burden of related diseases. Repeat surveys would help in monitoring the issues in the schools and in evaluating the efficacy of national programmes targeted to this age group.

References:

1. Srinivasan K., Prabhu.G.R. A study of the morbidity status of the children in Social Welfare Hostels in Tirupati town, Indian J Community Med 2006;31(3):25-30
2. Panda P, Benjamin AI, Singh S, Zachariah P. Health status of school children in Ludhiana city. Indian J Community Med 2000;25(4):150-5.
3. Warraich HJ, Javed F, Faraz-ul-Haq M, Khawaja FB, Saleem S. Prevalence of Obesity in School-Going Children of Karachi. PLoS ONE 2009;4(3):e4816. doi:10.1371/journal.pone.0004816
4. Srihari G, Eilander A, Muthayya S, Kurpad AV, Seshadri S. Nutritional status of affluent Indian school children: what and how much do we know? Indian Pediatr. 2007;44(3):204-13
5. Adolescent Health Research Group. A health profile of New Zealand youth who attend secondary school. J New Zealand Medical Association 2003;116(1171):1-9.
6. Khor GL. Update on the prevalence of malnutrition among children in Asia. Nepal Med Coll J 2003;5(2): 113-22.
7. Rahi JS, Gilbert CE, Foster A, Minassian D. Measuring the burden of childhood blindness. Br J Ophthalmol 1999; 83: 387-8.
- 7A. Executive Summary Status of Adolescent Nutrition – IPHA available from www.iphaonline.org/resources/publications/index.html
8. Department of Health and Human Services. Centers for Disease Control and Prevention, USA. CDC growth charts for the United States. Available from: <http://www.cdc.gov/nchs/data/nhanes/growthcharts/zscore/bmiagerev.xls>. [accessed 2010 Jan 12]
9. Andhra Pradesh School Health Project: Special School Health check up programme, Chittoor district report, 1996
10. Prasad AP, Lakshmi A, Bamji MS. Riboflavin and Haemoglobin status of Urban school boys: relationship with income, diet and anthropometry. Indian Journal of Paediatrics 1987; 54(4):529-33
11. Seshadri S. Weekly implementation of iron in Rural adolescent girls In: Malnutrition in South Asia-A regional profile, 1996, ROSA publications, S, 79.
12. Basu M, Das P, Pal R, Kar S, Desai VK, Kavishwar A. Spectrum of visual impairment among urban female school students of Surat. Indian J Ophthalmol. 2011;59(6): 475-79
13. Nirmalan PK, Vijaylakshmi P, Sheeladevi S, Kothari MB, Sundaresan K, Rahmatullah L. Kariapatti Pediatric eye evaluation project (KPEEP): Baseline ophthalmic data of children aged 15 years or younger in south India. Am J Ophthalmol 2003; 136:703-9.
14. Dandona R, Dandona L, Srinivas M, Sahare P, Narsaiah S, Munoz SR et al. Refractive error in children in rural population in India. Invest Ophthalmol Vis Sci. 2002;43(3):615-22.
15. Bhattacharya RN, Shrivastava P, Sadhukhan SK, Lahiri SK, Chakravorty M, Saha JB. P.C. Sen Memorial best paper award on rural health practice: A study on visual acuity and vitamin A deficiency among primary school students in Naxalbari Village, Darjeeling district of West Bengal. Indian J Public Health. 2004; 48(4):171-80.
16. Niroula DR, Saha CG. Study on the refractive errors of school going children of Pokhara city in Nepal. Kathmandu Univ Med J (KUMJ). 2009;7(25):67-72

17. Uzma N, Kumar BS, Khaja Mohinuddin Salar BM, Zafar MA, Reddy VD. A comparative clinical survey of the prevalence of refractive errors and eye diseases in urban and rural school children. *Can J Ophthalmol.* 2009;44(3):328-33.
18. Shrestha RK, Joshi MR, Ghising R, Pradhan P, Shakya S, Rizyal A. Ocular morbidity among children studying in private schools of Kathmandu valley. A prospective crosssectional study. *Nepal Med Coll J* 2006;8(1):43-6.
19. Goh PP, Abqariyah Y, Pokharel GP, Ellwein LB. Refractive error and visual impairment in school-age children in Gombak District, Malaysia. *Ophthalmology* 2005; 112:678-85.
20. Das A, Dutta H, Bhaduri G, De Sarkar A, Sarkar K, Bannerjee M. A study on refractive errors among school children in Kolkata. *J Indian Med Assoc* 2007;105(4):169-72.
21. Gilbert CE. Prevalence and causes of functional low vision in school-age children: results from standardized population surveys in Asia, Africa, and Latin America. *Invest Ophthalmol Vis Sci* 2008;49(3):877-81

REGISTRATION DETAILS OF IAPSM-GC

**REGISTERED WITH
OFFICE OF CHARITY COMMISSIONER, BHAVNAGAR ON
8TH NOVEMBER 2011**

**Name of the Trust
INDIAN ASSOCIATION OF PREVENTIVE AND SOCIAL
MEDICINE, GUJARAT CHAPTER**

"There can be no vulnerability without risk; there can be no community without vulnerability; there can be no peace, and ultimately no life, without community."

"It is our task—our essential, central, crucial task—to transform ourselves from mere social creatures into community creatures."

M. Scott Peck

Original Article

Self medication practice among adults of Ahmedabad city

Bhavna Puwar¹,

¹Assistant Professor, AMC MET Medical College, LG hospital, Maninagar.

Correspondence to Dr. Bhavna Puwar Email: drbvumpavat@gmail.com

Abstract :

Background: Medication of oneself without professional supervision so as to alleviate an illness or a condition is self medication.

Objectives: To study the practice of self medication and the common ailments, common drugs used for self medication, their sources and the reasons for it.

Methods: Cross sectional qualitative study.

Study sample: 200

Exclusion criteria: Any person (i) below 18 years and (ii) above 18 years who refused to consent for the sharing of information.

Results: In the study 63% were males and 37% were females. Proportion of the participants practicing self medication was 82%. Fever (42.5%), headache (30.30%), and common cold (24.24%) were common illnesses for which self medication was practiced. Commonly used drugs for self medication were Paracetamol (43.64%), Aspirin (16.97%), Ibuprofen (12.12%) and Cetirizine (12.73%). Frequency of using this drugs were SOS (as and when required) by 86% and weekly by 5% and monthly by 9%. In 60% cases, friends were the source of information for self medication, media in 35.8% and internet in 4.2% cases. 56% of people perceived improvement in health after self medication. Saving time (52%) and saving money (60%) were the major reasons for self medication.

Conclusions: Self medication is found to be a common practice and the main reason behind this practice is saving money and time.

Key words: Self medication, over the counter drugs (OTC), urban area.

Introduction:

Self-medication is the treatment of common health problems with medicines especially designed and labeled for use without medical supervision and approved as safe and effective for such use.

Medicines for self-medication are often called 'nonprescription' or 'over the

counter' (OTC) and are available without a doctor's prescription through pharmacies. In some countries OTC products are also available in supermarkets and other outlets. Medicines that require a doctor's prescription are called prescription products (Rx products).¹

In India, the import, manufacture, distribution and sale of drugs and cosmetics are regulated by the *Drugs and Cosmetics Act, 1940* (DCA), the *Drugs and Cosmetics Rules, 1945* (DCR).

The phrase "OTC" has no legal recognition in India, all the drugs not included in the list of "prescription-only drugs" are considered to be non-prescription drugs (or OTC drugs). Hence "OTC Drugs" means drugs legally allowed to be sold "Over The Counter" by pharmacists, i.e. without the prescription of a Registered Medical Practitioner.

Prescription-only drugs are those medicines that are listed in *Schedules H and X* of the Drug and Cosmetics Rules. Drugs listed in *Schedule G* (mostly antihistamines) do not need prescription to purchase but require the following mandatory text on the label: "Caution: It is dangerous to take this preparation except under medical supervision".²

This study was conducted to understand the factors behind self medication.

Objectives:

1. To find the proportion of self medication among the study population.
2. To find the common ailments where self medication is practiced and the common drugs used for self medication and their sources.
3. To study the reasons for practicing self medication.

Materials and methods:

It was a cross sectional qualitative study done between June 09 to September 09 in Ahmedabad city. Two localities of lower middle class of Central zone of the city were selected for this study. Initially after framing the questionnaire pilot study was done among

40 subjects and then questionnaire was modified. All people above the age of 18 years who consented for the study were included in the research until 200 subjects were contacted and the information was collected by personal interview. Exclusion criteria: Any person (i) below 18 years and (ii) above 18 years who refused to participate in the study.

Results:

Out of the total 200 subject who participated in the study 126(63%) were males and 74(37%) were females (Table1). Among them 164(82%) were taking medicines by self (Table2). More than half of the study subject were graduate (Table 3) and there was no significant association between the practice of self medication and level of education (χ^2 0.52, $p=0.5$)

Common illnesses for which self medication was practiced were fever (42.5%), Headache (30.30%), and cold (24.24%). Other illnesses in small proportion were body ache, diarrhea, pain and cough.

Commonly used drugs for self medication were Paracetamol (43.64%), Aspirin (16.97%), Ibuprofen (12.12%) and Cetirizine (12.73%). Others drugs used in small proportion by some were diclofenac, antacid like ranitidine, common cold remedies like Vicks 500, Antibiotics like Amoxycillin, Antidiarrhoeal like loperamide, antiemetic, and cough syrup.

Frequency of using these drugs were SOS (as and when required) by 142 people (86%), monthly by 15 people (9%) and weekly by 8 people (5%).50 people among those practicing self medication also relied on household remedies and ayurvedic and homeopathic drugs.

In 60% cases friends were the source of information for self medication and media (radio, Television, newspapers and magazine) in 35.8% and internet in 4.2% cases.

56% of people perceived improvement in health after self medication.

95% of them checked the expiry date of drugs before consuming them.

61% of people also advised their friends and relatives for self medication.

Common reasons cited for practicing self medication were saving money (60%) and saving time (52%).

It was found that 32 subjects (19.5 %) of study population were also taking prescribed drugs

for chronic illness like Heart disease, diabetes, Arthritis and Thyroid along with self medication for minor ailments.

Table 1: Age group of the study population

Age group (years)	Males (%)	Females (%)	Total
20-24	21(60)	14(40)	35
25-29	23(77)	7(23)	30
30-34	15(55.55)	12(44.44)	27
35-39	15(68.18)	7(31.81)	22
40-45	18(60)	12(40)	30
45-49	17(60.71)	11(39.28)	28
50-54	7(63.63)	4(36.36)	11
55-59	4(50)	4(50)	8
>=60	6 (66.66)	3 (33.33)	9
Total	126 (63)	74 (37)	200

Table 2: Age group of study population who were self medicating

Age group (years)	Males (%)	Females (%)	Total
20-24	17 (58.62)	12 (41.38)	29
25-29	20 (7.69)	6 (23.07)	26
30-34	11 (57.89)	8 (42.11)	19
35-39	12 (66.66)	6 (33.33)	18
40-45	16 (64)	9 (36)	25
45-49	15 (62.5)	9 (37.5)	24
50-54	5 (62.5)	3 (37.5)	8
55-59	4 (57.14)	3 (42.86)	7
>=60	6 (75)	2 (25)	8
Total	106 (64.63)	58 (35.37)	164

Table 3: Educational qualification of the study population people as per the practice of self medication

Education	Self medication (%)	No self medication (%)	Total (%)
Post graduate	29 (85.30)	05 (14.70)	34 (100)
Graduate	84 (79.25)	22 (20.75)	106 (100)
Higher Secondary	19 (73.08)	07 (26.92)	26 (100)
Secondary	32 (94.11)	02 (5.88)	34 (100)
Total	164 (82)	36 (18)	200 (100)

Discussion:

Self medication for common ailments is widely prevalent in the developing countries. In our study out of 200 subjects studied 164 (82%) were taking the medicines without prescription. A similar study by PR Shankar et al in Nepal reported 59% of respondents taking self medication for one or other ailments³. Our study observed that the common drugs used for self medication were Paracetamol (43.64%), Aspirin (16.97%), Ibuprofen (12.12%) and cetirizine (12.73%), similarly PR Shankar et al also found the commonest drug used was Paracetamol in 69 instances (43%) followed by some other analgesic in 37 instances (23%)³. Our study reported fever (42.5%), headache (30.30%) and combined they account for nearly 73%, and common cold (24.24%) as common ailments for self medication. P R Shankar reported headache and fever were the most common indications for self-medication, accounting for 60% of the illnesses requiring self-medication³. However, P D Phalke et al found that 80.49% respondents used self-medication mainly for the treatment of minor illness such as headache, cough and fever⁴.

Our study found in 60% cases friends were the source of information for self medication and media (radio, Television, newspapers and magazine) in 35.8% and internet in 4.2% cases, similarly V D Phalke et al reported Advertisement in newspaper, TV, Radio and magazines as main sources followed by chemist shops⁴. Therefore it is necessary that media should behave responsibly while advertising OTC drugs. Strict policy guidelines should be enacted by the Government in this context. A study in rural Maharashtra by V D Phalke et al found major reasons for practicing self medication were economic (58.5%) or non availability of health care facility (29.3%). Common reasons cited for practicing self medication in our study were saving time (52%) and saving money (60%)⁴. In our study non availability of health services was not the question as the study was conducted in urban set up in lower middle class people. Thus financial concern with increasing cost of health care restricts people from visiting doctors and going for practice of self medication. P D Phalke found most of the users of self-medication resorted to Allopathic system of medicine 73.17%, 9.76% was using allopathic + others and 9.02% only

Ayurvedic medicines, whereas in our study 30.5% respondents were using household remedies, Ayurvedic and Homeopathic drugs for self medication. Frequency of self medication was SOS (as and when required) by 142 people (86%), monthly by 15 people (9%) and weekly by 8 people (5%).

Thus the study concludes that self medication is found to be a common practice because of economic and time constraints. Commonly used drugs are antipyretics and analgesics. Common source of information for self medication are friends and media.

It is unsafe to do self medication for minor ailments while on medication for chronic diseases without knowing the potential interaction among medicines.

Limitations of the study: As the study was conducted on a small sample the results cannot be generalized to the population.

Acknowledgment: I appreciate the support of all the undergraduate students who had helped in data collection.

Reference:

1. WSMI - World Self-Medication Industry - About Self-Medication. www.wsmi.org/aboutsm.htm. accessed on 20/2/12
2. ORGANISATION OF PHARMACEUTICAL PRODUCERS OF INDIA, www.indiaoppi.com/IndiaOTCpharmaProfile2011.pdf accessed on 20/2/12
3. PR Shankar,1 P Partha,2 and N Shenoy3, Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based study. BMC Fam Pract. 2002; 3: 17
4. VD Phalke, DB Phalke, PM Durgawale. Self-medication practices in rural Maharashtra. IJCM 2006,31,issue 1,34-35

“A world community can only exist with world communication, which means something more than extensive software facilities scattered about the globe. It means common understanding, a common tradition, common idea's and common ideals.”
Robert Maynard Hutchins (1899-1977)

Original article**A qualitative approach to various factors affecting health of Seasonal Migrants**Dayama Sonal¹, Kosambiya J. K.², Kantharia S. L.³.¹Resident; ² Additional Professor; ³ Professor and Head,

Department of Community Medicine, Government Medical College, Surat, Gujarat

Correspondence to : Dr. Dayama Sonal, E-mail ID - sonaldayama@gmail.com.**Abstract:**

Background: Our cities are slowly transforming into concrete jungles due to large scale construction work. Migrants form backbone of this industry. **Objective:** The objective of the study was to explore various aspects of life influencing health, among construction workers through qualitative methods of research.

Methodology: Four Focus group Discussions (FGDs) were carried out with a total of 32 adult females and males in the month of May 2011. **Results:** Most of the respondents have shown a seasonal work pattern and also shown field work and the construction work in their village and the neighboring city respectively as their chosen work options. Labourers were not health conscious and went to qualified doctors only as a last resort to cure. The main reason for not availing any health facility was the fear of losing their daily wages. The mothers could not recall immunization status of most of their children. They also lacked awareness about the vaccine. Sterilization operation was not done till family had two male children and only females were supposed to undergo the surgery. Tobacco consumption was quite rampant amongst all, males and females of tribal area Dahod of Gujarat and it was present in almost all males of other states. **Conclusions:** We owe a lot for this ‘infrastructure development and beautification’ of our cities to the poor construction labourers to which we are apathetic. Measures to identify and meet the unmet needs of this special group should be taken.

Key words: seasonal migrants, construction workers, health services, awareness, Surat

Introduction:

Surat is one of the most dynamic city of India with one of the fastest growth rate due to immigration from various parts of Gujarat and other states of India.¹ It has seen phenomenal increase in infrastructure development in last ten years. As a result, it has created employment to thousands of migrant labourers from different parts of Gujarat and India. In New Civil Hospital campus also, new buildings are being constructed for use as wards, hostels, OPD etc. There are nearly 200-250 labourers living at the various construction sites within the campus. The objective of the study was to explore various aspects of life influencing health, among construction workers through qualitative method of research.

Methodology:

Focus Group Discussions: A total of four Focus Group Discussions were carried out in the month of May 2011. 2 FGDs were carried out with adult males and 2 with adult females with 8 participants in each FGD. The participants belonged to different states like Gujarat (mainly from Dahod), Madhya Pradesh and Uttar Pradesh. Before conducting FGDs there were 2 informal discussions with labourers at different sites and informed about the FGDs for their active participation. One of the authors was moderator and note taking was done by a note taker. Informed consent was taken from the participants. FGDs were conducted using both Gujarati & Hindi languages as per the convenience of the participants. Each FGD was conducted in the time comfortable with the study group i.e. after their job hours in the evening.

The duration of the FGD ranged from 50 minutes to 90 minutes. A guide containing the points to be discussed was prepared and it was used in all FGDs. Discussion related to their work, income, health and education was done. Transcript was then prepared in English.

Results:

Generally, the following themes emerged across the various demographic groups.

Work Pattern:

Most of the workers were seasonal migrants and had small farms in their village, which was managed by other family members when they were in cities. They usually come to the city after sowing seeds in their fields and go back for harvesting. They earn approximately 25,000 rupees per annum through agriculture.

