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EDITORIAL

"Swachh Bharat", A challenge: 'Sanctity of sanitation'

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"Purity is internal and external cleanliness"

Bhagvad Gita, Chapter 18.

When Hon Prime Minister, Sri Narendra Modi, kick started the "SWACHHATA ABHIYAN" on 2nd October 2014, there were varying responses from various strata of public. Some viewed it as a political gimmick, and some commented that it amounts to loosing sight of your priorities as they felt that there were much more important things to be done.

We, as "keepers" of community health should look at the "Abhiyan" through our own glasses and should have our own views about it. We should look beyond the media pictures of celebrities with broom in hand. The symbolism behind the "you tube" videos and photographs.should not be lost. We must remind ourselves that one of our primary aims is to create awareness at grass root level about health and ways to preserve it.

Forgive the repetition, but we must constantly reiterate and remember the concept of Hygiene and public health importance of cleanliness, personal as well as environmental.

The depth and breadth of the issue could be fathomed by perusing a report by the World Health Organisation (WHO) which has shown specific diseases and injuries caused by environmental factors, which include unclean surroundings among others.The report indicates that as much as 24 per cent of global disease is caused by environmental exposures, which can be averted. The WHO, stressed that well-targeted interventions can prevent much of this environmental risk.[1]

More than 33 per cent of disease in children under the age of five is caused by environmental exposures. It has also been shown that preventing environmental risk could save as many as four million lives a year in children alone, mostly in developing countries. Indeed, by focusing on the environmental causes of disease and how they are influenced by environmental factors, the report breaks new grounds in understanding the interactions between environment and health. The study reflects how much death, illness and disability could be realistically avoided every year as a result of better environmental management. The report indicates that more than 13 million deaths annually are due to preventable environmental causes. Nearly one third of death and disease in the least developed regions is due to environmental causes. Over 40 per cent of deaths from malaria and an estimated 94 per cent of deaths from diarrhea, two of the world's biggest childhood killers, could be prevented through better environmental management.[2,3]

Measures which could be taken now to reduce this environmental disease burden include the promotion of safe household water storage and better hygienic measures; the use of cleaner and safer fuels; increased safety of the built environment, more judicious use and management of toxic substances in the home and workplace and better water resource management.[4]

Interfering with and/or ignoring the "nature" is one of the main causes of environmental damage and its catastrophic aftermaths. A slide-show, recently, in circulation, shows the Nature and what we made of it. The pictures speak for themselves and do not need captions !!!.

The "sanctity" of sanitation:

A little treatise into history of sanitation : "In Deuteronomy 23:9–14, we learn that human wastes were to be buried, away from human dwellings. Today we call this sanitary waste disposal, and its benefits are widely understood but not always practiced—especially in poverty-stricken areas. History is filled with epidemics of typhus, cholera and dysentery, linked to the careless dumping of human waste into streets and rivers, or feeding human waste to animals that are then eaten. Burying human waste breaks the life cycle of many parasitic organisms that spread disease. This simple practice is much more effective, and less expensive, than treating disease after it breaks out—and God put this principle in the Bible thousands of years before mankind's science understood its benefit! [5]"

access to clean water. Then when behaviour does not change, people are blamed for their own poor health. Other

How many of us remembered, let alone organizing related activities, that November 19th, is designated as "WORLD TOILET DAY"?.

Like "sex", "toilet" is taboo for many to talk about though both are integral part of human biology. If we shun the inhibitions and start talking about them openly, many sex crimes would not have occurred and many health problems related to lack of sanitation could have been solved.

Many diseases are spread from person to person by *germs* in faeces. Some experts believe health problems from poor sanitation can be prevented only if people change their personal habits, or "behaviours," about staying clean. But this idea often leads to failure because it does not consider the barriers that people face in their daily lives, such as poverty or lack of experts look for technical solutions, such as modern toilets that flush water. Technical solutions often come from

outside a community and may not fit the traditions or conditions of the community. Sometimes they create more problems than they solve!

The diseases caused from poor hygiene and sanitation will not be prevented if people are blamed for their own poor health, or if only technical solutions are promoted. To improve health in a lasting way, health promoters must listen carefully and work together with people in the community. When communities use hygiene and sanitation methods that fit their real needs and abilities, they will enjoy better health. Pouring concrete will not in itself solve India's problems. Leaders need also to confront the cultural reasons for bad sanitation.

Health is not always the main reason why people want to have clean toilets, better water supplies, or improved hygiene. There are other needs which include:

*** Privacy:** A toilet can be as simple as a deep hole in the ground. But the need for privacy makes it important for a toilet to have a good shelter. Making a door or enclosed entrance to a toilet, or building it away from where people usually walk, will make it nicer to use. The best shelters are simple and are built from local materials.

***Safety:** If a toilet is badly built it can be dangerous to use. And if it is far from the home, women may be in danger of sexual violence when they take care of their sanitation needs. For a toilet to be safe it must be well-built and in a safe place.

***Comfort:** People will more likely use a toilet with a comfortable place to sit or squat, and a shelter large enough to stand up and move around in. They will also be more likely to use a toilet that is close to the house and that gives protection from wind, rain, or snow.

***Cleanliness:** If a toilet is dirty and smelly, no one will want to use it — and it may spread disease. Sharing the task of cleaning or paying for cleaning with money or other benefits will help to ensure that toilets are kept clean.

***Respect:** A well-kept toilet brings status and respect to its owner. Often this is a very important reason for people to spend the money and effort to build one. Safe water for washing and drinking is also important for health. So are other kinds of cleanliness such as ensuring that women have a way to keep clean during monthly bleeding.

When planning or making changes in household or community sanitation, keep in mind that every sanitation method should do these things:

• **Prevent disease** – it should keep disease-carrying waste and insects away from people, both at the site of the toilet and in nearby homes.

• **Protect water supplies** – it should not pollute drinking water, surface water, or *groundwater*.

• **Protect the environment** – ecological sanitation can prevent pollution, return *nutrients* to the soil, and conserve water.

• **Be simple and affordable** – it should fit local people's needs and abilities, and be easy to clean and maintain.

• **Be culturally acceptable** – it should fit local customs, beliefs, and desires.

• **Work for everyone** – it should address the health needs of children and adults, of women and men.

Millenium Development Goals & Its linkage to sanitation and hygiene:

1. Eradicate extreme poverty

It was found that girls stay home for fetching water & don't go to school. Fetching water from long distances consumes lot of time & contributes to malnutrition and reduces productivity. OE Poor water, sanitation and hygiene are the principal reason of diarrhoeal diseases and waterborne disease.

2. Achieve Universal Primary Education

Poor water, sanitation and hygiene reduce enrolment levels, educational achievement and the quality of education, and keep girls out of school. So there is

need of safe, private sanitation and washing facilities in schools.

3. Promote Gender Equality & Women Empowerment

Due to lack of private sanitation facilities in schools, girls are severely affected .Boys are also affected but girls are more affected.

4. Reduce Child Mortality

Poor water, sanitation and hygiene are the primary reason of diarrhoea, which annually kills between 1.6 million and 2.5 million children under five – more than any other illness or disease. Improving water, sanitation and hygiene is the only way to reduce the burden of chronic diarrhoea morbidity in young children.

5. Improve maternal health

Safe delivery is impossible without an accessible source of water & basic hygiene knowledge and practices, especially hand washing.

6. Combat HIV/AIDS malaria & other diseases

Unclean sources of water and unhygienic environments lead to chronic diarrhoea, which is a major cause of mortality and morbidity in AIDS patients.

7. Ensure Environmental sustainability

The safe disposal of faeces, waste and the management of water resources are key to environmental sustainability.

8. Develop a global partnership for development

Broad partnerships among civil society and the public and private sectors can improve service delivery while ensuring equitable access to water and sanitation. [4]

In the contemporary context of the growing environmental challenge, leading to the mankind's worst ever global crisis, Gandhiji is becoming increasingly relevant in a rather unexpected area of ecology. In a way Gandhi was the world's early environmentalist – in vision and practice. It is high time that we absorb and assimilate the ideas of the Great man. Let us start "walking the talk" and lead from the front.

"*Mahatma Gandhi never compromised on cleanliness.*
He gave us freedom.
***We should give him a Clean India*"**
Tweet- Sri Narendra Modi, 2 October 2014.

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"I shall have to defend myself on one point, namely, sanitary conveniences. I learnt 35 years ago that a lavatory must be as clean as a drawing-room. I learnt this in the West. I believe that many rules about cleanliness in lavatories are observed more scrupulously in the West than in the East. There are some defects in their rules in this matter, which can be easily remedied. The cause of many of our diseases is the condition of our lavatories and our bad habit of disposing of excreta anywhere and everywhere. I, therefore, believe in the absolute necessity of a clean place for answering the call of nature and clean articles for use at the time, have accustomed myself to them and wish that all others should do the same. The habit has become so firm in me that even if I wished to change it I would not be able to do so. Nor do I wish to change it" - **Mahatma Gandhinji**

स्वच्छ भारत
एक कदम स्वच्छता की ओर

CME

Common errors made during presentation of papers at conferences.

Vihang Mazumdar, Professor and Head, Department of PSM, Medical College Baroda

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The purpose of presenting a paper at a conference is to showcase your research work and trying, in the process, to communicate its importance, clearly stating what you have found, concluded and hopefully to provoke the interest of audience to ask you questions, clarifications and sometimes give you an important feedback. You get good inputs from teachers from the other colleges as well which has to be taken in a very positive way. It is not a comment for your ability neither is it a comment on the ability of your teachers. It is a different perspective which has to be taken, of having additional view point on something. It is only an additional viewpoint which you are free to accept or reject. The components of a presentation are: a title, introduction, background, research question, aim/s and objective/s, research methodology in brief and results, conclusion/s you have come to, recommendation/s which you propose, give references and finally an acknowledgement of all the people who have contributed to your study. These are standard components of any presentation. This is true for even a research paper for publication.

Title Slide:

It should contain the title of research which should be the same as what you had sent with the abstract. Sometimes abstract and the final presentation have different title and content. Mention your name and faculty. Mention the name of the PG guide /co author, faculty, and name of department and location of your institute. The title must be in fewest possible words which can clearly describe the research work. That means, your title must give an idea to the audience what to expect. Sometimes, the title almost reads like the aim of the study, which it is not. Neither should it be too short otherwise it sounds more like a title of a textbook. "Malaria in Gujarat" can be a textbook title. It has to describe what you have studied about malaria. It should have independent variable, dependant variable and relationship which has been studied or presented in research. May be in term of context of place, study area can be added.

Introduction:

It is the background of the presentation. It's like a trailer of the study. It gives an idea to audience what they should expect in presentation, why this paper is important and the research unique and different. If similar study is done at several places there is no point of doing that research at all unless there are compelling scientific reasons for the disease to be different in your area. So, every presentation assumes that you are presenting something new, which was not known earlier or which was not understood earlier or you are presenting a different perspective of a disease which was not seen earlier. Ultimately, it must be reflected in your research question/s. Therefore, you start with background information of what is already known about the topic and you end with saying that with this background your study is tries to answer the question, which is not available in the literature or what has been reviewed by you.

Give the audience a context of what impact it would have. Start with broad idea, may be the definition of disease the context of the background knowledge about disease and narrow down

in the end to say that what is unique about the study and so what is the importance of studying that aspect of this disease.

Aim and Objectives:

There is a lot of confusion between aim and objective. They are said in same breath and practically as synonyms, but they are not. Aim is the overall statement of the nature of original research and one intends to do but the objectives are specific questions that one expects to answer in the research. What is the difference? Aim is overall statement but a good research being designed for and presented in a conference, cannot have more than one or if related may be 2 objectives. It cannot have 5 objectives. A common mistake many students make when they present something from their thesis at conferences. The entire aim and objectives are those of the thesis. In the thesis you could have 5 objectives because you are studying in greater depth and doing it over long period of time and presenting it over 50 to 100 pages.

Methodology:

It describes what the study design was and how it was conducted. It should give enough information on how data was collected and analysed. What software was used? The purpose of methodology is to allow audience to judge validity. That means, is the methodology is correct for the research question asked or the objective/s? Ideally, methodology should be able to convey enough information to a person to be able to replicate the study; sometimes conference format does not allow us to present all details.

The content would be what was the study design, participant group, how informed consent was taken. If more than one group, what was the method of assignment to groups and what was the intervention, what was the design to implement that intervention and provide information of the two groups i.e. control arm and test arm?

How the dependant variable was measured and what was was the planned comparision. Many times it happens that we start with some concept and during the study we find out that it is not turning out the way it was expected. You are not getting participants and suddenly study design changes half way. We make sure of congruence between methodology and result. We also do not go to great lengths to describe commonly used methods- just mention name.

Results:

Each of your tables must follow the logical sequence as laid down in your aim and objectives. A presentation can have only few tables when you are working with a single objective. One could be basic description and demographics, and if you have done cross tabulation or subgroup analyses then there may be additional tables and all of them relate to an objective because you cannot have tables and not have an objective for that. In fact, when you write a research proposal you must make dummy tables and identify to which objective it would relate to. Also, if you are looking at an objective then what are data you would require for analyses to conclude what your objective wants you to conclude and therefore you must start from the end. I will have to do a particular statistical analysis and for which I will need particular data and which I will get from this particular table; and to generate this particular table I need data field/s in my pro forma. So, it always reverse, we don't make pro forma first and then think about the table later.

Discussion:

A common mistake people make in discussion is describing tables in words. Discussion is what you want to say about the research you have done. These are *your* findings. Results are what *you* have found. What you have to try to convey in discussion is- *so what!* Why is it important? How does it compare with

previous data or other studies and how my research is different from the others? Your discussion should give *your* interpretation of *your* data. Did you find something you did not expect? Your idea is to keep audience interested in what you saying. The discussion is basically presenting your principle finding/s with scientific arguments.

Scientific argument does not mean that nobody can challenge it. It is based on your logic and your knowledge. It is up to somebody else to challenge it, just as your research challenges previous knowledge on the topic, which is what research is all about.

Conclusion:

It summarises the results of research. It should be very precise and defined. That means, you cannot conclude anything which is not part of your objective/s and methodology proposed to find. If you have not included some population groups then you cannot conclude anything about them.

You have done a study in your OPD and you draw conclusions about prevalence of a disease in the city in which your hospital is – is another example. So basically, your conclusion must answer, your objectives, your research questions which you have raised.

Recommendation:

This is most important; your recommendation can not introduce new ideas but rely only on evidence. Recommendations are only possible in an interventional study. But your recommendation can be- your descriptive study shows that there are factor/s associated and propose further research to be done in that area to conclude whether these factor are really responsible or not.

Most common mistake is to make a recommendation on a factor which is never part of your research. For example, in a descriptive study on prevalence of malnutrition among slum children, we say that we found that malnutrition was very common in slum children that we studied and our recommendation is we should increase health education of all women and teach them IYCF or we should increase the quantity of supplementary nutrition. You have not studied this in your research. How can you say that health education will make difference? Unless you actually study health education as intervention- that initially we did a research we found so many malnourished children. Half of them were considered as controls and they were allowed to get education from anganwadi worker and in the other group we got the mothers together and gave them education and then we concluded that health education made a difference for the better. Then you can say that health education is recommended to be given to mothers. You cannot make sweeping statements. Most of recommendations you see in conferences- that poverty should be reduced, education should be increased, and female literacy should be increased! You have not studied these factors in your research at all but you are making a sweeping statement. We must be very careful in making recommendations. You cannot advice people to do this or that without studying what are the outcomes or impact of that particular intervention. It can have ideas for further research or studies can be advocated.

References:

Many people do not clearly understand the different between reference and bibliography. Reference refers to all articles, books, internet sites which you have used in your research and have cited somewhere in the text. Bibliography refers to all the articles, books, journal, literature which you referred to improve your knowledge of subject. So, if you want audience to have a better understanding of subject or topic then you may use bibliography. For example I read textbook of PARK or HARRISON but if I have not quoted Harrison in my presentation then I

don't use Harrison in my reference list but Harrison is my background search which I have done on that topic therefore Harrison becomes part of my bibliography.

It is a very important aspect of research that there is no shame in saying that I started with a research question but that it turned out to be not fruitful. The favour you are doing others by presenting that is, at least others may not make the same mistake

Lots of research done by students does not have much time and money spent, therefore, most of the research have some limitations which need to be mentioned. Otherwise, audience concludes what you have not included as a methodological lapse. For example, you have not mentioned non inclusion tribal population as a limitation. The audience will realise that the study does not contain anything about tribal population and may consider it as a sampling mistake. If they feel that the findings could be different in tribal population they are most welcome to study it in tribal population and compare the results with your study.

Presentation techniques:

You often prepare slides that allow you to read out entire presentation from the power point which is absolutely wrong. Your presentation should not contain every single word you are going to speak while making the presentation. Your slides should only have bullet points. If you cannot remember, please write on a paper what you wish to speak in every slide or memorize it. If you do not, half the time people look at the screen and not at your face. Preferably, add only one bullet point at a time on your slide so that focus of the audience remains on single point which are you speaking about, otherwise they read ahead of you when you are speaking about previous point .

Use a good font size that is legible to someone at the back of the hall. Main point and sub point have to be different font size. If you use complicated font, it looks good on the computer screen but not at the time of presentation. When choosing colours of fonts, make sure that they make good contrast with background. These are only pointers. You have to make your own choice and it comes with experience, looking and attending more presentations to get more idea about what looks good. While attending conferences, always pay attention to these details and not to the content of the presentation alone.

Each presenter must present in a way that topic belongs to him/her-someone who is very comfortable with the topic; a person who has done the research and knows the subject and the presentation. Practice for timing, for way you speak, for pronunciation, for English and even if you have to, practice in front of the mirror to see how you look when you make the presentation. Be enthusiastic about the research which you have done. Do not make it look as if you are presenting a paper because that was the only way to get permission to attend the conference Make eye contact with your audience.

Questions:

How do you deal with questions? If you have the answer please share the answer with the audience, if you don't, then don't bluff. Be honest- I actually don't know the answer to that, but I will try and try to find the answer and get back to you" or if your guide is present say "I request Dr XYZ to help answer this question or you may say could we discuss this after presentation is over because I can't explain it in two minutes which I have.I always say that research is like cooking. No amount of reading books can replace doing it yourself and learning from your mistakes. I have written this article from the presentation I made at Booster 2014 on a request. I hope that I have added to your knowledge with what I have learnt from my teachers over the years and continue to do so from my peers and *students...*

INITIATIVE

Evidence Based Education System (EBES) - Sumandeep Vidyapeeth

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Today we live in an age of evidence. The experiential and the textual, if not backed by the evidential, will not cut ice with the scientific community. Hence, whether it be the teaching or evaluation process or it be research, the element of evidence needs to be integral to the entire process. Of late, besides the teaching and evaluation methodologies, research in medical and health sciences is getting lit of attention and emphasis. The Medical Council of India, (the regulatory body of medical education) and UGC which regulates overall University education system in the country, are focusing on research. They are expecting more high quality research from Indian researchers. To give more impetus to this facet of research, the MCI has stressed enhanced promotional policy for faculty engaging in research. Similarly they expect more research from young postgraduates. At world level, the voluminous research evidence collected which is helping to develop treatment protocol and policy at local and national levels.

This process of evaluation of 'research' which was started by Dr. Cochrane and carried forward by various academicians became a revolution after Dr Gordon Gyuat, named it; 'Evidence Based Medicine', and Dr Sacket, comprehensively defined it. Evidence Based Medicine (EBM) means the best use of current evidence, in decision making in medicine, with expertise of experienced physicians, keeping in mind the patient's values and expectations. This led to more scrupulous scrutiny of research and publications. Soon evidence based practices evolved in health care specialties, because of their sound scientific principles and patient centric characteristics, and became powerful tools for both patients and practitioners. Simultaneously, education sector adopted this methodology, and defined it as "an approach to all aspects of education from policy making to class room teaching, to practice in life, where methods used are based on significant and reliable evidence derived from experiments".

