ISSN 2395 -2113 (Print)

Indian Journal of Community & Family Medicine

Volume 2, Issue 1, Jan - Jun 2016

www.aiimsbhubaneswar.edu.in/otherpublication/ijcfm

Editorial Office

Department of Community and Family Medicine
All India Institute of Medical Sciences, Bhubaneswar, Odisha-751019
Under The Aegis of
Ministry of Health & Family Welfare
Government of India

Design & Printed by: Siva Prasad Patra (Binducreative, 09438668784)

Indian Journal of Community & Family Medicine

Volume 2 Issue 1 Jan- Jun 2016

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CONTENT

EDITORIAL

Introducing Rotavirus Vaccine in UIP: Strengthening Child Survival efforts in India

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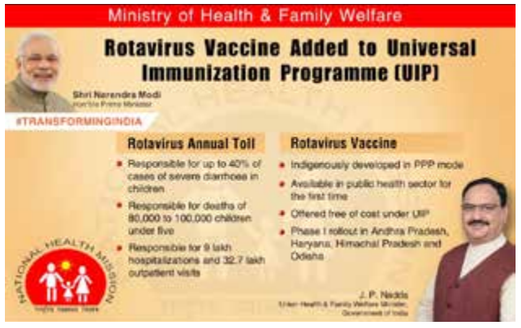

The rotavirus vaccine was launched initially in 4 states – Andhra Pradesh, Haryana, Himachal Pradesh and Odisha in first phase. Odisha was the first state where the vaccine was launched by the Honourable Union Health Minister Mr. J. P. Nadda at around 12.00 pm on 26th March 2016. The first child was vaccinated at around 12.30 pm in Bhubaneswar, Odisha. During this occasion, Mr. Nadda mentioned this event as a historic movement and an "exemplary" step in India's immunisation programme and an essential investment in children, who are the future of this country. Health Minister also emphasized during rolling out of the vaccine in Bhubaneswar that "Adding this life-saving vaccine to our immunisation programme will not only improve the health of our children but also reduce hospitalisation and other conditions associated with diarrhoea due to rotavirus such as malnutrition and delayed physical and mental development among children. Reduced hospitalisation eases the economic burden on the family and the health cost burden on the country,".

Globally Diarrhoeal diseases remain one of the leading causes of deaths among under-five constituting 15% of total deaths in this age group. Rotavirus is an important causative agent of childhood diarrhoea. WHO reports that 5% of all under-five deaths are associated with rotavirus diarrhoea. Around 95%of rotavirus related deaths in under-five are seen in middle and low income countries of Africa and Asia. India, Nigeria, Angola, Democratic Republic of Congo and Pakistan contribute half of these deaths and India accounts for maximum number of deaths i.e., 22% of global figure.[1,2]

According to a survey by India Rotavirus Strain Surveillance Network (IRSSN), rotavirus is responsible for approximately 40% of hospitalization due to diarrhoeal diseases in India. It is estimated that every year nearly nine lakh children are admitted and one lakh deaths occurs because of rota viral diarrhoea in India.[3] The number of children visiting outpatient department are several times higher than the number hospitalized. Burden of rota viral diseases are higher in central, east and north-east regions of India. Mortality is more in poverty stricken areas where sanitation, safe water supply, health care delivery are not proper.

Rotavirus is a highly contagious infection and is transmitted through faeco-oral route and contaminated fomites. Clinical spectrum of infection ranges from transient loose stools to severe diarrhoea leading to dehydration and death if not promptly treated. There is no specific treatment available and repeat infection is common. Management involves rehydration according to Oral Rehydration Therapy (ORT) and Zinc supplementation. Good sanitation and hygienic practices has little role in preventing transmission of infection. Hence the only effective intervention is through immunization with rotavirus antigen/vaccine.

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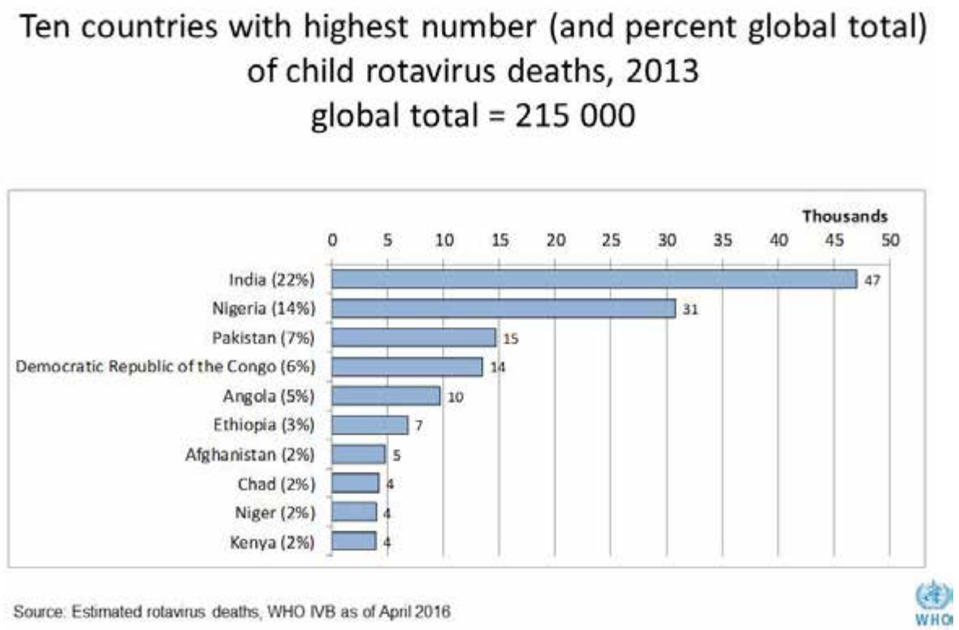

WHO recommends that rotavirus vaccine should be included in the National Immunization Program of every country and due emphasis to be given in countries where rotavirus associated gastroenteritis is more prevalent. Already 80 countries have included it in their national immunization program. Studies from the countries which have already incorporated rotavirus vaccine, reported significant decline in deaths and hospitalizations due to rotavirus vaccine.[4,5]Mexico recorded a 46% drop in diarrhoea related deaths in under-five children after introduction of rotavirus vaccine in 2007.The National Technical Advisory Group on Immunization (NTAGI) and MoHFW, Govt. of India has recommended the introduction of rotavirus vaccine in the country in a phased manner.

Around 8.5 lakh children of one year age will be vaccinated at 6,10 and 14 weeks along with Pentavalent vaccine and OPV during the immunization sessions. RVV will avert around 27,000 deaths, 2.91 lakh hospitalizations and 6.8 lakh outpatient visits in children. Though rotavirus vaccine (RVV) have been in use in private sector for many years these are expensive making it unaffordable for large proportion of India's population. Presently available RVV was developed indigenously under public-private partnership between the Ministry of Science Technology and the Health Ministry. This is in accordance with the "Make in India" policy for the benefit of entire nation. Prime Minister Sri Narendra Modi launched Rotavirus vaccine, Rotavac on 9th March 2015, which was developed by a Hyderabad-based Bharat Biotech company. Procurement cost for this indigenous vaccine to the Govt is Rs 63.00 (about US$1) per dose, which is quite less in comparison to other RVV.

Rotavirus vaccine is affordable, safe and effective, besides being cross-protective against a variety of Rotavirus strains. As per WHO, Position Paper (2013) there is evidence of herd immunity towards unvaccinated older children and adults. It is indeed a praiseworthy attempt by Govt. of India to include RVV in Universal Immunization Program. It will go a long way in decreasing child mortality in India. In near future it will be introduced in all states in phase wise manner. The challenge for states in future remains in ensuring high coverage of RVV and to reduce dropout to unleash full benefits of the vaccine.

Rotavac vaccine:[6]

Type	Live attenuated vaccine containing 116E [G9P(11)] strain. It is a pink coloured liquid vaccine. Doesn't need reconstitution.
Dose and route	Each dose constitutes 5 drops (0.5 ml) and administered orally.
Schedule& maximum age	Provided at 6, 10 and 14 weeks of age along with other UIP vaccines. Maximum age of taking vaccine is one year of age.
Booster dose	Not required
Vial presentation	Available in multidose vial (each vial contains 10 doses). Vial has to be utilized within a maximum of 4 hours after opening. There is no open vial policy for RVV.
Storage	At sub-district level vaccine is stored at +2 to +8 degree centigrade
Protective efficacy	Efficacy in preventing severe rotavirus diarrhoea ranges from 54-60%. The protection lasts through 2nd year of life.
Interactions	It can be safely administered with other UIP vaccines.
Interference	Breastfeeding does not impair development of immune response. Infants can be breastfed immediately before or after administration of vaccine
AEFI	It's a safe vaccine however minor symptoms such as diarrhoea, vomiting and irritability may occur in some children. Rarely, intussusception has been associated with RVV.
Precautions	In infants with moderate or severe acute illness , RVV should be deferred till recovery however vaccine can be administered to infants with mild illnesses including low grade fever and upper respiratory tract infection
Contraindications	Known allergic reaction to vaccine or its components; history of intussusceptions or any abdominal surgery or intestinal malformations; known case of immunodeficiency

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Author was invited to the launch of Rota virus vaccine ceremony at Bhubaneswar

Communication material (IEC) related to Rota virus vaccine was also released

PRESPECTIVE

Integration of Health Professionals Educational Systems as well as Health Systems, Difficult Road but Needs to Be Trodden

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Abstract

Background: There is changing health care, ground reality remaining naturally same, some needing services, others entrusted to deliver.