Income:

The income varied according to their experience and whether skilled or unskilled. New labourers were given daily wages of Rs.100-180/-, labourers with experience Rs.180-250/- per day, skilled laborers Rs.200-350/- per day. Young/adolescents were given Rs 100-150/- per day. Males did heavy work. Wages of workers also varied with contractor. Female worked as weight bearer, filtering sand etc.

Most of the labourers brought their children with them to help with odd jobs. Some of them had been studying in school and used to come to help in vacation time. They were given odd jobs like babysitting, pouring water over the newly constructed building/walls, taking drinking water or tea to the labourers, bringing packets of tobacco/guthka for them, helping the females to lift bricks or cement, sweeping etc. Few others had left school and joined this work on full time basis. A few women agreed with a remark made by their co

worker, *“This work tires us, lifting heavy weight but what do we do.”*

“Ame thaki jayeye, ketlu bhaar hoy maal nu , pan shu kariye.”

Financial Matters:

Savings were spent in buying ‘*Rakam*’- silver ornament/bangle by two groups from Gujarat, which were used as mortgage when they faced shortage of money. None of them had bank account. When asked about MNREGA, *“I know about NREGA, they give only Rs.80 or 90, they don’t give whole amount”*, said a 40 year old man, who had primary education.

“Muhje pata he Narega ke bare mein, par woh to 80-90 dete hein, pure thodi dete hein.”

None of them had documents like Ration card, birth certificate, BPL card etc. Those who had documents had kept at their homes in their village.

Health:

It was a priority only when it led to loss of wage. The pharmacist played role of doctor to them. Females had unknown fear of hospitals. When they were asked about not using services in the nearby tertiary level hospital, a woman said *“So many people die there.”*

“Wahan to bahut log mar jate hein.”

Another female said, *“There are so many hassles and then we are asked to go from here to there whole day. Also there is so much rush there.”*

“Wahan jane mein bahut musibat hai, bheed hai, idhar se udhar ghumna padta hai aur din bigad jata hai.”

When they were asked about vaccines, they remembered giving their children polio drops. Most of mothers could not recall immunization status of their children. They also lacked awareness about the vaccine. Few remembered the

ANM of their village, *“The nurse comes to immunise children; we also keep our children in Anganwadi, they get Balbhog there.”*

“Nurse ben ave chhe rasi apva, ame anagnwadi ma mukiye tyan chhokaran ne balbhog pan ape chhe.”

When they were told that there is an Anganwadi centre nearby they said, *“Who will take children to Anganwadi there, we have to work here.”* They hesitated to take children to Hospital for immunization and to Anganwadi.

“Wahan pe kon le jayega ,hamein yahan kam karna hai. ”

For family planning, sterilization operation was not done till family had two male children according to societal norms. Only females were supposed to undergo surgery according to a group of females. When a group of males was told about the incentive a male gets after getting vasectomy done, one male of around 30 years with 3 girls and one boy said, *“If we get weak due to the operation, then who will work.”*

“Mein kamjor ho gaya to kaam kaun karega?”

Tobacco consumption was quite rampant amongst all, males and females of tribal area of Dahod of Gujarat and it was present in almost all males of other states probably because most of females from other states only did household chores. When asked about tobacco chewing, *“We take tobacco when we get tired or bored of work.”*

“Kantali ke thaki jaiye tyare tambaku khaiye.”

Education:

Most of the females were illiterate. Males had some primary education. They were reluctant to send their children to school due to various reasons. *“If we send*

our daughters in rickshaw then she might get abducted in rickshaw or in school. She might also run away from school, and then what will we do?” said 32 year old, illiterate mother of three girls and one boy.

“Bachiyon ko auto me bheja aur koi utha liya to? Aur woh school se bhaag gayi to?”

This shows that females are still in apprehension of any abuse that their girl child may fall upon and this factor has to be pondered over while planning welfare services for women.

“If we send our son to school then, who will take care of our younger son?” said 30 year old illiterate mother of three boys.

“Yash ko school bhej diya to chhotu ko kaun dekhega?”

“My son wants to study, but I am afraid that while crossing roads he will meet with accident. Rickshaw could not be arranged. He has passed fourth class but they have put him in first standard as we have not brought mark sheet of fourth standard,” mother of a ten year old boy. She had a girl of 7 years too, but she did not mention anything about her. When she was asked about education of her girl child, she replied that she would send her to school if all mothers from her group would send their daughters to school.

Many children like him in the settlements in Civil Hospital Campus had stopped going to schools in their native villages for various reasons, few found them boring, in few schools teachers used to beat them, in few there were no teachers, for some the school was too far and hard to reach especially in monsoons.

Discussion:

According to Gandhiji's vision of Gram-Swaraj, villages and specially farmers were to be the main focus of any development plan of India. As years passed by, agriculture as an industry lost

its importance for policy makers of India. Some farmers do not know how to cope with changing economy leading them to take extreme steps like suicide while some started to search jobs in cities, resulting into large scale migration.^{2,3,4,5}

They now survive under the most appalling of living conditions, with scant regard to the basics of cleanliness and hygiene. They pose a challenge to public health and social welfare system because of the diversity and temporary nature of stay and work.⁶ These migrant workers are at loss because of their temporary stay; they neither get benefits of health (which they used to get in their villages) nor shelter (the slum dwellers are getting benefits of EWS-Economically Weaker Section-quarters under JNURM in selected cities).

Most of the findings of this study coincide with the findings of Gramin Vikas Kendra study.⁷ The situation of farmers has not changed much till now. India has still a lot to gain from scientific advances in agriculture. Even today most of the farmers face lot of problems like scarcity of rainfall, price of fertilizers & pesticides, electricity supply for irrigation, etc. Some have small plots or agricultural land which yields enough for their personal consumption only. Some earn a meager income (of 25,000 Rs per annum in this study) through farming which is not enough to sustain their needs the whole year. Due to fewer yields in agriculture the labourers resort to different means to earn. They are in poor economic condition and migrate to cities where they have no job security. Even though they stay in appalling conditions, many do not return which either creates labour shortage in villages or burden on females of the family who are left behind in villages. Sometimes families migrate permanently and face many socioeconomic problems of urbanization. This leads to loss of agricultural laborers in their native village where probably big farmers might employ them. The Government is trying to support

labourers through MNREGA scheme by employing them in developmental activities in their own village. But that is not enough as reflected by Union Rural Development Minister Jairam Ramesh⁸ recently. Although this labour force stands as pillar for construction industry we fail to plan its socioeconomic development. This imbalance will in future adversely impact not only the economy of cities but also health of our nation.

Conclusions:

In this study, the migrant workers did not have any financial savings. They were largely illiterate and owing to the temporary job structure, the education of their children suffered. They did not avail health services from public sector as they could not afford losing time in waiting at public hospitals. At the same time they could not afford private sector health services too so health had gone down in their priority list. Tobacco consumption was quite rampant amongst all the labourers. They also feel insecure in urban environment. Although the nearest school and Anganwadi, both are a kilometer away and they live in premises of Tertiary care centre there are no signs of their socio economic upliftment.

Recommendations:

Healthy and educated workforce is asset to the nation. Special efforts to make each and everyone including migrant workers aware about various government health schemes like RSBY, JSSK, JSK is needed. Since these schemes are mostly operational in rural India such migrant labourers are at loss. Ways to fill this gap must be found out for these laborers. Since the laborers don't have proper identity card they cannot fulfill the technical eligibility to avail many schemes. With advent of Aadhar-UID project, we can expect solution to this problem. Children of these laborers cannot get enrolled in Anganwadi and Schools. Flexibility in enrolling beneficiary/students should be there so that

each child gets proper nutrition and schooling. Effective implementation of the Unorganized Workers Act and the National Social Security Board can benefit these labourers. Identification and line listing of Migrants should be done at district and state level. There is a need of supportive inter-sectoral coordination of various departments related to health, rural and urban development, labour, housing, education etc. for social and economic upliftment of this neglected group.

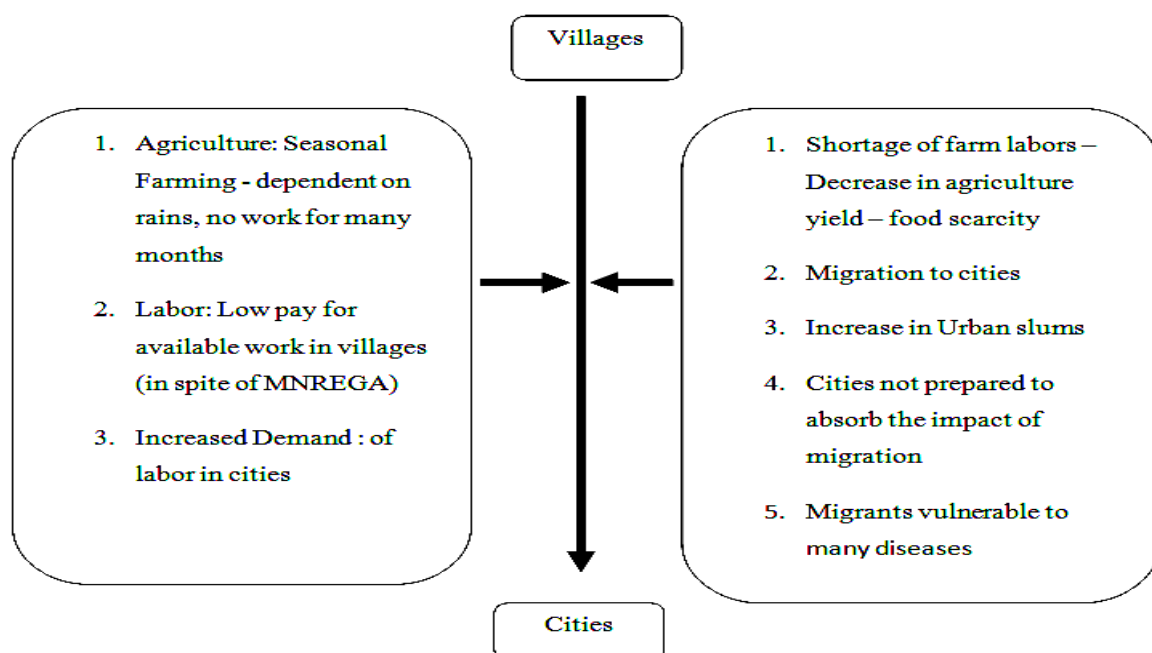
Acknowledgement:

The authors would like to acknowledge the participants of the study. The authors would also like to acknowledge PG students and faculties of Department of Community Medicine, Government Medical College, Surat, who helped in data collection & compilation.

Reference:

1. <http://www.suratmunicipal.gov.in/content/city/introduction.shtml>.(cited 2011 Dec 2)
2. <http://business.mapsofindia.com/india-gdp/sectorwise/agriculture-growth-rate.html>.(cited 2011 Dec 2)
3. Behere P.B and Behere A. Farmers' suicide in Vidarbha region of Maharashtra state: A myth or reality? *Indian J Psychiatry*. 2008 Apr-Jun; 50(2): 124–127.
4. Sainath P. Maharashtra leads in Statistic of Shame. *The Hindu*. 2011 Oct 29. Available from <http://www.thehindu.com/opinion/columns/sainath/article2577740.ece>.(cited 2011 Dec 2)
5. Factbook: India". *CIA Fact book*. *Central Intelligence Agency*. Retrieved 2008-06-10.
6. Sangra S.Population growth and Agriculture in India. 2010 July 15. <http://indiamicrofinance.com/population-growth-agriculture-india.html>.(cited 2011 Dec 2)
7. Prasad A, Deshingkar P. Seasonal migration of tribal populations in Gujarat and the impacts of the Migrant Labour Support Programme-Gramin Vikas Trust. 2006 Mar . http://www.gvtindia.org/seasonal_migration_tribal_populations_gujarat_and_impacts_migrant_labour_support_programme.html. (cited 2011 Dec 2)
8. Singh D K.Jairam NREG poser: 'How many ditches will you dig?'*The Indian Express*. 2012 June 4. (cited on 2012 June28).<http://www.indianexpress.com/news/jairam-nreg-poser-how-many-ditches-will-you-dig/957543/#>

Figure: Socio-ecological Model



Original Article:**A Bayesian Approach in 2x2 Tables: An Application in Anemia Status in Pregnant and Lactating Women in India**Atanu Bhattacharjee¹ and Dibyojyoti Bhattacharjee²¹Department of Statistics, Gauhati University, Guwahati-781014, India²Department of Business Administration, Assam UniversityCorrespondence to Atanu Bhattacharjee¹: E-mail ID – atanustat@gmail.com**Abstract:**

Background: India contributes towards 25 per cent of deaths in the world due to the pregnancy and related health problems. We aimed to observe the changes of level of prevalence of Anemia among lactating and pregnant women over the last decades in India.

Methods: The National Health Surveys have been conducted in India during 1998 and 2006 namely NFHS-2 and NFHS-3. A total of 1751 women have been studied by team of Healthcare & Research Association for Adolescents Noida & Nutrition Foundation of India (H. R. A. A. N & N. F.I) from seven states of India in 2004. The changes of prevalence rate of Anemia among pregnant and lactating women have been explored in this work. The Bayesian approach in the parametric model has been applied to deal with coarse data problem.

Results: The overall prevalence of Anemia in 1998, 2004 and 2006 are observed with 55 per cent, 52.44 per cent and 84.0 per cent respectively. The posterior Mean (SD) of mild, moderate and severe Anemic status among pregnant and lactating women have been found with [1.1(0.52), 0.47 (0.53), -3.9(0.24)] and [0.69(1.06), -2.69(0.21), -25(0.83)] in 2006 with respect to 2004 study.

Conclusion: Some improvement on nutritional status has been found on pregnant women. However, no significant change of Anemia prevalence has been observed on lactating women during the last few decades in India.

Key words: Anemia, Association of Attributes, Hemoglobin, Iron-deficiency.

Background:

India is sharing one fourth of maternal death of the world^{1,2}. The policy and political priority play an important role to control the factors associated with maternal health in India^{3, 4}. The implementation of effective intrapartum-care strategy can be useful to improve the maternal health status in India⁶. The adequate supply of skilled health care providers and well-equipped facilities of health care are important factor to reduce the Maternal Mortality Rate (MMR) in India⁷. Several studies have concluded about the reduction rate of maternal death, the importance of family planning, safe abortion and intrapartum care in India^{8, 9}. Some other studies have found the importance of several interventions for reduction of MMR in India. The poor settings of obstetric care units in hospitals is an important factor for high MMR in India.^{10,11} In this connection it can be pointed out that the level of hemoglobin plays an important role to prevent the pregnancy and delivery related death. The Anemia is the most digestive disease for the malabsorption. The reason of anemia is the low level of Hemoglobin. The degree of anemia can be diagnosed based on level Hemoglobin.¹² In this context; it is an important issue to look upon the reduction of prevalence of Anemia over the period in Indian women. Taking into account the goal, the level of Anemia prevalence changes among lactating and pregnant women in the time periods 1998, 2004 and 2006 has been explored in this work. The data has been obtained from the published work of NFHS-3¹⁵, NFHS-2¹³ and H. R. A. A. N & N. F.I group study¹⁴.

In NFHS-3¹⁵ and NFHS-2¹³ the nutritional measurements of the ever married women have been carried out by the level of hemoglobin in their blood. The Hemocue instrument has been involved to test their hemoglobin level. All ever-married women of age of 15-49 have been considered for the direct measurement of hemoglobin. The details of the procedure can be seen on the NFHS-3¹⁵ and NFHS-2¹³ manual. The levels of severity of Anemia have been categorized by (10.0-10.9 g/dl) for mild Anemia, (7.0-9.9 g/dl) for moderate Anemia and (less than 7.00 g/dl) for severe Anemia.

H. R. A. A. N & N. F.I group study¹⁴ have carried out the cross sectional study between September 2001 and April 2003, on hemoglobin status of the women through cyan met hemoglobin methods in the states of Assam, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Orissa and Tamil Nadu respectively. The classification of Anemia in the largest population based study is an important issue to prevent the death due to low hemoglobin¹⁶. The prevalence of Anemia over the period of time can be useful indicator for health status changes in India. The pregnant and lactating women's Anemia status changes have been considered in this study.

Material and Methods

The posterior mean of the mild, moderate and severe anemia status have been compared with state wise pregnant and lactating women obtained from different study reports through Bayesian approach. The comparison with classical approach has also been carried out on the prevalence data. The three sets of data have been considered to know the changes of prevalence of Anemia in Indian women during 1998, 2004 and 2006 by the representative studies of those years i.e. NFHS-2¹³, H. R. A. A. N & N. F.I group study¹⁴ and NFHS-3¹⁵. However, in case of NFHS-2¹³, NFHS-3¹⁵ surveys the all Indian states have been considered. But in

the study of H. R. A. A. N & N. F.I group study (2004) only the states of Assam, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Orissa and Tamil Nadu have been considered. These seven states have been considered due their available information in three studies.

Methodology for comparison

In this work, the model is

$$L_i \sim \text{Binomial}(N_i, p_i) \tag{1}$$

$$\text{where, } p_i = r_{i1}x_i + r_{i2}(1 - x_i), \tag{2}$$

The r_{i1} and r_{i2} are used to represent i^{th} state's (considered in this work) rate of Anemia among the pregnant and lactating women respectively. The proportions of women in the pregnant and lactating women are denoted by x_i and $(1-x_i)$ respectively. The terms Y_i and $(1-Y_i)$ have been used as the proportion of pregnant & lactating women of the i^{th} state. The parameter L_i has been used for the total anemic population in the i^{th} state population of N_i .

The observed value of r_{i1} and r_{i2} can be denoted by r_{i1}^* and r_{i2}^* . The logit of r_{i1} and r_{i2} have been assumed with $N(0, 1)$ and Wishart prior for scale matrix¹⁷. The absolute error has been measured by

$$E_r = \sum_i \sum_j |r_{ij} - r_{ij}^*|, \tag{3}$$

The formulated table for Anemia in pregnant and lactating women is given below:-

Table1: Cross table on pregnant and non anemic women

	Anemia	Non Anemia	Total Women in the i^{th} state
Pregnant	W_{1i}	W_{2i}	Y_i
Lactating	$1-W_{1i}$	$1-W_{2i}$	$1-Y_i$
	X_i	$1-X_i$	N

where, Y_i and X_i represent the observed margins, and W_1 and W_2 are unknown variability.