Sumandeep Vidyapeeth took a conscious decision at an early stage, to make Evidence Based Education System (EBES) as the central theme of it's education system. It envisaged to incorporate all the essential elements of Evidence based Medicine and Evidence Based Practice, in the teaching learning process, in all constituent institutions like medical college, dental college, physiotherapy college, nursing college, pharmacy college and management college.

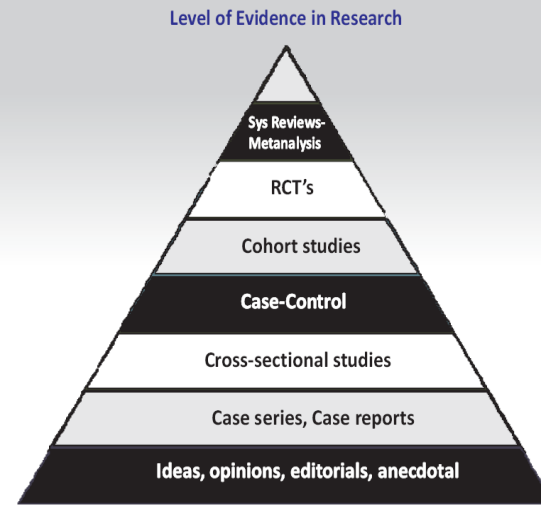
For authentic Evidence based practice, the practitioners ought to have very good evidence searching skills, which can be best transmitted by structured and integrated teaching with the main curricula. In its absence a health care practitioner would either be forced to accept whatever is presented in the name of evidence, or be wasting enormous amount of time searching the real evidence from the volume of evidence emerging almost on a daily basis. More importantly, this knowledge of best evidence is essential in these times of increasing consumer interest and involvement. A practitioner has not only to answer the questions posed by the consumer, but also to involve them in decision making. A failure to do so can lead to dire consequences, many a times resulting in

prolonged litigation and monetary loss. Further, an interest in search invariably would result in an interest in research, leading to a life long habit of looking at local and National problems in the light of emerging International guidelines and attempting to formulate most suitable management protocols catering to local needs. We felt that blossoming professionals exposed very early on to evidence related teaching would grow to become robust evidence based practitioners, who by training would be conscientious, ethical, scientific and patient –centric. This would also lead to control on misuse of diagnostic tools and use of unnecessary drugs. With these objectives we introduced evidence based education system in all our constituent institutions.

What is Evidence?

Evidence means the observation made with purpose or research out come with purpose. These observations or researches can be part of animal studies, observational studies, analytic studies or clinical trials. All studies generate evidences, but all are not equally valid and relevant for health care practices. EBM (evidence based medicine), is the process of checking the validity and relevancy of the available evidences. Thus research method is the key process of generation of evidences. How to generate quality evidence is the key question for EBM? The researchers need to ask as to what are the evidences likely to be generated out of the research? This would fully depend on the research methodology. The researchers should have knowledge of selecting best research methods for best evidence generation. Such quality evidences will help the health promotion of patient and community. For generating higher level of evidences through systematic review & meta analysis, available mid level and lower level evidences can be used as building blocks.

Level of Evidence –



All researchers should have knowledge of this level of evidence pyramid. Researchers should understand the level of evidence they would generate to add to the knowledge pool. This will gradually lead to higher levels of evidence. Hence it is high time to incorporate level of evidence, generation of evidence and evaluation of available evidence, in the teaching process in medical sciences. This understanding and belief in it, prompted us to initiate Evidence Based Education System in Indian context.

Process and journey of EBES at Suman Vidyapith –

When the idea of instituting innovative unique Evidence Based Education System (EBES) was conceived, an advisory board with academicians from India and abroad was constituted. This board after going through the various processes being undertaken in different parts of the world came up with a roadmap for this institution. A three phase strategy was drawn, entailing training of faculty, identification and placement of infrastructure, and formulation of EBM curriculum with subsequent integration with main curriculum. The entire blueprint was placed before the highest body for ratification and thereafter implementation was started.

Besides sending its faculty for training in EBM at various conferences

and workshops, it organized training of other faculty by these trained teachers. This group of trained teachers were given the responsibility to oversee all the training activities and were asked to ensure implementation in all aspects.

The phase: I of EBES implementation included the soft skills development of all faculty of university, infrastructure creation for implementation and focusing on curriculum for this new innovative system. The curriculum relating to teaching of evidence based skills was developed and this was merged with the main curricula within the parameters of the stipulation by statutory councils. In the phase-2, training of undergraduates and orientation of postgraduates was started. In this system, the undergraduates are taught evidence searching skills, basic research methodologies, quality evidence generation skills and essentials of clinical epidemiology. The subject Evidence Based Medicine is taught throughout course of MBBS. As per the elective EBM curricula we teach 16 hours of this subject in addition to MCI curriculum. Evidence based project work is carried out by undergraduates in each professional year. Assessment of evidence based lessons is carried out along with the University examinations. The postgraduates are given orientation relating to evidence searching skills in the beginning of their course. In the integration process, every undergraduate theory class has an element of evidence in the PICO format (problem or question, intervention, comparison and outcome), relating to some aspect of the text. Every practical and clinical session has evidence based assignments. In evaluation, the university has adopted an innovative Continuous Cumulative Assessment System (CCES) in form of MCQ's, at the end of every theory class and during practical & clinical classes, the students are evaluated based on various parameters like attendance, active participation in discussion, task completion, history taking, behaviour with patients and other parameters on a log book, on a daily basis. These marks contribute the internal assessment marks. The undergraduates are also encouraged to undertake short community oriented, hypothesis based research like Evidence Generating Community Health Project (EviGenCHIP). The postgraduates have regular evidence based journal clubs with emphasis on critical appraisal. There are frequent sessions of role modelling in OPD's , wards and ICU's, wherein consultants ask questions relevant to a problem and then demonstrate on ground how to search and apply the best evidence. Simultaneously we also insist on the physician experience and patient value system. While evaluating the best evidence, the practitioners are advised not to lose sight of patient's values and local situations.

To sensitize the health care fraternity to the emerging need of evidence related activities, the university organized the 1st International conference on evidence based medicine in 2011, to understand and simultaneously showcase all that was happening in this field. It hosted the 2nd International conference in 2014, which was attended by Dr Gordon Gyuatt (the person who coined the term EBM) and other luminaries in the field. It was indeed gratifying to have the endorsement of our system by the world leaders in the field.

Our innovative EBES has been implemented across the spectrum in all the six constituent institutions & it is an ongoing process. The core EBES team holds regular meetings to take stock of the entire process and suggest remedial measures. The management plays a very proactive role in the entire process.

A number of projects to evaluate the effectiveness and impact of this system of education have been undertaken and are in various stages of completion. We highlight here some of the studies which are at under publication level.

'Attitude and perception of faculty towards teaching evidence based medicine to pre- clinical and para-clinical medical students', was a study done by Bhavita et al. It was a descriptive self structured questionnaire based cross sectional study amongst teachers in our university engaged in teaching through this system. The response rate of the study was 70%. Almost 87% of the respondents believed that teaching evidence based medicine was a welcome development and 80% believed that it would help students in their future professional careers. About 87% were of the opinion that it improved literature and research searching skills. Of these faculty 77% had attended all the EBM workshops organized by the institution in respect and 83% wanted to learn more about it.

In another study "the changing face of medical education : the impact and effectiveness of evidence generating community health project (EviGenCHIP) in medical students" by Dr Trushna Shah et al the students perception and learning effectiveness towards such projects undertaken at our institute were evaluated. It was a self structured questionnaire based descriptive cross sectional study, in which 100 students of 3rd MBBS (Part 2) participated. 90.9% believed that research in medical field was important. However 40% believed that there was no need for medical students to know research methodology. About 56% believed that such projects sensitized them to protocol write up, 40.9% believed it helped them search the literature, 45% felt it made them understand structures questions, improved data collection and capacity to analyse, while 52.5% believed it improved their report writing.

Yet another study "evidence generating community health project (EviGenCHIP) : faculty perception and its effectiveness, outcome and implementation" by Dr Gitanjali et al, tried to get the response of faculty towards 24 community based short projects undertaken by 120 students of 3rd MBBS(part 1). The students were exposed to 2 days of workshop then asked to do the projects in groups and make presentation before a panel of faculty. The response rate of faculty was 83.3%. . Almost 80% believed in the importance of medical research and 70% agreed that such workshops improved research concepts in students. About 73% agreed that data collection by students was effective and through such a method students learnt team work and data analysis. They however felt that report writing and presentation skills need to improve.

Overall, both the student and the teaching community are very enthusiastic about the entire process. More and more students have started participating in interactive sessions, falling back on learning resources and evidence databases for completing their evidence based assignments, and showing eagerness for short research projects.

We hope that the initiative taken by the Sumandeep Vidyapeeth will be a beacon in the field oh health care education in India. As we learn from our endeavours and keep the process of evolution dynamic, we keep ourselves open to comments and suggestions from the fraternity. It is a journey in which we happily invite fellow travelers.

INITIATIVE

Learning Community Medicine through Community exposure; a proactive approach for UG teaching at GMERS Medical College, Valsad

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Based on past experience & future demand, we have planned to adopt certain innovations in UG curriculum with flexibility to change dynamically to get maximum benefit of the efforts for community as well as for the students.
Presently, there is 3rd batch of undergraduate students in our college. At this primitive stage of development of college, our department has designed an action plan for these students for learning Community Medicine hands on.

(1) One village to one student

We have around 465 villages in Valsad district & 450 students currently in the college. So at present we have assigned one village to one student. The students will work in a group of 4 to 5 for a group of 4 to 5 villages. The assignment of villages will be from 1st MBBS to Internship. (For some students it could be up to life time!) As the additional batch of students get admission, they will join their senior students as per the rotations. The Dang district will be added at an appropriate juncture. We have a plan to create street health guide at the rate of 4 per 20 houses/100 population. Also the approximate ratio will be applied to institutes like school, college, industry, Government departments other than health, associations etc. So approximately one student need to train around 50 to 60 volunteers in a span of 2 to 3 years.

The task for volunteer is to devote around 1 - 2 hrs of learning & 1-2 hours of sharing with 20 households or with members of institutions as the case may be. .

The information will be given by pamphlets, booklets, mobile library cum exhibitions, sms, whats app, email etc to support direct skill based training & education programmes.

Incremental learning process will be adopted at all levels with additional inputs of situation oriented modular training. For capacity building of students the training will be divided into two parts. (a) general, (b) specific to situation.

The overall activities at village level will include facilitation in implementation of National Health Programmes, Nutrition, sanitation, prevention of addiction & de addiction, School health, RCH activities etc.
All students will record the progress in Village files which will be available in village for the purpose of common use for all working for that village. Web based reporting, interactions, information exchange; research initiatives etc will be developed in such a way that other medical colleges as well as students can use the same platform.

Common platform will be used to involve Government functionaries, voluntary organizations, Self help groups, students of other colleges – like Social work, Home science, engineering etc in their related filed.

(2) Use of family folder by medical students for 5 and half years

From the first MBBS each student will be assigned 2 families from RHTC/UHTC & they will use the family folder which is having details of each family member. As on now 900 families are being allotted to the 450 students. Students will follow up the families till the end of their education. Students if new batches will join their seniors as per their turn.

(3) Virtual Museum & Health Exhibition

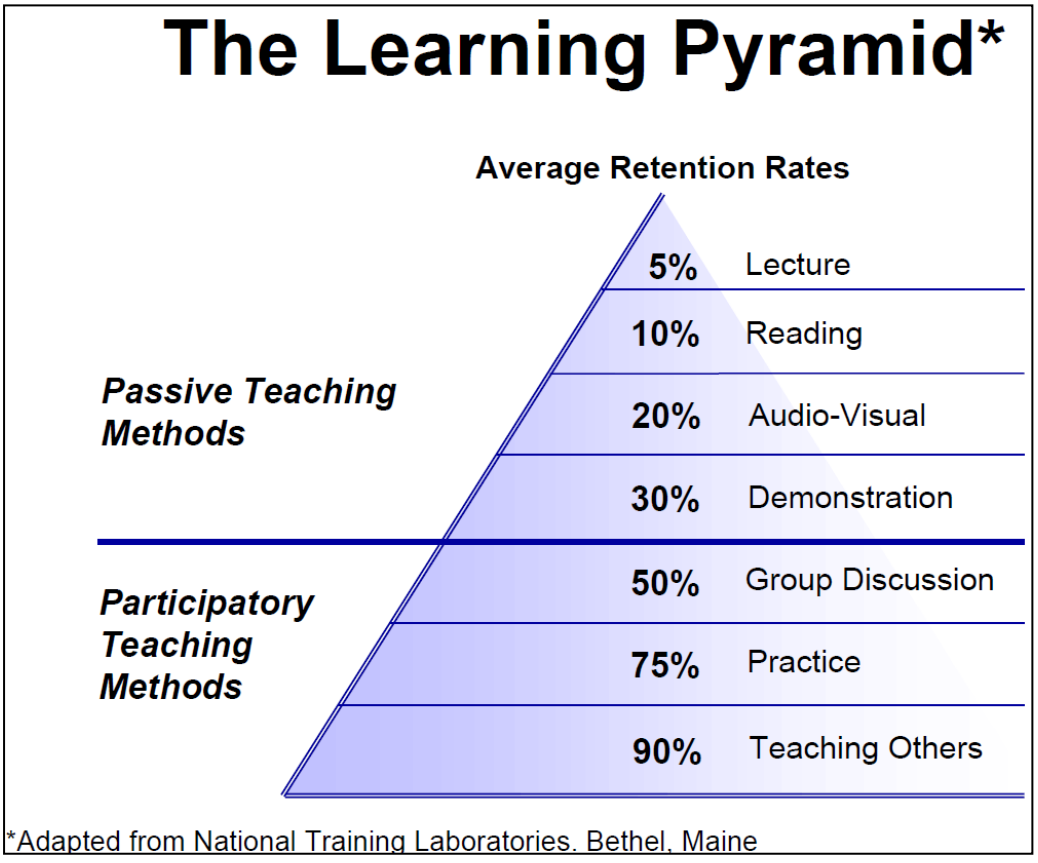
Best of the State & Nation will be shown in our museum in form of video & also we will have website with 108 sections related to health topics. Students will be actively encouraged to participate & add creatively to modify the content.

(4) Holistic Health Camps

Students will be involved in Holistic health camp which will have educational components, screening components, treatment facility as well as inbuilt follow up mechanism with two way referral systems.

(5) Preventive OPD and Preventive Wards

Students will be posted at preventive OPD & Preventive wards. While OPDs are there at Main hospital, UHTC & RHTC; preventive wards will only be there at RHTC in beginning. Life style modification with integrated approach will be taught to patients for Primary, Secondary & tertiary prevention at OPD level. Indoor will be utilized only for specific conditions like under nutrition, Obesity, Diabetes, Hypertension, Hypothyroidism, joint pain etc. Modern concept of scientific study of Alternative & Complimentary medicines will be integrated with research zeal.



ORIGINAL ARTICLE

The acceptance of H1N1 Influenza A vaccine by resident doctors in a tertiary care hospital of Mumbai.

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Abstract:
Background: Following the confirmation by the World Health Organization, that H1N1 influenza virus had reached pandemic proportions; rapid implementation of large-scale immunization programs was considered essential to reduce the burden of disease.
Method: A tertiary care hospital based cross sectional study of six months duration was undertaken with the objective to assess the acceptability of influenza A (H1N1) vaccination, the factors influencing it and to assess outcome of the H1N1 immunization program for the resident doctors. Study participants were all resident doctors working in all departments of the tertiary care hospital of Mumbai. Method of sampling was universal sampling. All the 317 resident doctors working in tertiary care hospital were interviewed by personal interview using a pretested semi-structured questionnaire after obtaining their informed consent. The questionnaire included information pertaining to the H1N1 pandemic and its vaccine. Privacy and confidentiality was maintained. Data entry and statistical analysis was done using licensed SPSS version 17. Frequency distributions were calculated for all the variables.
Results and conclusions: Only 5 (1.75%) of study participants were not knowing about the availability of vaccine. There were no accessibility barriers for receiving the vaccine. There was a poor knowledge regarding H1N1 Influenza A vaccine amongst the doctors' still 152 (47.94%) doctors felt the need of vaccine. Only 4 (1.3%) doctors have taken the vaccine. Fear of side effect was the leading cause for non-acceptance of vaccine followed by no lifelong immunity and questionable efficacy of the vaccine.
Keywords: swine flu, H1N1 vaccine, pandemic, Influenza A.

Introduction:

Influenza is a major threat to public health. On June 1st, 2009, the World Health Organization (WHO) declared the H1N1flu a pandemic [1]. By 20th December 2009, at least 11 516 deaths in 208 countries had been attributed to laboratory confirmed 'H1N1 Influenza A' [2]. According to recommendations from WHO all countries should immunize their healthcare workers as a first priority in order to protect the vital health infrastructure [3].

In a pandemic there are many uncertainties, but without vaccination many healthcare personnel (including resident doctors) will become infected. Although this will be a mild illness for most, deaths in healthy young adults have occurred. Immunization of health care personnel (HCP) is a matter of patient safety and is necessary to significantly reduce health care associated influenza infections [4].Vaccination may also help to keep the healthcare system operating at maximum capacity throughout the pandemic.

A particular concern for recipients may be the association of the 1976-1977 H1N1 Influenza A vaccine with Guillain-Barré syndrome, with an attributable risk of around 12 cases per million vaccinations[5]. This rare event has decreased greatly during the past 15 years (to around 0.7 reports/million vaccinations) [6]. Indeed, recent research

suggests no significant increase in the risk of this syndrome after vaccination, but a greater risk after natural influenza infection. Thus, even if the vaccine were associated with a small increase in the risk of the syndrome, this would probably be outweighed by a protective effect against flu related Guillain-Barré syndrome [7].

However, as with all new drugs, post-marketing surveillance (including for Guillain-Barré syndrome) is the only way to identify rare adverse events. Immunization of health care personnel is a matter of patient safety and necessary to reduce health care–associated influenza infections.

In Mumbai after the declaration of Swine flu as pandemic, Public Health Department of Municipal Corporation of Greater Mumbai designated Preventive & Social Medicine department (PSM) of KEM (King's Edward Memorial) Hospital as a nodal department for carrying out swine flu vaccination amongst health care professionals. In response to this, the department of Preventive and Social Medicine prepared a standardized plan to immunize resident doctors. Under this plan all the faculties and department were informed through notice about the availability and accessibility of vaccine. Simultaneously posters were displayed all over the hospital campus to disseminate information about campaign. This vaccination campaign was voluntary. It was expected that 100% immunization would take place amongst them but the outcome was not according to the expectations. Hence, the current study was performed to assess the acceptability of influenza A(H1N1) vaccination, the factors influencing it and to assess outcome of the H1N1 influenza A immunization program for the resident doctors.

Methods:

A cross sectional descriptive study was conducted in a tertiary care hospital for a period of 4 months from October - 2010 to January 2011. Universal sampling method was used.

Inclusion criteria: Study participants were all the resident doctors working in the tertiary care hospital of Mumbai of all the departments.

Exclusion criteria: Those residents who did not gave consent for the study or were not available for the interview during the study duration. There were total 354 residents working in the tertiary care hospital at the time of conduction of study but only 317 were available for the interview. So, final sample size was 317.

Instrument: Each of the resident doctors was interviewed by personal interview using a pretested semi structured questionnaire after explaining them aim of the study. The questionnaire was validated based on the findings of pilot study which was conducted amongst 40 doctors. The questionnaire included information pertaining to accessibility and availability of the H1N1 vaccine in the hospital, knowledge regarding the vaccine (route of administration, dosage, type of vaccine, side effects and duration of protection), perception for the need of vaccine, reasons for the acceptance and non-acceptance of the vaccine.