Objectives: Search literature about happenings, possibilities for reforms in health professionals education systems, health care systems to share for sensitization for change.

Methodology: Literature was searched with various search engines to find information in relation to objectives adding personal, shared experiences.

Results: Literature reveals lot needs change in training of health professionals, health systems. Causes of illnesses emphasized during health professionals' training, are biochemical, infectious, genetic, trauma, not influences of mind, environments. In health care spirituality, humanities, self-healing are not emphasized. There is disconnect between education, health systems with health professionals appropriate training in short supply. What is learned outside formal academics, 'hidden curriculum' observed behaviour, interactions, training environments which are extremely powerful in shaping values, attitudes are forgotten. This results in mismatch between delivered care / quality care even by those highly dedicated to doing good job.At places there are awakened users, however influenced by commercialized managed systems, at others, many health seekers are ignorant, lack resources, struggle for two square meals. Inequality, gaps continue.

Conclusion: Change needs realization, instructional, institutional reforms for training with coordination in systems for competent, compassionate, courageous service providers for efficient, effective integrated health delivery. For appropriate health delivery, clinicians need training to coordinate care in integrated way across systems, teams, in settings, time frames, responding to patients' expectations, which reaffirms importance of relationship between health providers whole person care. Health delivery has to be steered by ethical commitments, social accountability, 'professionalism'.

Key words: Essentialities, Integration, Health Professionals Education, Health Care Systems.

Introduction

Health is about people, needing services for, health promotion, prevention and treatment of diseases and rehabilitation. Health care requires that clinicians have knowledge and skills in responding to patient's expectations, coordinate care across teams, professions, settings and time frames. Health care needs to be based on scientific principles, based on medical research amulgated with wisdom to prevent, diagnose, treat not just diseases, but patient as a whole for wellness. Abundant evidence suggests that good health is at least partly knowledge based and socially driven.1,2 Critical understanding has become essential specially in the changed landscape of health delivery in the glittering surface of modern technology. There needs to be people entrusted to deliver, steered by ethical commitments and social accountability, the essence of professionalism.

Article is based on review about happenings in health professionals education and health care systems, ideas about reforms needed for better training of health professionals, better health systems for holistic care for global health with objective of sharing, sensitization and thought provoking. Literature search was done with available search engines like Pub med, Springer, Maternal health task force, proquest in the context of objectives.

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Received: 01/11/2015, Accepted: 02/02/2016

Present status

Health professionals for various modes of care are being trained with disconnect with each other and also what there own products are expected to do. Kreitzer et al[3] report that there is a strong belief in conventional medicine that most diseases, if not all, can ultimately be determined to have a physical cause, biochemical, infectious, genetic, or trauma. Influences of mind, spirit, environment on causation of disorders, on health are generally not emphasized in medical training outside the specialty of psychiatry, although this has changed to some extent in the recent past. So during health professionals' training, causes of illnesses emphasized are biochemical, infectious, genetic, trauma, not influences of mind, environments. Similarly spirituality, humanities, self healing are not emphasized in health care. There is evidence that, neither during their training, nor during continuing education avenues, health professionals are adequately prepared to address various issues which need to be looked into for desired health care[4-10]. Further while clinicians are made aware of an array of cutting edge technologies, they often are either not provided or provided fragmented basic foundation on environments, humanities which is essential for health professionals appropriate education and right health systems.[11-12] And also the education systems and health systems are working and executing with disconnect, not only with alternative systems but with each other in their own systems of education and health care.

Though reforms in the education of health professionals have helped in catalysing health gains in the past century, it is essential to pause and ponder if the change being mooted is backed by scientific evidence, imperative change for good. Although there is a focus on the serious mismatch between quality care and the delivered care, students and health professionals get few opportunities during their training and other educational avenues that would aid in analyzing the root causes of errors, other quality problems and in redesigning systems.[13-14] Quality issues are also seen in the hands of health professionals who are highly dedicated to doing a good job, because of training in a system that does not adequately prepare them, or support them before and after they are in practice for the best for their patients.

Once in practice, health professionals are expected to work in interdisciplinary teams, support those with variety of situations including chronic disorders, yet they are not trained in team-based skills. Also health professionals are confronted with a rapidly expanding disease burden where decisions need to be made, but they are not consistently schooled in for evidence based care and for application to practice.[15-18] Further there are reports that the problem of non-availability and uneven distribution of skilled health providers is the central challenge to meeting health goals, since the human resource for health (HRH) is the most critical component in the health systems.[19]

In addition glaring gaps and inequities in health persist, both within and between countries, underscoring the collective failure to share the health advances equitably.[20-23] White head reported that a large proportion of the 7 billion people on this planet continue to suffer from conditions of a century earlier, be it infections, malnutrition, and maternity-related health risks, which have long been controlled in affluent countries.[24]In some parts of the world there are awakened users, influenced by commercialized managed systems also, in the other parts many health seekers are ignorant, lack resources, some struggling even for two square meals. For such people the advancements in health worldwide are an indictment of imbalance and failure of equity, lack of sharing of health progress.[25] With all the developments, health security issues and fresh health challenges loom. New infectious, environmental, and behavioural threats, superimposed at a time of rapid demographic and epidemiological transitions threaten health security of all. Health systems worldwide are struggling to be in line, as health care is becoming more complex and expensive with additional demands on health workers. Public health systems are failing stakeholders, practitioners, patients and their families.[26-29] The most commonly used strategies in conventional medicine involve the use of pharmaceuticals, surgical procedures, and other technological interventions. In the heart of which is fragmentation.

This needs integrative medicine, reaffirms importance of relationship between health providers and health seekers, focusses on holistic care, patient as a whole person to achieve optimal health. This needs appropriate management/ governance. WHO defines health governance as "a political process that involves balancing competing interests and demands".[30] Clinical governance of health services includes risk management to ensure patient safety, clinical audits to assess providers' performance against standards and identify areas for improvement by use of evidence-based guidelines, standards of training and continuing professional education of health care providers and by patient satisfaction and involvement but is almost non-existent in India.

Learning / health delivery environments

In education, informative learning is about help in acquiring knowledge and skills, purpose being production of experts and formative learning is about socializing students around values, with the sole purpose of producing right professionals, enlightened change agents, who earn trust through a special blend of technical competence and service orientation, steered by ethical commitments and social accountability, which form the essence of professionalism.[31] In

response to the current scenario, efforts are being made to prepare clinicians for changing environments.[9,32-36] With the global policy transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs), initiatives have been taken, but siloed approaches have also prevented health and development professionals from viewing the continuum of care.

Elevating the patient to prominence within health care is fraught with complications that often have more to do with healthcare fragmentation than the desire to have patients more involved which is affecting the education and health care, drives cost and ultimately makes it harder for patients to receive the care they deserve. The more complicated the health problems, the more fragmented healthcare is. Because of fragmentation, education and training have not kept pace with the challenges and continue to have curricula that produce ill-equipped health professionals. The problems are the systemic mismatch of competencies for patient and population needs, poor teamwork, predominant hospital orientation at the expense of primary care. Also eeducation does not occur in a vacuum. Indeed, much of what is learned lies outside of formal academic coursework, a hidden curriculum of observed behaviour, interactions. The overall norms and culture of a student's training environment are extremely powerful in shaping the values and attitudes of future health professionals. Often, this hidden curriculum contradicts what is taught in the classrooms.[37-39]

Frenk et al reported that laudable efforts to address deficiencies have mostly foundered, partly because of the tribalism of the professions, the tendency of the various professions to act in isolation from or even in competition with each other. Further it has been reported that four countries (China, India, Brazil, and USA), each have more than 150 medical schools, whereas 36 countries have no medical schools at all. Although many educational institutions in all the regions have launched innovative initiatives,

little robust evidence is available about the effectiveness of reforms made. Realization of this vision will require a series of institutional and instructional reforms, which should be guided by proposed outcomes. Frenket al report that the context and conditions of the social efforts to educate for compassionate, competent, caring committed and courageous health professionals are rapidly changing across time and space globally.[29]

Without information about education / health care quality, accreditation is the most potent lever for curricula reforms in decentralized health professionals education / health care systems.[8] However there is enough evidence to suggest that records and realities are not the same.Ideally certification seeks to ensure that a practitioner maintains competence in a given area over the time. Organizational accreditation also may influence practitioners ongoing competency. However what is observed in the day to day health scenario is far from what is needed.

Integrative medicine

With the knowledge of present scenario, it is important that health professionals work together and look at the continuum in an integrated fashion, without forgetting any of the critical elements. Integrated care means addressing simultaneously the needs of people at the place they need. Too often there are separate and siloed efforts, which include financing, policies and also research programs. Barriers at various levels make it difficult to implement integrated care. These challenges start at the global level, which then prevent an enabling environment at the country level.

Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) defines, "Integrative medicine as the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, health care professionals, and disciplines to achieve optimal health and healing".[40] Boon et al describe 'integrative health care as an interdisciplinary, nonhierarchical blending of conventional, complementary / alternative health care, that provides a seamless continuum of decision-making, patient-centered care, and support.[41] While appreciating the significant role of modern medical techniques, holistic medicine integrates traditional medical systems (such as Ayurveda, Homeopathy, Naturopathy, Siddha, Unani, Chinese medicine and soon) and complementary therapies (including Yoga, Acupuncture, Reflexology) to help and hasten healing.