Y_i is the total proportion of pregnant women in the i^{th} state, X_i is the proportion of Anemic women in the i^{th} state. The parameters W_{1i} and W_{2i} are Anemic and Non-Anemic respectively.

So, the relationship can be established by $Y_i = X_i W_{1i} + (1-X_i) W_{2i}$ (4)

where, N is the size of each table.

The margin n_{rc} and n_{ic} have been extended into $R \times C$ tables¹⁷.

Table2: The R x C count table

					Total
	n_{i11}	n_{i12}	...	n_{i1c}	n_{i1}
	n_{i21}	n_{i22}	...	n_{i2c}	n_{i2}

	n_{iR1}	n_{iR2}	...	n_{iRc}	n_{iR}
Total	$n_{i.1}$	$n_{i.2}$...	$n_{i.c}$	N_i

where, n_{nr} and $n_{i.c}$ are the observed margins, N_i is the size for the table and n_{irc} are unknown variables.

$$n_{ir} = \sum_{c=1}^C n_{irc} \text{ for } r = 1, 2, \dots, R.$$

$$n_{i.c} = \sum_{r=1}^R n_{irc} \text{ for } c = 1, 2, \dots, C.$$

where, $\max(0, n_{ir} + n_{i.c} - N_i) \leq n_{irc} \leq \min(n_{ir}, n_{i.c})$.

Table 3: The RxC Table has been reformulated into

W_{i11}	W_{i12}	...	W_{i1c}	Y_{i1}
W_{i21}	W_{i22}	...	W_{i2c}	Y_{i2}
...
W_{iR1}	W_{iR2}	...	W_{iRc}	Y_{iR}
$X_{i.1}$	$X_{i.2}$...	$X_{i.c}$	N_i

where,

$$Y_{ir} = \sum_{c=1}^C X_{ic} W_{irc} \text{ for } r=1, 2, \dots, R. \text{ and}$$

$$Y_{ir} = \sum_{r=1}^R X_{ic} W_{irc} \text{ for } c=1, 2, \dots, C.$$

The proportion for each table stands for,

$$\max(0, X_{ic} + Y_{ir-1}) / X_{ic} \leq W_{irc} \leq \min(1, Y_{ir} / X_{ir})$$

In this work, the proportion of Anemia pregnant, non Anemia pregnant, Anemia lactating and non Anemia lactating women have been converted to count data. The count data have been applied in the Bayesian algorithm for the state wise comparison.

Inference Problem in 2x2 Tables

For every state $i=1, 2, \dots, n$ to formulate the 2×2 table. The Y_i is total numbers of women, X_i for pregnant women. Where, W_{i1} and W_{i2} are applied for the proportion for pregnant women in Anemia and lactating women in Anemia respectively. The deterministic relation can be formulated by

$$Y_i = W_{i1} X_i + W_{i2} (1 - X_i) \quad (5)$$

In the above equation, the parameter X_i and $(1-X_i)$ are observed weight and W_{i1} and W_{i2} are unobserved weight.

The difficulties come to obtain distribution assumption of the unknown parameters W_{i1} and W_{i2} in the population. In addition to that the particular observation of W_{i1} and W_{i2} in each state ($i = 1, \dots, n$) is also a challenge to estimate. The inconsistent estimation of the unknown parameters W_{i1} and W_{i2} are coined by Neyman and Scott¹⁸ with "Incidental parameter problem". Recently, it applied and solved under structure with coarse data^{17,19}. The limits of W_{i1} and W_{i2} in equation (5) can be expressed as,

$$W_{i1} \in [\max(0, \frac{X_i + Y_i - 1}{X_i}), \min(1, \frac{Y_i}{X_i})], \quad (6)$$

$$W_{i2} \in [\max(0, \frac{Y_i - X_i}{1 - X_i}), \min(1, \frac{Y_i}{1 - X_i})], \quad (7)$$

The likelihood function $L(\xi, \gamma | W, X)$ for the coarsening (X_i) and coarsened (Y_i) variable in the equation (5) has been considered to obtain the posterior mean estimates¹⁷. The likelihood function

has been obtained by the joint distribution of $f(W_i|\xi)$ and conditional distribution function of $h(X_i|W_i, \gamma)$.

It can be expressed by

$$L(\xi, \gamma|W, X) = \prod_{i=1}^n h(X_i|W_i, \gamma)f(W_i|\xi) \tag{8}$$

The term $f(W_i|\xi)$ is the density function of W_i with the unknown parameter ξ . The part $h(X_i|W_i, \gamma)$ is the density function of X_i given W_i with the unknown parameter γ . The parameter W_i^* has been segregated by,

$$W_i^* \sim (W_{i1}^*, W_{i2}^*) = \text{logit}(W_{i1}), \text{logit}(W_{i2}), \tag{9}$$

Here, the likelihood function $L(\xi, \gamma|W, X)$ has been used to obtain the posterior estimates.

Statistical Analysis

Statistical analysis has been carried out using Winbug-14.3.1²⁰. The prior distribution has been used to obtain the posterior mean value of each category in the sample. The cumulative comparative figures obtained through different states have been considered in this work. The posterior mean for Y_i states has been obtained by the combined posterior mean of the $X_i, 1-X_i, W_{1i}$ and W_{2i} respectively. The prior information about the X_i and $1-X_i$ has been taken from the published work of NFHS-2¹³, NFHS-3¹⁵ and H. R. A. A. N & N. F.I group study¹⁴. The weights for the pregnant anemic and non-anemic women are considered with W_{1i} and W_{2i} respectively. In case of the lactating women the weight for anemic and non-anemic women are $1-W_{1i}$ and $1-W_{2i}$ respectively. It has been assumed that the weight follows the uniform distribution with mean 0 and standard deviation 1 in the prior specification. The application have been carried out separately for the pregnant women and lactating women. In this work, in order to select the sample of two independent chains of 20,000

iterations, each run has been obtained to a burn-in period of 5000 iterations to allow the normal proposal distribution to finish the adapting. The chains are appeared to converge well before the end of the burn-in period. The posterior mean for the different status of hemoglobin have been computed and tabulated in Table 4 and Table 5.

Table 4:- The comparative prevalence rate of Anemia on pregnant and lactating women in India

States	Pregnant women			Lactating Women		
	10.0-11.9	7-9.9 g/dl	≤12.0 g/dl	10.0-11.9	7-9.9 g/dl	≤12.0 g/dl
1	25.2 (25.6) (6.8)	40.6 (34.2) (72.7)	72.6 (37.7) (6.1)	26.0 (67.7) (24.8)	43.8 (8.6) (1.0)	73.3 (4.3) (29.1)
2	26.0 (20.6) (19.1)	43.1 (33.1) (63.3)	71.1 (44.5) (9)	20.6 (57.1) (20.3)	40.7 (13.4) (2.5)	63.5 (4.5) (44.9)
3	27.5 (18.3) (38.3)	12.8 (12.8) (29.8)	40.3 (68.2) (31.9)	10.0 (30.3) (10.0)	36.3 (0) (1.0)	47.9 (9.2) (52.4)
4	19.7 (11.6) (33.6)	15.5 (8.7) (21.3)	35.2 (79.7) (3.2)	4.1 (14.3) (1.1)	28.5 (0) (0.2)	32.5 (39.3) (78.7)
5	23.6 (0.9) (4.8)	33.1 (21.9) (52.8)	58.7 (46.2) (42.2)	17.2 (54.5) (14.8)	47.4 (27.3) (1.2)	58.7 (0) (42)
6	37.1 (0.7) (23.8)	29.6 (26.8) (68.3)	68.8 (39.5) (3)	16.1 (61.2) (17.9)	47.3 (3.7) (1.1)	64.9 (0.7) (35.2)
7	28.2 (25.5) (30.8)	27.7 (27.1) (57.7)	57.8 (42.9) (8.5)	9.1 (50) (19.3)	48.6 (3.4) (3.5)	57.8 (9.1) (38.4)

(Legend of Table 4 - States)

1. Assam NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N & N. F.I group study¹⁴
2. Haryana NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N & N. F.I group study¹⁴
3. Himachal Pradesh NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N & N. F.I group study
4. Kerala NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N &

N. F.I group study¹⁴

5. Madhya Pradesh NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N & N. F.I group study¹⁴
6. Orissa NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N & N. F.I group study¹⁴
7. Tamil Nadu NFHS-3¹⁵ NFHS-2¹³ H. R. A. A. N & N. F.I group study¹⁴

Table 5:- The comparison between NFHS-3 and H. R. A. A. N & N. F.I group study 14 and NFHS-2 through posterior mean on lactating women

NFHS-3 v/s H. R. A. A. N & N. F.I group study ¹⁴						
	Lactation			Pregnant		
	Mean(SD)	Median	HPD (97.5%, 2.5%)	Mean(SD)	Median	HPD (97.5%, 2.5%)
Mild	0.69(1.06)	0.66	(2.87, -1.40)	1.10(0.52)	1.09	(2.17, 0.071)
Moderate	- 2.69(0.21)	-2.69	(-2.27, -3.15)	0.47(0.53)	0.46	(1.56, -0.58)
Severe	- 0.25(0.83)	-0.26	(1.44, -1.94)	- 3.99(0.24)	-3.99	(-3.52, -4.49)
Any Anemia	1.84(1.26)	1.83	(4.40, -0.61)	2.78(0.44)	2.77	(3.70, 1.92)
NFHS-3 v/s NFHS-2						
Mild	2.54(0.62)	2.543	(3.80, 1.28)	- 1.07(0.32)	-1.07	(-0.42, -1.72)
Moderate	1.18(0.25)	1.19	(1.66, 0.64)	0.40(0.16)	0.41	(0.71, 0.07)
Severe	5.44(0.45)	5.42	(6.38, 4.59)	- 2.72(0.27)	-2.71	(-2.20, -3.28)

Table 6:- The comparison between NFHS-3 and H. R. A. A. N & N. F.I group study¹⁴ and NFHS-2 through posterior mean on pregnant women

NFHS-3 v/s H. R. A. A. N & N. F.I group study ¹⁴			
Type of Anemia	Mean	Median	97.5%
Mild	1.10(0.52)	1.09	(2.17, 0.071)
Moderate	0.47(0.53)	0.46	(1.56, -0.58)
Severe	-3.99(0.24)	-3.99	(-3.52, -4.49)
Any Anemia	2.78(0.44)	2.77	(3.70, 1.92)
NFHS-3 v/s NFHS-2			
Mild	-1.07(0.32)	-1.07	(-0.42, -1.72)
Moderate	0.40(0.16)	0.41	(0.71, 0.07)
Severe	-2.72(0.27)	-2.71	(-2.20, -3.28)
Any Anemia	4.34(0.39)	4.33	(5.16, 3.60)

Results:

The state wise calculated posterior mean are given in the Table 4 and Table 5. The Highest Posterior Density (HPD) has been used for the estimated posterior mean with 95% credible interval. In NFHS-3¹⁵ vs. H. R. A. A. N & N. F.I group study¹⁴ for lactating women, the posterior mean (HPD interval) for mild, moderate, severe and any Anemia are found to be 0.69 (2.87,-1.4), -2.69(-2.27,-3.15), -0.25 (.44, -1.94) and 1.84 (4.40, -0.61) respectively. It confirms that the prevalence of mild and any type of Anemia increased in NFHS-3 duration in comparison to study year 2004. Whereas, in the same periods the moderate and severe types of Anemia reduced by posterior mean -2.69 and -0.25 respectively.

In case of NFHS-2 v/s NFHS-3, the posterior mean (HPD interval) for mild, moderate, severe and any Anemia are 1.03(1.85, 0.19), 2.54(3.80, 1.28), 1.18(1.66, 0.64) and 5.44(6.38, 4.59) for the lactating women. The results of pregnant and lactating women's prevalence of Anemia are given in Table 4. In case of pregnant women NFHS-3¹⁵ vs. H. R. A. A. N & N. F.I group study¹⁴, the two chain of posterior means (Highest Posterior Density) has been completed by mild and moderate at 1.10(2.17, 0.071), 0.47(1.56, -0.58) with a 95% HPD interval on severe Anemia value by -3.99(-3.52, -4.49). The computed posterior mean of NFHS-2¹³ versus NFHS-3¹⁵ are mild and moderate have the value -1.07(-0.42, -1.72) and 0.40(0.71, 0.07) respectively. It can be concluded that the significant progress to the way of reduction of Anemia have been found in both stages women (i) lactating women and (ii) pregnant women.

Discussion:

The WHO has defined the Anemia as lower level of haemoglobin for women (12g/dL) and men (13g/dL). A total of 24.8% populations in the world are affected by iron deficiency or anaemia²¹. A total of 164 million people are affected by Anemia in the world²⁸. In spite of increasing prevalence rate it is one of the neglected nutritional disorder diseases in India²². Over several years, anemia appeared to be important risk factor for variety of adverse outcome disorder²³⁻²⁶. The effective monitoring and implementation of evidence-based strategies on anemic level can reduce the MMR²⁷. The Anemia is significantly

associated with smoking habit, low body mass index, renal insufficiency and diabetes²⁹. The presence of Anemia can be a relevant effect on healthcare needs and increase the burden of health services³⁰⁻³¹. The mild Anemia is strongly associated with worse cognitive with quality of life³². The reason behind high hospitalization rate and mortality is due to the presence of mild Anemia in older women³³. The anemia is highly prevalent in adolescent girls⁴³. The poor foetal occurs due to presence of iron deficiency in pregnancy⁴⁴. The failure of nutritional anemia-control programme in India can be overcome by making an impact on the outcome of pregnancy through iron supplementation⁴⁵. The risk of having Anemia is higher in women than men⁴⁶. WHO has confirmed the failure in restoring iron status in women may increase the maternal mortality and child death in the world⁴⁷.

The anemia is positively associated with mortality³⁴⁻³⁸. The main constraint of the literature of anemia is that the inception and conclusion are not well documented. The chronic immune activation and inflammation can also be a cause of anemia in addition of nutrition deficiency³⁹. The creation of erythropoietin due to presence of chronic kidney disease can be a reason for anemia⁴⁰. There are some other reasons also for anemia called as "unexplained anemia"⁴⁰⁻⁴². From various studies and reports it can be stated that the risk of having Anemia is higher in women and the presences of it can be the results of maternal mortality and birth of low weight baby.

In NFHS-2¹³, the prevalence of Anemia has been found high in breast feeding and lactating women. H. R. A. A. N & N. F.I group study¹⁴ have compared the results with NFHS-2¹³ report. It has been found that the higher prevalence of Anemia in H. R. A. A. N & N. F.I group study¹⁴ for pregnant and lactating women study as compared to the NFHS-2¹³ report. In NFHS-3¹⁵, the prevalence of Anemia has been found higher in the breast feeding women than lactating women. It also confirmed that the provision of iron and folic acid supplement successfully reduced the prevalence of Anemia among pregnant women. In this work, we have compared the three results (i.e. NFHS-3¹⁵, NFHS-2¹³ and H. R. A. A. N & N. F.I group study¹⁴ through Bayesian approach. The results have been compared by the posterior mean with Highest

Posterior Interval. From the results, it can be confirmed that the output for the lactating women are same in case of NFHS-2¹³ and NFHS-3¹⁵ report. Whereas, the more similarity between NFHS-3¹⁵ and H. R. A. A. N & N. F.I group study¹⁴, has been found for the pregnant women in comparison to lactating. In our view, the requirement of iron is also important during the lactating period of the women.

Conclusion:

The anemia can occur due to presence of several factors. The leading factor is nutrition deficiency. A larger effort is needed to better observe the onset of anemia and categorize the reason behind it. The trace is required to overcome the nutritional disorder specially the iron deficiency in Indian women. In this article, the Bayesian approach is used in the 2×2 tables. The unknown distributional assumption of the parameter of interest in the density function has been dealt with the prior assumption. The work is involved to compare the state wise hemoglobin status of the pregnant and lactating mothers. The future health of India will be determined by our child's today. So, the reduction of Anemia prevalence among children is also an important issue. The work can also be extended to compare the Anemia status of children in this context. This study on this issue can be useful for policy maker for future goal of our country. The other outcomes of interest can also be taken care. It can be confirmed that, the state of Orissa, the moderate level of Anemia among pregnant women was reported highest in NFHS-3. In NFHS-2, the state of Assam has been reported with highest numbers of moderate Anemia among pregnant women followed by Tamil Nadu. The reports of NFHS-3¹⁵ and NFHS-2¹³ say that, among the lactating women the highest moderate anemic women belong to the state of Tamilnadu and MP. The comparison with Bayesian approach opens another dimension. It suggests that the moderate level of Anemia in the lactating women has been reduced in NFHS-3¹⁵ study period in comparison to the study period of 2004 conducted by Agarwal et al. (2004). However, the prevalence of severe level Anemia has been reduced in NFHS-3¹⁵ study period in comparison to H. R. A. A. N & N. F.I group study¹⁴ study. It can also be confirmed that the illustrated method is very much straightforward to apply in other problems.

Reference:

1. World Health Organization (WHO) Maternal mortality in 2005: estimates developed by WHO, UNICEF, UNFPA, and The World Bank. Available: http://www.who.int/whosis/mme_2005.pdf. Accessed 19 August 2009.
2. Hill K, Thomas K, AbouZahr C, Walker N, Say L, et al. Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. *Lancet* 2007; 370: 1311–1319.
3. Shiffman J, Ved R. The state of political priority for safe motherhood in India. *BJOG* 2007; 114: 785–90.
4. Shiffman J. Generating political priority for maternal mortality reduction in 5 developing countries. *Am J Public Health* 2007; 97: 796–803.
5. Campbell OM, Graham WJ, Lancet Maternal Survival Series steering group. Strategies for reducing maternal mortality: getting on with what works. *Lancet* 2006 Oct 7; 368(9543):1284-99.
6. Costello A, Azad K, Barnett S. An alternative strategy to reduce maternal mortality. *Lancet* 2006; 368: 1477–1479.
7. Taghreed A, Stephen S L, Sumi M, Zulfiqar A B, Helga F, Matthews M, Jelka Z, Gary L D. Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries. 2005; *BMJ* 331: 1107.
8. Sutherland T, Bishai D. Cost-effectiveness of misoprostol and prenatal iron supplementation as maternal mortality interventions in home births in rural India. 2009; *Int J Gynaecol Obstet* 104: 189–193.
9. Mills S, Bos E, Lule E, Ramana GNV, Bulatao R. Obstetric care in poor settings in Ghana, India, and Kenya. 2007; Washington (D.C.): The World Bank. Available: http://www-wds.worldbank.org/servlet/main?menuPK=64187510&pagePK=64193027&piPK=64187937&theSitePK=523679&entityID=000310607_20080123112201.
10. Registrar General, India. Maternal mortality in India: 1997–2003; trends, causes and risk factors. 2006; New Delhi, India. Available: http://www.mp.gov.in/health/Maternal_Mortality_in_India_1997-2003.pdf. Accessed 22 August 2009.
11. Fernando F B, Helena M and Montserrat F. A short review of malabsorption and anemia .2009; *World J Gastroenterol*. October 7; 15(37): 4644–4652.
12. World Health Organization (WHO) (2005) Millennium Development Goals and Health–India. Chapter III: Goal 5: improve maternal health. Geneva: WHO. Available: http://www.whoindia.org/LinkFiles/MDG_Chapter-03.pdf. Accessed 31 July 2009.