Operationally in the study, the term health care personnel (HCP) is defined broadly as all persons working in health care settings who have the potential for exposure to any type of infectious materials.

Ethical considerations: Ethical clearance was obtained from the Institutional Ethics committee CARE (Committee for Academic Research Ethics) before starting the study. Informed consent was obtained from the study participants. Privacy and confidentiality was maintained.

Data analysis: Statistical analysis was done using licensed SPSS version 17. Frequency distributions were calculated for all the variables.

Results:

Out of the 317 resident doctors, 194 (61.20%) were male and 123 (38.80%) were female. Majority 273 (86.12%) of the residents were between 25 – 30 years age group. 146 (46.06%) residents doctors were from the pre and para-clinical departments and 171 (53.94%) were from the clinical and super specialty departments. Out of the 317, 312(98.42%) were aware about the availability of vaccine in the hospital.

100% study participants agreed that there was no accessibility barrier to take the vaccine in the hospital.

Table 1 depicts that in spite of no availability and accessibility barrier only 4(1.3%) of the resident doctors has taken the vaccine. Thus, the outcome of this immunization initiative was poor as most of the resident doctors were reluctant to take the vaccine.

Table 1: H1N1 vaccination status of doctors

H1N1 vaccination status of doctors	No. of resident doctors	Percentage (%)
No	313	98.7
Yes	4	1.3
Total	317	100.0

Reasons for non-acceptance, 177 (56.55%) residents cited fear of side effect, followed by no lifelong immunity, questionable efficacy and peer pressure (Table 2).

Table 2: Reasons for non-acceptance of H1 N1 vaccine

Reasons for non-acceptance by the doctors	Number of resident doctors (N = 313)	Percentage (%)
Fear of side effect	177	56.55
No lifelong immunity	74	23.64
Questionable efficacy	48	15.33
Peer pressure	44	14.05
Tamiflu drug is available	38	12.14
Technically not required	36	11.50
All are not vulnerable	24	7.67
Disease can be easily treated	4	1.27

Table 3: Knowledge about H1N1 vaccine amongst doctors

About the Vaccine	Knowledge of the doctors	Number (%)
Side effects	Myalgia, fever, redness, swelling	74 (23.34)
	Neurological complications, GBS	84 (26.49)
	Allergic reaction	21 (6.62)
	Don't know	138 (43.53)
Duration of Protection	6 months	63 (19.87)
	1 yrs-2 yrs	67 (21.13)
	Don't know	187 (58.99)
Dosage (0.5ml)	Correct	81 (62.14)
	Incorrect	39 (12.30)
	Don't know	197 (62.14)
Route of Administration	Intramuscular / Nasal	178 (56.15)
	Don't know	139 (43.84)
Type of vaccine (Split virus, inactivated monovalent)	Correct	2 (0.63)
	Incorrect	53 (16.71)
	Don't know	262 (82.65)

Table 3 depicts that 138 (43.53%) doctors were not aware about any side effects of the vaccine. When enquired about the duration of protection offered by the vaccine 63 (19.87%) doctors reported correctly, as 6 months while remaining 254 (80.13%) were either not knowing it at all or knowing it incorrectly.

Table 4: Perception about need of vaccine during the pandemic of H1N1

Need of the vaccine	Number of resident doctors [N = 317] (%)
Needed	152 (47.94)
Not needed	135 (42.59)
Don't know	30 (9.46)

Table 4 shows that 152 (47.94%) of resident doctors felt that the vaccine is needed for health care personnel but despite of that only 4 (2.63%) have actually taken the vaccine.

When asked that who should take H1N1 vaccine, 115 (75.65%) doctors said health care personnel while 37 (24.34%) doctors said it should be restricted to pregnant women / extremes of age / immuno-compromised people.

Discussion:

In the present study, only 4 (1.3%) resident doctors had taken vaccine in the tertiary care centre. A study conducted in University of Athens, School of Medicine, Greece a total of 74 (8%) out of 922 medical students reported to have received the H1N1 vaccine [8]. Similarly study carried out amongst Greek healthcare workers revealed a low acceptance (17%) of vaccination against the 2009 pandemic influenza [9]. The uptake of pandemic influenza vaccine in people at risk (including pregnant women) was 38% in England, 52-55% in Scotland and 42% in Wales [10]. Immunization rates of 80% or higher are essential for providing the "herd immunity" needed to have a significant impact on transmission of influenza by health care personnel in medical settings, but overall immunization rates for health care personnel remain near 40% in US [4]. Mandatory influenza immunization programs for health care personnel will benefit the health of employees, their patients and members of the community [11]. There are also evidences that the willingness of European healthcare workers to be vaccinated with seasonal influenza vaccine is poor, ranging from 14% in the United Kingdom to 48% in France [12].

The American Academy Of Pediatrics has suggested in their study that sustainability of herd immunity in health care settings can be achieved only through a mandated policy. Despite many organizations' efforts to improve influenza immunization rates with the use of voluntary campaigns, influenza vaccine coverage among United States health care personnel remains unacceptably low at a rate of 44.4% between 2006 and 2007[4], and even fewer receiving both seasonal and H1N1 vaccines during the 2009 –2010 season. Voluntary programs have proven to be ineffective, in part because health care personnel have misconceptions regarding the risks and benefits of the vaccines.

In the current study the main reasons for non acceptance of the vaccine was found to be fear of side effect in 177 (56.55%) residents. It was followed by no lifelong immunity, questionable efficacy and peer pressure. The Joint Commission of US found that reasons health care personnel decline immunization include fear of getting influenza-like illness from the vaccine, fear of adverse effects, perceived low or no likelihood of developing influenza disease, and concern about exposure to thimerosal, among others[13]. In the study amongst Greek medical students, the most common cause (387/848, 46%) for non-acceptance was mild course of the influenza, while the concern regarding the possible long-term adverse events of the vaccine was reported as a cause in 44% (370/848). Some students had doubts about the vaccine's effectiveness (258/848, 30%) and others were worried about the short-term adverse events of the vaccination (197/848, 23%). In total, 392 (46%) participants appeared worried about possible adverse events [8]. In the study amongst Greek health care personnel, the main reason for refusal of vaccination was fear of side effects, which was stronger in those who received

information on the safety of the vaccine mainly from mass media[9].

In recent studies concerning the attitudes and behavior towards H1N1 vaccine, the main reasons given for non acceptance were likely to have been: the mild perception of pandemic severity, "I'm not at risk of serious illness", the fear over vaccine safety, "I am very sensitive to these vaccines", and vaccination inefficacy [14, 15, 16].

It is well known that health care personnel can transmit influenza virus to patients and coworkers before the onset of symptoms or during symptomatic illness [17]. Mandatory influenza immunization of health care personnel is a matter of patient safety. The risk of transmission is augmented, because many health care personnel work when they are mildly symptomatic or ill, which puts their co-workers and patients at risk [18].

On February 5, 2011 United States generates a cost burden estimated to be $87 billion per year [19]. The bulk of this cost is a result of work absenteeism and premature mortality. Presenteeism or working while symptomatic, also contributes a significant amount to the cost burden and decline in productivity associated with influenza infection. Influenza B virus infection in healthy adults impairs the ability to perform certain tasks to a level similar to that seen with sleep deprivation or alcohol consumption [20]. In addition, healthy adults who receive the influenza immunization have 25% fewer upper respiratory infections, 44% fewer physician visits, and 43% fewer sick days off, saving an average of $47 per person annually and highlighting the cost-effectiveness of immunization against influenza [21].

The study had the limitation in the form that it was a uni-centric study and thus findings of the study are not generalizable.

Conclusion:

The low acceptance rate of the pandemic vaccine among healthcare workers is alarming given that they are used as an example for their patients and the public. Vaccination is important in order to keep the healthcare system operating at maximum capacity during a pandemic. Policy makers in India, and may be in other countries in world could consider our findings in order to improve the vaccination strategy for health care workers in future vaccination campaigns. A lot is expected from the Government Public Health Department and other agencies involved in health care delivery mechanisms regarding proper communication and education of the health care workers and of the general public on this issue as majority of the technical features of the vaccine were not adequately known by the resident doctors. The knowledge of doctors about the various aspects of swine flu vaccine should be upgraded. It is evident that the acceptance of H1N1 vaccine amongst the resident doctors will require persuasive efforts by the health care organizations; otherwise the success of this immunization program in future also will remain questionable.

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Original article

Assessment Of Malnourishment In Elderly Of Rural Punjab

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Abstract:

Background: Nutrition of the elderly affects immunity and functional ability, it is an important component of elderly care that warrants further attention. The few studies that have been done, show that more than 50% of the older population is under weight and more than 90% have an energy intake below the recommended allowance.

Aims: 1. To assess the nutritional status elderly using Body Mass Index & 2. Identify malnourishment in elderly population.

Settings and Design: Cross sectional study

Materials and Methods: This study was conducted in two villages of Kalo Majra block, district Patiala, Punjab. All the information was collected from selected subjects by interview technique. Clinical examination and anthropometric measurements were done and BMI was computed using standard equation.

Results and Conclusions: Majority of participants in the study i.e. 51.9% belonged to the age group of 60- 64 yrs. The present study showed a high percentage (63.1%) of illiteracy out of which, 30.5% were males and 69.5% were females. 86.9% of the elderly were found to be suffering from anemia. BMI was found to be higher in women than men (i.e. 21.3 ± 1.94 & 19.3± 5.5 respectively).

Key Words: Nutrition, Elderly, BMI, Aging, CED

Introduction

Demographic aging is a global phenomenon. Aging is accompanied by a variety of physiological, psychological, economic and social changes that compromise nutritional status and/or affect nutritional requirements.[1]

Globally it is estimated that there are 605 million people aged above 65 yrs. WHO has predicted that aging population will present new challenges to the health care.[2]

India has acquired the label of an aging nation with 7.7% of its population being more than 60 yrs old. There has been a sharp increase in the population of elderly in India due to demographic transition. This is attributed to decrease in mortality arising from longer life span of individuals and improvements in public health and medical services leading to control of infections diseases.[3]

In India, the national health policy focuses on maternal health, child health and communicable diseases, the health status of the elderly has not been given due consideration.[4] A large number of elderly in India, are residing in rural areas and about 30% are below poverty line i.e in a vulnerable situation without adequate food.[5]

The older population faces a number of problems ranging from absence of ensured and sufficient income to support themselves and their dependents, ill health, absence of social security, loss of social role, recognition and non-availability of opportunities for creative use of time.[5]

Since nutrition of the elderly affects immunity and functional ability, it is an important component of elderly care that warrants further attention. The few studies that have been done, show that more than 50% of the older population is under weight[6] and more than 90% have an energy intake below the recommended allowance.[7] Low micro nutritional status is

often reported in this population which is associated with increased morbidity and mortality rates. In addition micro nutrients play an essential role in the function of the immune system and deficiencies in them influence the rate, duration and severity of infections.[8] Older adults are at greater risk for nutritional deficiencies than younger adults due to physiological changes associated with aging, acute and chronic illness, financial and social status and functional decline.[9,10]

Although adult nutritional status can be evaluated by many ways Body Mass Index (BMI) is most widely used as it is inexpensive, non – invasive, safe and suitable for large scale surveys.[11] A BMI < 18.5 kg / m^2 is widely used as a practical measure of chronic energy deficiency (CED).

The rising number of elderly worldwide makes it essential and challenging to address their health and nutritional needs. The present study was conducted to assess the nutritional status of elderly through BMI in rural Punjab, India.

Methodology

This study was conducted in two villages of Kalo Majra block, district Patiala, Punjab. The population of these two villages is approximately 10,651 out of which 676 were above the age of 60 years. Ethical committee approval was taken before conducting the study. A predesigned and pretested Performa was used to collect all the relevant information regarding general demography, Socio economic status, family structure, personal habits, co-morbid diseases, their health needs and expectations. Economic independence was taken as those who were earning or their spouse was earning or those who were getting pension and did not have to ask their children for day to day expenditure

The data was collected by house to house visit by trained team members consisting of a doctor, MSW, Lab Technician and ANM. Out of the 676 elderly, 566 gave verbal consent to participate in the study.

All the information was collected from the subjects who gave consent, by interview technique. Clinical examination was done by the doctor and anthropometric measurements i.e. height and weight was measured. Weight was taken without footwear and heavy clothing using electronic weighing scale. A portable stadia meter was used for measuring the height. BMI was computed using standard equation.

BMI = Weight (Kg)/ Height $(m)^2$

Nutritional status was evaluated using internationally accepted BMI guidelines.

CED III	BMI < 16
II	16.1 – 17.0
I	17.1 – 18.4
Normal	18.5 – 24.9
Over- weight	25.0 – 30.0
Obese	>30

(Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004).

Limitations of using BMI:

- Does not take into account distribution of body fat.
- Does not distinguish between weight due to muscles and weight due to fat.

Despite its drawbacks, BMI remains one of the most widely used tools to screen obesity risk in several target populations as it is simple, inexpensive and non-intrusive. Other factors such as gender, age and ethnicity should also be taken into consideration when using BMI in public health policies and to increase the success rates of obesity intervention programs.

Results

Table I: Socio – demographic profile of elderly people over 60 years of age

Characteristics	Male 243 (42.9%)	Female 323 (57.1%)	Total 566
Age Groups (years)			
60-65	112 (46.1)	182 (56.3)	293 (51.9)
66-70	25 (10.3)	76 (23.5)	101 (17.8)
71-75	57 (23.4)	40 (12.5)	97 (17.2)
> 76	49 (20.2)	25 (07.7)	74 13.1)
Education Status			
Illiterate	108 (44.8)	248 (76.8)	356 (63.1)
Primary	59 (24.3)	27 (08.4)	86 (15.2)
Middle	23 (09.1)	26 (08.0)	49 (08.5)
Matric	42 (17.3)	19 (05.9)	61 (10.7)
H. Sc. & above	11 (04.5)	03 (00.9)	14 (02.5)
Occupation			
Unable to work	21 (08.6)	80 (24.8)	101 (17.8)
Household	06 (02.5)	172 (53.3)	178 (31.6)
Cultivator	67 (27.6)	11 (03.4)	78 (13.8)
Labourer	30 (12.4)	18 (05.6)	48 (08.5)
Service	03 (01.2)	1 (00.3)	4 (00.7)
Business/Selfemployed	71 (29.2)	28 (08.6)	99 (17.5)
Retired (Pensioner)	45 (18.5)	13 (04.0)	58 (10.2)

Table II: Anthropometric data of the elderly

Characteristics	Men (243)	Women (323)
Height	170± 2.02	150± 3.88
Weight	54.2±3.6	48.3± 8.7
BMI	19.3± 5.5	21.3± 1.94

Table-III: Sex-wise distribution of the nutritional status of elderly

BMI	Men (243)	Women (323)
CED	61 (25.2)	49 (15.2)
Normal	134 (55.1)	135 (41.8)
Overweight	35 (14.4)	103 (31.9)
Obese	13 (5,3)	36 (11.1)

$X^2 = 35.01$, df = 3

Table- IV: Age-wise distribution of nutritional status of elderly

BMI	61-65 (294)	66-70 (101)	71-75 (97)	>75 (74)
CED	20 (6.8)	9 (8.9)	41 (42.3)	40 (54.1)
NORMAL	174 (59.2)	40 (39.6)	39 (40.2)	16 (21.6)
OVERWEIGHT	73 (24.8)	41 (40.6)	12 (12.4)	12 (16.2)
OBESE	27 (9.2)	11 (10.9)	05 (5.2)	06 (8.1)

$X^2 = 143.45$, df= 9

In Table I, it was seen that majority of the participants in the study (51.9%) belong to the age group of 60- 64 yrs. Out of 566 participants, 57.1% were females expressing feminizing of the elderly population. More than half of the participants (63.1%) were illiterate, out of which 75% were females.

Inspite of the age, maximum number of study participants were involved in house hold work (31.6%). Punjab being an agricultural state, cultivation was seen as the second commonest occupation (15.9%) in this study. It was also observed that 15.2% of the study subjects were unable to do any kind of work. 80.7% of the participants were married and living with their spouse. Financially and for their basic needs, 42.5% were dependent on their families.

Table II shows, that men are heavier and taller than women. The mean height of men is 170 ±2.02 while that of

women is 150 ± 3.88. BMI was found to be higher in women i.e. 21.3 ± 1.94 than men 19.3± 5.5.

11.1% females were obese and 31.9% were overweight. This percentage is more than that of the male participants in which 5.3% and 14.4% were found to be obese and overweight respectively.

There were no men or women who were found to be severely obese. CED was seen in almost 25.2% males as compared to 15% of females. This difference in the prevalence of CED and obesity in males and females was found to be statistically significant. (Table III)

The number of elderly with CED increases with age, whereas tendency of obesity and over-weight decreases as the age advances.(Table IV) This observation was also found to be statistically significant.

Discussion

The magnitude of malnutrition among the elderly in India is largely under reported.

There is no gold standard for estimating malnutrition among elderly. Studies have been conducted by researchers using different screening tools like Mini nutritional assessment (MNA) questionnaire or BMI.

The few studies that have been done show that more than 50% of the elderly population is underweight[12] and more than 90% [6] have energy intake below the recommended allowance.

In comparison to studies conducted in rural population of Tamil Nadu[13] and Western Rajasthan[14], our study showed higher prevalence (19.4% vs 14% and 11% respectively). These studies were conducted using MNA questionnaire which utilizes a higher BMI cut off (19 kg/m^2) than that recommended by WHO (18.5 Kg/m^2). Older age is associated with a lower BMI score in our population. This finding has also been observed in previous studies[15] while others have shown that age has no effect on nutritional status.[16]

It was our observation that the older subjects were less active and often reported reduced appetite and decreased food intake. It is apparent that increased focus on nutritional status is required as the age of the elderly increases.

In our study population insufficient income and financial dependence on children (45.2%) were the possible factors related with low energy intake.

We observed that economic pressure did influence dietary pattern to a large extent, but we did not assess the knowledge and attitude of elderly towards nutrition. Similar findings were also reported by Natarajan et al.[6]

Conclusions

In conclusion, our study showed 19.4% of elderly had chronic energy deficiency. Considering this prevalence of poor nutritional status, more focus on diet and possible nutritional intervention is required.

Recommendations

Nutrient requirements for elderly people are mostly extrapolated from younger adults in developed countries, and assume the reduction in energy expenditure associated with retirement. These requirements may not be correct for poor older people in developing countries. There are also age-related changes that can lead to reduced or altered food intake. Interventions that address these problems need to be developed and tested.

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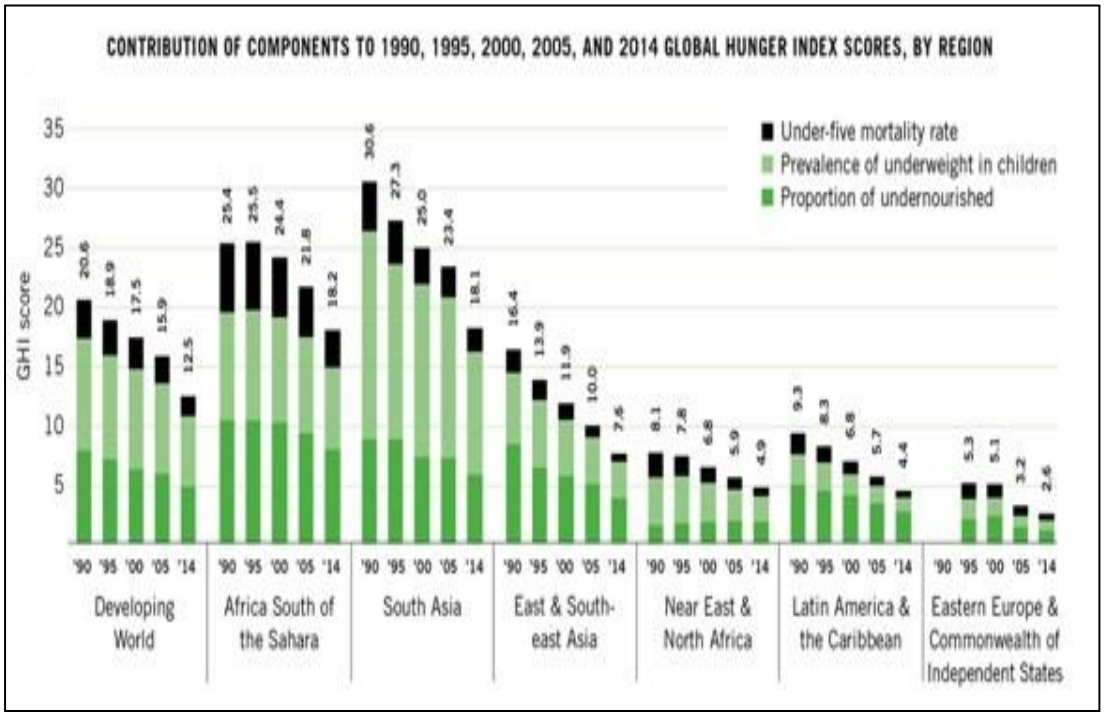

Original article

Study of Complementary feeding practices among mothers of infants aged six months to one year.