The success of Integrative Medicine is the ability of selecting and blending the appropriate systems of medicine, without compromising on the authenticity of each individual system. Apart from having a full fledged knowledge of each system, it is crucial for the holistic physician to have the wisdom and experience in implementing such an integration of systems. When done appropriately, this combination enhances the healing powers of the various approaches.[42]

Integrative health care system is based on a core set of values, including the goals of treating in a holistic way, assisting the innate healing properties of each person, the patient as awhole, promoting health, wellness and prevention of disease. It employs an interdisciplinary team approach guided by consensus building, mutual respect, and a shared vision of health care.Concerns have increased that health professionals are not sufficiently informed about integrative health care that they can effectively provide to the patients. However among various professional groups, debate continues as to what constitutes sufficient information with the health professionals for integrative

care.[3]

Great emphasis is on the need for team-based, interdisciplinary educational strategies as a means to reduce medical errors, improve quality and reduce cost. In integrated health care there is sharing of information among team members through a high degree of collaboration and communication related to patient care and the establishment of a comprehensive treatment plan to address the biological, psychological, and social needs of the patient. The interdisciplinary health care team includes a diverse group of members depending on the needs of the patient.

Discussion – Possibilities.

As the plans are being made for the next set of global commitments, SDGs, it's important to talk about the inextricable link between health professionals education and health care systems. This link has biological, social and critical implications for health systems. A functioning health system able to provide integrated care is needed to address health needs of communities. Without a good infrastructure, the necessary supplies and proper training for health workers, communities, and the evidence of the efficacy of various educational, health care approaches is slim. However, the limited evidence that exists points to improvements, such as better performance on licensing exams, associated with the use of competency or outcome based educational approaches.[43]A competency based approach to education could result in better quality because educators would begin to have information on outcomes, which could ultimately lead to better patient care. Defining a core set of competencies across educational oversight processes could also reduce costs as a result of better communication and coordination, with processes being streamlined and redundancies reduced. Integrating core competencies provide the impetus for faculty development, curricular reforms and leadership activities.A variety of forces are encouraging the move towards interdisciplinary education. Health professionals need to work in interdisciplinary teams, to deliver evidence-based patient-centered care. Currently the Institute of Medicine's (IOM's) vision for education of health professionals reports that "all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence based practice, quality improvement approaches, and informatics".[44] GIIT reports that development of strategies for restructuring health professionals education across the full continuum of education which goes with the health systems is the need of day.[45]Global, national policymakers and decision makers should support innovations defined in a broad way. Innovations do not only mean new technology, innovations are needed to represent change and create new ways to organize health systems. Looking at innovations from an integration perspective, it is essential to consider models that will allow integration of services on the ground and measure the impact they have. The work does not stop once an innovation is implemented; evaluation of the effects is essential. And also if fragmentation is to be addressed it is essential to work in teams. For creating a comprehensive system it is essential to consider clinical, operational, education and training and financial aspects to achieve a truly integrated healthcare system that places the patient at the center of the team. The systems cannot sustain the current trajectory from a cost and effectiveness perspective nor from a patient and provider satisfaction perspective. A radical departure in healthcare is essential that goes far away from a delivery system of the isolated provider to a truly integrated healthcare delivery system that works in teams and focuses on the whole person, not just parts.[46]Redesigning of health professionals education is necessary, in view of the opportunities for mutual learning and joint solutions offered by global interdependence due to acceleration of flows of knowledge, technologies, and financing across borders.

In modern healthcare climate, policy makers should look for ways to create a more efficient and effective integrated healthcare delivery system manned by well-trained competent service providers. At the heart of these efforts, the need is to try combat fragmentation, the primary driver of healthcare inefficiency and ineffectiveness. Scientific knowledge not only produces new technologies but also empowers citizens to adopt healthy lifestyles, improves care-seeking behavior to become proactive citizens who are conscious of their rights. Additionally, knowledge translated into evidence can guide practice and policy. Health systems need to be socially driven with the primary intent to improve health, complementing the importance of social determinants and social movements in health. Health professionals are not only caregivers, service providers educators, team members, managers, leaders, and policy makers communicators, but also they link people to technology, information, and knowledge.[44, 47-53]

Frenket al, says health workers are the human faces of the health systems. All health professionals in all countries should be educated to mobilize knowledge and engage in critical reasoning and ethical conduct so that as members of locally responsive and globally connected teams they are competent to participate in patient and population centered health systems.[29] The ultimate purpose is to assure universal coverage of the high quality comprehensive services, essential to advance opportunity for health equity within and between countries.What is required is better steering and oversight of medical education and health services across public and private, formal and informal sectors.

Health delivery has to be steered by ethical commitments, social accountability, 'professionalism'. Also it is globally, essential to work in direction of filling gaps, have equity in persisting glaring gaps, inequities in health.

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PRESPECTIVE

"Taste Modification"- A New Strategy for Reduction of Salt Intake Among Indian Population

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Introduction

Hypertension or high blood pressure (HBP) is an important modifiable risk factor for cardiovascular disease (CVDs). It currently accounts for about 7.6 million (13.5%) of annual global deaths. Hypertension is directly responsible for 54% of all strokes and 47% of all coronary heart diseases worldwide.[1]Low and middle-income countries bear a disproportionate burden of hypertension related risk of death, which is double that of high-income countries. There has been plenty of research on finding out the best strategy to reduce the risk factors for development of high blood pressure.

Over the past few decades, numerous investigations spanning animal, epidemiological and population intervention studies conducted worldwide have found excess dietary salt or sodium intake to be associated with increased risk of high blood pressure (HBP).[1] Other studies (INTERSALT) also have confirmed the harmful health effect of excess salt consumption, particularly on cardiovascular health. Excess dietary salt intake is responsible for 17%–30% of hypertension. Thus, salt substantially increases the risk of blood pressure-related CVD events in normotensives. A dose-response relationship between the reduction in salt intake and the decrease in blood pressure has also been documented in the literature. It is estimated that a reduction of salt by 6 g/d would lower blood pressure by 4-7 mmHg in individuals with high blood pressure and 2-4 mmHg in those with normal blood pressure.[2] For the last 3-4 decades, there is enough evidence in the literature to prove that salt is one of the main etiological factor for hypertension. In spite of such conclusive evidence, we have not been able to devise a fruitful/effective strategy to combat this.

This is because of the fact that only medical approach has been tried so far for this purpose. As doctors we have always tried to use a paternalistic (parent- child) approach to counsel the patients to reduce dietary salt intake. It is usually done in a clinic setting. Community or family level contact between doctor and patient is missing. The approach has always been to create a fear among the public regarding various risk factors e.g. salt intake. In other words, we are trying to impose a behavior change on the people. Actually we have failed to effectively design and implement, behavior change based salt reduction strategy through active involvement of patients or their families. For this reason the response has not been up to the desired extent. Changing human behavior is a complex process. It is not easy. Rather than just simply advising patients to reduce salt intake, we need to provide alternate strategy by creating an enabling environment for people to adopt this behavior change. It is much more than an OPD based doctor patient interaction. We need to consider family also while devising such strategies. This is because patients behavior may be influenced by "significant others".

In this paper we have proposed two alternate salt reduction strategies: cross sectional strategy (control) and a long-term (preventive) strategy.

Long-term preventive strategy ("catch them young-target the children").

A strategy proposed in this paper is pre-conditioning the child with low-salt diet right from the weaning period when he/she starts taking feeds other than breast milk. This requires counseling of the mother and the general public by the health care personels during their interactions with patients /people in home or hospital or any contact point in the community, regarding relation of high salt intake in diet and chances of development of high blood pressure in future. Mother would be taught that, following a simple advice (adding less salt in diet) can benefit their child in future. As it is seen that a better understanding is present between these health care providers and the mothers due to regular interaction in the community or since often they belong from the same community. This communication process is likely to be more successful than simply advice giving by a doctor in a clinical setting. This way the message of long-term benefits of the strategy

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Received: 11/07/2015 Accepted: 23/2/2016

will be conveyed effectively to the target population. If they understand the benefit then they will try to change their behavior and the child will be offered to low salt diet from the very beginning of life. Thus the child will be preconditioned with this type of diet. This habit is likely to continue and run in generations, because their taste buds would be physiologically conditioned to low salt diet. In future they would not prefer high salt diet in their routine lives.

Cross sectional- control strategy ("better late than never- tackling the adults").

With rising incidence and prevalence of NCDs the problem of hypertension is present in everywhere whether in urban or rural clinic. When we talk about hypertension management in clinic setting in urban area a physician usually encounters adults who are pre-conditioned with high salt content in their diet since their childhood. It is difficult to convince them to change their dietary salt intake overnight from high salt to low or no salt simply by giving advice in a short span of 5-7 minute in OPD setting where there scores of patients are waiting. We need to offer a feasible alternative to them. We may add a counseling room approach. Here for high blood pressure patients may be referred from the main OPD after initial work up. In that room the message can be given at a leisurely pace. They may be told that addition of spices/herbs like ginger, black pepper etc. in their food. Over a period of time gradual reduction in salt in diet can help in control of hypertension. This approach has been successfully tried in a DBT project on Multi-purpose behavior therapy in gynaecology OPD in PGIMER, Chandigarh. The room may have add on features like posters, displays, live demonstration/training of exercises, laptop based education etc. discussion may be held between patient and counselor across the table in a congenial set up. Even their family member would be actively involved in the counseling session in a friendly atmosphere. It will save time of the patient as well as of the doctors. It will also enhance patient satisfaction.

The idea is to gradually replace salt by these spices. The altered taste may not be acceptable to people in the early phase. But gradually their taste buds would be conditioned to the new taste. Eventually these spices may become acceptable to them. This way salt intake will be reduced.