13. National Family Health Survey-2, 1998-99, India , International Institute for Population Sciences,2000; VOLUME I.
14. Agarwal K.N., Agarwal D.K., Sharma A., Sharma K., Prasad K., Kalita M.C., Khetarpaul N,Kapoor A.C., Vijayalekshmi L., Govilla A.K., Panda S.M. and Kumari P. Prevalence of anaemia in pregnant & lactating women in India Healthcare & Research Association for Adolescents Noida, & Nutrition Foundation of India,India. Indian J Med Res 2006;124, pp 173-184.
15. National Family Health Survey-3, 2005–06, India , International Institute for Population Sciences,2007; VOLUME I.
16. Mauro Tettamanti, Ugo Lucca, Francesca Gandini, Angela Recchia and et al. "Prevalence, incidence and types of mild anemia in the elderly: the "Health and Anemia" population-based study" *Haematologica*. 2010; November; 95(11): 1849–1856.
17. Kosuke Imai,Ying Lu,Aaron Strauss.Bayesian and Likelihood Inference for 2 3 2 Ecological Tables: An Incomplete-Data Approach. 2008; Political Analysis 16:41–69.
18. Neyman, J., and E. L. Scott. Consistent estimation from partially consistent observations. 1948; *Econometrica* 16:1–32.
19. Gary King: A Solution to the Ecological Inference Problem: Reconstructing Individual Behavior from Aggregate Data.1997; Princeton University Press, New Jersey.(The Software can be freely downloaded from www.mrcbsu.cam.ac.uk/bugs/winbugs/contents.shtml).
20. WHO (2008) worldwide prevalence of anaemia 1993–2005. In: de Benoist B, McLean E, Egli I, Cogswell M, editors. WHO global database on anaemia. Geneva: World Health Organization.
21. Gopalan C (1992) Strategies for combating under nutrition: lessons learned for the future. In: Nutrition in developmental transition in Southeast Asia. New Delhi: World Health Organization. pp 109–111.
22. Culleton BF, Manns BJ, Zhang J, Tonelli M, Klarenbach S, Hemmelgarn BR. Impact of anemia on hospitalization and mortality in older adults. *Blood* 2006; 107:3841–3846.
23. Denny SD, Kuchibhatla MN, Cohen HJ. Impact of anemia on mortality, cognition, and function in community-dwelling elderly. *Am J Med* 2006; 119:327–334.
24. Izaks GJ, Westendorp RG, Knook DL. The definition of anemia in older persons. *JAMA* 1999; 281:1714–1717.
25. Patel KV, Harris TB, Faulhaber M, Angleman SB, Connelly J, Bauer DC, et al. Racial variation in the relationship of anemia with mortality and mobility disability among older adults. *Blood* 2007; 109:4663–4670.
26. Dileep V. Mavalankar, Kranti S. Vora, K.V. Ramani, Parvathy Raman,Bharati Sharma, and Mudita Upadhyaya. Maternal Health in Gujarat, India: A Case Study *J HEALTH POPUL NUTR* 2009 Apr; 27(2):235-248.
27. De Benoist B, McLean E, Egli I, Cogswell M, editors. Worldwide prevalence of anaemia 1993-2005.2008; WHO Global database on anaemia. World Health Organization.
28. Mauro Tettamanti, Ugo Lucca, Francesca Gandini, Angela Recchia, Paola Mosconi, Giovanni Apolone, Alessandro Nobili, Maria Vittoria Tallone, Paolo Detoma, Adriano Giacomini, Mario Clerico, Patrizia Tempia, Luigi Savoia, Gilberto Fasolo, Luisa Ponchio, Matteo G. Della Porta, and Emma Riva. Prevalence, incidence and types of mild anemia in the elderly: the "Health and Anemia" population-based study *Haematologica* 2010;95(11):1849-1856.
29. Ershler WB, Chen K, Reyes EB, Dubois R. Economic burden of patients with anemia in selected diseases. *Value Health*. 2005;8 (6):629-38.
30. Robinson B. Cost of anemia in the elderly. *J Am Geriatr Soc*. 2003;51(3suppl):S14-S7.
31. Lucca U, Tettamanti M, Mosconi P, Apolone G, Gandini F, Nobili, et al Association of mild anemia with cognitive, functional, mood and quality of life outcomes in the elderly: the "Health and Anemia" study. *PloS ONE*. 2008;3(4):e1920.
32. Riva E, Tettamanti M, Mosconi P, Apolone G, Gandini F, Nobili A, et al. Association of mild anemia with hospitalization and mortality in the elderly: the Health and Anemia population-based study. *Haematologica*. 2009;94(1);22-8
33. Denny SD, Kuchibhatla MN, Cohen HJ. Impact of anemia on mortality, cognition, and function in community-dwelling elderly. *Am J Med* 2006;119:327–334.
34. Izaks GJ, Westendorp RG, Knook DL. The definition of anemia in older persons. *JAMA* 1999; 281:1714–1717.
35. Patel KV, Harris TB, Faulhaber M, Angleman SB, Connelly J, Bauer DC, et al. Racial variation in the relationship of anemia with mortality and mobility disability among older adults. *Blood* 2007; 109:4663–4670.
36. Penninx BW, Pahor M, Woodman RC, Guralnik JM. Anemia in old age is associated with increased mortality and hospitalization. *J Gerontol A Biol Sci Med Sci* 2006;61:474–479.
37. Zakai NA, Katz R, Hirsch C, Shlipak MG, Chaves PH, Newman AB, et al. A prospective study of anemia status, hemoglobin concentration, and mortality in an elderly cohort: the Cardiovascular Health Study. *Arch Intern Med* 2005; 165:2214–2220.
38. Weiss G, Goodnough LT. Anemia of chronic disease. *N Engl J Med* 2005;352:1011–1023.
39. Guralnik JM, Eisenstaedt RS, Ferrucci L, Klein HG, Woodman RC. Prevalence of anemia in

- persons 65 years and older in the United States: evidence for a high rate of unexplained anemia. *Blood* 2004;104:2263–2268.
40. Ferrucci L, Guralnik JM, Bandinelli S, Semba RD, Lauretani F, Corsi A, et al. Unexplained anaemia in older persons is characterised by low erythropoietin and low levels of pro-inflammatory markers. *Br J Haematol* 2007;136:849–855.
41. Artz AS, Fergusson D, Drinka PJ, Gerald M, Bidenbender R, Lechich A, et al. Mechanisms of unexplained anemia in the nursing home. *J Am Geriatr Soc* 2004;52:423–427.
42. Toteja GS, Singh P, Dhillon BS, Saxena BN, Ahmed FU, Singh RP et al. Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. *Food Nutr Bull* 2006;27:311-5.
43. Beard JL, Dawson H, Pinero D. Iron metabolism: a comprehensive review. *Nutr Rev.*1996;54:295–317.
44. Kumar A. National nutritional anaemia control programme in India. *Indian J Public Health.*1999;43:3–5.
45. Sharma JB: Nutritional anaemia during pregnancy in non-industrialised countries. In *Progress in Obstetrics and Gynaecology*. Edited by: Studd J. Edinburgh Churchill Livingstone; 2003:103-122.
46. World Health Organization. *Iron deficiency anaemia: assessment, prevention, and control: a guide for programme managers*. Geneva: World Health Organization, 2001. 132 p. (WHO/NHD/01.3).

**The official website of
INDIAN ASSOCIATION OF
PREVENTIVE
AND SOCIAL MEDICINE,
GUJARAT CHAPTER.**

**Renovated, rejuvenated,
redesigned, redefined....**

VISIT

www.iapsmgc.org

Original article**Awareness of cervical cancer and effectiveness of educational intervention programme among nursing students in a rural area of Andhra Pradesh.**Poonam R Naik¹, K. Nagaraj², Abhay Subhashrao Nirgude³¹Associate Professor, ²Professor and Head, ³Associate Professor

Department of Community Medicine, Kamineni Institute of Medical Sciences, Sreepuram, Narketpally-508254. Nalgonda district-A.P.State.

Correspondence to : Dr Poonam Naik, E-mail ID - drpoonamnaik@gmail.com**Introduction:**

Cancer of cervix is the commonest genital tract malignancy in the female, and it has been ranked second to breast cancer. Cervical cancer accounts for 8.5% deaths yearly most of which occur in developing countries. About half a million new cases are seen worldwide each year, most occurring in developing countries.^[1, 2] Cervical cancer is the single largest killer of middle-aged women in India. The incidence of cervical cancer per 100,000 Indian women of all ages varied between 30.0 and 44.9 (WHO, 2010). India bears about one fifth of the world's burden of cervical cancer.^[3] The menace of cervical cancer is still haunting India in spite of this being a preventable disease.^[4]

The primary underlying cause for cervical cancer is human papillomavirus (HPV).^[5] Early sexual debut, multiple sexual partners, HPV infection, smoking, genetic predisposition and compromised immunity are associated with development of cervical cancer.^[6] Cervical cancer screening is an important health care programme where precancerous cases could be treated more successfully than the cancer itself.^[7]

A study done in Kolkata among female students reflected low level of knowledge of cervical cancer and its risk factors and only 11% and 15% were aware of Pap smear and HPV respectively.^[4] Study done by K Jayant in a rural Indian population in Maharashtra recommended that increasing awareness will motivate symptomatic individuals to seek medical consultation and treatment in the early stages and thus result in better survival.^[8] The success and benefit of a public health program to control and prevent cervical cancer will depend to a great extent on the level of awareness of the potential beneficiaries about different basic aspects of the disease.^[4] Comprehensive health education programmes are more likely to be beneficial to encourage screening.^[1]

Therefore, nurses have an important task of imparting information on risk factors, detection of early signs of cervical cancer and encourage women to perform cervical cancer screening regularly. This can be achieved by conducting additional education programmes for nurses.^[2] Currently, scanty information is available on knowledge base of the Indian nurses on cancer of the uterine cervix.

The purpose of the study was to assess knowledge, in terms of cervical cancer aetiology, symptoms, risk factors, screening and prevention among nursing students.

Objectives:

- 1.To assess the awareness of nursing students on aetiology, symptoms, risk factors, screening and prevention of cervical cancer.
- 2.To assess the effect of educational intervention regarding risk factors, screening programmes and prevention of cervical cancer.

Methodology:

An interventional study was conducted amongst B.Sc. Nursing students in Kamineni Institute of Nursing College of Nalgonda district during the period of April 2012 to assess their knowledge on aetiology, symptoms, risk factors, screening and prevention of cervical cancer.

Institutional Ethical committee approval and informed consent of the subjects was obtained prior to the start of the study. Permission to undertake study among nursing students was obtained from the Principal.

All those students who were available on the days of the study and willing to participate in the study were included as study samples which constituted 120 students.

Pre-Test:

To evaluate different aspects of basic knowledge and awareness on cervical cancer, the nursing students were offered a structured questionnaire to collect information. Confidentiality was ensured by asking them

not to write their names. All the students answered the questionnaire voluntarily and independently in their own classes under the supervision of interviewers (authors).

First part of the questionnaire was to collect information on age, socioeconomic status and family size. The second part contained questions pertaining to, knowledge, aetiology, symptoms, different risk factors, screening methods and prevention.

Intervention:

Educational intervention was conducted through one session of 60 minutes. The training was conducted by participatory learning approach which included ice-breaking, lectures using power-point, chalk and talk and question-answers. The topics discussed were related to prevalence and causation of cervical cancer, symptoms, risk factors, screening methods and prevention.

Post-test:

The same questionnaire was administered to the study subjects one week after completion of their training session.

Scoring was done as 2 and 1 for correct and wrong responses respectively for close-ended questions. For open-ended questions scoring was done as 3, 2 and 1 respectively for correct, partially correct and wrong responses respectively. We assume that the conceptual distance between correct and partially correct responses is equal to difference between partially correct and wrong responses. For the purpose of scoring; questions were grouped as pertaining to knowledge on cervical cancer, aetiology of cervical cancer, Human Papilloma virus, risk factors, symptoms, screening methods and prevention of cervical cancer. Maximum score was 60.

Data was analysed using SPSS version 19.0. Paired *t*-test was used to measure the effect of intervention.

Results:

A total of 120 individuals were registered for the study. They belonged to the age group of 17-20 years with a mean age of 18.85 years. As per their socio-economic status by modified B G Prasad classification; around 49.1% of them belonged to middle class.

Knowledge regarding “what cervical cancer is” was very low (30%). Majority of them (71.7%) had heard of cervical cancer and the sources of information were: teachers in 47.5% participants and 20% of them had read in books and newspapers. Although 7.5% of them could correctly answer the aetiology of cervical cancer, only 14.2% of them could correctly tell what Human Papilloma virus (HPV) is. A quarter of the participants (24.2%) were aware of the symptoms of cervical cancer. [Table I]

Higher level of knowledge was observed regarding the different risk factors of cervical cancer. “Multiple sexual partners” was correctly identified as a risk factor by 83.3% of the respondents while 62.5% were aware of the logical follow-up to this, that a partner who has or has had many sexual partners is also a risk factor. Also higher level of correct response was obtained in terms of STD's (85.8%) and genital warts (57.5%) as risk factors. Initiation of sexual intercourse at an early age was mentioned by 52.5% respondents. Around half of the respondents (57.5%) mentioned family history as a risk factor. Smoking and alcohol consumption as a risk factor was answered by 43.3% and 56.7% of the participants respectively.

Only 30% of them were aware of any screening method being available [Table I] and only 3.3% could correctly answer the method available. Another important finding observed was that though 17.5% of them had heard of Pap smear only 0.8% knew about its use. Although 84.2% said that cervical cancer is preventable only 30.8% of them were aware of the vaccine being available. [Table I]

Significant improvement was seen in the knowledge post-intervention and it is statistically significant by application of paired *t*-test ($p < 0.000$). More improvement in their knowledge was seen in areas related to screening methods, Prevention aspects, knowledge of Human Papilloma Virus as an aetiology agent and symptoms with mean paired differences of 4.258, 4.933, 2.767 and 1.067 respectively. The overall mean pre-test score was 39.38 and the post-test score was 56.57 with mean difference of -17.192 and *t* value of -36.370 significant at $p < 0.000$. [Table II]

Table: 1 Knowledge about aetiology, symptoms and prevention of cervical cancer (Pre-test N=120)

Knowledge about	Answer	Frequency (Percentage)
Cervical Cancer	Correct	36 (30)
Human Papilloma	Correct	17 (14.2)
Symptoms	Correct	29 (24.2)
Availability of screening method	Yes	36 (30)
Pap smear	Yes	21 (17.5)
Cervical cancer is preventable	Yes	101 (84.2)
Availability of vaccine	Yes	37 (30.8)

Table 2: Effect of educational intervention among nursing students (N=120)

Characteristics	Mean Score		Paired Differences		t- value	Sig. (2-tailed)
	Pre Test	Post Test	S.D	Mean		
Knowledge of Cervical cancer	1.94	2.28	0.882	-0.333	-4.138	0.000
Knowledge of causative factor of cervical cancer	1.28	2.61	0.780	-1.325	-18.618	0.000
Knowledge of HPV	2.42	5.18	1.158	-2.767	-26.181	0.000
Knowledge of risk factors	18.06	18.40	0.825	-0.342	-4.537	0.000
Knowledge of Symptoms	1.24	2.31	0.786	-1.067	-14.871	0.000
Knowledge of Screening methods	7.26	12.19	2.340	-4.933	-23.097	0.000
Knowledge of Prevention	8.25	12.51	2.144	-4.258	-21.758	0.000
Overall	39.38	56.57	5.178	-17.19	-36.37	0.000

Discussion:

It was observed that very few (7.5%) of the participants could correctly answer the question pertaining to aetiology of cervical cancer. In a study done by Urasa M among nurses in a hospital in Tanzania 38.7% could correctly identify HPV infection as the aetiology.^[6] These results are similar to other studies done elsewhere showing less than satisfactory knowledge about the cause of cervical cancer in the community as well as among the health professionals.^[9] Our study observed that less than a quarter of them could correctly tell what HPV is. Low level of awareness regarding the same was observed in study conducted by Cristina H Rama et al in Brazil.^[10] These results again show insufficient knowledge of HPV infection being the cause of cervical cancer in health professionals, even though 98% of cervical cancer in our part of the world is due to HPV infection, as reported in a study done by Das B C et al in India.^[11] Here we observed that only a quarter of the participants (24.2%) were aware of the symptoms of cervical cancer. On the basis of these findings it can be expected that considering the knowledge about this disease in the nursing students, the knowledge in general population of our country will be even less. This emphasizes the need to increase the awareness about cervical cancer in nursing students who are involved in the primary care of general patient population and form an important source of guidance for them.

Higher level of knowledge was observed regarding the different risk factors of cervical cancer. Similar findings were observed in a study done in Kolkata by A Saha et al^[4] and Teresa Joy et al in their study in India.^[12]

Only 30% of the students in our study were aware of any screening method being available and only 3.3% could correctly answer the method available. Awodele et al in their study among nurses observed that 51.5% of them were aware of Pap smear as a screening test for cervical cancer.^[1] Another important finding observed in our study was that only 17.5% of them had heard of Pap smear. Study done by A Saha et al reflected that only 11% had ever heard of Pap Smear test.^[4] Also similar observations were noted in a study done by Yifru Terefe et al among health clients in hospital in Ethiopia.^[7] These results indicate that information of

cervical cancer screening was inadequate among our study group. It might therefore contribute delaying of establishment of prevention and screening efforts in the community. Furthermore it is important for their health also.