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Abstract

Introduction: Infants and young children are at an increased risk of malnutrition from six months of age onwards, when breast milk alone is no longer sufficient to meet all their nutritional requirements and complementary feeding should be started. Hence this study was undertaken to assess the practices of complementary feeding.

Methods: This hospital-based cross-sectional study was conducted at one private hospital in Salem, Tamil Nadu during the month of December 2013. Fifty mothers of infants between six months and one year attending the paediatric outpatient departments of the above-mentioned hospital were selected for the study by random sampling technique. The study instrument was a closed ended structured questionnaire. Logistic regression was done with feeding practice as dependent and socio demographic factors as independent variables.

Results: In the present study 62% mothers had started complementary feeding before the recommended time of six months. Residence area and education level of mother were significantly related with the use of proper weaning practices. Most of the nursing mothers who were home makers and had family income more than Rs. 10,000 preferred commercial weaning foods.

Conclusion: Use of proper weaning practices among the mother was improper among the majority cases. For the betterment of infant's health, existing motivational and awareness programme need to be strengthened and widen by the relevant authorities.

Key words: Factors, Complementary feeding, Infants

Introduction

An appropriate diet is critical in the growth and development of children especially in the first two years of life.[1] The World Health Organization (WHO) recommends exclusive breast feeding for the first six months of life, with the addition of complementary feeds at six months with continued breast feeds until at least the age of two.[2,3] Infants and young children are at an increased risk of malnutrition from six months of age onwards, when breast milk alone is no longer sufficient to meet all their nutritional requirements and complementary feeding should be started. Initiating complementary feeds too early or too late can lead to malnutrition.[1] Complementary feeding as described by WHO refers to the addition of energy and non-energy containing fluids, non-human milk, and semi-solids or solids to children's diet.[4] Natural weaning occurs as the infant begins to accept increasing amounts and types of complementary feedings while still breastfeeding on demand. When natural weaning is practiced, complete weaning usually takes place between two and four years of age. Planned weaning occurs when the mother decides to wean without receiving signals from the infant that he is ready to stop breastfeeding. Some reasons

commonly given for planned weaning include the following: not enough milk or concerns about the baby's growth, painful feedings or mastitis, returning to work, a new pregnancy etc.[5]

The early introduction of complementary feeds before the age of six months can lead to displacement of breast milk and increased risk of infections such as diarrhoea, which further contributes to weight loss and malnutrition.[6] Besides this, it is thought that babies are also not physiologically ready to receive complementary feeds under six months due to immaturity of the gastrointestinal and neuro developmental systems and the kidneys. Studies have demonstrated that early introduction of complementary feeds does not result in improved growth velocities or food acceptance.[7] Complementary feeding, if not done properly, can be followed by diarrhoea and months of growth retardation leading to kwashiorkor, marasmus and immune deficiency marked by recurrent and persistent infections which may be fatal.[3] Inadequate food/nutrient intake is the major factor for malnutrition. Poor nutrition leads to underweight infants and stunting.[8] Proper breast feeding and complementary feeding practices can prevent under five mortality by 19%.[9] Appropriate complementary feeding depends on accurate information and skilled support from the family, community and healthcare system. Inadequate knowledge about appropriate food and feeding practices is often a greater determinant of malnutrition than the lack of food. Knowledge of mothers about these factors will help in planning interventions to improve feeding practices. It has been shown in many studies that mothers in India are unable to start complementary feeding at the right time.[1,10] As there is a paucity of literature on the complementary feeding practices in this region, the present study was undertaken to estimate the average age of commencement of weaning, and to determine the feeding pattern of infants, including the types of commonly used foods for weaning and their frequency in the studied population.

Methodology

Study Area :

The present study was conducted at Salem District which contains 21 blocks. Among these blocks, Salem block was selected by random sampling technique. In Salem block, four roads area was selected because more number of pediatric clinics were located. Among that Dr.Rajendhran hospital was selected as the site for the selection of nursing mothers for data collection. The main reason is that, the hospital does not only records the highest attendance of nursing mothers, but also mother from all over the district. Primary research respondents for this study were mothers with infants from six months to 12 months old. The number of nursing mothers who visit that hospital post-natal clinic for 10 days was collected and recorded. Mothers of selected infants who were willing to participate in the study were interviewed for collecting the desired information.

Sample design

The data were collected during November - December 2013. About 127 infants in the age of 0 – 12 months were registered by hospital staff member. An inclusion criteria was the mothers of infants between six and twelve months who attended pediatric department of the above mentioned clinic for growth monitoring, immunization and minor illnesses. Among the 127 infants, 62 of them were at the age of 6 – 12 months and the remaining infants were at the age of 0 – 6 months. Fifty infants who were at the age of 6 – 12 months were

selected by simple random sampling method.

Research Instrument

The main survey instrument that was used to gather responses from the nursing mothers were closed ended structured questionnaire. The instrument consisted of two sections, A and B and consisted of 25 items. Section A dealt with the socio-demography characteristics of respondents and section B elicited information relevant to the infant feeding practices and nutrient intake of the infants and the data was collected with measures such as feeding bottle, food measurement cups, glass and spoons. The average interview duration per respondent was around 30 minutes. During the data collection, the researcher manually marked, recorded and wrote down responses to the questions as the respondent answers through each question face-to-face contact.

Data Collection

Information on selected socio demographic characteristic: age (in months) and weight of the infants, socio-economic status, educational status and occupational status of the mother were collected. Age was calculated for completed months on the date of interview. Information on infant feeding practices such as initiation of breast feeding, frequency and duration of breast feeding, initiation of complementary feeding, types and preferences of complementary food were collected. Data on breast-feeding practices including number of times and frequency of feeding occasion over the prior 24 hours (24-hour recall method) were collected. Informations about age at start of complementary feeding (Months), reasons for preferring complementary feeding, frequency of complementary feeding (Times/Day), complementary food intake (Gram/Day) was measured using food measurement cups, glass and spoons, types of complementary food (types of commercial complementary food), cost spent for complementary food per month were collected.

Data management

Socio-demographic data such as patient's age, sex, type of weaning food, economic status of the family and mother's education had been collected through structured close ended questions and were coded. Data were summarized using numerical descriptive statistics including number and percentage for data representation. The data was analyzed using SPSS version 14.0. Binary logistic regression was used to determine the variables that independently predicted early weaning with infants weaned at ≤ 6 months being the dependent variable. Multivariate binary logistic regression model was developed based on a priori literature and the results obtained from the univariate modelling in the present study. Factors were retained in the model if they were significant at the $P<0.05$ criterion. The importance of each variable, adjusted for the others in its group, was assessed by the OR and 95 % CI.

Results

Table – 1 : List of Variables

Variables	Meaning	Type of Measurement	Type of Response
Residence Area	Living area of infants	Area	1. Urban 2. Rural
Maternal Education	Average schooling years of mother	Categories	1.Schooling 2.Graduate
Maternal Occupation	Working status of the mother	Categories	1.Homemaker 2.Employee
Income	Monthly total earning of family	Categories	1.Rs. > 10,000 2.Rs. ≤ 10,000

A total of 50 mother-child pairs responded and the response rate was 100%. Table – 2 shows that 46% infants belonged to the 6–9 months age group and 54% infants belonged to the 6–12 months age

group. Nearly half of them were boys and the boys to girls ratio was 1.40: 1. The mean age was 8.84 (S.D+1.78) months and the median age was 10 months. About 30 (60%) infants had body weight more than seven kg, 58% of the infants had first birth order and 56% of the infants was first child in their family. Approximately 68% infants belonged to urban area and 60% infant's family income was more than Rs. 10,000. Half of the mothers completed their graduation and moreover majority of the selected mothers were homemakers.

Table – 2: Socio demographic profile of the subjects (N-50)

Particulars	Number (%)
Age (Months)	
6 – 9	23 (46)
9 -12	27 (54)
Gender	
Boy	29 (58)
Girl	21 (42)
Weight (Kg)	
4 – 7	20 (40)
> 7	30 (60)
Birth Order	
1	29 (58)
2	18 (36)
3	3 (6)
Number of children	
1	28 (56)
2	20 (40)
3	2 (4)
Residence area	
Urban	34 (68)
Rural	16 (32)
Family income	
Rs. ≤10000	20 (40)
Rs. >10,000	30 (60)
Mother's occupation	
Homemaker	45 (90)
Employee	5 (10s)
Mother's education	
Schooling	23 (46)
Graduate	27 (54)
Primiparous	
Yes	21 (42)
No	29 (58)

Table – 3 : Feeding practices adopted by mothers

Feeding practices		Number (%)
Time of start of breast feeding (in hours)	<1	13 (26)
	4 – 12	37 (74)
Age at start of complementary feeding (month):	≤5	31 (62)
	6	18 (36)
	>6	1(2)
Reasons for preferring complementary feeding		
	Mother's occupation	2 (4)
	Mother's sickness	-
	Additional nourishment	48 (96)
Frequency of complementary feeding (Times/Day):	≤2	35 (70)
	3 –5	15 (30)
	>5	-
Complementary Food intake (Gram/Day):		28 (56)
<40		21 (42)
	40 - 75	1 (2)
	>75	
Types of complementary food		
	Commercial baby food	32 (64)
	Combination of home and commercially prepared	18 (36)
Cost for complementary food per month:	<Rs. 150	5 (10)
	Rs. 150 – 300	11 (22)
	>Rs.300	34 (68)

The feeding practices of the mothers were interviewed and it is shown in Table - 3. About 62% of the mothers introduced complementary foods to their infants before 5 months, while 36 % of them were introduced at 6 months. Over half (64%) of the mothers preferred commercial weaning foods because these foods save time, convenient and good taste while 18 % of them felt that these foods were more nutritious, cheaper, better taste and easily available. One fourth of the selected mothers preferred both home-prepared and commercially- weaning foods. Approximately three fourth of the subjects (70 %) fed weaning foods twice a day to

Table – 4 : Binary logistic regression analysis of the factors associated with initiation of complementary foods

Particulars	Weaning Age (months)		Adjusted		P Value
	> 6	≤ 6	OR	95% CI	
Residence area					
Urban	10	24	1.000	0.72 –	
Rural	11	5	3.426	6.52	0.02
Maternal : education					
Schooling	13	10	2.054	0.38 –	0.01
Graduate	18	9	1.000	4.12	
occupation					
Homemaker					
Employee	28	17	1.00	0.00	
	3	2	0.00		0.00
Income					
Rs. > 10,000	14	6	0.231	0.11 –	0.256
Rs. ≤ 10,000	17	13	1.000	1.15	

Table – 5 : Factors associated with factors associated with type of complementary foods

Particulars	Type of complementary foods		Adjusted		P Value
	Commercial	Commercial & Home made combination	OR	95% CI	
Residence Area: Urban	28	6	1.24	0.42 –	
Rural	4	12	1.00	6.23	0.02
Maternal education					
Schooling	15	8	0.52	0.21 –	0.24
Graduate	17	10	1.00	1.54	
occupation					
Homemaker	30	15	1.00	0.000	0.00
Employee	2	3	0.00		
Income					
Rs. > 10,000	18	2	1.65	0.19 –	0.01
Rs. ≤ 10,000	14	16	1.00	3.14	

their infants, while 30 % of them fed weaning foods to their infants 3 -5 times. More than three hundred rupees per month was spent for procuring complementary foods by 68% of the mothers.

Table – 4 and 5 illustrate that binary logistic regression analysis of the factors associated with initiation and type of complementary foods respectively. Residence area and maternal education were significantly ($p<0.05$) related with initiation of complementary foods. Residence area and family income were significantly ($p<0.05$) related with type of complementary foods.

Discussion

In the present study 36 % of mothers started complementary feeding at the recommended time i.e., six months. In an interventional study of 35 parents in Delhi only 16.5% of mothers had started complementary feeding at the recommended time, which is less when compared to the present study.[10] A prospective interview study of 200 parents by Aggarwal et al.[1] showed that only 17.5% of mothers had started complementary feeding at the recommended time. A National Family Health Survey (NFHS 3) for Karnataka State, India showed that 72.5% of children aged 6–9 months were receiving complementary foods and breast milk.[14] In our study the mothers with a less number of infants started the complementary food at the recommended time of six months (36%) and the relationship between number of infants and the practice of initiation of complementary feeding at the recommended time was statistically significant ($p=0.02$).

In this study, all the selected mothers were literate. The association of literacy and initiation of complementary feeds at the recommended time was statistically significant ($p=0.01$). A prospective interview study of 200 parents from Delhi also showed that knowledge about the correct timing of complementary feeding significantly correlated to maternal education and father's education but knowledge about quantity of complementary feeds was not affected by the educational status of parents.[1] About 60% of our study population had family income more than Rs.10,000 and 40% had family income less than Rs. 10,000. The association of socio-economic status and initiation of complementary feeds at the

recommended time was not statistically significant.

In the present study 62% of infants were weaned prematurely. Premature weaning is also reported in other studies.[1,15,16] A study from Delhi indicated that premature weaning is only 5.5% children which are lesser than the present study.[15] A prospective observational study from Ireland showed that 22.6% of infants were prematurely weaned onto solids at ≤ 12 weeks with mothers reporting the maternal grandmother as the principal source of advice on infant feeding.[17] A study from Brazil showed that the median age for the introduction of complementary feeds was four months.[17]

Majority of infants (74%) were breastfed between four and 12 hours in the present study whereas in the study done at Allahabad only 55.8% of mother initiated breastfeeding within six hours of delivery.[19] A study from Mumbai [15] showed that 82.3% of infants were breast-fed within four hours of birth which is comparable to our study. The secondary data analysis of the National Family Health Survey 2005–06, which consisted of a sample size of 20,108 children showed that only 23.5% of mothers had initiated breastfeeding within the first hour after birth and 56.7% of infants aged six to nine months received complementary feeds.[19] About 70% of the mothers fed complementary foods twice a day to their infants. Efetie et al [20] stated that over half (54.0 %) of the nursing mothers fed their infants thrice daily with weaning foods, while 4.7 %, 23.7 % and 17.7 % of them fed their infants once daily, twice daily and several times with weaning foods respectively.

In the present study, majority of the mothers preferred commercial weaning foods. Studies revealed that the energy density and nutritive value of local weaning foods in many developing countries are suboptimal.[21,22] There is therefore need to encourage mothers to add more nutritive foods to infant weaning foods. Such preference should be encouraged as the WHO/UNICEF advice that home-prepared weaning foods are socioeconomically more acceptable for families and communities because it eliminates the importation of expensive commercially-prepared weaning foods.[23] WHO/UNICEF also advocate that mothers should be encouraged to feed their infants with locally available home-prepared foods which contain calories, proteins, minerals and vitamins. About 64% of the nursing mothers had preference for commercial weaning foods because they felt that they save time, convenient and taste better. About nine and nine percent of the nursing mothers had preferred home made weaning foods and combination of home made and commercial weaning foods. Efetie et al [20] reported that over three-quarter (76.0 %) of the nursing mothers had preference for home-prepared weaning foods, while 9.0 % and 15.0 % of them had preference for commercially-prepared weaning foods and combination of home-prepared and commercially-prepared weaning foods respectively.

Conclusions

The findings of this study indicate that majority of the cases (62%) were not up to the mark in proper use of weaning practices. Residence area and education level of mother were significantly related with the use of proper weaning practices. Most of the nursing mothers who were home makers and had family income more than Rs. 10,000 preferred commercial weaning foods. Appropriate complementary feeding should start from age of six months with continued breast feeding up to two years. The result of this study would help in educating and counselling the prospective mothers about complementary feeding.

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Original article

Drug Inventory control analysis in a Primary level Health care facility in Rural Tamil Nadu, India

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Abstract

Introduction: Almost one-third of hospital budget is spent in buying supplies including medicines. The cost and need of these medicines vary widely depending on the level of health care and the population catered. Effective and scientific drug inventory management techniques are necessary for efficient health care delivery.

Objectives: To categorise the drugs based on cost and criticality aspects and identify those which require stringent managerial control.

Methods: The data related to annual consumption and annual drug expenditure (ADE) incurred on each drug during the year 2012 in a primary level health care facility in Kancheepuram District, Tamil Nadu was collected. The drugs were categorised based on ABC, VED analysis using Microsoft Office Excel version 2007.

Results :A total of 84 drugs used in the hospital were included in the analysis. The ADE on these 84 items, for the year 2012 was, Rs.3,22,697.10. ABC analysis showed, 15 items (17.9%) in Category A, 17 (20.2%) in Category B and 52 (61.9%) in Category C consumed 70.6%, 19.47% and 9.9% of the total ADE. VED analysis revealed 25 vital items (29.8%), 31 essential items (36.9%) and 28 desirable items (33.3%) consuming 29.3%, 44.2% and 26.5% of the ADE respectively. On ABC-VED matrix analysis, 42.8%, 36.9% and 20.2% items were categorised under Category I, II and III respectively accounting for 78.4%, 17.1% and 4.5% of ADE.

Conclusions : This analysis allowed for categorisation of drugs based on cost and criticality factors and identifies level of managerial control required.

Keywords: Drug Inventory control, ABC analysis, VED analysis

Introduction

Inventory is the stock of any item or resource used in an organization. It can be described in financial terms as the sum total value of raw materials; semi processed and finished goods at any given time[1]. Inventory requirement differs with the type of organisation. In a hospital, this includes the drugs and all other raw materials or finished products involved in diagnostic and therapeutic services for the patients. In hospital about one-third of the annual expenditure is spent in buying those supplies including drugs[2,3]. Hospitals as in any other organisation require an effective inventory management for maintaining a balance between inventory investment and demands for supplies. The basic issue involved in inventory management is to ensure that adequate amount of raw materials are available to meet the demand of the organisation, while at the same time ensuring that too much inventory is not accumulated and also there are no stock-outs in the organisation[4].

In any hospital, high quantities of inventory in form of large number of costly drugs and supplies would be detrimental to profitability and efficient performance of the hospital due to blocking of cash in form of idle stores,

requirement of large storage space for medical stores, substantial handling and transportation charges, pilferage and cost of expired medical stores[4]. The ultimate aim of inventory control in a health care setting is to ensure that adequate and optimal essential items are properly stored, controlled, are easily retrievable and distributed to points of uses so that patient care does not suffer due to lack of these essential medical supplies. In short, the objective of inventory management is to have the appropriate amounts of materials in the right place, at the right time and at low cost[5].