Another aspect which is often ignored by us is that when we educate a patient regarding salt reduction in diet we do not involve the family especially the lady of the house. As a matter of fact, we know that they play an important role in salt reduction. The proposed strategy will target to the family/women, especially who is responsible for cooking. So it is important to consider family as an integral part of salt reduction strategy. This approach is quite feasible because there will be no extra burden to the food maker in terms of money or labour. This is in contrast contrary to the usual strategy where only the patient is targeted for advice on salt-restriction who virtually has no control over the amount of salt in the food.

Figure.1 compares two communication models: the conventional clinic approach and the proposed approach

Transactional analysis (TA to its adherents), has an origin in psychology as a discipline. As per this framework humans are social creatures and that a person is a multi-faceted being that changes when in contact with another person in their world. Typically, according to TA, there are three ego-states that people consistently use:

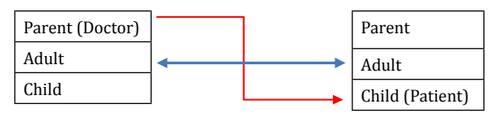
Parent ("exteropsyche"): a state in which people behave, feel, and think in response to an unconscious mimicking of how their parents (or other parental figures) acted, or how they interpreted their parent's actions. For example, a person may shout at someone out of frustration because they learned from an influential figure in childhood the lesson that this seemed to be a way of relating that worked.

Adult ("neopsyche"): Our adult ego state is our thinking, feeling and behaving in the here and now appropriately to any stimulus. When we are in our Adult ego state we are in full contact with and are responding to the here and now. For example; excitedly thinking of new ways of being with your partner; or feeling angry with a person who deliberately is blocking your view of a film, then assertively asking him to move, and ifhe refuses asking the steward to deal with the matter. Berne called this state of the self the neo-psyche, the new self... however he also used the simple term of Adult.

Child ("archaeopsyche"): a state in which people behave, feel and think similarly to how they did in childhood. For example, a person who receives a poor evaluation at work may respond by looking at the floor, and crying or pouting, as they used to when scolded as a child. Conversely, a person who receives a good evaluation may respond with a broad smile and a joyful gesture of thanks. The Child is the source of emotions, creation, recreation, spontaneity and intimacy.

Kinds of transactions

1. There are basically three kinds of transactions:
2. Reciprocal/Complementary (the simplest)Crossed
3. Ulterior – Duplex/Angular (the most complex)



*Transaction in a clinic setting between a doctor and a patient (Conventional approach)

**Transaction in the proposed approach

Figure1.Transactional analysis model of communication: A comparison of two approaches

Reciprocal or complementary transactions

A simple, reciprocal transaction occurs when both partners are addressing the ego state the other is in. These are also called complementary transactions.

Example 1:

A. "Have you written the report?" (Adult to Adult)

B. "Yes - I'm about to email it to you." (Adult to Adult)

Example 2:

A. "Would you like to skip this meeting and go watch a film with me instead?" (Child to Child)

B. "I'd love to - I don't want to work anymore, what should we go and see?" (Child to Child)

Example 3:

A. "You should have your room tidy by now!" (Parent to Child)

B. "Will you stop hassling me? I'll do it eventually!" (Child to Parent).

Communication like this can continue indefinitely. (Clearly it will stop at some stage - but this psychologically balanced exchange of strokes can continue for some time).

Crossed transactions

Communication failures are typically caused by a 'crossed transaction' where partners address ego states other than that their partner is in. Consider the above examples jumbled up a bit.

Example 1a:

A. "Have you written that report?" (Adult to Adult)

B. "Will you stop hassling me? I'll do it eventually!" (Child to Parent)

This is a crossed transaction likely to produce problems in the workplace.A may respond with a Parent to Child transaction. For instance:A: "If you don't change your attitude, you'll get fired."

Example 2a:

A. "Is your room tidy yet?" (Parent to Child)

B. "I'm just going to do it, actually." (Adult to Adult)

This is a more positive crossed transaction. There is however the risk that A will feel aggrieved that B is acting responsibly and not playing their role, and the conversation will develop into:

A. "I can never trust you to do things!" (Parent to Child)

B. "Why don't you believe anything I say?" (Child to Parent) which can continue indefinitely.

Ulterior transactions:

Another class of transaction is the ulterior transactions, where the explicit social conversation occurs in parallel with an implicit psychological transaction. For instance:

A: "I need you to stay late at the office with me." (Adult words), body language indicates sexual intent (flirtatious Child)

B: "Of course." (Adult response to Adult statement), winking or grinning (Child accepts the hidden motive).

Problems occur in crossed transactions when the other person is at a different level.In a conventional clinic setting, the physician and the patient are at a different level due to asymmetry of information and the high pedestal at which the physician is placed in the society. For this reason the messages are not conveyed in proper manner resulting in non -compliance.

Example –A "I don't think you are following my advice of salt reduction properly". (Parent to child)

B-"Many times I told you that salt is a poison for you, still you are ignoring and taking fast foods."(Parent to child)

In the proposed approach (OPD consultation integrated with counseling in separate room) the communication will improve. In the counseling room the patient can relax a bit and there will be enough time for discussion. This way the child state of the patient can be brought back to the adult stage. Now the patient will be confident enough to speak their problems openly. And then effective (adult to adult) communication will come to play. Thus barrier to effective communication can be easily broken by this approach. The family will realize its role in harm reduction of their lovable ones. This effective communication will lead to proper practice because the kitchen owner will decide the cooking practices of the household.

Physiological basis of the strategy:

Sodium balance in an organism is influenced by a variety of factors such as diet, disease, and hormonal state. Animal experiments have shown that in many species when sodium loss occurs, a behavioral mechanism starts operating to compensate the loss resulting in increased intake of sodium chloride. This increased intake is presumably mediated by the sense of taste. The sodium-deficient animals show reduced neural responses to salt [3]. In human beings there is some evidence that sodium depletion also results in altered taste response.[3] In many experiments it has been shown that after a certain period of salt depletion from diet the food which was considered normal previously was categorized as salty.[3]As an example if we develop a habit to eat salad with less salt and mixing more citric juice on it, our taste will definite change after a

certain period. After some time if somebody offers us salad with high salt, then it will not be acceptable to us. This is because our taste buds have been conditioned.

This observation has important implications for dietary salt control. It shows that preferences of food quality and taste are mostly acquired.Essentially our taste is a learned experience rather than genetically determined. Hence it is quite manipulable.

We develop different taste as per exposure through our family kitchen. For example Hyderabadi food may be considered too spicy by North East person. While Laddakhi tea may be considered too salty to the Marathi people. It is called food neophobia. In our lives most of us have neophobia. Many of us can not able to adjust to life in a foreign country because of food. We feel comfortable when we are back in our family to enjoy home food.

Although food neophobia may cause reluctance to accept a new taste, repeated exposure over time to new food stimulus may increase the familiarity. Over a period of time we may alter taste perception and liking. A study from China shows that addition of herbs and spices can enhance the liking of low salt tomato soup by the people which was previously unacceptable. [4]Reducing salt content and incorporating herbs and spices into a typical tomato soup led to initial rejection by the customers. But after some time due to repeated exposure it was well accepted by the same customers.[4]

Decades of research on psychological factor research consistently show that mere repetition of a simple action in a consistent context leads, through associative learning, to the action being activated upon subsequent exposure to those contextual cues (that is, habitually). Once initiation of the action is 'transferred' to external cues, dependence on conscious attention or motivational processes is reduced.[5]Therefore habits are likely to persist even after conscious motivation or interest dissipates.For example, if we train a person who is responsible for cooking regarding salt reduction in food, for first few days she/he will consciously do the act but after repeated practice it will be converted as an reflex action for him/or herself.

Habit-formation advice, paired with a 'small changes' approach, has been tested as a behaviour change strategy. It has been quite successful.[5] Similarly, the cooks have to form a habit of preparing of low salt diet with a small change in cooking process that is adding of low salt and incorporating spices. Rest of the cooking process will remain same. So this strategy will be quite easy and successful.

In India we have multiple options of altering food taste by using masala (spices like haldi, pepper, ginger). Spices or Masalas it is called in Hindi, are the "heart" of an Indian kitchen. Thus we can have multiple combinations of masalas to add taste to the food while simultaneously reduce the salt content in our diet.

In the conventional clinic based approach, we advise low-salt food for the hypertensive patient only in OPD setting when they report. This advice is to be implanted at home. However, preparing low-salt food separately for a hypertensive patient in a family is burdensome and time consuming for the homemaker or the cook. Affordability is also a concern due to fuel consumption. So hypertensive patients are compelled to eat the food prepared for the whole family.