Unlike most other cancers, cervical cancer is readily preventable when effective programs are implemented to detect and treat its precursor lesions.^[9] Majority of them (84.2%) said that cervical cancer is preventable but only 30.8% of them were aware of the available vaccine. Low level of awareness (9%) about vaccine was also observed in a study done in Karachi by Syed Faizan Ali et al.^[9] Similar findings were noted by Muhammad Ehsanul Hoque in their study conducted among university students in South Africa.^[13] Continuing nursing education may contribute to strengthening cervical cancer screening programs.^[14] Public acceptance and usage of a prophylactic vaccine are related to the level of knowledge about the disease, which the vaccine will provide protection from.^[15]

Significant improvement was seen in the knowledge post-intervention by application of paired *t*-test. More improvement in their knowledge was seen in areas related to screening methods, Prevention aspects, knowledge of Human Pappilloma Virus as an aetiological agent and symptoms with mean paired differences of 4.258, 4.933, 2.767 and 1.067 respectively. Papa et al in their study on educational intervention on women also concluded that their knowledge regarding Human Papilloma Virus, cervical cancer and screening statistically improved after the intervention.^[16] Similar results were noted by Lin et al in their study that educational program led to improvement of Taiwanese women's knowledge and practices related to cervical cancer screening.^[17] Al anoud Al Thani et al in their study done on school teachers concluded that the study intervention had a significant positive impact on women's knowledge about cervical cancer and screening and also they commented, "those exposed to educational sessions showed some improvement in their knowledge regarding Pap smear test".^[18] Kwan TT in their school-based educational study on adolescent girls stated that after the program, participants had greater knowledge and a more positive attitude (both $p < 0.001$), with more girls having an

intention to accept the vaccine.^[19] Jayant K et al in their study concluded that efforts to improve awareness of the population have resulted in early detection of and improved survival from cervical cancer in a backward rural region in western India.^[8] This therefore highlights the need for continuing educational intervention amongst the nursing students.

Conclusion:

This study highlights inadequate knowledge about cervical cancer, its screening and prevention amongst the nursing students. Implementation of the educational sessions was successful in improving their knowledge. Continuing Educational interventions should be started at the institute level which highlights the importance of screening and prevention of cervical cancer in women. Nursing staff especially if properly aware of this disease can educate masses, increase the health seeking behaviour in women and thus reduce the burden of cervical cancer.

Study highlights the need to undertake similar community based studies about awareness and education interventions.

Acknowledgement:

We specially thank Principal of Nursing College and the faculty members for extending their support in conducting this study. We also thank profusely all students who took part in this study.

References:

1. O. Awodele , A. A. A. Adeyomoye , D. F. Awodele , V. Kwashi, I. O. Awodele, D. C. Dolapo. A Study on Cervical Cancer Screening Amongst Nurses in Lagos University Teaching Hospital, Lagos, Nigeria. *J Canc Educ* 2011; 26: 497–504
2. Gul Ertem Awareness of Cervical Cancer Risk Factors and Screening Behaviour among Nurses in a Rural Region of Turkey. *Asian Pacific J Cancer Prev* 2009; 10: 735-738
3. Shanta, V. (2004) Perspectives in cervical cancer prevention in India. *Newsletter 3* .Available at http://www.inctr.org/publications2003_v03_n03_w02.shtml
4. A Saha, A Nag Chaudhury, P Bhowmik, R Chatterjee Awareness of Cervical Cancer Among Female Students of Premier Colleges in Kolkata, India. *Asian Pacific*

- Journal of Cancer Prevention 2010; 11: 1085-1090
5. Marrazzo JM, Koutsky LA, Kiviat NB, Kuypers JM, Stine K . Papanicolaou test screening and prevalence of genital human papillomavirus among women who have sex with women. *Am J Public Health* 2001; 91: 947–52.
 6. Urasa M, Darj E Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. *African Health Sciences* 2011; 11(1): 48-57
 7. Yifru Terefe and Asheber Gaym Knowledge, attitude and practice of screening for carcinoma of the cervix among reproductive health clients at three teaching hospitals, Addis Ababa, Ethiopia. *Ethiopian Journal of Reproductive Health* 2008; 2 (1): 14-24
 8. K Jayant, RS Rao, BM Nene, PS Dale and A Nandakumar Improved survival in cervical cancer cases in a rural Indian population. *British Journal of Cancer* 1996; 74: 285-287
 9. Syed Faizan Ali, Samia Ayub, Nauman Fazal Manzoor, Sidra Azim, Muneeza Afif, Nida Akhtar et al Knowledge and Awareness about Cervical Cancer and Its Prevention amongst Interns and Nursing Staff in Tertiary Care Hospitals in Karachi, Pakistan. *PLoS ONE* 2010; 5 (6): 1-6
 10. Cristina H Rama, Luisa L Villa, Sonia Pagliusi, Maria A Andreoli, Maria C Costa, Aline L Aoki et al Awareness and knowledge of HPV, cervical cancer, and vaccines in young women after first delivery in São Paulo, Brazil - a cross-sectional study. *BMC Women's Health* 2010; 10 (35): 1-7
 11. Das BC, Hussain S, Nasare V, Bharadwaj M Prospects and prejudices of human papillomavirus vaccines in India. *Vaccine* 2008; 26 (22): 2669–2679.
 12. Teresa Joy, Brijesh Sathian, Chacchu Bhattarai, Jenny Chacko Awareness of Cervix Cancer Risk Factors in Educated Youth: A Cross-Sectional, Questionnaire Based Survey in India, Nepal, and Sri Lanka. *Asian Pacific Journal of Cancer Prevention* 2011;12: 1707-1711
 13. Muhammad Ehsanul Hoque Cervical Cancer Awareness and Preventive Behaviour among Female University Students in South Africa. *Asian Pacific Journal of Cancer Prevention* 2010; 11: 127-130
 14. Catherine McCarey, David Pirek, Pierre Marie Tebeu, Michel Boulvain, Anderson Sama Doh and Patrick Petignat Awareness of HPV and cervical cancer prevention among Cameroonian healthcare workers *BMC Women’s Health* 2011; 11 (45): 1-7
 15. Baykal C, Al A, Uğur MG, Cetinkaya N, Attar R, Arioglu P: Knowledge and interest of Turkish women about cervical cancer and HPV vaccine. *Eur J Gynaecol Oncol* 2008, 29:76-9.
 16. Papa D, Moore Simas TA, Reynolds M, Melnitsky H. Assessing the role of education in women’s knowledge and acceptance of adjunct high risk human Pappilomavirus testing for cervical cancer screening. *J Low Genit Tract Dis* 2009; 13 (2): 66-71.
 17. Lin HH, Chen SH, Jeng SY, Chen HM. A project to improve the screening rate of Pap smear for cervical cancer. *Hu Li Za Zhi* 2007; 54 (1): 62-69.
 18. Al anoud Al Thani, Aizeldin Eljack, Mohamad Al Thani, Rasha E Salama Impact of Health Education on Utilization of Cervical Cancer Screening Services among Females Working in Secondary Schools in Doha. *MIDDLE EAST JOURNAL OF FAMILY MEDICINE* 2012; 10 (4): 10-19
 19. Tracy T.C. Kwan, Kar-fai Tam, Peter W.H. Lee, Karen K.L. Chan, Hextan Y.S. Ngan The effect of school-based cervical cancer education on perceptions towards human papillomavirus vaccination among Hong Kong Chinese adolescent girls. *Patient Education and Counseling* 2011; 84(1): 118-122

“We now have a global community that calculates how to maximize the benefits for a few at the expense of the majority”
-- Irene Fernandez

Original article**Level of Education and Awareness about menopause among women of 40 to 60 years in Bhavnagar & Surat cities of Gujarat**Vaghela Kishor¹, Bhalani Kailesh²¹Senior Resident, Department of Obstetrics & Gynecology²Associate Professor, Department of Preventive and Social Medicine, Government Medical College, BhavnagarCorrespondence to : Dr. Kailesh Bhalani, E-mail ID - kaileshbhalani@rediffmail.com**Abstract**

Objectives: To study the level of awareness about menopause and its problems in women of 40 to 60 years with different levels of education in Bhavnagar and Surat cities.

Methods: Pretested questionnaire were filled up for 500 Women of 40 to 60 years of age from cities of Surat and Bhavnagar. The data were entered in MS Excel worksheet and analyzed with the Epi info software.

Results: 25.9% of illiterate women were aware about menopause by definition, while 89.3% of women having education above standard 12 were aware about the same. When asked, only 44.4% of illiterate women were aware about the availability of treatment for the menopausal troubles, while 84.7% of women having education above standard 12 were aware about the same.

Conclusions: As education level increased, awareness towards menopause and related problems also increased in the women of 40 to 60 years of age of Bhavnagar and Surat city.

Key words: Menopause, Awareness, Level of Education, Women of 40-60 years

Introduction:

“Menopause” is a word derived from Greek literature signifies “Cessation of the monthly periods”. However the symptoms accompanying this cessation are known to affect quality and duration of life. Keeping in mind a wide variety of symptoms commonly associated with this phase of women’s life, menopause has been now defined as a hormone deficiency state rather than a normal maturation.

From details given above, it is quite clear that the female longevity had increased significantly during last century. In the period between 2006 to 2010, the life expectancy of females is 68.1 in comparison to 65.8 of males

which is expected to rise to 72.3 for females as compared to 69.02 for males during the period 2011-2016¹. Thus a larger segment of female population will be living for longer periods after menopause, so the problems which they are likely to face should be studied and as health care providers, special treatment centers should be developed in future.

Midway between the challenges of adulthood and despair of old age, comes the change - menopause in women and during which lives takes a compulsory change in direction. Menopausal health has been one of the neglected areas in our country and needs timely vital attention.

The need of the hour is to conduct awareness campaigns to inform general public, health workers etc, about menopause and associated health issues through various forms of mass media.

Like adolescence, menopause brings about a physical and an emotional change and may affect the quality of women’s life. An ideal approach to menopause management needs assessment of risk factors through clinical and laboratory investigations. According to Indian menopause society research, there are currently 65 million Indian women over the age of 40 years².

Even though awareness about menopause is growing, most Indian women have a history of self-denial and neglect. The need of their families take precedence over their own needs. Menopause is the most misunderstood biological change that happen to women.

As couples are now breaking the traditional norms and constraints and live separately from their extended families – as is increasingly the case for the professional, urban, upper middle classes- the earlier restrictions on sexual activity beyond certain age can no longer be monitored and enforced. For these sections of Indian society, the post-reproductive years are no longer considered a time of rest and gradual retirement. Rather,

demanding working careers, a busy social life and aspirations towards improving the overall quality of life have led to a new conception of the female body and female sexuality. The emphasis now is on active, productive and aesthetic body that is far from succumbing to the natural forces of aging and disease.

Objectives:

1. To study the awareness about menopause and its problems in women of 40 to 60 years with education in Bhavnagar & Surat cities.
2. To study the perceptions of women of 40 to 60 years with education about menopausal life among this group.

Methodology:

A structured questionnaire was used for data collection in this study. It was developed in Gujarati language. It had questions related to awareness of menopause, menopausal symptoms they experienced, remedies they were seeking for menopausal symptoms, awareness about hormone replacement therapy (HRT) and also had questions asking their opinion about strategies to improve the awareness of menopause. A pre-tested questionnaire was prepared and distributed to those consultant gynecologists of Surat and Bhavnagar city, who had agreed to participate in the study. Fifteen (15) consultants of Surat city and 32 consultants of Bhavnagar city were given the questionnaires. All the consultants were explained about the objectives and the methods of the study to facilitate the data collection.

All women in the 40 to 60 years agegroup, who attended the clinics of these consultants, either as a patient or as a relative, irrespective of their menopausal status, were included in the study. After taking their informed consent, questionnaires were filled by the consultants by interviewing them. A total of 334 women of Surat and 166 women of Bhavnagar city participated in this study. The data collection for the study was carried out between October 2008 and march 2009. The data were entered in the computer in MS Excel and then analyzed with the Epi info software.

Results & Discussion:

Table 1 shows 52% of women included in the study had reached menopause

during their forties. However 7.3% women were attained menopause before the age of 40. Mean age of Menopause in this group of women was 45.41 years, which is almost similar to the findings of the study of Shipra N et al in year of 2005, in which they found the mean age of 44.59 years in the women of Baroda city³. Other studies in various parts of the world have shown a slightly higher average age of menopause. In our study, the median age of menopause was 45 years. Sharda S et al found the median age of menopause was 47.54 years in educated menopausal women in Amritsar⁴. Ombuza et al observed median age of menopause in Nigerian women was 49 years⁵, while in Malaysia it was found 50.7 years by Ismail N⁶.

Table 1: Distribution of Women of Bhavnagar and Surat according to Age at Menopause.

Menopause attended	Number of women (n= 500)	Percentage
Yes	368	73.6
No	132	26.4
Age at Menopause (Years)	Number of women (n= 368)	Percentage
30-39	027	7.3
40-49	260	70.7
50-59	081	22.0

Table 2: Proportion of Post Menopausal Symptoms in the Menopausal Women of Bhavnagar and Surat.

No.	Menopausal Complaints	Frequency	Percentage (%) (n=368)
1	Psychiatric Problems	168	45.7
2	Burning Micturition	155	42.1
3	Itching Private Parts	136	37.0
4	Hot Flush	122	33.2
5	Dry skin	119	32.3
6	Dryness in Vagina	116	31.5
7	Night Perspiration	105	28.5
8	Backache	056	15.2
9	Excessive Hair-growth	032	08.7
10	Palpitation	021	05.7

Psychiatric problems:(Anxiety, Depression, Sleeplessness, Weakness, Irritability)

Multiple answers permitted

Table 3 – Comparison of Awareness about Menopause and its treatment among women of different levels of Education in Bhavnagar and Surat.

Awareness about	Education (%)					P Value
	Illiterate (n=81)	Upto Std. 12 (n=223)	Above Std. 12 (n=196)	Total (n=500)	X ² (dF=2)	
Menopause by definition	21 (25.9)	152 (68.2)	175 (89.3)	348 (69.6)	109.138	0.000
Treatment possibility for Menopausal troubles	36 (44.4)	176 (78.9)	166 (84.7)	378 (75.6)	52.746	0.000
Hormone Replacement Therapy	3 (3.7)	56 (25.1)	117 (59.7)	176 (35.2)	96.73	0.000

Table 4 - Comparison of Perceptions about Menopause and Treatment Seeking Behavior of women with different levels of Education in Bhavnagar and Surat.

Perceptions about Menopause	Education (%)				X ² (dF) P Value
	Illiterate (n=81)	Upto Std. 12 (n=223)	Above Std. 12 (n=196)	Total (n=500)	
Having prior knowledge before arrival of Menopause	54 (66.7)	208 (93.3)	184 (93.9)	446 (89.2)	50.985 (dF=2) 0.000
How awareness about Menopause can be increased? - Doctor - Media - Seminar					46.306 (dF=4) 0.000
Preference for treatment provider - Gynecologist - Physician - General Practitioner - Household remedies - Not Applicable					34.573 0.000
First priority to - Health - Diet - Beauty - Wealth					80.464 (dF=6) 0.000

Menopause is manifested by wide variety of symptoms and in different severity in different women. Table 2 indicates psychiatric problems (45.7%) like anxiety, sleeplessness, depression, etc. and burning micturition (42.1%) were the most frequent problems, followed by itching in private parts (37%), hot flush (33.2%), dry skin (32.3%) and dryness in vagina (31.5%).

Shipra N et al in year of 2005 found 92% of menopauses in Baroda complained of decreased sleep, 86% of them suffered from profuse perspiration, 92% of them complained short waves of hot sensations. In a Nigerian study by Ozumba et al, the most frequent complaints were hot flushes (79.6 %), fatigue (74.8 %), irritability (68.4 %), anxiety (68.1 %), poor memory (52.2 %), dyspareunia (44.7 %), urinary symptoms (43.5 %), and depression (37.3 %) ⁵.

Nisar Nusrat et al in his study in the year 2008 concluded that 63.44% menopausal women of Pakistan complained of insomnia, 57.01% of them experienced frequent mood changes, and 35.92% of them suffered from depression ⁷.

In the same year, Bunpei Ishiuzuka et al found out that the prevalence of hot flushes in Japanese women was 36.9% ⁸.

Table 3 indicates the role of education in the women for having awareness about menopausal problems and availability of its treatment.

As education level increased, awareness towards menopause and related problems also increased. In this study, only 25.9% of illiterate women were aware about menopause by definition, while 89.3% of women having education above standard 12 were aware about the same. The difference observed is highly significant ($P < 0.001$).

The table shows that education level improves the possibility of seeking treatment by women suffering from menopausal troubles. When asked, only 44.4% of illiterate women were aware about the availability of treatment for the menopausal troubles, while 84.7% of women having education above standard 12 were aware about the same. The difference observed in awareness about availability of treatment between illiterate women, women studied up to standard 12 and women studied above standard 12 is significant ($P < 0.001$).

About hormone replacement therapy (HRT), overall awareness among this group was found very low (35.2%). However the pattern observed in the different groups was similar. Highest awareness (59.7%) about HRT was found in the women having education above standard 12. This difference in the groups was significant ($P < 0.001$).

These findings showed that literacy can improve awareness about menopause and treatment seeking behavior of the women for menopausal troubles.

According to census 2001, the female literacy rate in Gujarat is 50.2%, which is an improvement from 19.1% in 1961. With increasing literacy level, the health seeking behavior of women is also improving.

Table 4 compares illiterate women, women with education up to standard 12 and women with education above standard 12 for their perceptions about having prior knowledge about menopause, how awareness about menopause can be increased, their preference for treatment provider for menopausal troubles and their priority to health above other things.

89.2% of women perceived that they should have knowledge about menopause and related issues prior to arrival of menopause. More than 93% of women having education of up to and above standard 12 perceived the need while only 66.7% of illiterate women perceived the need. The difference observed between the groups was significant ($P < 0.001$).