Literature search provides sufficient insights into inventory management techniques in tertiary care hospitals. But there is paucity of similar studies conducted in primary level health care centres which cater to the majority of the population, especially in developing countries. It is highly essential that primary health care systems in limited resource settings have effective inventory management techniques in place to provide acceptable and affordable health care. This study was an initial attempt in drug inventory analysis in a primary level health care centre in Kancheepuram district in Tamil Nadu, India. The health centre followed a weekly drug indenting policy depending on the quantity of drugs dispensed over the week which resulted in occasional shortages of essential drugs as well as overstocking of few less used drugs. The objectives of the study were (i) to analyse the annual consumption of the drugs and the expenditure incurred on them during the year 2012 and (ii) to evolve a priority system of drug inventory control based on ABC, VED and ABC-VED matrix analysis.

Materials and Methods

This study was undertaken in a Rural Health care centre providing primary level care in Kancheepuram district of Tamil Nadu state in India and caters a population of 18000. All the drugs expended during the period January 2012 to December 2012 were included in the study.

The data related to annual consumption of each drug and annual drug expenditure (ADE) incurred on each drug was entered in Microsoft (MS) Office Excel for Windows, version 2007 and statistical analysis was performed using MS Excel statistical functions.

For ABC Analysis, the consumption cost of each medicine/ drug was worked out for the whole year. All the drugs were arranged in descending value of their annual cost, the most expensive being at the top and the least expensive being at the bottom. The cumulative cost was then calculated. The drugs were then classified into 3 groups, A (items which consume 70% of total annual cost), B (items which consume the next 20% of the total annual cost) and C (items which consume the remaining 10% of the total annual cost) based on Pareto's principle[6].

VED analysis is based on the criticality of an item in service delivery. "V" is for vital items without which the hospital cannot function, "E" for essential items without which a hospital can function but may affect the quality of the services and "D" for desirable items, unavailability of which will not interfere with the functioning of the hospital[6]. For VED analysis, the list of drugs was distributed to a panel of 10 medical personnel comprising physician, surgeon, obstetrician, paediatrician, orthopaedician, anaesthetist and four medical officers with adequate experience in delivering health care at primary level. They were asked to classify the drugs into vital, essential and desirable. The drugs were categorised into a particular group if more than 50% of the members of the panel concurred.

The data was coupled into ABC and VED matrix which again divides the drugs into 3 categories, as follows,

Category I: AV+BV+CV+AE+AD
Category II: BE+CE+BD
Category III: CD

Category I: All the vital and costly items, whose shortage may adversely affect the functioning of the hospital and over stocking, may lead to financial loss to the hospital.

Category II: Essential but less costly; can have less stringent controls

Category III: Stores and medicines which are desirable but would not affect the functioning of the hospital even if unavailable for a long time[4].

Results

A total of 84 drugs used in the hospital were included in the analysis. The ADE on these 84 items, for the year 2012 was, Rs.3,22,697.10. The details of ABC, VED and ABC-VED matrix analysis are presented in Tables 1 and 2.

Table 1: ABC, VED analysis and ABC-VED matrix of drug store of the health facility

Class	Number of items (n=84)	% of number of items	Annual Drug Expenditure in Indian rupee	% of Annual Drug Expenditure
A B C analysis				
A	15	17.9%	2,27,930.74	70.63%
B	17	20.2%	62,829.24	19.47%
C	52	61.9%	31,937.12	9.9%
V E D analysis				
V	25	29.8%	94,713.38	29.3%
E	31	36.9%	1,42,526.22	44.2%
D	28	33.3%	85457.5	26.5%
Classification based on ABC-VED matrix analysis				
Category I	36	42.8%	2,53,026	78.4%
Category II	31	36.9%	55,234	17.1%
Category III	17	20.2%	14,437.1	4.5%

Discussion

The drug formulary the health centre consisted of 84 items. The total annual drug expenditure on these 84 items was INR 3, 22,697.10. The aim of hospitals is to provide timely and efficient medical care services. Drug Inventory control is an important element of Health care management, and is an essential activity to achieve efficient patient care in a hospital. The regular availability of the necessary medicines is the topmost priority for any hospital. Each hospital has to evolve its own drug inventory analysis system depending on the population and the health care problems it caters. To avoid stock-outs as well as excess stocks, cost and criticality of the drugs are two important factors which have to be taken into account in drug inventory analysis[7]. ABC analysis and VED analysis which assess the cost and criticality respectively have been used in this study.

An ABC-VED matrix helped us identify 36 drugs (42.8%), which consume 78.4% of total annual drug expenditure under Category I and require stringent control.

ABC analysis

In our study, 15 items (17.9%) in Category A consume 70%, 17 items (20.2%) in Category B consume 19.47% and 52 items (61.9%) in Category C consume 9.9% of the total ADE. Considering ABC analysis alone will enable us to ensure adequate control over 17.9% of items which consume 70% of total annual drug inventory cost. But this analysis does not take into account the vital items in B and C categories.

VED analysis

VED analysis of the drug inventory in our study shows that, 25 items (29.8%) in vital category consume 29.3%, 31 items (36.9%) in essential category consume 44.2% and 28 items (33.3%) in desirable category consume 26.5% of the annual drug expenditure. When VED analysis is considered alone, the 4 desirable items included in category A and consume considerable cost are ignored

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Table 2: ABC-VED Matrix

	V	E	D	Total
A	**4**	**7**	**4**	**15**
B	**5**	**5**	**7**	**17**
C	**16**	**19**	**17**	**52**
Total	**25**	**31**	**28**	**84**

Table 3: Comparison of ABC, VED and ABC-VED matrix analysis of different studies*

Category	Gupta et al[6]	Mahatme et al[8]	Junita et al[9]	Khurana et al[7]	Devnani et al[10]	Present study
A	14.6	14.5	7.74	3.45	13.78	**17.9**
B	22.4	18.2	11.01	6.9	21.85	**20.2**
C	63	67.3	81.25	89.65	64.37	**61.9**
V	7.4	24.2	6.6	32.41	12.11	**29.8**
E	49.2	68.5	33.6	61.38	59.38	**36.9**
D	43.4	7.3	59.8	6.2	28.51	**33.3**
I	20.9	31.5	11.9	33.8	22.09	**42.8**
II	48.9	68.5	37.8	60	54.63	**36.9**
III	30.2	_	50.3	6.2	23.28	**20.2**

An ABC-VED matrix provides a balanced classification of the drug inventory into 3 categories based on both cost and criticality of the items. In the present study, 36 items (42.8%) consuming 78.4% of the ADE belong to Category I, 31 items (36.9%) consuming 17.1% of the ADE belong to Category II and 17 items (20.2%) consuming 4.5% of the ADE belong to Category III. ABC-VED matrix enables us to apply stringent managerial control measures to the 36 items in Category I which are either expensive or vital. These drugs should always be maintained in stock since they are either vital or essential. But considering the high cost of these drugs, a low buffer stock should be maintained and strict control should be exerted on the prescription and utilization of these drugs. Category II drugs can be controlled by the middle level management and Category III drugs can be controlled by lower managerial level. Appropriate ordering techniques should be employed for the different categories. Comparing our results with similar studies revealed considerable differences (Table 3). The differences could most probably be due to the fact all these hospitals were providing tertiary level care or speciality care. The studies by

Mahatme et al, Gupta et al, Junita et al, Devnani et al was done in tertiary care hospital and Khurana et al analysed the inventory control techniques in a neuropsychiatry hospital[6,7,8,9,10]. No such literature was available to compare the inventory analysis techniques in primary level health care settings. There is a need for adoption of such scientific techniques of inventory control at all levels of health care and published data regarding the same.

Conclusions

The drug inventory analysis enabled their classification into categories based on their priority and assignment to appropriate managerial levels. This analysis is hoped to promote effective management of drug inventory with minimal monetary resources while maintaining required safety stocks of high priority drugs and reduce frequency of drug supply shortage. An efficient inventory management system at a primary health care level will contribute to provision of uncompromised patient care.

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Original Article

Evidence of vitamin d deficiency and its relation with possible cardiovascular risk among postmenopausal women.

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ABSTRACT

Background: Recent reports have shown that Vitamin D deficiency is rampant in tropical countries including India despite plenty of sunshine due to several factors. Ageing affects synthesis vitamin D. Post menopausal women are more vulnerable to vitamin D deficiency.

Aim: To determine the prevalence of vitamin D deficiency and to find out its relation with possible cardiovascular risk among postmenopausal women.

Methods: The present cross-sectional survey was conducted among 270 postmenopausal women between age group of 45 to 70 years attending Gynecology Out Patient Department of a tertiary care teaching hospital. Each study subject was interviewed and vitamin D adequacy was evaluated by measuring serum 25-hydroxyvitamin D.

Results: Vitamin D deficiency was prevalent among 70.7% of study subjects, whereas only 10.0% had optimum vitamin-D level. Participants having high cholesterol level had low vitamin D level. An inverse relationship was observed between BMI and vitamin D level among study subjects.

Conclusion: The findings of the study highlight that vitamin D deficiency is an alarming issue among postmenopausal women in India. Health promotional measures could help them in maintaining optimum BMI as well as achieving the optimum vitamin D levels.

Key words: Vitamin D deficiency, postmenopausal women, cardiovascular risk, BMI, obesity.

Introduction

Vitamin D or Sunshine vitamin is not only indispensable but also vital for human beings. Vitamin D is synthesized in the skin after sunlight exposure or can be obtained through a balanced dietary intake.[1] However; it is well known that natural sources of vitamin D in foods are not sufficient to supply the normal body requirements. Therefore, skin synthesis of vitamin D through exposure to sunlight is thought to constitute the major source of vitamin D.[2] However, various studies conducted in tropical countries have shown that Vitamin D deficiency is rampant in tropical countries including India despite plenty of sunshine due to several factors.[3-5]

Vitamin D has an established role in calcium and bone metabolism. Menopause is associated with an increased risk of obesity and a shift to an abdominal fat distribution with associated increase in health risks.[6] Ageing affects multiple steps of vitamin D metabolism as ageing skin has reduced efficiency to synthesize vitamin D upon exposure to sun.[7] This makes post menopausal women more vulnerable to vitamin D deficiency owing to their inevitable ageing process.

Only a fewer studies are available in the literature regarding evidence of vitamin D insufficiency and its relation with possible cardiovascular risk among postmenopausal women in India and none from western Uttar Pradesh thus information on the same is patchy and scanty. Therefore, the present study was planned with an objective to determine the prevalence of vitamin D deficiency among postmenopausal women. An additional objective was to find out its relation with possible cardiovascular risk among study subjects.

Materials and methods

The present cross-sectional survey was conducted at the Department of Pathology, Major S. D. Singh Medical College and Hospital, Fatehgarh, Uttar Pradesh during June to December 2013. The sample size was calculated with an anticipated prevalence of vitamin D deficiency of 80%,[8] 5% absolute precision, 95% confidence interval and 10% non-response error − as 270.

Study subjects were postmenopausal women between age group of 45 to 70 years attending Gynecology Out Patient Department and they were selected using systematic random sampling technique. First eligible study subject was picked up randomly and subsequent study subjects were selected at a predefined constant (3rd) interval in this study till the desired sampling size was obtained. Women who had undergone hysterectomy or suffering from chronic debilitating diseases and bedridden patients were excluded from the study.

Information was collected by interviewing the study subjects using a structured proforma. It was ensured that respondents understand the meaning of questions well. Each study subject was interviewed and examined for Vitamin D deficiency. The questionnaire included questions about history of dietary habits, intake of milk along with other vitamin D rich food items (fish, eggs, butter, and cheese), exposure to sun and symptoms of vitamin D deficiency. Types clothing practices were also assessed in order to determine the extent of skin exposed to sun.

Vitamin D adequacy was evaluated by measuring serum 25-hydroxyvitamin D (25 (OH) D concentration) by Roche electro chemi-luminescence, as this was the primary circulating form of vitamin D. This serum concentration of 25(OH) D is a good reflection of cumulative exposure to sunlight and dietary intake of vitamin D, and is widely regarded as a robust "gold standard" indicator of vitamin D status.[9] 25 (OH) D level less than 20 ng/ml was considered deficiency, between 20-30 ng/ml was considered Insufficiency and more than 30 ng/ml was the desirable range as per Endocrine Society guidelines.[10]

Written informed consent was obtained in the local language from every study subject before conducting each interview and examination. They were explained about the nature and purpose of the study and were requested to participate in the study. To obtain consent, the author read the contents of the consent information sheet out loud to each respondent, who was given the opportunity to ask the questions. It took an average of 20 min to complete each interview. Ethical clearance for this study, as

per university norms, was obtained from the Institutional Ethics Committee for Human Research.

The collected data was entered into Microsoft-Excel 2007, coding of the variables was done. After cleaning, data was subsequently analyzed using Statistical Package for Social Sciences (SPSS) SPSS version 20.0 software. Interpretation of the collected data was done by using appropriate statistical methods.

Results

Out of 270 postmenopausal women vitamin D deficiency was prevalent among 70.7% of study subjects, 19.3% had insufficiency and only 10.0% had optimum vitamin-D level. Level of significance shows that vitamin D deficiency is significantly related to age. Vitamin D deficiency was observed to be highest in the age group of 45-50 years followed by in the age group of 51-55 years. (Table 1)

Table 1: Distribution of vitamin D level among study subjects

Age group	Deficient (%)	Insufficient (%)	Optimum (%)	Total
45-50	114 (77.0)	29 (19.6)	05 (3.4)	148 (54.8)
51-55	29 (70.7)	07 (17.1)	05 (12.2)	41 (15.1)
56-60	25 (67.5)	05 (13.5)	07 (19.0)	37 (13.8)
61-65	12 (48.0)	07 (28.0)	06 (24.0)	25 (9.3)
66-70	11 (57.8)	04 (21.1)	04 (21.1)	19 (7.0)
Total	191 (70.7)	52 (19.3)	27 (10.0)	270 (100)
Figures in parenthesis indicate percentage				

Table 2 depicts vitamin D level in relation to factors of cardiovascular risk i.e. triglyceride and cholesterol level. Vitamin D level is proportionately decreasing with rise in triglyceride and cholesterol level. Cholesterol level <200 mg/ dl is desirable. Level beyond desirable range indicates risk of obesity and cardiovascular diseases. Participants having high cholesterol level have low vitamin D level. (Table 2)

Table 2: Vitamin D level in relation to triglyceride and cholesterol level among study subjects

Variables	Levels of Vitamin D Mean ± S.D.
Triglyceride level	
<140	**28.6 ± 2.3**
141-400	**15.1 ± 2.8**
401-1000	**8.8 ± 2.4**
One way ANOVA, p = 0.069	
Cholesterol level	
<200	**22.7 ± 2.8**
200-400	**16.1 ± 2.2**
>240	**14.5 ± 1.9**
One way ANOVA, p = 0.051	

An inverse relationship was observed between BMI and vitamin D level among study subjects i.e. with increasing level of BMI, vitamin D level was declining.

Discussion

The present study revealed that, majority (70.7%) of study subjects were suffering from vitamin D deficiency, 19.3% had insufficiency and only 10% had optimum vitamin-D level and this vitamin D deficiency was found to be associated with increasing age. Similar findings were recorded by Harinarayan CV in his study from south India.[3] This finding can be attributed to the fact that menopause along with natural process of aging marks an important transition in vitamin D requirement as ageing skin is unable to synthesize the required amount of vitamin D because it cannot effectively absorb sunlight.[11]

It was seen in the current study that high BMI was significantly associated with lower levels of vitamin D. Another studies[12,13] is also in cohort with our observations. The reason why high BMI is related to low circulating 25 (OH) D is that vitamin D is a fat soluble vitamin which is

stored in adipose tissue and is sequestered in pool of fat. This causes low circulating level of vitamin D in the body. Obese people are more prone to vitamin D deficiency as subcutaneous fat which stores vitamin D, sequesters more cutaneously synthesized vitamin D. Therefore, results in less release of vitamin D from skin into circulation. Thus obesity creates a vitamin D deficient state.

Regarding associated of lower levels of vitamin D with the factors of cardiovascular risk i.e. triglyceride and cholesterol levels, this study confirms the results of another study.[8] Deviation from desirable range triglyceride and cholesterol level is suggestive of cardiovascular risk. Recently vitamin D insufficiency has been shown to be associated with increased risk of developing type 2 diabetes mellitus and cardiovascular risk factors such as hypertension and obesity from another study from Malasiya.[14]

This study has several strengths. First, we have collected the evidence of vitamin D insufficiency and its relation with possible cardiovascular risk among postmenopausal women from western Uttar Pradesh. According to our knowledge this aspect has not been closely investigated by the experts in the field. No similar experience is available in the literature. Second, study subjects were chosen randomly which provide protection against selection bias. Third, all the interviews were conducted by single person which creates a sense of uniformity. The study has some limitations as well. First, it is a hospital based study. A community based study would yield more generalizable results. Second, while linking vitamin D insufficiency with possible cardiovascular risk we could have performed bone marrow density, PTH levels too but it was not possible due to certain reasons.

Conclusion

The findings of the study highlight that vitamin D deficiency is really an alarming issue among postmenopausal women in India. Health promotion i.e. encouraging women to adhere to healthy lifestyles, losing their weight and themselves indulging in outdoor recreational activities could help them in maintaining optimum BMI as well as achieving the optimum vitamin D levels.

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Original Article

Upper extremity and neck disability in male hairdressers with concurrent changes in pinch strength: an observational study

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Abstract:
Background: Hair-stylists and barbers face the risk of musculoskeletal disorders (MSDs) due to awkward postures, repetition, and static loading combined with the high customer turnover.
Study Objectives: The purpose of the study was to assess upper extremity and neck disability in male hairdressers. And to study the relationship of pinch strength with duration of exposure.
Methodology:A total of 59 subjects were recruited from various salons in and around Bihar and Dehradunfor the study on the basis of inclusion and exclusion criteria after signing the informed consent form**.**
Outcome measures: Disabilitywas measured by Neck Pain Disability Index (ICC = 0.68) and Disability of Arm, Shoulder, HandQuestionnaire (ICC=.92) Pinch Strength was measured by Pinch Gauge.
Results: There was increasing disability with increase in age and increase in work experience. Pinch Strength was affected with increasing disability and because of repetitive work by hand and wrist.
Conclusions: It can be concluded that awkward neck posture and repetitive work done by upper extremity exacerbates degenerative changes and increases risk of disability in hairdressers with increase in age and experience. In addition there is also a loss of pinch strength on the dominant side with increase in age and experience.

KEY-WORDS: Hairdressers, Pinch Strength, Neck Pain Disability, Disability of arm, shoulder and hand.

Introduction

The US Department of Labor defines work-related musculoskeletal disorders (WMSDs) as injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and spinal discs associated with exposure to risk factors in the workplace. WMSDs do not include disorders caused by slips, trips, falls, motor vehicle accidents, or similar accidents.[1]Most hairstylists who have been practicing for 5-10 years, complain of pain or numbness in the upper extremities—the hand, wrist, and shoulder. As is usually the case with ergonomic risk, some of the cause can be seen as equipment-related, while a portion may be attributed to personal technique.[2]Typical postural issues in hairdressers include excessive shoulder flexion and shoulder abduction, often caused by working with the elbow at or greater than shoulder height, trunk flexion (bending forward at the waist) because the chair may not be at the proper height for the hairdresser,forward neck flexion which is considered excessive if the angle of flexion is more than 20°. Wrist deviation using scissors or hand shears. Awkward wrist postures include radial deviation (to the thumb side) and ulnar deviation (to the little finger side), extension (wrist bent up), flexion (wrist bent down), pronation (palm down), and supination (palm up)A survey on Brazilian hairdressers done to verify the prevalence of WMRDs in hairdressers through

symptoms stated that the prevalence of WRMDs was 71%. Risk factors were associated with psychosocial factors and factors related to discomfort and work fatigue such as lack of acknowledgement of work and uncomfortable posture at work, not feeling comfortable with body/neck/shoulders while working.[3] A study to investigate the risk factors of WMSDs for hairdressers by identifying the body regions associated with significant discomfort showed that 91.7% of subjects reported shoulder discomfort as the most frequent problem followed by discomfort in the lower back (83.3%) and in the neck region (75%).[4] Hairdressers are also exposed to a variety of hazards in thework place .These include chemical agents (products for hair), physical agents (noise, temperature) and ergonomic hazards (inappropriate posture during work, demands for service quality, long work hours without breaks, etc.).[5]If muscle is fatigued repeatedly without sufficient recovery being allowed for, muscle disorders are likely to occur. If there is occurrence of damage daily, long-lasting impairment can develop due to work activity, the capacity of the muscle may be insufficient to repair the damage as fast as it occurs.[6]The ability to grip and manipulate objects is essential in performing various activities of daily living. Assessment of hand strength has proved to be reliable and valid as an objective parameter to evaluate the functional integrity of the hand as part of the musculoskeletal system. [7]

According to onsite observations, hairdressers used their non-dominant hands to comb, hold hair with their fingers and wave/curl hair while cutting and/or blow-drying.Musculoskeletal symptoms of hairdresser are highly prevalent, and associated with job strain and their health habits. A high prevalence of work-related musculoskeletal disorders has been recorded among workers who are exposed to manual labor, work in unusual and restricted postures, repetitive and static work, vibrations, and poor psychological and social conditions.[8]The activity of professionals working in salons is one of the least studied in occupational health.