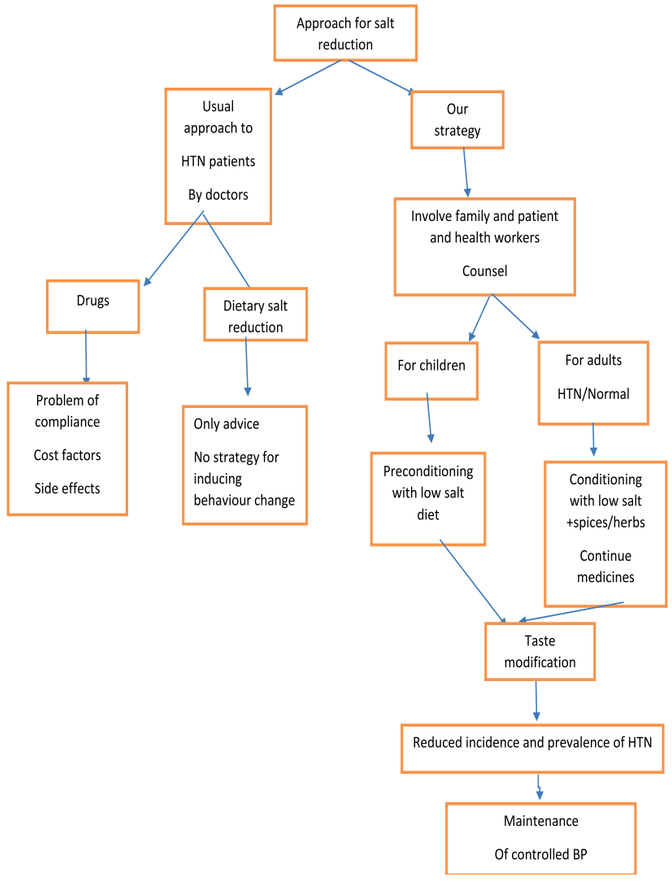


Figure2a. Proposed and usual strategy for dietary salt reduction

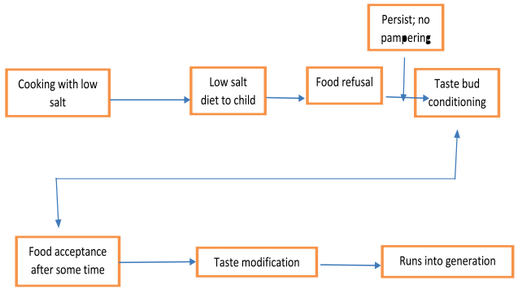


Figure 2b. For Child

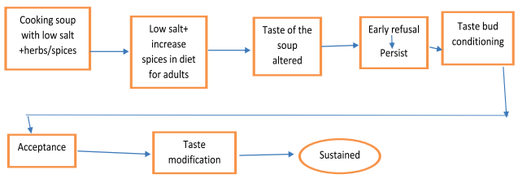


Figure 2c. For adults

Another issue is the compliance of the patient to the low salt dietary advice. A person who is habituated to take high salt diet right from the weaning period is physiologically pre-conditioned with high salt content in the diet. A sudden prescription of low salt or no salt diet will create phobia in him. It usually results in non-compliance.

As a physician in clinic, we think that hypertensive patients are the only target group for advice. We do not take into consideration the family, the setting in which they live. We never give advice to the women who are actually responsible for cooking whether it is mother, sister or wife. They are the main controller of salt in the diet. Thus setting based approach of health promotion should be used.Here it is an opportunity to use psychological theory related to habit formation to formulate simple and sustainable behaviour change advice. In a family if we have to modify the salt intake of member we have to target the children. If a mother cooks food with less salt, there may be initial rejection. But after some time the child will be used to take low salt diet. Moreover, children can learn quickly as they usually follow their parents.Once the child is preconditioned with low salt diet and the habit is properly maintained, there would be an opportunity to relay this behavior from generation to generation. So, this is a sustainable option for reducing salt in diet of the family.

Thus, we have discussed two novel strategies. One is a long term (preventive) strategy and the other one is cross sectional (control) strategy.The first strategy relates to preliminary conditioning or habit formation with low salt diet from childhood. The otherone - entails taste modification or habit change by using spices/herbs. The two approaches may be applicable to different segments of the population concurrently.

First one shall be applicable to young children in a family right from the weaning period when the child starts taking complementary feeds. The second strategy is applicable to all sections of the population. Above mentioned methods are mainly dependent on behavior change or habit change or habit formation.

This behavior change strategy (taste modification) seems to be a new approach for reduction in salt intake. The approach is easy because we are involving not only patient but also the family members, who are responsible for kitchen. In the proposed strategy no extra effort will be needed (training) on the part of the home-maker, easy to follow (place of intervention is kitchen) and there will be no extra financial burden (same masala or spices will be used). Further, this will be culturally appropriate for Indian.

As we know taste plays an important role regarding salt intake, we have to condition our taste buds, first by behavior change or habit change (taste modification). Taste modification may be a new approach for the Indian population. So food can be made with reduced salt and adding spices or herbs to it. Result may not come very quickly, it will take time. Though this approach is applicable to all. This novel idea can be further explored by trials and can be pilot tested first in urban area, due to feasibility concern.

If this strategy is combined with enabling factors/ supportive environment like government regulation (e.g. ban on sale of fast food in school canteen) and subjective norms (encouragement for home tiffin and avoidance of market food) we can control hypertension in population level, effectively.

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PERSPECTIVE

Health Promoting Emergency Departments: An Utopia or Reality

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Abstract: Health promotion strategies have been successfully integrated in services of emergency departments of hospitals of many developed nations. The aim of this commentary is to highlight the health promoting orientation of emergency department in a tertiary health care hospital in India and suggest how Bensberg's model of 'Strategies for Health Promotion' can be applied in relation to health promoting emergency care in India

Key words: health promotion, emergency department, health promoting hospital, Bensberg's model

Health promotion in emergency departments

In 1986, World Health Organization (WHO) strongly advocated that the health promoting principles should be applied and integrated in hospital settings, beyond its traditional responsibility for providing clinical and curative care (WHO, 1986). Since then many efforts have been done globally in this direction. Some initiatives were also taken by the authors of present study to popularize the concept of health promoting hospitals (HPH) in India.[1]However, Emergency Departments (EDs) are grounded in a medical paradigm where most of the staff still thinks exclusively in terms of curative medical care. Published research has shown many health promotion strategies have been gainfully incorporated in services of EDs of hospitals of United States, Australia, United Kingdom and Canada, however, there is a dearth of literature in developing nations, on how health promotion can be incorporated in EDs.[2,3,4]

Health promotion is the process of enabling people to increase control over, and improve their health and the factors that influence their health. It encompasses not only individual life-style and behaviour, but also structural conditions (physical, social, economic and political environments) in which individual lives. Traditionally, the role of EDs is to provide emergency medical and surgical care to severely ill patients at all times of the day. This 'medical thinking' has been dominated for several years. ED provide an ideal setting for health promotion for several reasons: Health promotion and emergency medicine generally share similar goals i.e., improvement of individuals' and communities' health; EDs is generally the first contact point of many patients and their attendants, generally in distress, where health promoting concept can be easily and gainfully incorporated in the services; EDs are a credible source of health information for general public; EDs have existing infrastructure for health promotion (planning processes, professional alliances, community networks).[5] On the other hand, health professionals in EDs are likely to face barriers in practicing health promotion *viz.* lack of time, heavy workload on limited staff, lack of guidelines and unclear objectives.

Bensberg's Model: A tool for evaluating Health Promoting Emergency Departments

The Bensberg's model originated from Irwin and Brown's 'spectrum of health and disease' categories (optimal health, wellness, illness, recovery) and 'intervention classifications' (health development and maintenance, primary, secondary and tertiary prevention), which described the circumstances of health promotion activities emanating from EDs According to the intervention classification, 'Health development and maintenance' aimed to create social, economic and environmental changes that support population health like policies for taxation, education and transport etc. Primary prevention aims to avoid injury from occurring by identifying and reducing the risk of exposure like smoke-free workplace

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Received: 30/05/2015 Accepted: 12/11/2015

Table 1. Health promoting strategies adopted in 'routine' and during 'outbreak situation' in an emergency department vis-à-vis Bensberg model

Health and disease spectrum	Optimal Health	Wellness	Illness/ Injury	Recovery
Intervention classification	Health development	Primary prevention	Secondary prevention	Tertiary prevention
Bensberg strategies for EDs	• Social marketing • Economic and regulatory activities • Monitoring and data collection	• Health information, education and skill development • Community action	• Organizational development • Screening, and individual risk assessment • Health information, education and skill development • Immunization	
Results in ED	No social marketing activities, the top brass of ED involved in decision making about policies of ED, free of cost treatment for poor patients (designated poor patient cell), ED regularly interact with media on health issues, collation of patient information. However, there is no designated protocol on health promotion in ED. Evaluation of HP activities was not done on regular basis.	Little community action in terms of imparting trainings to schools and university students on hand hygiene and biomedical waste management etc., community volunteers participates in managing patients in ED.	No separate screening area, 2/3rd staff in ED were vaccinated for Hepatitis B while only 16.2 % for H1N1, availability of newspapers/ television, no health documentary, patients briefed about risk factors (87%) and decision making in self-care (42%), staff (75.1%) aware about biomedical waste management and hand-washing, few staff (10%) aware about health promotion policy in hospital, adequate signage in ED for guiding patient, existence of shelter homes, nutritious food supply and washed linens in ED wards, proper biomedical waste management, Staff trained on various aspects like BMW management, hand hygiene, injection safety etc. No assignment of any responsibility to staff related to health promoting activities,	
Results in ED (During SARS (2003)[8] and H1N1 influenza (2009) outbreaks)	Daily meeting of top ED brass with director of institution and heads of various departments within hospitals, development and circulation of internal policy during outbreaks,	Extensive community participation like health camps in villages, visit to households of patients. Meeting of director of institution with other stakeholders like other hospitals, municipalities for planning.	Three tier screening system established, brochures distributed on related health conditions, school based health activities carried out, extensive trainings to staff during outbreaks.	

campaigns. Secondary prevention aims to screen individuals for signs of disease like blood pressure or cholesterol screening. Tertiary prevention aims to prevent recurrence of disease and limit disability such as cardiac rehabilitation. These intervention classifications are akin to 'health and disease spectrum' where health development is seen as 'optimal health', primary prevention as maintaining 'wellness', secondary prevention as prevention of 'illness/ injury' and tertiary prevention as 'recovery' phase.[6] It was thought that health promotion should be embedded in the context of clinical system for health promotion programs in medical settings to be successful.[7]