Most illiterate women (59.3%) felt that awareness about menopause can be increased with the help of the doctor. Educated women opined that awareness can be increased by media and seminars. The difference in the opinion between different groups is significant ($P < 0.001$).

Gynecologists were the most preferred treatment providers across all the groups of women (Illiterate – 37.0%, educated up to standard 12 – 34.5%, educated above standard 12 – 48.0%). However the second preferred option for the treatment across all the groups was some household therapy. As the education of women increased, preference for general practitioner and household therapy decreased. The difference seen was found significant ($P < 0.001$). Most of the women (74.0%) had given first priority to health over other things in life like wealth, beauty and diet. This was found across all the groups but education improved the proportion of women giving

priority to health. A total of 44.4% illiterate women had given first priority to health while 75.8% of women with education up to standard 12 and 84.2% of women with education above standard 12 had given the first priority to health over other things in life. The difference observed was statistically significant ($P < 0.001$).

Conclusion:

As education level increased, awareness towards menopause and related problems also increased in the women of 40 to 60 years of age of Bhavnagar and Surat city.

References:

1. Satyendra Prakash. Policies and programmes on population ageing: Indian perspective. Country Statement India 2007.
2. Neeta Lal. Making menopause easier. India Together, October 2006; 1-4.

3. Shipra Nagar, Parul Dave. Perception of women towards physiological problems faced at menopause. *Anthropologist* 2005; 7(3): 173-175.

4. Sharda Sidhu, Avneet Kaur, Mandeep Sidhu. Age at menopause in educated women of Amritsar (Punjab). *J. Hum. Ecol.* 2005; 18(1): 49-51.

5. Ozumba B C, Obi S N, Obikili E, Waboso P. Age, symptoms and perceptions of menopause among Nigerian women. *Journal of Obstetrics and Gynecology of India* 2004; 54(6): 575-578.

6. P Damodaran, R Subramaniam, S Z Omar, P Nadkarni, M Paramsothy. Profile of a menopause clinic in an urban population in Malaysia. *Singapore Medical Journal* 2000; 41(9): 431-434.

7. Nisar Nusrat, Zehra Nishat, Haider Gulfareen, Munir Aftab, Naeem Asia. Knowledge, attitude and experience of menopause. *J Ayub Med Coll Abbottabad* 2008; 20(1): 56-59.

8. Bunpei Ishizuka, Yoshiko Kudo, Toshiro Tango. Cross sectional community survey of menopause symptoms among Japanese women. *Maturitas* 2008; 61(3): 260-267

All in all, even without grotesque visions, every organic desire for improvement remains up in the air if the social one is not acknowledged and taken into account. Health is a social concept, exactly like the organic existence in general of human beings, as human beings. Thus it can only be meaningfully increased at all if life in which it stands is not itself overcrowded with anxiety, deprivation and death.

Bloch, Ernst (1995). *The principal of hope*. Cambridge, Mass. (MIT Press), 467

Original article**A study on relationship between various anthropometric measurements used as indicators of acute malnutrition in a slum of Kolkata**Ranadip Chowdhury¹, Abhijit Mukherjee¹, Somnath Naskar¹, Saibendu Kumar Lahiri².¹ Post Graduate Trainee, ² Head of the Department.

Department of Community Medicine, R.G. Kar Medical College, Kolkata

Correspondence to Dr. Ranadip Chowdhury, E-mail : ranadip84@gmail.com**Abstract**

Background: According to the 2008 Lancet Series on Maternal and Child Undernutrition an estimated 19 million children under -5 suffer from severe acute malnutrition, some 55 million children age 5 or younger suffer from moderate acute malnutrition. In 2006, WHO released new international growth standards. Acute malnutrition is best assessed by weight for height (W/H), but in community level it is not recommended to use.

Objectives: 1. To find out the prevalence of acute malnutrition among 6-59 months children in a slum of Kolkata. 2. To compare weight for age (W/A) with weight for height (W/H) and weight for age (W/A) and mid upper arm circumference for age (MUAC/A) as combination indicator with weight for height (W/H) for determination of acute malnutrition.

Methods: This Community based cross-sectional study was done in the service area of Urban Training Centre in Baghbazar, Kolkata with 84 children aged 6-59 months. Anthropometric measurements of the study population were done using standard methods. Data of the anthropometric measurement were analyzed using WHO Anthro for personal computers, version 3.2.2, January 2011 to compute the Z scores of W/A, W/H and MUAC/A. SPSS version 16.0 was used to analyse the data.

Results: In the study population the prevalence of wasting (W/H) is 23.8%. If combination of indicator low weight for age and MUAC for age was used as an indicator for assessing acute malnutrition then the prevalence rises to 35.7%. The sensitivity and negative predictive value has been increased when combination of indicator low weight for age and MUAC for age was used as an indicator for assessing acute malnutrition in comparison to W/A alone.

Conclusion: If W/A and MUAC/A can be used as combined for screening acute

malnutrition in the community instead of W/H there would be more chance to screen the acute malnourished children from the community.

Key words: Acute malnutrition, anthropometry, sensitivity, NPV, z-value, correlation

Introduction:

Acute malnutrition among children aged 6-59 months is a key indicator routinely used for describing the presence and magnitude of humanitarian emergencies. In the past, the prevalence of acute malnutrition and admissions to feeding programs has been determined using the growth reference developed by the World Health Organization (WHO), Centres for Disease Control and Prevention (CDC) and the National Center for Health Statistics (NCHS). In 2006, WHO released new international growth standards¹ and recommended their use in all nutrition programs. Children are undernourished if their diet does not provide adequate calories, protein, and micronutrients or they are unable to utilize fully the food they eat for example due to illness; malnutrition affects children first and foremost under the age of 5yr, especially in the first two years of life; it weakens the immune system and thereby increases the risk of dying from pneumonia, diarrhoea, malaria and other infectious diseases². To describe acute malnutrition at the population level, two prevalence indicators are normally reported: global acute malnutrition (GAM) and severe acute malnutrition (SAM)³. GAM and SAM are the principal indicators reported in nutrition surveys and are used to compare population prevalence of acute malnutrition across time and geographic areas. Childhood undernutrition is an underlying cause of 35 percent of deaths among under-5 children in the developing world. According to the 2008 Lancet Series on Maternal and Child Undernutrition, SAM is one of the most important contributing causes of childhood mortality. An estimated 19 million children under 5 suffer from SAM, with half a million dying directly because of SAM each year. These numbers do not include children

suffering from bilateral pitting oedema, which is the most lethal form of acute malnutrition⁴.

Under nutrition is responsible for 11 percent of disability adjusted life years among young children worldwide. Severe wasting during the first 24 months of life leads to a loss of up to 18 points of an individual's expected intelligence quotient score. The negative impact of undernutrition on the physical and mental potential of the population diminishes national productivity, costing countries as much as 3 percent of their gross domestic product. The international aid community has traditionally considered high rates of acute malnutrition the result of crises such as drought and conflict rather than a chronic problem with developmental causes. As a public health concern, acute malnutrition has therefore mainly been the target of stand-alone, emergency nutrition interventions. While humanitarian emergencies do cause widespread undernutrition, in reality, the majority of acutely malnourished children live in stable countries not currently experiencing a crisis. They are undernourished because of complex behavioural and environmental factors rather than a temporary loss of access to food due to an emergency. Addressing the majority of the global burden of undernutrition requires that nutrition programmes be integrated into health systems in sustainable ways⁵.

Underweight (Weight/Age = W/A) reflects both chronic malnutrition and acute malnutrition; inadequate weight relative to age (WFA) < -2 to ≥ -3 z-score indicates moderate undernutrition and < -3 z-score indicates severe underweight. Wasting (Weight/Height = W/H) reflects acute malnutrition inadequate weight relative to length or height (WFH) < -2 to ≥ -3 z-score indicates moderate wasting and < -3 z-score indicates severe wasting. Inadequate muscle tissue and fat stores in the body can be measured by mid upper arm circumference (MUAC)-for-age (6–59 months) where < -2 to ≥ -3 z-score indicates moderate wasting and < -3 z-score indicates severe wasting¹.

Weight-for-Height/Length should be taken only at treatment-facilities before admission into therapeutic/supplementary feeding programs, because of its complexity and proneness to mistakes⁶. It is recommended not to use this anthropometric measurement technique in primary health care settings and communities. Mid-upper arm circumference

(MUAC) is a measure of the diameter of the upper arm and gauges both fat reserves and muscle mass. Measurement is simple and requires minimal equipment; MUAC has therefore been proposed as an alternative index of nutritional status for assessing malnutrition. According to WHO for screening and case-detection of acute malnutrition in the community W/A is more precise, sensitive, specific and more predictive than W/H; MUAC/A is more acceptable, low cost, precise, sensitive, specific and more predictive than W/H⁷. With this background the present study was designed

1. To find out the prevalence of acute malnutrition among 6-59 months children in a slum of Kolkata.
2. To compare z score of weight for age (W/A) with weight for height (W/H) and mid upper arm circumference for age (MUAC/A) in the study population.
3. To compare weight for age (W/A) with weight for height (W/H) and weight for age (W/A) and mid upper arm circumference for age (MUAC/A) as combination indicator with weight for height (W/H) for determination of acute malnutrition.

Materials and Methods:

Study Type: Community based observational study with cross-sectional study design.

Study Area: In the service area of Urban Training Centre in Baghbazar area under Department of Community Medicine R.G. Kar Medical College, Kolkata.

Study Period: 1st July 2011 to 31st July 2011.

Study Population: All the children aged between 6-59 months of the Urban Field Practice area in Baghbazar were included in the study. Total 87 children were in the age group during the study period. Among the 87 children 3 children could not be included in the study because of their absence during the study period. All the 84 children present during the study period were included in the study after getting verbal consent from their parents or care givers.

Techniques and Tools: All the children thus included in the study were subjected to anthropometric measurement.

Anthropometric measurements were carried out following standard methods. The data included weight, recumbent length (for children less than 24 months of age) and height (for children more than 24 months of age) and MUAC. Weight was measured to the nearest 0.1 Kg and Salter weighing machine was used for weight measurement. Height was measured against a non stretchable tape fixed to a vertical wall, with the participant standing on a firm/level surface and it was measured to the nearest 0.5 cm. Recumbent length (for children less than 24 months of age) was measured by using an infantometer. The children were dressed in light underclothing and without any shoes during the measurement. MUAC was measured by a non stretchable tape. After determination of midpoint between the elbow and the shoulder of the left arm (the arm was relaxed and hanging down by the side of the body); the tape was placed around the midpoint of left arm to measure MUAC to the nearest 0.1cm. Each measurement was done twice, and the mean of the two readings was recorded. If any pair of readings exceeded the maximum allowable difference for a given variable (e.g. weight, 100 g; length/height, 7 mm), the measurements were repeated. The same measuring instruments

were used throughout the study. Age of the child was determined by reviewing the records (Birth certificate, discharge certificate, Immunisation card) and local events calendar method was used if any record was not available.

Statistical Analysis: Data of the anthropometric measurement were analyzed using WHO Anthro⁸ for personal computers, version 3.2.2, January 2011 to compute the Z scores of W/A, W/H and MUAC/A. SPSS version 16.0 was used to analyse the data.

Result:

Acute malnutrition is best assessed by weight by height (W/H) and MUAC for under-five children. Weight by age (W/A) is used as an indicator of both acute and chronic malnutrition. MUAC/A can also be used as an indicator of acute malnutrition⁷. Inclusion of age in indicators would make it more sensitive to random errors in age than to random errors in anthropometry⁹.

Table No.1 shows age and sex wise distribution of the study population. Out of 84 children 36 are male and 48 are female.

Table No.1: Age and Sex distribution of the children (n = 84)

Age Distribution (months)	Male (%)	Female (%)	Total (%)
6-11	1(2.8)	8(16.7)	9(10.7)
12-23	2(5.6)	5(10.4)	7(8.3)
18-23	5(13.9)	5(10.4)	10(11.9)
24-29	3(8.3)	5(10.4)	8(9.5)
30-35	9(25)	7(14.6)	16(19)
36-41	4(11.1)	4(8.3)	8(9.5)
42-47	5(13.9)	4(8.3)	9(10.7)
48-53	5(13.9)	4(8.3)	9(10.7)
54-59	2(5.6)	6(12.5)	8(9.5)
	36(100)	48(100)	84(100)

Prevalence of wasting (W/H) is 23.8% and prevalence of underweight (W/A) is 31% in the study population. Prevalence of acute malnutrition is 25% in the study population when low MUAC for age was used as an indicator. If combination of indicator low

weight for age and MUAC for age was used as an indicator for assessing acute malnutrition then the prevalence rises to 35.7% (Table No.2)

Table No.2: Pattern and distribution of acute malnutrition (n=84)

Pattern of malnutrition	total	percentage (%)
Underweight (W/A)	26	31.0
Wasting (W/H)	20	23.8
Low MUAC/AGE	21	25.0
W/A + MUAC/A	30	35.7

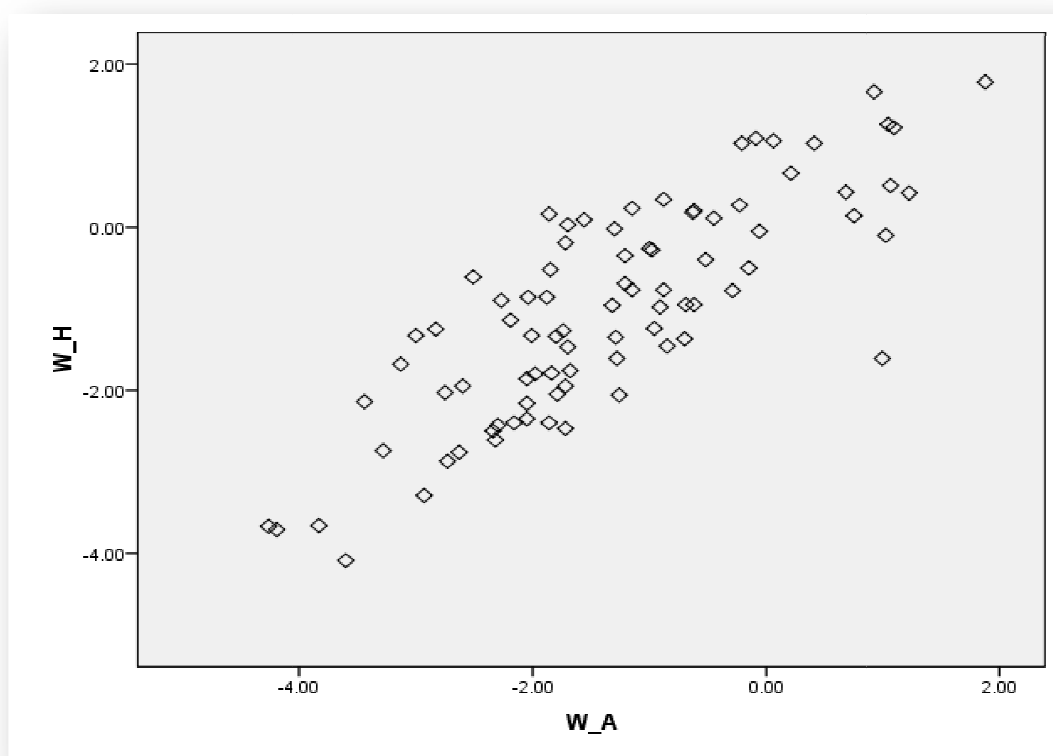
Table No.3 shows a strong correlation between the z score of W/A with W/H and W/A with MUAC/A. A significant linear correlation (Fig No.1 & Fig No.2) has been demonstrated between the z score of W/A with W/H ($r = .816$; $p = .000$; $r^2 = .665$) and W/A with MUAC/A ($r = .829$; $p = .000$; $r^2 = .687$). If the z

score of MUAC/A is adjusted for W/H, then correlation of determination (r^2) between the z score of W/A with W/H is reduced to .661 and if z score of W/H is adjusted for MUAC/A, then correlation of determination (r^2) between the z score of W/A with MUAC/A is reduced to .683.

Table No.3: Correlation between z score of different anthropometric measurements for acute malnutrition

	W/H	MUAC/A
W/A		
Pearson correlation coefficient (r)	.816	.829
P value	.000	.000
Correlation of determination (r^2)	.665	.687
Adjusted r^2	.661	.683

Fig 1: Scatter diagram showing linear relationship between z score of W/A and W/H



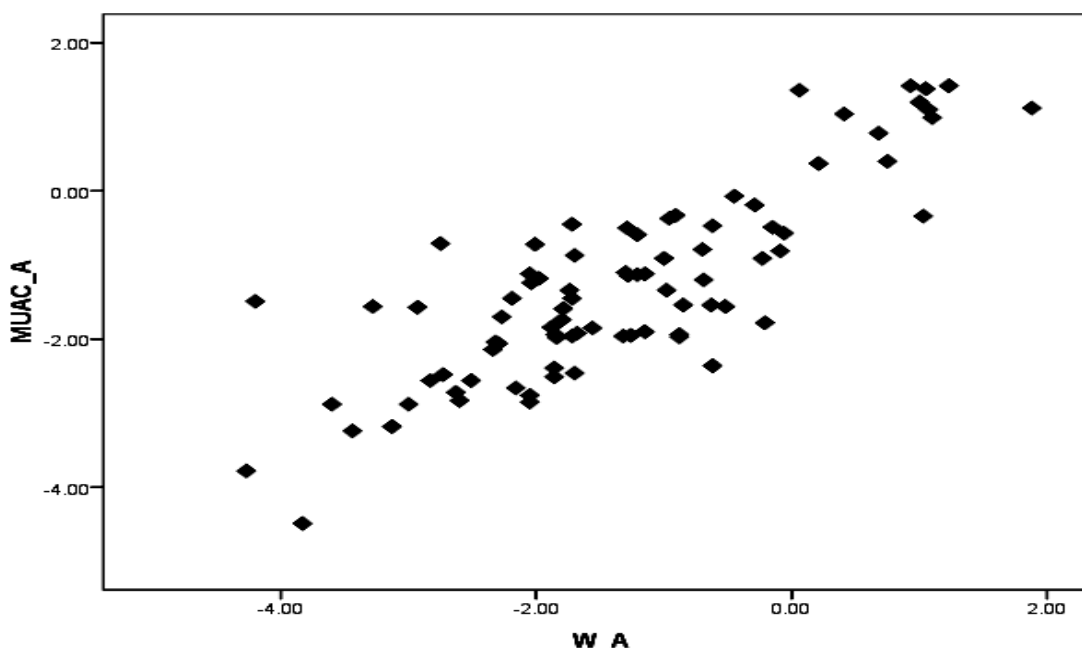


Fig 2: Scatter diagram showing linear relationship between z score of W/A and MUAC/A

Results of screening test (Table No.4) and evaluation (Table No.5) using low weight for age (W/A) an indicator of acute malnutrition as compare to the gold standard weight for height (W/H) show the test to be 80% sensitive and 84.37% specific. Table No.4 shows that positive predictive value and negative predictive value of the screening test is 61.54% & 93.1% respectively. If W/A is used

as an indicator of acute malnutrition children of the study population with acute malnutrition are 5.12 times (positive likelihood ratio = 5.12) more likely to have positive test than are those who are not malnourished and negative test is almost a fourth (negative likelihood ratio =.24) as likely in a child who is malnourished than in normal child (Table No.5).