Objectives of study

1. To assess upper extremity and neck disability in male hairdressers.
2. To study relationship of upper extremity and neck disability with duration of exposure.
3. To study relationship of pinch strength with duration of exposure

Material &Methods

Study Design: Cross Sectional Observational Study

Type Of Sampling: Convenient Sampling

Study Duration: 3 months

Protocol:

59 participants were selected from various salons in Patna and Dehradun according to the inclusion and exclusion criteria. Participants selected were informed about the purpose and procedure of the study. The subjects signed an informed a consent form, following which Nordic pain questionnaire was administered for assessment of pain and discomfort. Then the participants' responses to Neck Pain Disability Index(NPDI) andDisability of Arm, Shoulder, Hand Questionnaire(DASH) was recorded to check the progression of disability[25,26]. After that pinch strength was measured.

Instrumentation:

The Neck Pain Disability Index (NPDI) is a 10-item quesionnaire that measures a patient's self-reported neck pain related disability. Each question is measured on a scale from 0 (no disability) to 5, and an overall score out of 100 is calculated by adding each item score together and multiplying it by two. A higher NDI score means the greater a patient's perceived disability due to neck pain.[25]

The Disabilities Of The Arm, Shoulder And Hand (DASH) questionnaire

is a self-administered region-specific outcome instrument developed as a measure of selfratedupper extremity disability and symptoms. The DASH consists mainly of a 30itemdisability/symptomscale, scored 0 (no disability) to 100.[26].The other tools used included a

Pinch Guage, Digital Camera , Pen and paper

Subjects with the following criteria were included age- 20 to 35 years, Minimum 70 haircut in a week,minimum experience of 2 years.

Subjects were excluded in the presence of any.musculoskeletal deformity, range of motion deficit and neurological disorders that affect neck and upper limb function. Hairdressers using adjustable chairs were also excluded.

Procedure:

Pre-participation data [i.e. Age, Sex, years of experience, job nature, and hand dominance] were collected from all the selected subjects.In order to assess physical exposure to musculoskeletal risk, Nordic pain questionnaire for area of pain assessment, neck pain disability index and disability of arm,shoulder,hand questionnaire were used. Following the questionnaire survey, pinch strength was checked by pinch gauge.

Measurement Of Pinch Strength:

The subjects were seated with their shoulder adducted and neutrally rotated, elbow flexed at 90 degree, forearm in neutral position and wrist between 0-30 degree of dorsiflexion and between 0 and 15 degree of ulnar deviation. The pinch gauge was held by the examiner at the distal end to prevent dropping.[9]The subjects were then asked to press the pinch meter increasing theforce moderately to avoid muscle fatigue. A rest period of 15 seconds were given to alternate hands and to record the score .Tip, key and palmer pinch measurements were recorded.

Data analysis:

- Data analysis was done by using SPSS 16.0 version.
- Descriptive analysis was done to check the mean for NPDI, DASH, Pinch Strength values.
- Karl Pearson's test was used to find correlation between NPDI, DASH and Pinch Strength values.
- Results were obtained by using 0.05 level of significance.

Results

The mean and standard deviation of age, weight, and height was calculated. (Table 1),there was a positive correlation of both DASH and NPDI with experience (Table 2).

Table 1: Demographic data of Participants

	MEAN	SD
Age (Yrs)	30.72	3.94386
Ht(Cm)	5.53	0.19725
WT(Kg)	61.83	4.73054

Table 2: Correlation between Work Experience , DASH and NPDI scores

Variable	MEAN	SD	R	P
Work Exp	8.8136	4.15009	.774	.000
DASH Score	17.559	17.12759		
NPDI scores	18.017	17.68351	.698	.000

Table 3: Group Comparison for DASH Score

Work Exp	N	MEAN	SD	F	P
0-5 Yrs	17	.0000*	.00000*	29.1	.00
6-9 Yrs	17	14.941	12.43347		
10-14 Yrs	9	29.105	10.93869		
>15 Yrs	6	38.167	4.49073		

When DASH and NPDI scores are grouped according to years of experiance 0-5,6-9,10-14 and more than 15,analysis revealed a increase in scores with age and also a statistical significant difference between the groups (table 3and 4).

Table 4: Group Comparison for NPDI Score
*none of the participants with 0-5 years of experience complained of pain or disability

Work Exp	N	MEAN	SD	F	P
0-5 Yrs	17	.0000*	.00000*	23.121	.000
6-9 Yrs	17	16.588	18.51708		
10-14 Yrs	9	29.684	11.62876		
>15 Yrs	6	36.167	4.49073		

Table 5: : Group Comparison for pinch strength dominant side

Work Exp	N	MEAN mm Hg	SD	F	P
0-5 Yrs	17	17.529	1.28051	19.4	.00
6-9 Yrs	17	16.235	2.10741		
10-14Yrs	9	13.421	2.43392		
>15 Yrs	6	12.167	1.32916		

Table 6: Group Comparison for pinch strength Non dominant side

Work Exp	N	MEAN mm Hg	SD	F	P
0-5 Yrs	17	16.882	.99262	1.51	.22
6-9 Yrs	17	16.118	1.53632		
10-15 Yrs	9	16.842	1.46299		
>15 Yrs	6	17.167	.98319		

Table 7: Correlation between work experience and pinch strength dominant side

Variable	MEAN	SD	R	P
Work Exp (yrs)	8.8136	4.15009	-.675	.000
Pinch Strength(mmHg)	15.237	2.68674		

Similarly when pinch strength on dominant side are grouped according to years of experiance,analysis revealed a progressive decrease in strength with age and also a statistically significant difference between the groups (table 5).But on the non dominent side there was no statistically significant difference (table 6).Further on the dominant side a negative corelation was found between grip strength and years of experiance (table 7) while on the non dominant side no such corelation was found (table 8). Lastly comparison of pinch strength on the dominant and non dominant side revealed higher values on the non dominant side which was statistically significant (table 9).

Table 8: Correlation between work experience and pinch strength non dominant side

Variable	MEAN	SD	R	P
Work Exp (yrs)	8.8136	4.15009	.191	.148
Pinch Strength(mmHg)	16.661	1.33404		

Table 9: Comparison of Pinch Strength on dominant and non dominant side

Variable	MEAN mm Hg	SD	T	P
Dominant	15.237	2.68674	-3.890	.000
Non dominant	16.661	1.33404		

Discussion

The present study was done to assess the level of disability in male hairdressers. Out of 59 hairdressers 61%had minimal disability. of shoulder, arm and hand.17% had mild disability,19% had mild to moderate disability, only 3% showed moderate to severe disability(Fig 1). While in case of NPDI,61% had minimal disability,17% had mild disability,19%had moderate disability, only 3%showed more disability (Fig2s).We also found positive correlation between years of work experience and level of disability.

This is in agreement with available literature[10] which indicates that hairdressers are at risk of cumulativetrauma. It has long been recognized that workers with predominantly repetitive work tasks, or those maintaining fixed postures for long periods, have increased risk of developing work related musculoskeletal illness.

In 2009, a study by Jens wahlstrom on Upper Arm Postures and Movements in

Female Hairdressers, showed that Hairdressers may be at risk of developing musculoskeletal disorders in the neck and shoulders due to a considerable occurrence of highly elevated arms, especially during customer tasks.[11]

Hairdressers reported significantly higher level of musculoskeletal problems including work related shoulder pain, work related shoulder and wrist pain, work related upper back pain, work related lower back pain.[12]

Working with the upper arms elevated is considered a generic risk factor for neck/shoulder disorders and symptoms, as well as for rotator cuff tendonitis [13,14,15]Studies[16] have shown high degree of neck shoulder pain in hairdressers. Previous studies have already established the various risks for cumulative trauma disorder such as forceful exertion and mechanical stress for long period. High repetitive work may be regarded as causative factor for the occurrence of cumulative trauma disorders. In workers who are exposed to repetitive work for a long time the occurrence of cumulative trauma disorders had found to be very high[16]

The repetitive stereotyped work is typically performed on nonadjustable workstations and chairs. The task demands and lack of adjustability of the work stations may lead to awkward postures such as cervical and thoracic spine flexion, shoulder elevation and abduction which may result in elevated rates of shoulder and neck pain.[17]

Using tools in the same way over and over again can lead to obvious injuries such as misuse of tools and serious bodily harm but can also cause injury simply by the repetition of movement. Repetitive motion disorder is actually a muscular condition. This muscular condition is caused when motions are repeated over and over again in every day work or every day activities. Repetitive motion disorder is actually umbrella term for a no of specific disorders like CTS, tendinitis, ganglion cyst, bursitis, tenosynovitis, tennis elbow. What actually causes repetitive motion disorder is too many repetition of a motion without interruption or unnatural motions, overexertion, musle fatique,or incorrect posture. The places in the body where we most often see repetitive motion disorder occurring are the shoulder, elbow hand and the wrists. Symptoms of these disorders are intense pain, swelling.numbness; loss of strength, less flexibility, which if untreated can cause permanent damage to muscle, tendons, nerves and ligaments[18.]

A study on Ergonomic Risk Factors for the Wrists of Hairdressers by Hsieh-Chingshow that the average time to finish a woman's haircut (51.4 min) is significantly longer than that for a man's haircut (35.6 min) ($p<0.005$). Female hairstylists had significantly greater EMG activitythan male hairstylists. The non-dominant hands of hairdressers have significantly higher overall wrist velocity than those of barbers. Analytical results suggest that the relatively higher force exertion and wrist velocity of female hairstylists combined with prolonged exposure may account for the higher rate of hand/wrist pain in female hairdressers than in male barbers[19]

Veiersted *etal.* (2008) showed thathairdressers typically worked with their arms elevated at $\geq 60°$ for approximately 13% of totalwork time.[20]

In present study a positive correlation was found between neck pain disability and work experience. The greater the average time per work cycle spent in neck flexion, the greater the association with symptoms in the neck area. A statistically significant association was also obtained from the job analysis describing neck forward flexion and upper arm elevation and neck and neck or shoulder disorders[21]

Harms-Ringdahl found that previously asymptomatic individuals all experienced pain after various periods of

prolonged flexion loading of cervical spine.[22]

In the present study positive correlation was found between work experience and disability of shoulder, arm and hand. National Institute for Occupational Safety and Health(1997).concluded that there was evidence for a relationship between repeated or sustained shoulder postures, with greater than 60 degrees of flexion or abduction and shoulder musculoskeletal disorders.[23] We found decreased pinch strength in dominant hand with increase in experience; this may be explained by cumulative trauma suffered by subjects over the years resulting in increased pain and disability. This is in agreement with a study which showed increased two point discrimination and reduced pinch strength between thumb and index finger and thermal thickening over the thumb.[24] There was a significant increase in pinch strength on the non dominant side when compared to the dominant side, this may be attributed to the fact that hairdressers constantly use the non dominant hand to comb, hold hair with their fingers and wave and curl hair and the concomitant decrease in pinch strength on dominant side due to pain and cumulative trauma.

Limitations

Only upper extremity and neck disability is assessed, only male hairdressers participated in the study, Sample size was small.Future studies could include a larger sample size and focus on other areas of the body which are exposed to high degree of stress in repetative work such as the back.

Conclusion

It can be concluded that awkward neck posture and repetitive work done by upper extremity exacerbates risk of disability in hairdressers with increase in age and experience. In addition there is also a loss of pinch strength on the dominant side with increase in age and experience.

Clinical Significance

Since this study showed there was significant disability in hairdressers because of repetitive work so it is need to screen them more thoroughly for musculoskeletal disorders and adapt appropriate rehabilitation measures including their awareness of proper posture and if possible to develop assistive devices and to modify the workstation.

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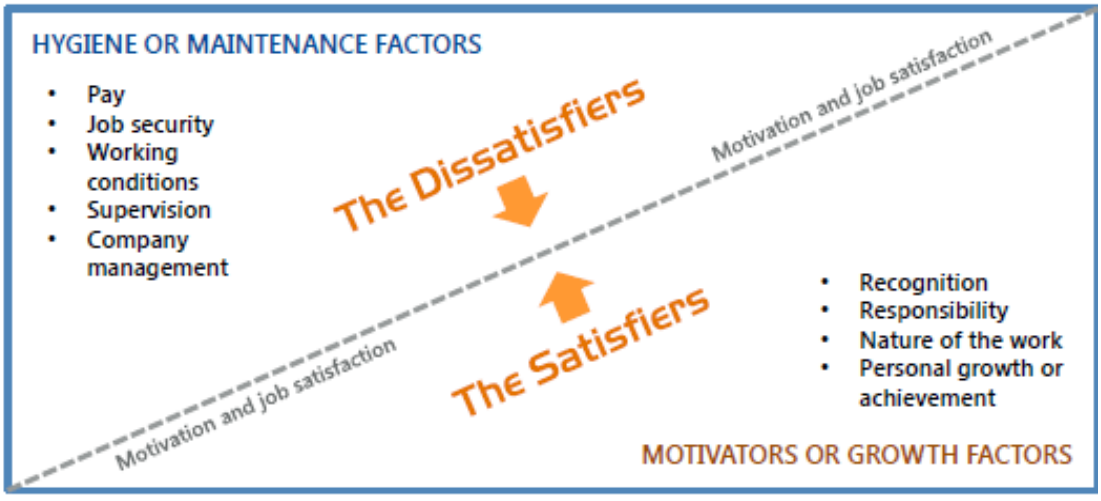

Original article

An epidemiological investigation of outbreak of Project Malaria in PHC area of Rajkot district, Gujarat, India, 2014

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Abstract:

Introduction/ Background: Gujarat is an endemic state for malaria with Annual Parasitic Incidence (API) between 1 and 2. During this calendar year, total 3291 cases of malaria were reported till October month in Rajkot district. The highest contribution was from the Primary Health Center (PHC) of Bharatnagar area (1863 cases). The present study investigates the epidemiological distribution of the malaria cases and determinants which contributed towards the outbreak of malaria in Bharatnagar PHC with special focus on industrial belt.

Method: The study was carried out based on the secondary data generated as a part of National Vector Borne Disease Control Program (NVBDCP) through active surveillance and routine health care at PHC & CHC as passive surveillance. Also meetings with the local health staff, local stakeholders and migrant workers etc, as well as field visits to observe the ecological situation were carried out.

Observations: The incidence of malaria cases has increased double fold every year in Bharatnagar PHC since year 2011. Out of total cases, almost half of the cases (up to July) were reported from industrial project sites. Two peaks were observed respectively in months of May and August 2014 (121 and 169 cases respectively), with intermediate fall in the number of cases in June, July and again in September, October. Climate, water and irrigation as well as ecological factors affecting this outbreak were studied.

Discussion: Rapid development of industrial belt with influx of new migrants from tribal areas of Madhya Pradesh and east Gujarat might have contributed to sudden increase in malaria incidence in month of May. This was followed by prompt measures taken by PHC like IRS and EDPT. However, with initiation of rainy season at the end of July, again sharp peak was observed in the month of August. This was followed by gradual fall after second round of IRS and continued EDPT.

Conclusion and Recommendations: Looking to the epidemiological factors, high transmission would remain till the construction would be going on. Strengthening of active surveillance by deputing/ filling the vacant post of MPWs, motivation and proper training should be carried out. Mass screening of incoming migrants with Rapid Diagnostic Kit (RDT) for malaria followed by prompt treatment. Quality assured regular IRS (Indoor Residual Spray) should be continued over the monthly time period.

Introduction

Malaria continues to pose major public health problem in developing countries, which is a complex and fatal disease caused by four species of *Plasmodium* parasites and transmitted by different species of Anopheles mosquitoes. In India, about 22 percent population lives in malaria high transmission areas and about 67 percent in low transmission areas. [(1)]India is characterized predominantly by unstable malaria transmission, the seasonal

transmission being related to rains. Due to the low and unstable transmission dynamic, most of the population has little or no immunity towards malaria. [2] While malaria is mostly an endemic disease, it may also occur as outbreaks. Factors that may cause outbreaks include an increase in vector breeding sites, migration of infected people into a vector-rich area populated with susceptible individuals, arrival of new efficient vectors, breakdown of vector control measures, resistance of the parasites to treatment and resistance of the vectors to insecticides. [3] For the purpose of stratification and identification of malaria priority areas, major epidemiological types of malaria are 1) Tribal malaria, 2) Rural malaria, 3) Urban malaria, and 4) Project malaria. Project areas are those areas where construction and developmental activities are taken up and temporary tropical aggregation of laborers takes place. The labor force in these projects may come from varied epidemiological backgrounds - some from malaria endemic areas with some degree of acquired immunity, and others from non-endemic areas and completely immunologically naïve. [4] This results in disturbance in eco-system, prolific increase in vector breeding places and increased man-mosquito contact favoring high malaria transmission. These pockets contribute a large number of malaria cases which are highly disproportionate to the relatively small population groups inhabiting the area. [5]90 percent of malaria cases in 2011 in India were reported from 12 states. 90 percent of deaths in 2011 were reported by 9 states in which Gujarat was the highest contributor (16.9 %). [6]Gujarat is an endemic state for malaria with Annual Parasitic Incidence (API) between 1 and 2. Annual malaria cases reported for the year 2011, 2012, 2013 for Rajkot district (excluding Rajkot city) were 5693, 3394, 2369 respectively. [7] During this calendar year, total 3291 cases of malaria were reported till October month in Rajkot district. The highest contribution was from the Primary Health Center (PHC) of Bharatnagar area (1863 cases). A significant increase in the incidence of malaria cases (1863 cases up to October 2014) was observed in comparison to previous year (446 malaria cases in the year 2013) in PHC Bharatnagar area.The present study investigates the epidemiological distribution of the malaria cases and determinants which contributed towards the outbreak of malaria in Bharatnagar PHC with special focus on industrial belt. Additionally the study was also taken up to suggest measures for further control and prevention based on the available evidences.

Method:

Study Area:-

Bharatnagar PHC is located at geo coordinates 22°54'17"N, 70°49'31"E in Morbi Taluka of Rajkot district, Gujarat state. It is distanced at 68 Km towards north from the district Headquarters along Morbi - Samakhiyali National Highway 8A. It lies at an altitude of about 49 meters above sea level. [8] Total population of PHC area is 37223, spread across 29 villages. But there is additional population of 6081 migrant workers working in Vaadi's (fields) for agriculture work (seasonal) and 11950 workers in industries. Major occupation in the PHC area is the cultivation and ceramic industries.

Data collection:

The study was carried out based on the secondary data generated as a part of National Vector Borne Disease Control Program (NVBDCP) through active surveillance and routine health care at PHC & CHC as passive surveillance.