The model was originally developed to illustrate health promotion principles and practices to emergency department staff. It displays seven standard health promotion strategies: (i) Screening or individual risk assessment to identify people who have elevated risk factors for different diseases and immunization to reduce spread of communicable diseases; (ii) Providing health information to enable people to make informed choices about their behaviors and use of health care services; (iii) Health education, counseling and skills development to help people live healthier lives by focusing on behavior change; (iv) Community action, which aims to help and empower people to gain control over their health seeking decision during their illness; (v) Social marketing to influence public opinion and their behavior on various health related issues. (vi) Organizational development, which aims to create a supportive environment for health promotion activities within ED by building sustainable skills, resources and commitment to prevention; and (vii) Economic and regulatory activities aim to create environments that promote and protect health. The (v) and (vii) strategies of Bensberg's model fall under health development; (ii), (iii) and (iv) strategies fall under primary prevention; (i) and (vi) strategies fall under secondary prevention.[6]

Health Promotion Orientation of an ED in India

The aim of this commentary is to highlight the health promoting orientation of emergency department in a tertiary health care hospital in India and suggest how Bensberg's model of 'Strategies for Health Promotion' can be applied in relation to health promoting emergency care in India.The data collection methods included on-the-spot overt observation of ED; and interview schedule based survey among 30 randomly selected patients, officer in-charge emergency, emergency medical officers (n=5), medical doctors (n=10), paramedical and nursing staff (n=15): and review of hospital emergency records pertaining to management of outbreaks. The presentation of findings of the study vis-à-vis Bensberg's model is presented in Table-1.

What we conclude?

The study explored the potential and opportunities for health promotion activities in emergency department of a tertiary hospital in India. The results show that ED should focus on social marketing like selling a health message and regularly informing individual about healthy lifestyle choices. Further, a health promoting cell should be created to regularly monitor health promoting activities in ED and recommend for urgent actions. The ED staff should be empowered and made responsible for HP activities. Screening system should be regularly established rather than an 'adhoc' mechanism during outbreak situations. ED could also develop collaborative alliances with other sectors for more effective management of diseases. ED of PGIMER fared well in health promotion orientation during outbreak situations as compared to routine situation. The study paves the way for other EDs to evaluate health promoting orientation of their ED based on Bensberg's model. We presume that the situation of other public hospitals in India is no different from the studied hospital. Thus, there is a need to regularize and strengthen HP activities in ED so that these become a routine affair. As the application of HP theory to ED is relatively novel, further research would enrich the existing literature on the subject. The research could be focussed on individual patient perspectives like risk factors (injury prevention, smoking cessation, alcohol abuse) or disease (asthma, diabetes) or ED procedures (discharge planning, safety). It could also focus on staff training and empowerment issues; or organizational development. The framework is a tool to support the development of HPED. It will assist planners to design and organise appropriate approaches to health promotion in specific settings.

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An Interview with Mrs. Arti Ahuja, I.A.S., Principal Secretary (Health & Family Welfare), Government of Odisha

Mrs Arti Ahuja holds a Masters in Public Health from Harvard School of Public Health and a Masters in Public Policy with Certificate in Health Policy from Woodrow Wilson School, Princeton University. She is also a Masters in Economics and LLB.She joined the Indian Administrative Service in 1990. She worked in remote tribal areas of the eastern state of Odisha in the initial years. Thereafter she took on a state wide role in ICDS and Health. Subsequently, she worked as a faculty member and Deputy Director at the National Academy of Administration, Mussoorie that trains senior civil servants. She was Secretary of Women and Child Development in Odisha, and currently holds the position of Principal Secretary Health Department. A member of the Independent Expert Group for the Global Nutrition Report, and Senior Honorary Research Associate of Institute of Global Health, University College of London. Has authored/co-authored many articles and papers on Nutrition and Health.

IJCFM: ***How do you visualize Global Health being important in modern day world particularly for India?***

Mrs. ***Arti Ahuja***: It is important to remember that we are not islands within ourselves. Starting from individual till the global, we are all interconnected and nothing connects us more than health and diseases. We all know that virus, bacteria and mosquito know no national boundaries. The recent global scares regarding Ebola and Zika Virus are case in point. Hence the issue of global health is important not just for India but for all countries. Apart from the obvious connection of disease transmission we are also inconnected through research and technology based solutions for health. The IT based simple solutions and the research findings being published all over the globe, can also be applied to the Indian context. Besides there are also the traditional system of medicines in our own country which have relevance for others specially in the chronic lifestyle diseases. As the burden of diseases shifts and newer diseases in hitherto neglected areas such as mental health, disability prevention etc. come to the fore, we increasingly realise the impact of globalization and modernization reducing on the disease burden of the society. As travel increases, as people get more connected, global health is bound to assume greater relevance.

IJCFM: Our country is facing acute shortage of doctors at every level from super specialist/specialists and primary health care physicians. What measures need to be taken to overcome this situation?

Mrs. ***Arti Ahuja*****:** There is no doubt that there is a shortage of doctors at different levels including Specialists. For reducing the shortage of doctors there are two mechanisms; (1) Create more seats for MBBS and Post Graduate and secondly incentivize doctors to work within the health system particularly in unserved areas. In Odisha, we have tribal areas which have shown persistently lower social indicators. It is in these areas, the shortages are even more acute. In order to address these shortages, we have taken some measures such as posting of doctors on ad hoc basis through counselling due to which many doctors have now joined in the remote areas (called BKB and KBK+ districts). Counselling has ensured transparency and given a fillip to the recruitment process. A number of doctors also remain in the rolls but are physically not present. We followed the proper process and removed nearly 400 doctors from service because of which vacancies opened up and currently we are recruiting fresh doctors in their place. There has been across-the-board increase in the remuneration of contractual doctors because of which more doctors have joined the system. Apart from this, two major incentives to ensure stay in these areas have been introduced. In the first place we have ranked institutions depending on their vulnerability assessed as a combination of different factors such as location, infrastructure, connectivity etc. Accordingly, graded place based incentive have been given for serving in these vulnerable areas. This has resulted in doctors opting to stay in these institutions. Apart from that a sum of nearly 10 million rupees has been given to these districts for transportation, communication, accommodation of doctors and paramedics etc. The next issue is of creating more doctors in the State for which 8 new medical colleges are coming up which will substantially add to the number of doctors in the State. The third concern is paramedics who are even more important

when we look at preventive healthcare. We have created nearly 6800 additional posts including staff nurses and community health workers. These influxes will surely benefit health system and mitigate the shortages.

IJCFM: ***In a large country like India, the accessibility to health care to the masses is still not fully met. How do you visualize improving the accessibility to health care. Can Universal Health Coverage be a reality?***

Mrs. ***Arti Ahuja***: We did an analysis recently which showed that patients attending OPD in Government Institutions covers about 90% of Odisha's population. Of course some of these are repeat visitors. However, that does not take away from the fact that Government is still the largest provider of health care especially in rural areas. We have set up a Corporation now that does transparent tendering and supplied drugs to different levels of facilities. A robust IT platform is being used and we are in a position to do inventory management between deficit and surplus institutions. The other aspect is of health coverage. We currently have different kinds of insurance scheme for different categories of people in the State. We are working on bringing them all together under one umbrella and we are working with partners on getting clarity on whether it should be insurance or assurance model I am hopeful by early next year we will be rolling out a robust model for the people of our State.

IJCFM: Madam, you are a Harvard Trained Public Health Professional. What are newer initiatives being undertaken or already implemented in recent past under your leadership to strengthen health care delivery in the State? Some models or success stories can be replicated in other States.

Mrs. ***Arti Ahuja***: There is no doubt that my Master in Public Health from Harvard has helped me in my discharging my duties as Principal Secretary, Health. It has given me a larger perspective on different areas. A number of new initiatives have been taken in the recent past in the State. Very recently we have started giving Chemo Therapy at the District Headquarter Hospitals. Earlier people used to come to a single centre in the State from all over the State incurring huge expenditure. Now the chemo drugs are also free and available in their own districts. I feel personally very happy about this initiative. Apart from that the fee drug distribution scheme has been very useful in reducing out of pocket expenses. . We have also come with a strategy for reduction of IMR & MMR which is State's own initiative and I am sure it is very much replicable as well. Similarly we have also come with an action plan including partnership with other agencies for Malaria and Cancer. A number of systemic in measures have also been taken which will I am sure give an impact and lay the foundation for larger developments.

IJCFM: Medical Officers working in peripheral health institutions have limited access to updates and recent developments in medical field. How can we encourage them to engage in enhancing their knowledge and skills?

Mrs. ***Arti Ahuja*****:** One way that medical officers working in far flung health institutions can keep engaged with developments is through Telemedicine where they can remain connected to Specialists sitting elsewhere and know about the latest diagnostic techniques and also enhance their skill. This is being done in the State. Secondly we also conduct seminars etc. online in the medical colleges where officers in the field attend from their remote locations and take part. These knowledge enhancement seminars done through the video conference are very helpful in enhancing their knowledge. The doctors in Government service are also encouraged to apply for courses for enhancing their skill. A number of doctors avail of this and enroll in training programmes both short-term and long term diploma courses and also post-graduation and super specialization. They are given study leave for this purpose and the Government also pays their salaries and in many cases bears their training cost for their skill enhancement.