Table No.4: Screening test result for assessment of acute malnutrition of W/A with W/H

ACUTE MALNUTRITION				
W/H		yes	No	total
W/A				
yes		16(TP)	10(FP)	26(TP+FP)
no		4(FN)	54(TN)	58(FN+TN)
total		20(TP+FN)	64(FP+TN)	84(TP+FP+FN+TN)

Table No.5: Evaluation of screening of acute malnutrition by W/A with W/H

Measures	Results
Sensitivity	80%
Specificity	84.37%
Positive predictive value	61.54%
Negative predictive value	93.1%
Positive likelihood ratio	5.12
Negative likelihood ratio	.24

Results of screening test (Table No.6) and evaluation (Table No.7) using mid upper arm circumference for age (MUAC/A) a indicator of acute malnutrition as compare to the gold standard weight for height (W/H) show the test to be 60% sensitive and 85.94% specific. Table No.7 shows that positive predictive value and negative predictive value

of the screening test 57.14% & 87.3% respectively. If MUAC/A is used as an indicator of acute malnutrition children of the study population with acute malnutrition are 4.27 times (positive likelihood ratio = 4.27) more likely to have positive test than are those who are not malnourished.

Table No.6: Screening test result for assessment of acute malnutrition of MUAC/A with W/H

ACUTE MALNUTRITION			
W/H \ MUAC/A	yes	No	total
yes	12(TP)	9(FP)	21(TP+FP)
no	8(FN)	55(TN)	63(FN+TN)
total	20(TP+FN)	64(FP+TN)	84(TP+FP+FN+TN)

Table No.7: Evaluation of screening of acute malnutrition by MUAC/A with W/H

Measures	Results
Sensitivity	60%
Specificity	85.94%
Positive predictive value	57.14%
Negative predictive value	87.3%
Positive likelihood ratio	4.27
Negative likelihood ratio	.47

Results of screening test (Table No.8) and evaluation (Table No.9) using low weight for age (W/A) and mid upper arm circumference for age (MUAC/A) as a composite indicator of acute malnutrition as compare to the gold standard weight for height (W/H) show the test to be 85% sensitive and 79.68% specific. Table No.9 shows that positive predictive value and negative predictive value of the screening test 56.67% &

94.44% respectively. If W/A and MUAC/A is used as a combination indicator of acute malnutrition children of the study population with acute malnutrition are 4.18 times (positive likelihood ratio =4.18) more likely to have positive test than are those who are not malnourished and negative test is almost a fifth (negative likelihood ratio =.19) as likely in a child who is malnourished than in normal child (Table No.9).

Table No.8: Screening test result for assessment of acute malnutrition of W/H with W/A + MUAC/A

ACUTE MALNUTRITION			
W/H	Yes	No	total
W/A +MUAC/A			
yes	17(TP)	13(FP)	30(TP+FP)
no	3(FN)	51(TN)	54(FN+TN)
total	20(TP+FN)	64(FP+TN)	84(TP+FP+FN+TN)

Table No.9: Evaluation of screening of acute malnutrition by W/H with W/A + MUAC/A

Measures	Results
Sensitivity	85%
Specificity	79.68%
Positive predictive value	56.67%
Negative predictive value	94.44%
Positive likelihood ratio	4.18
Negative likelihood ratio	.19

Discussion:

In India around 43% of its children under the age of five are malnourished or undernourished and malnutrition is much more common in India than sub-Saharan Africa. It is estimated that one in every three malnourished children in the world live in India. The prevalence of wasting in India is about 20%¹⁰. Our present study shows prevalence of acute malnutrition in an urban slum of Kolkata among under-5 children is 23.8% if we take W/H as indicator and 25% if we take MUAC/A as indicator. In a context of unprecedented economic growth (9-10 percent annually) and national food security, over 60% of Indian children are wasted, stunted or a combination of the above. As a result, India ranks number 62 in the poverty and hunger index (PHI) out of a total of 81 countries and is included among the low performing countries in progress towards MDG1 with countries such as Nepal (number 58), Ethiopia (number 60), or Zimbabwe (number 74)¹¹. Malnutrition thus makes an impact on the national development. Acute malnutrition is a devastating public health problem of epidemic proportions. Acute malnutrition is a devastating disease of epidemic proportions. Worldwide, some 55 million children age 5 or younger suffer from moderate acute malnutrition¹². Each year, some 5 million of these children die because they lack access to treatment¹³. These deaths are entirely preventable. Childhood acute malnutrition is as much a medical problem as it is a social problem because it directly affects a broad range of issues: a country's mortality rates, educational prospects, productive employment, and economic capacity, etc.

Malnutrition also happens to be one of the principal mechanisms behind the transmission of poverty and inequality from one generation to the next. These devastating consequences also carry a heavy economic cost: it is estimated that

productivity losses alone exceed 10% of a person's lifetime income, and up to 3% of a country's GDP. Mental development and growth are affected, and there is a heightened risk of disease and diminished productivity in later life with children of acute malnutrition¹⁴ and acute malnutrition is closely linked to child mortality¹⁵.

A Mozambique study¹⁶ showed that the z score of Weight for age was positively correlated with the z score of weight for height. Our present study also showed a positive linear strong correlation between z score of weight for age with weight for height and also z score of weight for age with MUAC for age. This implies that if z score of weight for height and MUAC for age increases or decreases z score of weight for age also increases or decreases and this change of z score is statistically significant ($p = .000$).

As for screening test in community, a test with high sensitivity and high negative predictive value would be considered good. As it is previously mentioned that measurement of height in community is not always accurate and precise particularly for less than 2 years children where length instead of height is measured by infantometer, diagnosing acute malnutrition by W/H indicator should be considered for hospital settings. Our present study shows that the sensitivity and negative predictive value had been increased if W/A and MUAC/A were taken as combined instead of W/A and MUAC/A used alone to assess acute malnutrition in community level in comparison to gold standard W/H. Though the positive likelihood ratio (LR+) had been decreased but the negative likelihood ratio (LR-) showed that negative test is almost a fifth as likely in a child who is malnourished than in normal child if W/A and MUAC/A are combined in comparison to one fourth in W/A and almost one in two children in MUAC/A when they are used alone. So,

using W/A+MUAC/A as a combined indicator would give less false negative result but more false positive result i.e. Acute malnutrition diagnosis for community level is a cumbersome job for the grass root health workers. Though weight for height is gold standard for diagnosis for acute malnutrition it is very difficult for the community health workers to measure height accurately and precisely. For ICDS programme and during routine immunisation programme AWWs, ANMs are well equipped to measure the weight of the under-5 children. Mid upper arm circumference measurement at the community level is an easy and simple tool to operate. Though proper age estimation of age not always an easy procedure to do

chance of under diagnosing of acute malnutrition in the community is reduced.

Conclusion:

because of low literacy rate particularly in the rural community and due to home delivery but as immunisation coverage is increasing steadily age estimation from the immunisation card and local festival records would not be a difficult job to do. If W/A and MUAC/A can be used as combined for screening acute malnutrition in the community instead of W/H it would be more chance to screen the acute malnourished children from the community.

Acknowledgment: We are thankful to all the internee doctors who participated in data collection.

References:

- 1 World Health Organization. WHO child growth standards: length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: methods and development. Geneva, Switzerland: World Health Organization; 2006.
- 2 Acute Malnutrition Summary Sheet. Save the Children, USA. www.savethechildren.org/atf/cf (last accessed on 2/11/2011)
- 3 World Health Organization. Physical status: the use and interpretation of anthropometry. World Health Organ Tech Report Ser 1995;854.
- 4 Black, RE, LH Allen, ZA Bhutta, LE Caulfield, M de Onis, M Ezzati, C Mathers, and J Rivera. 2008. Maternal and child undernutrition: Global and regional exposures and health consequences. *The Lancet* 371(9608): 243-60.
- 5 Gross, R, and P Webb. Wasted time for wasted children: Severe child undernutrition must be resolved in nonemergency settings. *The Lancet*. 2006; 367: 1209-11
- 6 The Mother and Child Health and Education Trust. Mother, Infant and young children nutrition and malnutrition.
- 7 Myatt M, Khara T, Collins S. A review of methods to detect cases of severely malnourished children in the community for their admission into community based therapeutic care programs. Technical Background Paper. 2005:14
- 8 <http://www.who.int/childgrowth/en> (last accessed on 2/11/2011)
- 9 Bairagi R, Effects of bias and random error in anthropometry and in age on estimation of malnutrition, *Am J Epidemiol*, 1986;123(1):185-91.
- 10 Unicef. Available at URL: http://www.unicef.org/infobycountry/india_statistic.s.html#53 (last accessed on 2/11/2011)
- 11 Gentilini, U., Webb, P., How are we doing on poverty and hunger reduction? A new measure of country performance. *Food Policy*. 2008. doi:10.1016/j.foodpol.2008.04.005 (last accessed on 2/11/2011)
- 13 *The Lancet*. Maternal and Child Undernutrition Series paper 1. 2008;January
- 13 Pelletier DL. The relationship between child anthropometry and mortality in developing countries: implications for policy, programs and futures research. *N Nutr*. 1994 (supple): 2047S-81S
- 14 Unicef. Fast Facts: Acute Malnutrition. www.unicefusa.org/work/emergencies/horn-of-africa/Horn-of-Africa-Malnutrition-201011.pdf (last accessed on 2/11/2011)
- 15 De Onis M. Measuring nutritional status in relation to mortality. *Bull World Health organ*. 2000;78:1271-1274
- 16 WorldBank.HaelthOutcom e#2:Anthropometrics.siteresources.worldbank.org/INTPAH/Resources/Publications/459843-1195594469249/HealthEquityCh4.pdf(last Accessed on 2/11/2011).

Review Article

Current Health Status of Women in India - Issues and Challenges

Jaishree Ganjiwale¹

¹ Assistant Professor (Biostatistics),

Dept. of Community Medicine,

PS Medical College, Karmsad

Correspondence to : Ms Jaishree Ganjiwale , E-mail ID - jaishreeganjiwale@gmail.com

Empowerment means the ability to exercise full control over one's actions. The status of women in India has been subject to many great changes over the past few millennia. The purpose of this paper is to explore the status of women empowerment in India and its effect on health indicators through various related factors.

The health of women depends on their emotional, social and physical well-being which are determined by different social, political and economic contexts of their lives. India being large country, has a diverse population- socially, culturally and economically; yet, the common major problem that women here face in availing healthcare, is inequality, between men and women; among women of different geographical regions, social classes and indigenous and ethnic groups across the country.

There are several factors responsible for the current status of women, one is the culture itself. Women are subjected to selective malnourishment from birth. There is strong preference for the male child in several states promoting illegal sex determination and female foeticide. This not only poses threat to the expectant mother's physical and mental health but also imbalances the sex ratio, thereby giving rise to several other social problems.¹

The girl child is treated as a financial burden on the family because of customs like dowry at the time of marriage. This is a major reason why sex determination and female foeticide is rampant in some places.² Many a times women are not free to control their fertility and decision regarding medical termination of pregnancy is influenced by husband or other family members. There are states with remarkable decline in the fertility rates of females, yet female foeticide continues and strong preference for male child remains.³

In the patriarchal societies like Indian, women on an average have less power, status, autonomy, independence and financial resources. They are mostly the carers, providing both domestic labor and health care for husband, children and elders whenever required. The male child preference exists mainly because of the patrilineal nature of these societies where the property and title are inherited by only the male lineage.⁴

Despite all odds, the backbones of the family are women. The family health issues relate to various phases involving fertility and pregnancy, infancy, childhood, adolescence, adulthood, and old-age along with the familial relationships. Poor pregnancy outcomes affect not only the mother but also the child, family, and the community physically, mentally and economically. In Indian society where women's rights are repressed, the health of women and children suffers significantly.

The major gender specific cause of death in India continues to be the maternal mortality, despite this being one of the key agenda in the national health care programs. The maternal mortality rate is 212 per 1000 which is almost 6 folds higher than that of china.^{5,6}

Women's post natal health appears to take second place for all once the process of child birth is over.⁷ The percentage of women receiving post natal care within two days of delivery across states gives a glimpse of the same.⁸(Table 1) The mothers who do not avail antenatal care and / or give birth unattended by the trained personnel, invariably indulge into wrong practices related to child care and hence the child health complications adding to the infant mortality rate (IMR).

Early marriage and early child bearing are important factors adding to maternal mortality rate (MMR) and IMR.

Every third girl in the developing countries (excluding China) is getting married at the age before 18. Early marriage is

observed to compromise the sexual and reproductive health of young women and the adverse consequences are borne not only by young women but also by the child they bear.^{9,10}

The indicator 'Domestic violence' reflects lots about the status of women in society. Women marrying at a later age than 18, are seen less prone to domestic violence, may be for their improved awareness about marital life, sexual behavior and its consequences along with the physical and mental development with time. In addition the women are seen to be participating in deciding about their marriage if they marry at a later age.¹¹ Mother experiencing intimate partner violence is found significantly associated to infant mortality.¹² Experiencing marital violence not only damages the women's physical being, but also has serious negative impact on the multiple aspects of women's reproductive health.¹³ Moreover, it is observed that the marital physical violence by the husband and acceptance of the justification for such violence are significantly associated with decreased chance of seeking care.¹⁴

The gender inequality and mortality analysis reveals that the life expectancy of male and female in India are comparable (65.77 for males and 67.95 for females - 2011 estimates). This small difference also refers to the low social status of the women in the country.¹⁵

As education holds the key to development, women education should be considered more seriously. Comparing the health indicators and empowerment indicators across states, the effect of women empowerment on health can be visualized (Table 1).⁸

Under age girl marriage is 4.8% in Kerala against 41.2% in West Bengal, 42.7% in Rajasthan and 45.6% in Bihar.¹⁶ If we see the sex ratio in the above states, Kerala had 1053 against 898 in Uttar Pradesh, 919 in Bihar and 934 in West Bengal (WB).¹⁷

Bihar has overall literacy rate of 47% with 59.7% male literacy against 33.1% female literacy. The status of literacy in Kerala is 90.9% total, 94.2% male and 87.7% female literacy against 68.6% total, 77% male and 59.6% female literacy in WB. So Bihar remains way behind in terms of literacy and education against Kerala.⁸

The IMR in Kerala is 11 (per 1000 live births) against unavailable data for Bihar in 2008 and 81 in Uttar Pradesh and 86 in Madhya Pradesh.⁸

In Kerala, 99.3% women are reported to avail antenatal care against 28.1% in Bihar showing the awareness of women about their health and also indicating the availability of health care facilities in the two states.⁸

The reasons for better indicators on all aspects in Kerala over other states could be liberated and educated women who are capable of taking care of the education and health needs of their children and the rest of the family. School attendance in Bihar is low compared to other states. The dropout rate in Bihar is 48 in 1st - 6th standard itself for both sexes. The proportion of girls getting married before the age of 18 in Bihar is 69% and more so in rural areas this proportion is as high as 75%.⁸ The number of children per women in Bihar is 4 against 1.9 in Kerala.⁸ The mothers who had at least 3 antenatal care visits for their last birth in Bihar is 16.9% against 93.9% in Kerala.⁸ This speaks for all the reasons why the two states are different in all the health indices. The anemia status in the women in Bihar is very high than the anemia prevalent in men in the same state. This proves the gender bias in the state. The domestic violence in Bihar is rampant at 59% against only 16% in Kerala. These are all strong indicators, why a state where women are better empowered and have an active role in the society, is faring far well, compared to the other states. Therefore to conclude, women empowerment should be ensured in all the states as it is identified as a key to progress development for the states and hence the nation.

Table 1: Some indicators related to women from NFHS-3 for some states

	Very young mothers <19 years	Median age of mother at first birth	% Children fully immunized	% Women participate in household decisions	% Mothers received proper postnatal care	% Women experienced spousal violence
Kerala	5.8	22.7	75.3	47.2	87.7	16.4
Tamilnadu	7.7	21	80.9	48.8	89.6	41.9
Bihar	25	18.7	32.8	32.7	15.9	59
Rajasthan	16	19.6	26.5	22.8	29	46.3
Delhi	5	21.7	63.2	52	50.4	16.3
Gujarat	12.7	20.6	45.2	36.6	54	27.6
Indicators for only uneducated women :						
Kerala	*	18.9	*	47.8	*	26
Tamilnadu	*	19.4	78.3	49.7	78.1	52.9
Bihar	35.3	18.3	21.9	35	9.9	63.6
Rajasthan	22.8	19.3	20.5	20.5	19.7	50.4
Delhi	24.6	19.4	44.2	50.4	24.5	28.9
Gujarat	37.9	19.4	27.7	34	36.5	34.3

* based on fewer than 25 unweighted cases.