For active case detection, multipurpose health workers (MPWs) searched for cases of fever in their field areas. For passive case detection, laboratory technicians in health care facilities collect blood smears of the patients presenting with fever. Malaria

surveillance reports were reviewed. A case of malaria was defined as an acute febrile illness with a peripheral blood smear positive for malaria or a positive rapid antigen test in a resident of Bharatnagar PHC area. Laboratory registers were reviewed to abstract slide examination results. Health care facility records and registers were reviewed to find the demographic details regarding PHC area and details regarding the staff position at PHC. Also meetings with the local health staff, local stakeholders and migrant workers etc, as well as field visits to observe the ecological situation were carried out.

Observations:

The outbreak was noticed by the PHC medical officer with rise in the malarial cases in the passive surveillance during the month of April in the various PHC areas including industrial belt. Following that he has strengthen active surveillance to find out the malaria cases.

Descriptive epidemiology / Malaria prevalence and spatial trend

Table 1 shows the incidence of malaria cases of Bharatnagar and surrounding PHCs of last 4 years. The incidence of malaria cases has increased double fold every year in Bharatnagar PHC since year 2011. In 2014, 1863 cases have been reported till October (Attack rate: 33.8 per 1000); 616 from industrial project sites whereas remaining cases from Vaadi's (agriculture fields) and villages. However not a single death due to malaria was reported during this period.

Table 1: Malaria cases, year wise incidence in Bharatnagar PHC and other nearby PHC's

Year	Primary Health Center			
	Bharatnagar	Vavaniya	Khareda	Sarvad
2011	100	24	171	44
2012	284	27	66	33
2013	446	11	46	87
2014 (up to Oct.end)	1863	3	25	19

A retrospective analysis of the data indicated that the epidemic threshold (i.e., number of reported cases exceeding by two standard deviations of average number of reported cases in 2011-2013) had been almost reached in June 2014 (559 cases in PHC area for a threshold of 622) and had crossed in July 2014 (692 cases). Total seven spots were identified in the PHC areas reporting the rise in the malaria cases. Out of total cases, almost half of the cases (up to July) were reported from industrial project sites. Hence an attempt was made to investigate the various epidemiological factors responsible for outbreak across the industrial areas.

Table 2: Malaria cases and deaths, by age and sex, January - October 2014

Characteristics		Total number of cases* (%)	Total deaths
Age group (years)	0 - 5	121 (19.6)	0
	6 - 15	100 (16.2)	0
	16 - 59	389 (63.2)	0
	≥ 60	06 (1.0)	0
Sex	Male	424 (68.8)	0
	Female	192 (31.2)	0
Total		**616 (100.0)**	**0**

Table 2 shows the age and sex wise distribution of 616 malaria cases in industrial project sites. Majority (63.2%) cases belonged to age group of 16 - 60 years, whereas 19.6% cases were reported in under 5 age group. About two third cases (68.8%) were reported in males and remaining one third in females.

Distribution as per native residence of the cases

Out of 330 cases in month of August to October 2014, details of native residence were available in 246 cases. 74 percent (182 out of 246) of the cases were native residents of tribal areas of west Madhya Pradesh and east Gujarat. Moreover 67.2% of P. *falciparum* cases (90 out of 134) reported during these 3 months were from same areas as mentioned above. (Table 3)

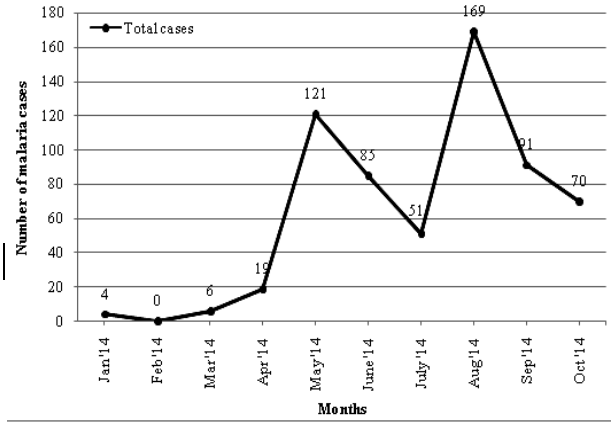
Table 3: Malaria cases distribution, by native residents, August - October 2014

Native residents	August - October 2014	
	Total malaria cases (N=330) (%)	*Pf* cases (N=134) (%)
Madhya Pradesh (Dhar, Alirajpur, Jhabua)	114 (34.5)	60 (44.8)
Gujarat (Dahod, Chhota Udepur, Godhra)	68 (20.6)	30 (22.4)
Others (Uttar Pradesh, Rajasthan, Bihar)*	63 (19.1)	25 (18.6)
Not known	85 (25.8)	19 (14.2)
Total	330 (100.0)	134 (100.0)

Epidemic curve and its association with various parameters

Two peaks were observed respectively in months of May and August 2014 (121 and 169 cases respectively), with intermediate fall in the number of cases in June, July and again in September, October (Figure 1).

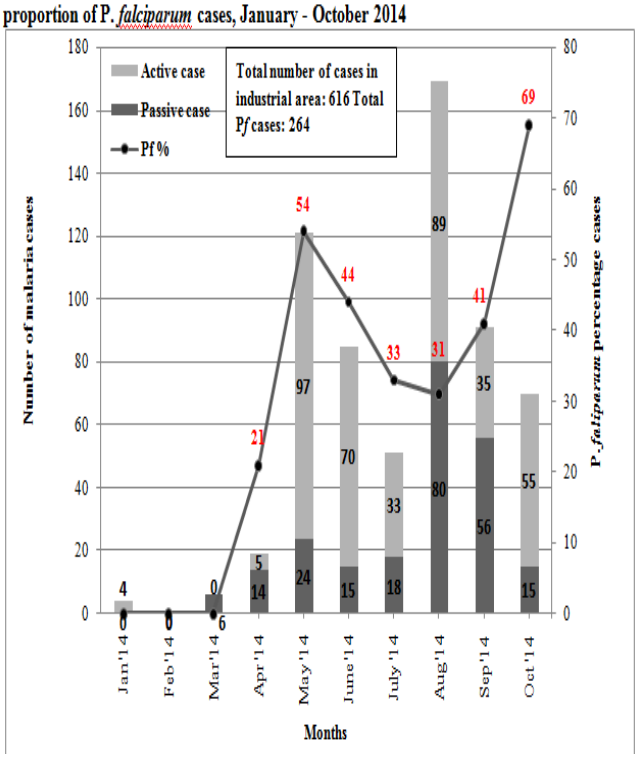
Figure 1: Malaria cases, month wise with interventional control measures, January to October 2014



.....	Active surveillance started from May, 15 rounds of surveillance till date
– – –	First round of IRS at the end of May, newly developing industries covered
– · – ·	First rainfall; potential development of water pockets in and around industries leading to breeding places of mosquitoes
— · ·	Second round of IRS at the end of August, all 150 industries covered
———	Fogging of industrial area in the mid-September
⟺	Continuous influx and efflux of migrant laborers round the year - dynamic migration/ circular migration

More than 50 percent cases were reported by active surveillance in industrial areas. Overall, 264 (42.9%) had *P. falciparum* infection (Figure 2).

Figure 2: Malaria cases in project sites by month of onset, active case detection, and proportion of P. *falciparum* cases, January - October 2014



Climate, water and irrigation

The climate of Bharatnagar is semi-arid, with hot and dry summers from mid-March to mid-June and the wet humid monsoon season from mid-June to October. During summer time, the temperature ranges between 24 °C and 42 °C. In the months of monsoon, the average humidity rises up to 75%.

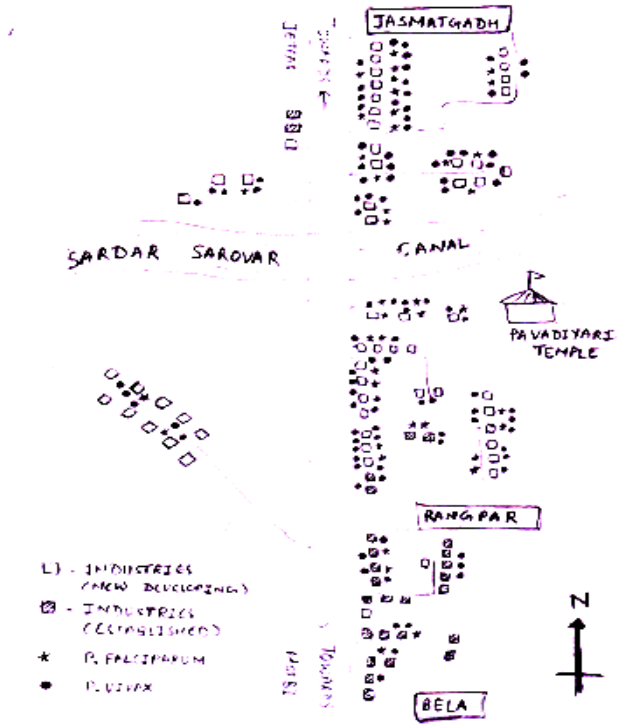
The Sardar Sarovar canal runs along the PHC area traversing village areas and industrial project sites. The construction of canal was completed in the year 2011 and from 2012 onward water was released in this canal. The water supply through this canal is available round the year.

Ecological factors

The area of PHC is characterized by rapid development of ceramic industries since last 2 years following the regular supply of the water through newly created canal. About 150 industries have been established in this area along the belt of Jasmatgadh - Bela belt. This belt has clear cut two division of area, one from Rangpar to Bela, which is having already functioning factories and second from Jasmatgadh to Rangpar, having 100

factories in different stages of construction since last 12 months. This second part of the belt reports dynamic migration of around 1100 to 1200 having continuous influx of new migrant laborers and efflux of existing migrants (Figure 3).

Figure 3: Spot map to highlight industrial zone and cluster of malaria cases



water fetching from the canal by using siphon for industries had created numerous water bodies around few industries. This was creating favorable situations for mosquito breeding around the industries throughout the year besides water logging during rainy season.

Preventive and control activities carried out by PHC

The action taken by PHC following increase in malaria cases were; early diagnosis and prompt treatment (EDPT) by strengthening of active surveillance in the month of May followed by vector control through IRS activity (with alpha cypermethrin) in newly developing industries during first week of June. Long Lasting Insecticide Nets (LLINs) were also distributed to the positive cases. Vector control through second round of IRS in all 150 industries during the last week of August and impregnation of the mosquito nets available with the migrant workers or donated by the owner of the industries.

Discussion:

Epidemiological factors that might have contributed for the increase in cases leading to first peak of epidemic in month of May were;

1) Vulnerability/ Human factor - As many as 100 new industries were under simultaneous construction which had brought in huge influx of migrant laborers. Majority of the migrants were from Madhya Pradesh (mainly from Jhabua, Dhar and Alirajpur districts) and east Gujarat (mainly Dahod, Godhra and Chhota Udepar districts). Jhabua and Alirajpur are known *Adivasi* districts and up to 85.6% population is tribal. [9] These three districts were identified as endemic for malaria and have been included in Enhanced Malaria Control Project (EMCP) of NVBDCP with support from World Bank. [10] Population of Dahod district is mostly tribal (Bhils). [11]
2) Receptivity/ Entomological factor - Potential breeding places were present around the industrial zone due to passage of Sardar Sarovar canal. Such places were also observed around new construction sites due to pockets of water accumulation.

A second peak in epidemic curve with as many as 169 cases was observed in the month of August. It might have been occurred due to;

1) Climatic factors - First rainfall in this area happened at the end of July 2014 which had caused the development of conditions favorable for breeding of mosquitoes.
2) Vulnerability/ Human factor - Continued dynamic migration might have acted as a contributory factor for the increase in incidence of cases.

The control and preventive measures (EDPT, IRS, LLINs) implemented by PHC as described in observation section

was responsible for the gradual fall in the incidence of cases in months of June, July and again in September, October 2014.

Challenges observed for control of epidemic:

- Health service related - In Bharatnagar PHC, Laboratory Technician is on deputation for 3 days in a week and out of sanctioned posts of 7 Multi Purpose Health Workers and 7 female Health Workers, 5 and 2 positions have been respectively vacant till date.
- Ecology related - Due to passage of canal and continuous development of new industries, breeding sites remain present potentially favouring the transmission of malaria throughout the year.
- Population movement -Dynamic migration round the year has challenged the health system to effectively control the outbreak.
- Tribal population is illiterate and having complete different dialect and languages affecting in imparting effective health education.

Conclusion & Recommendations:

This was a project malaria epidemic with a constant influx of migrant workers from the endemic districts with perennial presence of water pools favoring constant breeding places, low level of health awareness and protective behavior and poor compliance to treatment coupled with crunch of human resource. Looking to the epidemiological factors, high transmission would remain till the construction would be going on. Thereafter perennial transmission due to favorable environmental condition and availability of vulnerable host in the industries would be continued. To control present epidemic and prevent future outbreaks following recommendations were made.

- Strengthening of active surveillance by deputing/ filling the vacant post of MPWs, motivation and proper training.
- Mass screening of incoming migrants with Rapid Diagnostic Kit (RDT) for malaria followed by prompt treatment.
- Drug Distribution Centres (DDCs) and Fever Treatment Depots (FTDs) can be an established in project areas for providing easy access to anti-malarial drugs to the migrant workers. Motivated migrant workers with some education from the group may be involved in screening, FTDs and health education on malaria.
- Quality assured regular IRS (Indoor Residual Spray) should be continued over the monthly time period.
- Awareness about importance and benefits of completing the treatment and behavior change communication for using insecticide mosquito net must be imparted.
- Looking to high monthly turnover of the migrant workers with short stay requirement of mosquito net will be huge, hence strategy to distribute mosquito net to local employers/contactor should be adopted instead distributing to the workers.
- Attempts were carried out to reduce the water leakages from and of larval breeding places by collaboration of various departments, like revenue, irrigation etc
- Attempts were made to involve local stakeholders with little success. Efforts should be continued with various advocacy approaches. Local NGOs should be sought for health education, EDPT and providing personal protective measures like insecticide nets.

- Efforts for sensitization of and cooperation from local political leaders and senior administrative officers from related departments in source reduction must be continued.

Limitation:

The study is based on the secondary data generated as a part of NVBDCP.

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WHO Model for Health System Strengthening

Short Communication

Evaluation of Medical Certificate of Cause of Death (MCCD) Training imparted to Medical Officers of Vadodara District located in Gujarat

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Abstract:
Complete, timely and accurate registration of death is crucial for understanding population dynamics and planning effective development programmes. However, there has been little research on the dynamics of the certification process and the extent of training of physician certifiers. This study aims to find out the extent to which the training imparted to Medical Officers at primary and secondary level could improve their skills in filling up of MCCD certificates. A pretested semi-structured proforma to test various components of the cause of death certificate was administered to the participants before and after the training that lasted for five hours. Of 120, only 80 participants from four trainings filled the pre and post-test tool. Almost all of them thought that there was a dire necessity of MCCD training.
Conclusion & Recommendation: The MCCD training imparted to the Medical Officers significantly improved their knowledge regarding various causes of death to be entered in MCCD certificates. Adequate training and proper sensitization of the private and government doctors regarding the usefulness of MCCD data is required. Pre and post-test assessment as utilized at this center offers feedback to the trainers as well as participants about the adequacy and importance of MCCD. Rechecking of randomly selected forms (say 10%) filled by medical officers by concerned doctors at district level is recommended.

Key Words: Medical Certificate of Cause of death, Training, Pretest, Post-test, Medical Officers.

Introduction

The Medical Certificate of Cause of death (MCCD) plays an important role in providing mortality pattern of various diseases. Because of this reason, the MCCD scheme has been interwoven with the Registration of Births and Deaths Act, 1969 [1] and is provided with legal support. MCCD is basically a part of International Statistical Classification of Diseases (ICD) and health related problems formulated by World Health Organization (WHO). It provides basic scientific information for medical research and it enables planners to understand the trend and mortality pattern of various diseases.

The Registration of Births and Deaths Act, 1969 came into force in the State of Gujarat in 1970. The MCCD scheme was introduced only in Vadodara Municipal Corporation on an experimental basis during 1971. With the introduction of Gujarat Registration of Births and Deaths Rules of 1973, all civil surgeons and medical officers of referral hospitals were intimated to introduce the certification of death as per prescribed proforma under the rule. However, to bring full strength and quality of data in the MCCD scheme, efforts

are required by way of imparting training to medical personnel, coders and statistical personnel[2].

To ensure correct and proper filling up of these forms, the Union Government is currently covering this scheme in phased manner to include Medical Practitioners and Coders at primary, secondary and tertiary levels. In Gujarat, all the Doctors and Coders are being trained in a phased manner. It is also being included in the MBBS curriculum so that budding medical practitioners will be well versed with this issue.

There is long way to go to achieve completeness of death registration in Gujarat, as is the case elsewhere in India. Complete, timely and accurate registration of death is crucial for understanding population dynamics and planning effective development programmes. Incomplete or inaccurate entry in these certificates poses difficulty in obtaining reliable information pertaining to causes of mortality. More so, there has been little research on the dynamics of the certification process and the extent of training of physician certifiers. Hence, this study aims to find out the extent to which the training imparted to Medical Officers at primary and secondary level to improve their skills in filling up of MCCD certificates.

Methods

Doctors at Medical Colleges are trained at state level, mostly at State Institute of Health & Family Welfare (SIHFW) Sola, Ahmedabad and they in turn impart trainings to Medical Officers posted at Primary Health Centers and Community Health Centers on a regular basis. These doctors are deputed for a day long training from the office of DHO Vadodara, in a batch of 25-30.This study reflects the findings of the feedback taken from the participants of MCCD training between 2010 and 2012 at a training center of Vadodara district located in Gujarat. 120 participants were trained in a batch of 30 each at four different training sessions. A pretested semi-structured proforma to test various components of the cause of death certificate, accuracy and completeness pertaining to MCCD, uses of MCCD and a case study to practice was administered to the participants before and after each training that lasted for eight hours.

Results and Discussion

Of 120, only 80 participants from four trainings filled the pre and post-test tool. All of them were Medical Officers from Vadodara district. A total of 80 participants filled the pre and post-test tool out of the 120 who took the training. The rest could not offer feedback as they did not either report in time or returned back blank forms. Almost all of them (92.5%) mentioned that there was a dire necessity of MCCD training for them. Seventy percent (56/80) participants reported that they were filling the MCCD form in their department routinely. Twenty percent (16/80) were well versed with the issue as MCCD was taught to them as part of undergraduate curriculum. Only eight participants had received some training in MCCD after their basic medical qualification (MBBS). Eighty percent (64/80) reported having faced difficulty while filling up the forms, especially; when sudden death of the person occurred, when dead body was brought to the hospital, in postmortem cases and in cases of newborns. Most common reason given by them for these difficulties was a lack of training in MCCD.

Only 15% of the participants were up to the mark regarding the accuracy and completeness of the MCCD form. A quarter of them opined that MCCD form should be modified so as to make it more simple, specific and understandable. One of the barriers to the implementation of MCCD as

mentioned by almost three quarter of them was the unavailability of coders to do ICD classification of causes of death at their settings. Some of the pertinent suggestions for improvement as mentioned by them were; the need of training the concerned district level officials as well, the need for review meetings at yearly interval and proper maintenance of the medical records. The perception of one third of the participants was that, they were not satisfied with completeness and accuracy of death certificates filled by them (Table I).