IJCFM: ***Indian journal of Community & Family Medicine was started with the objective of disseminating and sharing knowledge with Public health professionals, GPs, Family Physicians. Can some mechanism be developed so that IJCFM can be shared with doctors working in health system as well.***

Mrs. ***Arti Ahuja***: Definitely we can look at disseminating IJCFM with doctors working in health system. We can store it in both hard copy and electronic form in all our medical institutions where students can read it and also in district libraries for the doctors working in the field.

The interview was conducted with Mrs. Arti Ahuja by Prof. Vikas Bhatia, Editor-in-Chief, Indian Journal of Community and Family Medicine in the month of May, 2016.

Indian Journal of Community & Family Medicine expresses heartfelt gratitude to Mrs. ***Arti Ahuja*** **for taking time out to answer the interview questions for the benefit of the readers.**

REVIEW ARTICLE

Invited Article

Rational Drug Therapy

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Rational Drug Therapy

Enormous progress has occurred after 1940 in the field of drug development. Large numbers of drugs are available in market. "A pill for every ill" has become an accepted cultural norm. There is a need to rationalize use of medicines because several times use of the drug is unnecessary, irrational and harmful. According to W.H.O. – "*Rational use of drugs requires that patients receive medication appropriate to their clinical needs, in doses that meet their own requirements for an adequate period of time and the lowest cost to them and their community".*

The key of rational drug prescribing is -

To use

Right drug
In right patient
At right time
In right dose
By right route
With right documentation

Criteria for Rational Prescribing.

Rational drug prescribing refers to prescription of drug on the basis of -

Appropriateness - After correct diagnosis, the doctor has to decide whether the drug is actually needed or not. Functional constipation, prehypertension without compelling indications, vomiting during early pregnancy and early type 2 diabetes mellitus are managed by non pharmacological measures or life style modifications and if that fails then the drug is started.

Efficacy - Doctor must use a drug of adequate efficacy, by an appropriate route of administration and for proper duration For example -

For anti-inflammatory purpose - Ibuprofen is preferred over Paracetamol.

For anti-inflammatory purpose	Ibuprofen is preferred over Paracetamol.
For controlling tremors	Propranolol is preferred over Atenolol.
For anaerobic infection	Mtronidazole,Clindamycin, Chloramphenicol, Cefoxitin or Cefotetan are preferred over VthGeneration Cephalosporins and newer Aminoglycoside antibiotics.
For motion sickness	Promethazine is preferred over Prochlorperazine and Metoclopramide
For drug induced Parkinsonism	Benzhexol is preferred over Levodopa.
For stable heart failure	Metoprolol, Bisoprolol or Carvedilol is preferred over other β-blockers.

Safety - Drugs should be cautiously used in children, elderly patients, in presence of liver and kidney diseases. Cotrimoxazole should not be used during late pregnancy and under 2 months of age. Fluroquinolone antibacterials are used in prepuburtal children if benefits outweigh the risk. Children are more prone to develop acute dystonia following the use of Metoclopramide. Use of Asprin in children and adolescent suffering from chickenpox or influenza may cause Reye's syndrome. Drugs with ant cholinergic property should be avoided in elderly male. Effectiveness of both β2 agonists and β blockers is reduced in elderly patients. During pregnancy the safe antibacterial drugs are Penicillins, Cephalosporins and Erythromycin, but Fluroquinolones, Aminoglycoside antibiotics, Tetracycline and Chloramphenicol should be avoided. The safe analgesic and antipyretic drug during pregnancy is Paracetamol. Hypertension during pregnancy is managed by Hydralazine, Methyldopa or Labetolol. Hyperthyroidism during pregnancy is managed by Propylthiouracil. Aspirin should be discontinued 2 weeks prior to due date of delivery otherwise there is an increased

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risk of post partum haemorrhage and premature closure of ductus arteriosus.Drugs like Doxycyline, Pefloxacin, Ceftriaxone, Cefaperazone, Digitoxin are considered safe during renal insufficiency. If level of ALT is more than 3 times of its normal then preferred antitubercular drugs are Streptomycin and Ethambutol,while INH, Rifampicin and Pyrazinamide are to be discontinued.

Cost of Therapy -

Cost of therapy includes -

Direct cost of purchase of drug.

Cost involved in administration of drug.

Cost involved in monitoring of adverse effects (liver function test, renal function test, electrolyte level, ocular examination etc.)

Cost involved in treatment of ADRs.

Cost of treatment failure.

Expenses involved in visiting the hospital for administration of drug (with travel expenses loss of working hours should also be considered).

Therefore financial implications of drug therapy must be taken into consideration before selecting the drug. High cost of therapy adversely affects the compliance to therapy in developing countries. The incomplete treatment not only causes therapeutic failure, but also leads to emergence of resistant organisms (in case of infections). Therefore if equally effective and toxic drugs are available, the least expensive drug must be prescribed.

Determinants of Irrational Drug Use and Prescribing

These are -

1. Wrong choice of drug or incorrect use of drug

Drugs should be judiciously selected.

Following are the few examples of wrong choice of drugs -

Antibiotics - In every case of fever.

Antibacterials - In viral infections.

Antitussives - In productive cough.

Furosemide - In essential hypertension.

Loperamide - In infective diarrhoea.

Hydrochlorothiazide - In acute pulmonary oedema.

Intravenous Dextrose - In hypovolumic shock.

Phenytoin - In absences.

Nifedipine (alone) - In unstable angina and threatened MI.

Fexofenadine - In motion sickness and drug induced extrapyramidal toxicity.

2. "Me too" drugs - Availability of large number of drugs is one of the important determinant of its irrational use. About 70% drugs are not absolutely necessary. Essential medicines are drugs which satisfy health care needs of majority of population and must be available at all the places, in adequate amount, all the times, in appropriate dosage forms and at affordable cost. 19th essential medicine list of W.H.O. (2015) contains 409 drugs including 28 fixed dose drug combinations. List of essential medicines updated in India in 2015 contains 376 drugs i ncluding 24 fixed dose combinations.

3. Self medication or OTC - Taking the drug without doctor's prescription, not having adequate knowledge of drugs and drugs dispensed by pharmacists without prescription of doctor are important determinants of irrational use of drug.

4. Prescribing by unqualified persons - Sometimes allopathic drugs are prescribed by practitioners of traditional system of medicine who are not well aware about efficacy and safety of allopathic drugs. Hon'ble Supreme Court in the judgement of a case - Poonam Verma V/s Ashwini Patel and others has clearly ruled that a person can prescribe drugs of only that system in which he is qualified and registered. If he prescribes the drugs of other systems, then he will be considered quack and deemed to be negligent *per se* without any further proof or argument.

5. Busy doctor -The doctor is too busy to imply his or her knowledge and discretion in selection of the drug. There is a possibility of either arrogance or ignorance.

6. Repeat prescription - Some doctors without regular review of patient, issue repeat prescriptions. There are instances where prescriptions were issued by receptionist without consultation of doctor.

7. Prescribing with intention to impress the patient and attendants - In order to obtain quick and intense effect from drug and to impress the patient and attendants, the doctor may prescribe the drug in high doses; however there is a risk of toxicity in this. Many times steroids are unnecessarily used with same intention.

8. Prescription influenced by patient - Sometimes doctor prescribes the drug at a request of patient, though it may not be required in patient. Doctor may succumb to pressure of patient for giving injection or IV fluid though these may not be required.

9. Prescription with misconcepts - Sometimes doctor prescribes the drug with following misconcepts -

(i) Newer drugs are always the better drugs - This is not always true. Limited knowledge is available at the time of marketing of new drug. Complete adverse effect profile of a new drug and its exact place in therapeutics are evident only after several years of use in population. Newer antibiotics are not the answer to every infection. IV

generation cephalosporin (Cefepime, Cefpirome) are not effective against listeria, enterococci, methicillin resistant staphylococci, Penicillin resistant pneumococci, B.fragilis, M.tuberculosis and M.avium complex. Vth generation cephalosporins (Ceftabiprole,Ceftaroline) are not much effective against anaerobic bacteria.

- Tigecycline is not effective against pseudomonas.
- Teicoplanin is effective against methicillin resistant staphylococci, but against methicillin sensitive staphylococci it is inferior to cloxacillin.
- Amoxycillin-Clavulanic acid combination is not effective against Pseudomonas.
- Tazobactum does not increase efficacy of Piperacillin against Pseudomonas and therefore, Tazobactum-Piperacillin combination offers no advantage over Piperacillin alone.
- Betoxolol though having better safety profile in asthamatics and COPD patients but is less effective than Timolol in chronic simple glaucoma.

(ii) Costly drugs are the better drugs- Some doctor prescribe the drug with notion that effectiveness of drug is directly proportional to the cost of drug. This is not always true. Uncomplicated UTI responds very well to Cotrimoxazole, Norfloxacin, Ciprofloxacin, Ofloxacin, Cephalexin and Nitrofurantoin while expensive IIIrd generation cephalosporins and newer aminoglycoside antibiotics should be reserved for complicated UTI. Expensive higher class of antibiotics offer no advantage over economical Cefazolin in prophylaxis of surgical site infection. Economical Thiazide diuretic is very effective antihypertensive drug in black, elderly and obese population.

(iii) Polypharmacy is more effective- Longer the prescription, more will be the academic excellence of the doctor is a wrong notion. Prescribing one drug for every symptom of disease without scientific justification represents the irrational use of drug. Polypharmacy increases the risk of ADRs, drug interactions, cost of therapy and may make diagnosis difficult sometimes. However, Polypharmacy is justified in complex clinical conditions and during emergency. Emperical antibiotic Polypharmacy is indicated in polymicrobial infections (like intra-abdominal abscess, lung abscess) and in life threatening infections (like meningitis, septicaemia etc.). Polypharmacy is also indicated in management of chronic infectious diseases like Tuberculosis and Leprosy.