References:

1. Sen, A. 1992. Missing Women. *British Medical Journal* 304: 587-588
2. Ahmed, 2010. "Female Feticide in India." *Issues in Law & medicine*. 26(1) pp 13-29.
3. Nadia diamond, Nancy L & Stephen M. 2008. "Too many girls, too much dowry": son preference and daughter aversion in rural Tamil Nadu, India." *Culture, health and sexuality*. 10(7): pp 697-708.
4. Puri S, Adams V, Ivey S, Nachtiqall RD.2011. "There is such a thing as too many daughters, but not too many sons": A qualitative study of son preference and fetal sex selection among Indian immigrants in the United States." *Social Science and Medicine*. 72(7):1169-76.
5. "Infant mortality rate declines in India " available at <http://www.rediff.com/news/slide-show/slide-show-1-infant-mortality-rate-declines-in-india/20120113.htm> as accessed on 25th June 2012.
6. China Demographics Profile 2012 available at http://www.indexmundi.com/china/demographics_profile.html as accessed on 25th June 2012.
7. Thomas, Hillary. 1998. "Reproductive health needs across the lifespan." Pp. 39-53 in L. Doyal (ed.), *Women and health services: an agenda for change*. Buckingham: open University press.
8. NFHS III report: Key indicators of India from NFHS-3 available at

<http://www.nfhsindia.org/pdf/India.pdf> as accessed on 21st October 2011.

9. Santhya KG. 2011." Early marriage and sexual and reproductive health vulnerabilities of young women: a synthesis of recent evidence from developing countries." *Adolescent and paediatric gynaecology*. 23(5):334-9.

10. Pande RP, Falle TY, Rathod S, Edmeades J, Krishnan S. 2011." 'If your husband calls, you have to go': understanding sexual agency among young married women in urban South India." *Sexual health*. 8(1):102-109.

11. Santhya KG., Ram U, Acharya R, Jejeebhoy SJ, Ram F, Singh A. 2010." Associations between early marriage and young women's marital and reproductive health outcomes: evidence from India." *International perspectives on sexual and reproductive health*. 36(3): 132-139.

12. Silverman JG, Decker MR, Cheng DM, Wirth K, Saggurti N, McCauley HL, Falb KL, Donta B, Raj A. 2011. Gender-based disparities in infant and child mortality based on maternal exposure to spousal violence: the heavy burden borne by Indian

girls." *archives of pediatrics and adolescent medicine*. 165(1):22-27.

13. Vachher AS, Sharma A. 2010." Domestic violence against women and their mental health status in a colony in delhi." *Indian journal of community medicine* 35(3): 403-405.

14. Sudha S. Morrison S. 2011. "Marital violence and women's reproductive health care in Uttar Pradesh, India." *Women's health issues: official publication of the Jacobs Institute of Women's health*. 21(3):214-221.

15. Santow, gigi. 1995." social roles and physical health: the case of female disadvantage in poor countries." *Social Science and Medicine* 40: 147-161.

16. Indicus report 2008 available at : <http://www.indicus.net/media/index.php/idl/1250-key-indicators-on-empowerment-state-level> as accessed on 18th November 2011.

17. Census 2011 as available at : http://www.censusindia.gov.in/Tables_Published/A-Series/ accessed on 18th November 2011.

"I don't believe medical discoveries are doing much to advance human life.

As fast as we create ways to extend it we are inventing ways to shorten it."

Christiaan Barnard

Short communication

Knowledge about Eye Diseases and Eye Care Needs in School going Children among Teachers and Children of a City located in Western India

Shobha Misra¹, R. K. Baxi²

¹Associate Professor, ²Professor

Department of Preventive and Social Medicine, Medical College and SSG Hospital, Baroda, India.

Correspondence to : Dr. Shobha Misra, E-mail ID - shobhamisra@rediffmail.com

Abstract:

Background: Knowledge about eye diseases in school children is important as six percent to seven percent (6-7%) children aged 10-14 years have problems with their eyesight affecting their learning in India.

Methods: The objective was; to determine the knowledge of teachers and students about eye diseases in school children. Current study utilized "Focus Group Discussion" (FGD) with students of sixth (6th) and seventh (7th) standard and with teachers as a method of enquiry. Ten schools were randomly selected and five FGDs with students of sixth and seventh standard and another five FGDs with teachers were conducted depending on availability of the study participants in the school selected. A semi-structured guideline was developed purposively. The content analysis of focus group discussions was done to identify key concepts relating to; Knowledge and Practice.

Results: FGDs with teachers suggest that pain, redness and swelling of eyes are more easily perceived as problems as compared to visual acuity. FGDs with students suggest inability to read on the black board as the most known symptom.

Conclusions: It is concluded that students can be helped by regular eye check up, for most conditions are easily treatable if not fully preventable. Besides, programme also need to consider a range of issues related to teachers' and students' perceptions.

Key words: Knowledge, Practice, Focus Group Discussions (FGDs), Eye problems in School children.

Introduction:

In India, several studies have been carried out on the health status of school age children. These have largely been quantitative and have reported morbidity as, malnutrition (10.0-98.0%), dental ailments (4.0-70.0%), worm infestation (2.0-30.0%), skin diseases

(5.0-10.0%), eye diseases (4.0-8.0%) and anemia (4.0-15.05%).¹

Pediatric ophthalmology is not yet well established as a separate subspecialty in India in most eye care programmes. Six to seven percent (6-7%) children aged 10-14 years, in India, have problems with eyesight affecting their learning and the major cause of which is refractive error (81.7 percent).^{2, 3} Studies have reported 16.3 to 37 percent of preventable & avoidable blindness in children in India.^{2, 4}

Revised strategies under National Programme for Control of Visual Impairment and Blindness include and emphasize strengthening services for corneal blindness and refractive errors in school going children. Gujarat is committed to reduce the burden of avoidable blindness by the year 2020 by adopting strategies that are advocated in VISION 2020.⁵ Developing eye care program targeting children is different from program targeting adults, as the primary decision- maker in the case of children with eye problem is often not the subject with the problem, hence, knowledge regarding eye diseases among teachers, students and parents is important in this context.

A formative study using qualitative methodology tool, the Focus Group Discussion (FGD) was carried out among school children studying in sixth and seventh standard and their teachers from urban schools of a city located in western India, as a method of inquiry. The objective was: to determine the knowledge of teachers and students about eye diseases in school children.

Material and Methods:

This study was conducted during 2008 in primary schools of a city in Gujarat, run by Municipal Corporation where children belong to lower and middle socio-economic groups. A ward wise list of primary schools was obtained from the Municipal Corporation. Then, one school was randomly selected to carry out Focus Group Discussion (FGD) with students

and teachers separately as a method of inquiry. Focus Group Discussion permits free and focused participation to explore the issues at hand. Both, the moderator and note-keeper who conducted the FGDs were trained in qualitative research methodology.

Five FGDs with students of sixth and seventh standard and another five FGDs with teachers were conducted depending on availability of the study participants (students or teachers) in the school selected at the time of interview. Each group had six to eight participants and of both gender. In all, we studied 40 male (18 teachers/22 students) and 32 female (15 teachers/17) participants.

A semi-structured guideline was developed purposively for the discussion. The content analysis of focus group discussions was to identify key concepts relating to Knowledge and Practice.

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

Data Collection and Statistical Analysis: Transcripts of FGD were prepared by two separate investigators, revised and analyzed for content and key concepts as mentioned earlier.

Ethical Issues: To tackle ethical issues prior informed verbal consent was taken from Administrative Officer, Municipal School Board after explaining the study to the participants.

Results:

The study findings showed that few teachers and students (30% teachers/8% students) had the knowledge and practice (16% teachers/ 6% students) about eye problems of school children.

FGDs with teachers suggest that pain, redness, and swelling of eye are more easily perceived as problems as compared to visual acuity. Infection is perceived as the most common cause of these problems, other causes

mentioned were watching Television from near distance and Vitamin A deficiency. Most of them knew that eating green leafy vegetables is good for the eyes (a teacher said, “*Leela shak bhaji ankh mate saru hoi*”). But leafy vegetables are rich source of Vitamin A, a protective nutrient which was known to very few (2%) of them.

FGDs with students suggest that inability to read on the black board (a student said, “*Shala ma agal besvu pade*) as the most known symptom while, working/reading in dim light, and watching TV (a student said, “*Vadhare padtu TV jova thie*”) for long or from a short distance are most commonly perceived causes. Most important eye problems /diseases identified by them were watering, dimness of vision, redness of eye, swelling of eye, and far and near vision difficulty. Students also did not know about the national Vitamin A programme, or Vitamin A but they could name a few rich sources of Vitamin A in the green leafy vegetables. A few mentioned that to treat eye problems one should consult a doctor, wear spectacles, eat green leafy vegetables and walk on green grass.

Some of the teachers suggested that there is need for public awareness and expected parents to take interest in regular eye check-up of their wards.

Conclusion:

The study findings showed that few teachers and students had the correct knowledge and practice about eye problems in children. This reinforces the necessity for the teachers and students to be made aware of eye diseases in children and the manifestations of common eye problems so that they could make informed decisions on bringing their wards in for treatment.

Developing eye care programme targeting children is different from programme targeting adults as mentioned earlier; our study brings out several challenges that eye care programme need to address for better program outcomes. Simple vision testing in primary school children at least at the commencement of school, so as to detect visual problems in early stage of life. Besides this, programme also needs to consider a range of issues related to teachers’ and students’ perceptions. Information- education- communication

material should be based on them and be directed to their perceived needs.

References:

1. Ananthakrishnan S., Pani S.P., Nalini P., (March 2001). Extent and Pattern of Health Status of School age Children. Vector Control Research Centre, ICMR, Pondicherry, India. A report.
- 2 Nirmalan P. K., Vijayalakshmi P., Sheeladevi S., Kothari M. B., et al (2003). The Kariapatti Pediatric eye evaluation project (KPEEP); Baseline gather

data of children aged 15 year or younger in south India. Am J Ophthalmology; (136) 703-9.

3 Kishore J (2006). National Health Programmes of India, 6th Edition, Century Publications 46, Masih Garh, New Delhi; 267-272.

4 Sajida Parveen Shiekh, Taziq M. Aziz (2005). Pattern of eye diseases in children of 5-15 years at Bazarretatine area of Pakistan. JCPSP, Vol 15 (5) 291-294.

5 Govt. of India, Annual Report (2005-2006). Ministry of Health & Family Welfare, Nirman Bhawan, New Delhi

"In our hectic, fast-paced, consumer-driven society, it's common to feel overwhelmed, isolated and alone. Many are re-discovering the healing and empowering role that community can bring to our lives. The sense of belonging we feel when we make the time to take an active role in our communities can give us a deeper sense of meaning and purpose. "

Robert Alan Silverstein

"There is no power for change greater than a community discovering what it cares about.

Relationships are all there is. Everything in the universe only exists because it is in relationship to everything else. Nothing exists in isolation. We have to stop pretending we are individuals that can go it alone "

-- Margaret J. Wheatley

A report on First Annual IAPSM-GC PG meet - Booster 2012 : Enhancing Experiences

Explore ...

..... Enjoy

.... Evolve.

It has been a discussion & deliberated by the members of IAPSM-GC to offer a podium where all community Medicine residents could come together to exchanging ideas and sharing various activities of their respective departments every year for common goal. To attain the objective IAPSM-GC decided to initiate an annual mid-year PG meet which could offer a platform where PSM resident doctors can be groomed for different facets of their personality along with technical side.

As the aim of this PG meet was to boost the spirit of PGs, explore their hidden potentials, it was branded as “BOOSTER – Enhancing Experiences”. The strategies used to achieve the goals were “Explore...Enjoy...Evolve...”. Broadly the meet was planned in such a way that it had a mix of various curricular, co-curricular-extracurricular activities/ competitions and fun activities/competitions with socio-cultural interaction.

Smt. NHL Municipal Medical College, Ahmedabad volunteered to organize the first PG meet. First Annual IAPSM-GC PG meet - Booster 2012 was held on August 30-31, 2012 at Ahmedabad Textile Mills Association (ATMA hall), Ahmedabad. It was inaugurated by Shri P. K. Taneja, I.A.S., Principal Secretary (Public Health & FW) & Health Commissioner, Gujarat State. He has also delivered a key note address on “Role of Community Medicine experts in improving the Public Health scenario” on this occasion. Dr. S. L. Kantharia, President, IAPSM-GC, during his speech has highlighted the discrepancies in recruitment rule where after Medical Post graduations one can not get Class – I post in public health unlike Medical Education, Medical

Services. Dr. Vikas Desai, Former Professor & Head, GMC Surat & Former A.D.(F.W.) also blessed the event with her presence during the inauguration as well as delivering a Guest Lecture on “Opportunities & Challenges – Living Public Health”

With a view of cross learning of the existing best practices in PG studies of various departments and exchanges of the PG activities from all the medial colleges were carried out in PG curriculum Sessions. Lots of best practices and local initiatives were learnt during the session. Concept about, PG Studies Support Programme (PGSP), an another initiatives of IAPSM-GC shared by Dr. A. M. Kadri, Secretary IAPSM-GC during the event and feedbacks from PGs for further strengthening was taken

For development beyond the academic facet, a session on personality development and self-improvement was taken by Shri Deepak Taraiya on “*HU ANE MARU PRATIBIMB* (I am with My reflection)– An Introspective exercise for self development”. It has touched the hearts of all present there.

PSM Quiz was one of the most liked academic competitions during Booster-2012. Dr. Atul Trivedi, Associate Professor (PSM), GMC, Bhavnagar successfully conducted quiz as a Quiz master. Other competitive academic activities like Poster making, Rangoli & Collage competition on Community Medicine related themes, helped to bring out best of creative ideas from the Resident Doctors. Dr. Vasudev Rawal, Rtd. Professor (PSM) & Former Director, SIHFW has tough time to judge best out of all. With full of surprises in the campus a

“Treasure Hunt” based on the hints related to World Health Day Themes was organized in the evening

After a lot of academic activities, the participants enjoyed the “Antakshari” event on the magical musical orchestra. Other informal evening activities with full of fun & entertainment like Just A Minute (JAM) & Tug of War, fun filled musical parody from NHL Resident Doctors of NHL and socio-cultural event of traditional Garba mix with Bollywood songs has kept all the participants engaged with late night.

Second day started with Guest Lecture by Dr. Rajesh Solanki, Head Pulmonary Medicine, Civil Hospital; on “RNTCP update and avenues for operational research” followed by a lecture “Reproductive and Child Health services in Gujarat” by Dr. Sridhar R. P., RCH Consultant, in State Health & FW Department.

A Debate competition on Community Medicine related critical topics with full of views and counterviews provided a platform to participants to show their wisdom and advocacy skills while cherished moments for the audience. The spirit of the participation was revealed when turn-by-turn points and heated arguments were applauded by each individual in the audience.

RCH based thematic “Role play” was probably the most enjoyed and fun-filled moment during Booster. Four plays covering different areas of the RCH, with humorous situations and strong dialogues but effective messages transformed this event into one of the most memorable and learning moment of “Booster 2012”. Dr. Vasudev Rawal, and Dr. A. M. Kadri, Associate Professor (PSM) served as Judges for the Debate & Role Play competitions.

In Booster 2012 lessons to contribute and helps the society was also taught. As a Blood Donation Camp with the support of Indian Red Cross Society, Ahmedabad Branch. Total of 16 blood donors donated their blood for a noble social.

All participants were winner but trophies were given away to best of them in each activities. Based on the overall performance in competitions with academic themes (PSM Quiz, RCH role play, Poster making, Rangoli, Collage making competition & Debate) & blood donation **“Best Performing Department in Booster 2012”** was awarded to B. J. Medical College, Ahmedabad.

“Booster 2012” really proved to be an event “of the PGs, for the PGs & by the PGs”. With encouraging experience of First Annual IAPSM-GC PG meet, strong belief is reaffirmed and strengthened that PSM Residents have tremendous hidden potentials, not only in academic activities but also in various other fields as well. Such Annual IAPSM-GC PG Meet will help in “Boosting” their “Primary Learning” being received at respective Medical Collages.

IAPSM-GC put on records words of appreciation for hard works put in by team of Resident Doctors, leadership provided by senior teachers Dr. Jay Sheth, Dr. Sonal Parikh and Dr. Aparajita Shukla and guidance as well as environment provided Dr. D.V. Bala, Professor & Head, Community Medicine Department, NHL Municipal Medical College, Ahmedabad concept of Annual IAPSM-GC PG meet a real and excellent organization of the First Annual IAPSM-GC meet, Booster -2012.

healthline

Editorial Board

Advisors

Dr. Bharat Bhavsar	Dr. D. V. Bala	Dr. Deepak Solanki
Dr. Dileep Mavlankar	Dr. Dinkar Rawal	Dr. Geeta Kedia
Dr. K. N. Sonaliya	Dr. K. N. Trivedi	Dr. M. P. Singh
Dr. N. B. Dholakia	Dr. N. J. Talsania	Dr. P. B. Verma
Dr. P. V. Kotecha	Dr. Paresh Dave	Dr. Pradeepkumar
Dr. R. K. Baxi	Dr. R. K. Bansal	Dr. Sheetal Vyas
Dr. Sudha Yadav	Dr. Uday Shankar Singh	Dr. Vasudev Rawal
Dr. Vihang Mazumdar	Dr. Vikas Desai	

Members

Dr. Anjali Singh	Dr. Aparajita Shukla	Dr. Atul Trivedi
Dr. Bhagyalaxmi	Dr. Bhavesh Modi	Dr. Chandresh Pandya
Dr. Deepak Saxena	Dr. Jay Sheth	Dr. Jayendra Kosambiya
Dr. Mohua Moitra	Dr. Mrudula K. Lala	Dr. Narayan Gaonkar
Dr. Niraj Pandit	Dr. Prakash Patel	Dr. Rajesh Chudasma
Dr. Rashmi Sharma	Dr. Sangita Patel	Dr. Shobha Misra
Dr. Sonal Parikh	Dr. Umed Patel	

Editor- Emeritus (Ex-Officio)	:	Dr. S. L. Kantharia
Editor-in-Chief	:	Dr. Girija Kartha
Editor	:	Dr. Naresh Godara
Joint Editor	:	Dr. Hitesh Shah
Managing Editor & Publisher (Ex officio)	:	Dr. A. M. Kadri

Views expressed by the authors do not necessarily reflect those of the Indian Association of Preventive and Social Medicine, Gujarat Chapter. All statements, opinions expressed in the articles are those of authors and not of editor(s) or publisher(s). The editor(s) and publisher(s) disclaim any responsibility for such material. The editor(s) and publisher(s) also do not guarantee, warrant or endorse any product or service advertised in the journal nor do they guarantee any claim made by the manufacturer of such product or service.

***Subscription for individual and Institutions: ` 1000/- annual.
Distributed complimentary to Life members of IAPSM-GC***