Table 1: Knowledge, Attitude and Practice of the Participants regarding MCCD (n= 80)

Components	No.	%
Felt Need for MCCD training	74	92.5
Prior training received- a) During MBBS	16	20
b) Others: (Guest lectures, self - reading, formal training)	8	10
Filling MCCD certificate routinely	56	70
Difficulty faced while filling the MCCD forms-	64	80
a) When sudden death of the person occurred	38	47.5
b) When dead body was brought to the hospital	56	70
c) Post-mortem cases	54	67.5
d) Newborns	12	15
Correctly mentioned accuracy and completeness related to MCCD	12	15
Modification of MCCD forms required-	20	25
a) It should be simple to fill up the forms	20	25
b) It should be specific	5	6.3
c) It should be easily understandable.	16	20
Barriers to the implementation of MCCD- Unavailability of a technical person at their settings	58	72.5
Suggestions for improvement-	49	61.2
a) Need of training the concerned district level (Officials as well.)	42	52.5
b) Need of review meetings at yearly interval	31	38.8
Not satisfied with completeness and accuracy of MCCD forms filled by them	24	30

1. The MCCD training imparted to the Medical Officers significantly improved their knowledge regarding immediate, antecedent and underlying cause of death ($p<0.0001$) to be entered in MCCD certificates. Although improvement was also seen regarding their knowledge about contributory cause, but this was not statistically significant. Similarly statistically significant difference was seen in their knowledge regarding manner of death and injury and the uses of MCCD (Table 2). These pretest findings are in line with the findings of an unpublished research (thesis) conducted by Jain Kamlesh (Situational analysis of Civil

Table 2: Comparison of correct knowledge of participants regarding MCCD during pretest and post test. (n=80)

Knowledge regarding different causes of death	Pre test No.	%	Post test No.	%	P value (chi square test)
Immediate cause	12	15	44	55	<0.0001
Antecedent cause	12	15	44	55	<0.0001
Underlying cause	8	10	60	75	<0.0001

Registration System in Municipal Corporation area of Ahmedabad. A dissertation submitted to Gujarat University, MD (Preventive & Social Medicine, October 2009) which reported that only 2.04% forms were completely filled. A study by Agarwal Swapnil S et al [(3)], reflected that there was confusion and inadequate understanding of the meaning of terms 'causes of death', 'modes of death', and 'manners of death' among the doctors, findings similar to the pretest of our study . In our study also most of the time heart failure was mentioned as the immediate cause of death. While interpreting the given case study data, it was observed that during the pre test, although the participants mentioned gender and age, the name of the deceased was frequently missing. Nonetheless, knowledge on age, sex and name have been significantly improved in the post test. There was also significant improvement seen in the post-test with regard to the immediate, antecedent, underlying and contributory causes. The same was also seen in mentioning the time interval in relation to different causes of death, regarding co**rrec**t filling of manner of death and injury signature of the doctor (Table 3).

Table 3: Pretest and Post test assessment of the participants based on the given case study (n=80)

Correctly mentioned in the given case study	Pre test No.	%	Post test No.	%	P value (chi square test)
Name of deceased	8	10	34	42.5	<0.0001
Sex	61	76.2	76	95	0.0016
Age	58	72.5	74	92.5	0.0018
Immediate cause	12	15	64	80	<0.0001
Antecedent cause	12	15	32	40	0.0008
Underlying cause	4	5	60	75	<0.0001
Contributory cause	8	10	48	60	<0.0001
Time interval in relation to different causes of death	3	3.7	42	52.5	<0.0001
Manner of death and injury	28	35	64	80	<0.0001
Name and signature of medical attendant	4	5	45	56.2	<0.0001

Conclusions & Recommendations

The MCCD training imparted to the Medical Officers significantly improved their knowledge regarding various causes of death to be entered in MCCD certificates. Adequate training and proper sensitization of the private and government doctors regarding the usefulness of MCCD data is required. Pre and post-test assessment as utilized at this center offers feedback to the trainers as well as participants about the adequacy and importance of MCCD. Rechecking of randomly selected forms (say 10%) filled by medical officers by concerned doctors at district level is recommended. An extra effort needs to be put forth towards re-orienting them for instance, inculcating positive attitude and addressing the lacunae in the scheme.

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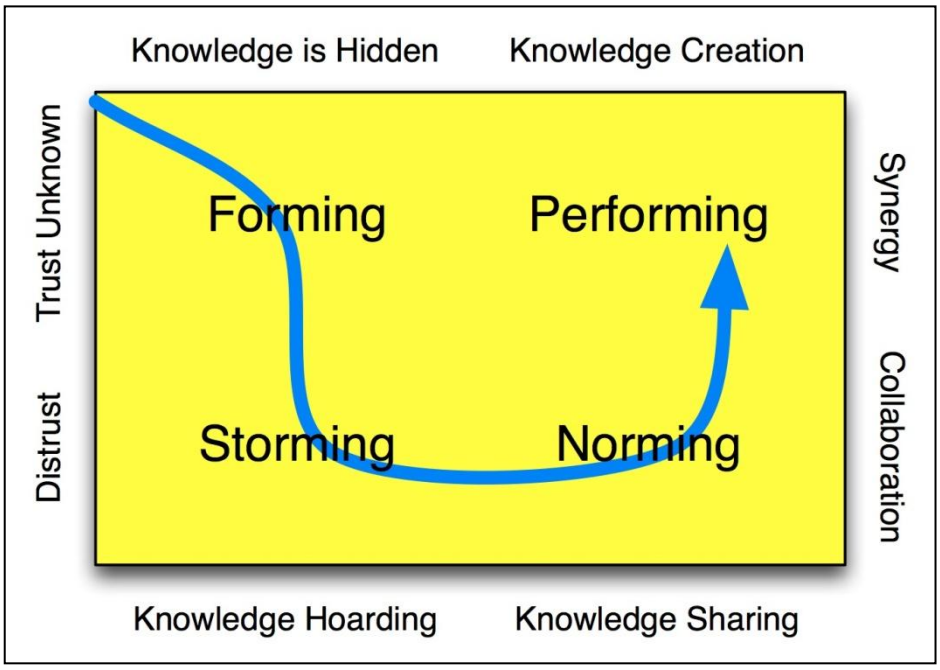
Tuckman's Theory : stages of Team building



Minutes of Meeting of Technical Advisory Council- IAPSM GC, held on 27.06.2014 at GMERS, Sola Ahmedabad.

Meeting of Technical Advisory Council (TAC) of IAPSM – GC was held at Community Medicine Department, GMERS Medical College - Sola on 27th June 2014 under the chairmanship of Dr K N Sonaliya, President-IAPSM- GC.

Following members have attended the meeting.

Sr.	Name	Designation	Community Medicine Dept, Institute
1.	Dr. K N Sonaliya	President and Professor	IAPSM-GC & GCS Medical College, Ahmedabad
2.	Dr. S.L.Kantharia,	Professor	Govt. Medical College, Surat
3.	Dr V. S. Mazumdar	Professor	Medical College, Vadodara
4.	Dr. R. K. Baxi	Professor	Medical College, Vadodara
5.	Dr Pradeep Kumar	Professor	GMERS Medical College, Sola
6.	Dr P. B. Verma	Professor	GMERS Medical College, Gandhinagar
7.	Dr. Niti Talsania	Professor	BJ Medical College, Ahmedabad
8.	Dr. K. N.Trivedi	Professor	ADAG Medical College, Bhuj
9.	Dr. Rajesh Mehta	Professor	GMERS Medical College, Valsad
10.	Dr. Sheetal Vyas	Professor	AMC-MET Medical College, Ahmedabad
11.	Dr D. V. Bala	Professor	Medical College, Ahmedabad
12.	Dr. Dipesh Parmar	Professor	MP Shah Medical College, Jamnagar,
13.	Dr. N. R. Makwana	Professor	MP Shah Medical College, Jamnagar
14.	Dr. Uday Shankar Singh	Professor	PS Medical College, Karamsad
15.	Dr.(Brig) A.K.Chaudhary	Professor	SBKS Medical College, Vaghodia
16.	Dr. Niraj Pandit	Professor	SBKS Medical College, Vaghodia
17.	Dr. Atul Trivedi	Asso. Professor	Medical College, Bhavanagar
18.	Dr. A. M. Kadri	Secretary and Professor	IAPSM-GC & PDU Govt. Medical College, Rajkot
19.	Dr Chandresh Pandya	Vice President	IAPSM-GC
20.	Dr. Bhavesh Modi	Vice President	IAPSM-GC
21.	Dr. Viral Dave	Joint Secretary	IAPSM-GC
22.	Dr. Venu Shah	Treasurer	IAPSM-GC

Following agendas were decided to be discussed during the meeting:

- Appraise about the activities planned/ideas and seek advises.
    - Capacity Building: Training, CME
    - Research & Project
- Discussion on seek the points for preparing working/technical papers on
    - UG teaching – Standards and guidelines
    - PG teaching – Standards and guidelines
    - RHTC & UHTC – Standards and guidelines
    - Collaborating with Health System as Technical Arm.
- Any other points suggested by the august members.

Meeting started with welcome from Dr Pradeep Kumar, HoD of organizing institute and Dr. K.N. Sonaliya, President, IAPSM-GC.

Secretary, IAPSM-GC shared purpose of creation of TAC and objectives of the meeting. Below ae the objectives shared by..

1. Seeking advises on various topics and use it for IAPSM-GC activities
2. Seeking guiding points and principles on working groups of UG teaching, PG teaching and RHTC/UHTC activities.
3. Creating a platform where all institutes come together and share their views, issues, and best practices.

Activities of IAPSM-GC

Secretary, IAPSM-GC presented activities carried out by IAPSMGC till date as well as future plan. He informed IAPSM-GC has partnered with UNICEF to carry out a study assessment of Water Sanitation and Hygiene (WASH) related services and practices in Health centre of high risk districts of Gujarat. It was proposed to carry out with support of Medical Colleges.

Dr. S. L. Kantharia, Prof. & Head, GMC, Surat shared that Community Medicine GMC, Surat has been requested by NACO to conduct state level research project on HIV/AIDs in truckers. He proposed that IAPSM-GC can undertake this project. All members unanimously agreed for the same.

Following suggestions were received and decisions were made for IAPSM-GC related activities.

- E-newsletter or face book like mechanism may be created so that all members can be informed about the activities. In case of e-newsletter it can be published on 3 monthly. To increase the non-scholastic ability it was suggested to arrange a session on general knowledge and personality development in Annual IAPSM-GC PG meet Booster. The same was proposed with the idea of conducting work shop on payment basis to improve arrangement constrains in booster.
- It was proposed to arrange Community Medicine related quiz for UG and PGs.
- To have a field exposure of PG resident doctors for different set up i.e. other state, NGO working in health like Gadhchiroli and Jamkhed etc on self sponsorship basis. IAPSM-GC can co-ordinate centrally.
- It was also suggested that PG students should be posted in different colleges (Post graduate students' Exchange Programme) in order to receive knowledge about various activities in each department.
- It was presented by Professor from all the Private Medical Colleges that they are left out from the RMT activities in recent revised order of assignment of the districts. All the members of TAC felt that it was not proper and appropriate representation is to be made by IAPSM-GC and others as when opportunity arises.
- To increase the capacity of the faculties in teaching of Health System and Health Management a workshop for middle order faculties should be plan.

Enhancing UG Teaching

Dr. D.V. Bala, Professor & Head make a presentation about a report on bringing uniformity in UG & PG assessment in different colleges of Gujarat University prepared by six Medical Colleges of Gujarat University after discussion. It was recommended unanimously to carry out steps to bring uniformity in UG teaching & exam pattern.

For improving the undergraduate teaching following issues were discussed.

1. Currently there is lack of relevance of subject in the UG students.
2. Teaching for of class room based than community based.
3. Teaching is more of knowledge based than skill based.
4. So many irrelevant topics are there. Clarity on content priority is lacking.

Based on above issues and other points following principles and working points were finalized by TAC. Broad principles suggested by the TAC for Working Group are as below.

1. Should be prepared as per MCI Guideline for UG teaching.
2. The recommendations should be having broad framework with flexibility to incorporate local need and opportunities.
3. Sequencing of topics should be from basic to applied/advanced.
4. Best practice from different colleges can be incorporated.
5. Content relevant to Gujarat Health administration and local epidemiology should be included.
6. Content may be divided on basis of "Must to Know, Good to Know and May be known. (Dead woods (Irrelevant topics) may be removed.
7. Specific Learning Objectives (SLO) for each topics/session should be prepared.
8. Uniform journal for UG may be prepared which can be used by all Colleges keeping local situation and need in mind.
9. In practical sessions applied aspects of topics (e.g. Nutrition) and skill based teaching (e.g. chlorination, epidemiology, biostatistics) and in field visits more exposure to Health services/program may be kept.

Enhancing PG activities :

It was discussed that every year more than 50 residents are joining MD in Community Medicine in different medical Colleges. It was felt that in Gujarat PG teaching has improved a lot in comparison to past when one or two students were joining in one colleges. However it was felt that still a lot can be done to improve as PGs are more interested to learn and work hard. Following issues were identified and discussed for PG Teaching strengthening.

- Lack of structured curriculum
- PG teaching..
- Is not in alignment with current role,
- Is restricted to basic level and not moved to application part.
- Not matching with the professional aspiration of PG as many of them are opting jobs in the Health System rather than teaching or research institute.
- Lack of adequate Community Medicine Materials (opportunities) for practical (Skill) & field understanding.

It was suggested by the TAC that same principles/points recommended for UGs may be kept in mind by Working Group for PG related discussion and document preparation. Additionally following point were suggested by TAC.

- Uniform Log book can be prepared which can be used by all Colleges keeping local situation and need in mind.
- Separate teaching Class for 1st, 2nd and 3rd yr Post Graduates can be suggested along with General PG classes.
- Instead of Pedagogy; more of andragogy approach may be used i.e. Case study preparation- discussion, Field visit discussions, Journal clubs, article discussions etc. should be stressed.
- In selection of dissertations; along with feasibility; its usefulness for future career of the PGs may be kept in mind.
- Emphasis on field exposure with pre determined specific objectives must be given.
- Exposure to clinical skills for primary health care should be ensured.
- Field Posting, Clinical posting should be structured and made effective.
- Exposure for Health education should be part of the curriculum.
- Formative assessment (i.e. annually) for all PGs should be planned.

- In a given framework, uniformity in university examination should be done.
- If pedagogy is asked in the PG exam, it should be formally taught during the PG period.

RHTC & UHTC Activities :

Discussion for strengthening RHTC and UHTC activities for UG and PG teaching carried out. Commissioner Health has framed a special committee for the RHTC/UHTC. Dr. Vihang Mazumdar, Professor & Head, Medical College, Vadodara is the member of that committee. He has shared their approaches and progress. The points discussed are as below.

- Though MCI recommends administration control of RHTC/UHTC by Dean, but complete clarity is not there and as per the man power requirements laid down by MCI it can be deduced that teaching and training parts should be under the administrative control of the Dean.
- College can provide support in the form of prescribed staff, infrastructure, teaching equipments (LCD, computer, books).
- As far as activities are concerned PG students and interns should be posted regularly with predefined objectives and teaching schedules whereas it can be sue in Under Graduate teaching show field epidemiology (village/urban slum) and orientation about health related services/programs

Additional Agenda

President-IAPSM-GC requested to all Heads of the Department and senior professors to encourage and nominate the active member for contesting Executive council of IAPSM GC.

The idea of preparing the multi author textbook of Community medicine by faculties cum members from IAPSM-GC was shared. It was suggested that to begin with we may prepare notes and soft copy can be shared in pdf format and uploaded on website of IAPSM-GC.

Secretary requested to all the members to encourage faculties and PG to submit their research articles in Healthline Journal. He shared that it is a National Journal with five indexing and accessible globally on the web. Also he appealed that articles published in this journal should be given mark in ad hock interview considering National as is being done in case of many journals which are electronically published by one person or a small group from Gujarat.

It was decided that Community Medicine should be used as a nomenclature of the subject instead of Preventive & Social Medicine in all the correspondences and University must be communicated wherever the case may be.

Discussion on Public Health Laboratories was held. Members were of the opinion that currently Community Medicine Department has to little to contribute independently in Public Health Laboratory but should be at institutional level.

At the end Dr. Chandresh Pandya, Vice-president, IAPSM-GC, gave vote of thanks with special acknowledgement to Community Medicine Department, GMERS Medical College –Sola for all pains and efforts in organizing meeting and Community Medicine Department, GMC-Bhavnagar for their financial support for refreshment and lunch.

The meeting adjourned with thanks to the chair.

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Report 'Booster – 2014'

3rd IAPSM-GC PG Meet

"Gender Equality"
Be human, Be Considerate To Women

- Equal Right, Equal Might

Organized by: Dept of Preventive & Social Medicine, Medical College, Baroda, 390001,

Background

The 3rd Annual IAPSM-GC PG meet was organized by the team of all Residents from Dept. of PSM, Medical College Baroda, Vadodara on 5th and 6th September, 2013. After spreading the topic news online on 'Booster Facebook page' to take suggestions from PGs across the state, the theme for this learning event was decided as "Gender Equality - Be Human, Be Considerate to women". Approximate 150 PG students from all medical colleges of Gujarat took part in this event. The meet included academic sessions from eminent experts in Gender Equality and also some co curricular activities.

Different activities: Day 1 (05/09/2014)

Inauguration:

With a Prayer and lamp lighting the event was inaugurated by Dr A T Leuva, Dean Medical College Baroda, the Guest of Honor. He praised the initiation of such '*For the student - By the student'* event that is organized yearly by residents of PSM all across Gujarat. Inauguration event had become special by the presence of Medical Superintendent Dr Rajiv Daveshvar, Professor and Head PSM Dr V S Mazumdar, IAPSM GC President Dr K N Sonaliya, IAPSM GC Secretary Dr A M Kadri and GMC observer for the event Dr J R Damor.

Sessions:

First session of first day was kick started by our faculty Dr Shobha Misra, Associate Professor, MCB. She had not only explained importance on gender equality but also discussed an excellent tool for gender analysis in research. As an invited guest speaker Dr Dinesh Kapadia (Director, Gender resource centre, Ahmedabad) talked on "Gender Inequality – Sensitization and Awareness on Legal Provision". Both these lectures were very helpful to students in understanding the actual burden, current scenario and available and future solutions in the field of gender equality and also the legal side of it. During post lunch period guest speaker Dr Arthur Mackwan (SMO, Vadodara) spoke on 'Work Experience And Challenges - What Field Requires From A PSM Post Graduate?' Special discussion time was allocated after each session and participants took part actively in discussions. All the queries and doubts were nicely replied by speakers. Thematic cultural events like Poster making, Rangoli, Mahendi and Card making were organized in the evening at the end of scientific session. Students from all colleges took part with great enthusiasm and tried their best to display their creative talents. During these sessions PGs enjoyed interacting with their colleagues from different colleges.

Day 2 (06/09/2014)

Sessions:

Enthusiasm similar to day one was also evident on the faces of participants on the next day too. Topic "Gender inequality: Psychosocial aspects" was explained in depth by Dr Bhavna Mehta, Associate Professor, Faculty of Social Work, MS Uni. After that Dr Bhavesh Modi, Associate Professor, Dept of PSM, GMERS, Gandhinagar presented his views with graphs and pictures on "Tobacco control policies – advocacy & challenges". Words "Best was yet to come!" were proven true by Dr V S Mazumdar when he gave his views on the topic "Presenting Papers at Conference- Common Errors". Students found the lecture very interesting and learned the art of presentation. After all the academic/scientific sessions a beautiful extempore was given by Mr.Jay Vasavada, an eminent name in Gujarati literature, on *"સ્ત્રી : પતંગિયા ની પાંખ અને અજગર ની આંખ"*. His humorous and at the same time an emotional speech touched many hearts. Scientific session was followed by thematic cultural events like Dumb Charades, ad making and drama

Felicitation of Winners & Vote of Thanks:

Felicitation of the winners of thematic and non thematic was done with certificates and prizes to boost PG's motivation. After felicitation of winners, the PG Meet was concluded with vote of thanks from Dr R K Baxi, Professor. The PG meet was very well appreciated by all the delegates, experts as well as senior teachers from different medical colleges.

Feedback from the Participants

This meet acted as a platform for the PG students to explore and share their ideas and network with each other for future advancement. Booster in real sense is an unique opportunity to sensitize young turks of public health towards a particular issue and may help in overall development of the state.

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BOOSTER-2014

3rd Annual IAPSM-GC PG Meet

Technical Advisory Coucil & Technical Working Group Meetings

Training of Investigators for WASH studies in 8 High Priority Districts