(iv) Brand name drugs are better than generic name drugs - Generic or non-proprietary prescribing offers uniformity, convenience, economy and comprehension. As far as efficacy is concerned, there is no difference between branded drugs and their generic equivalents in 90% cases despite of vehment claims of superiority of branded drugs by pharmaceutical industry.

(v) Fixed dose drug combinations are always superior - This is not always true. There is a possibility that one of the ingredients present in fixed dose combination may not be needed in patient or rather contraindicated. Dose of one drug cannot be changed without altering the dose of other. If adverse effect occurs with FDC, then it is difficult to ascertain which ingredient of FDC is responsible for the adverse effect.

W.H.O. essential drug list (2015) contains only 28 FDCs.

Essential drug list of India (2015) contains only 24 FDCs.

FDCs ENLISTED IN EML (National & WHO-2015).

- Amoxicillin + Clavulanic Acid.
- Imipenem + Cilastatin
- Sulfamethoxazole + Trimethoprim.
- Piperacillin + Tazobactam
- Artemether + Lumefantrine.
- Artesunate + Amodiaquine.
- Sulfadoxine + pyrimethamine.
- Artesunate + Mefloquine.
- Artesunate + Sulfadoxine + pyrimethamine.
- Efavirenz + Emtricitabine + Tenofovir.
- Emtricitabine + Tenofovir.
- Lamivudine + Nevirapine + Stavudine
- Lamivudine + Nevirapine + Zidovudine.
- Lamivudine + Zidovudine.
- Lopinavir + Ritonavir (LPV/R).
- Atazanavir + Ritonavir
- Tenofovir + Lamivudine
- Tenofovir + Lamivudine + Efavirenz
- Stavudine + Lamivudine
- Ledipsvir +Sofosbuvir
- Ombitasvir + Paritaprevir + Ritonavir
- Abacavir + Lamivudine
- Isoniazid + Rifampicin.
- Isoniazid + Ethambutol.
- Isoniazid + Pyrazinamide + Rifampicin.
- Ethambutol + Isoniazid + Riflampicin.
- Ethambutol + INH + Pyrazinamide + Rifampicin.

- Ethinylestradiol + Levonorgestrel.
- Ethinylestradiol + Norethisterone.
- Estradiol Cypionate+Medroxyprogesterone
- Levodopa + Carbidopa.
- Lidocaine + Epinephrine (Adrenaline).
- Prilocaine + Lignocaine.
- Oral Rehydration Salts.
- Glucose with Sodium Chloride.
- Ferrous Salt + Folic Acid.
- Budesonide + Formoterol.
- DPT + Hib + Hep B vaccine

Rational Drug Combinations not enlisted in essential medicine list

- Ergotamine + Caffeine in Migraine
- Aluminium Hydroxide + Magnesium Hydroxide as Antacid.
- Potassium losing Diuretic (Furosemide, Benzthiazide) + Potassium sparing Diuretic (Spironolactone, Triamterene) for hypertension and Heart failure
- ß-Blocker or ACE Inhibitor or ARB + Thiazide Diuretic for hypertension and Heart failure
- Atovaquone + Proguanil in Malaria

SOME IRRATIONAL FDCS MARKETED IN INDIA FOR MANY YEARS

- Antiamoebic + Antibacterial Drug or Antifungal Drug
- Amplicillin/Amoxycillin + Cloxacillin.
- Antibacterial + Mucolytic Agent or Lactobacillus or Serratiopeptidase.
- Piperacillin+Tazobactam(Against Peudomonas)
- NSAID + NSAID or Antispasmodic or Muscle relaxants or PPI or Serratiopeptidase.
- Domoperidone + H2 Blockers or PPI.
- Ondensetron + H2 Blockers or PPI
- H2 Blockers + Antispasmodic Drug.
- Antacid + Antianxiety Durg or Antispasmodic or Anticholinergic Drug or H Blockers.
- Antidepressant with Antianxiety drug
- Antipsychotic with Anticholinergic Drug.
- Autussive + Expectorant + Mucolytic + Decongestant
- Leukotrine Antagonist + Levocetrizine or Bambuterol
- Glimeperide + Pioglitazone + Metformin

Ministry of Health & Family Welfare, Govt. of India has recently banned 344 such irrational FDCs through a gazette notification.

Promotion of drug - Pharmaceutical industry may induce the doctor to prescribe its brand name drug on the basis of attributes other than efficacy and safety. Many times unethical and unhealthy tactics are practiced by pharmaceutical industry to promote the sale of their product.

Lack of drug information - One of the important determinants of irrational drug prescribing is lack of drug information. There must be provision to provide unbiased, updated and independent information about the drug. Information provided by the pharmaceutical industry may be biased in the favour of its marketed product.

Mistake by dispenser - like-

i. Wrong interpretation of prescription by pharmacist.
ii. Supply of wrong drug from stock by pharmacist.
iii. Supply of wrong doses by pharmacist. Regan (Repaglinide) may be dispensed in place of Reglan (Metoclopramide)

Impact of irrational use of drugs - Irrational use of drug may have deleterious effect on society as a whole and on health care delivery system.

Important consequences are -

Reduction in quality of drug therapy leading to increased morbidity and mortality.

i. Increased cost of therapy.
ii. Increased risk of adverse effects.
iii. Unjustified psychological impact on patient that there is a pill for every ill and this may lead to increased demand of drugs.

Responsibility for promotion of rational drug therapy

Lies on -

(i) Drug control authority -

- To prepare, circulate and update essential drug list.
- Discourage irrational drug combination.
- Formulate guidelines for use of specific group of drugs like antibiotics, antihypertensive etc.
- Formulate guidelines for promotional literature.
- To make arrangement for rapid dissemination of ADR reports.

(ii) Teaching institution -

- To hold CME (Continuing medical education).
- To include training on rational use of drug in curriculum for both undergraduate and postgraduate medical students.

(iii) Industry -

- Be ethical while promotion of drugs.
- Assist in PMS (post marketing surveillance)
- To support drug awareness programme.

(iv) NGOs (Nongovernmental organisations)

- To make people aware of rational use of drug.
- To highlight discrepancies.

(v) Patients -

- Observe compliance to prescription strictly.

Concept of Essential Medicines

Essential Medicines are -"The drugs that satisfy the healthcare needs of majority of the population, they should therefore be available at all times, in adequate amount, at all the places, in appropriate dosage form and at affordable cost."

India has prepared its first national essential Medicine list in 1996 containing 279 drugs to meet the common contemporary health needs of the general population of the country at that time. The list was revised in 2003, 2011 and then in 2015. W.H.O. has also published 19th list of essential medicines in 2015 which contains 409 drugs and other items including 28 FDCs. National essential medicine list (2015 contains 376 drugs including 24 FDCs). After identifying the diseases prevalent in majority of population, a multidisciplinary committee will select the essential medicines on the basis of Efficacy, Safety, Cost, Ease of administration, Local availability and Storage facility. Drug in list is mentioned by Non-proprietory name. There should be provision to assure the quality of essential medicines and also to provide information about these medicines. Selection of essential drugs is a continuing process taking into consideration the changing health priorities, epidemiological situation, progress in the pharmacological and pharmaceutical knowledge. The concept of essential medicines will help in the promotion of rational use of medicines in society.

Indian scenario - India is a developing country with limited resources. There is a significant burden of diseases in Indian population. Lot of resources of country get wasted in unnecessary diagnostic procedures and due to irrational use of medicines.

Important shortcoming of medical curriculum is that the teaching and training put more emphasis on diagnostic rather than therapeutic aspects of diseases. Medical curriculum need to be modified in the interest of science and society. Medical curriculum must enable the undergraduates and post graduates to acquire knowledge and skills to manage common illnesses prevalent in country promptly and effectively through proficiency in clinical acumen and rational approach towards use of medicines.

Guidelines for Rational Drug Prescribing

First decide whether the drug is needed or not in the patient.

⬇

Select the group of drug to be prescribed on the basis of efficacy, safety, suitability and cost of therapy.

⬇

Select a drug from the group which is time tested and about which doctor has sufficient knowledge.

⬇

Decide the dose in the patient.
Decide the route of administration.
Decide interdose interval.
Decide duration of therapy.

⬇

Monitor the efficacy and safety of drug.
If it is not emergency, then give sufficient time to drug to menifest its effect.
Do not change the drug on the basis of whims, fancy and material consideration.

⬇

Avoid repeat prescription. Review the patient regularly.

⬇

Give the information to the patient regarding the significance of drug therapy in the illness, how to take the drug, how long to take, any precaution while taking the drug, how to store the drug and if any undesirable effect occurs what is to be done.

If the drug is judiciously used, then it will offer hope of saving life, re-establishing the health and alleviating the suffering while injudicious use of drug causes more harm than benefit to the patient and exposes the prescriber to a risk.

Suggested reading.

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"Medicines are nothing in themselves, but are the very hands of gods if employed with reason and prudence"

"Every prescription is the beginning of a new experiment Begin it carefully, remain vigilant make the patient healthy get blessed from the almighty.

CME

Invited Article

Primary Management of Orthopaedic Injuries

Vivek Singh[1],Anant[2], Gaurav Sanjay[2],Naveen Pandita[2],Prince Raina[2]

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Introduction

Our country suffers from a significant percentage of preventable morbidity and mortality from musculoskeletal injuries.[1]Theseinjuries range from simple fractures to polytrauma including multisystem involvement. Quick initial assessment and immediate primary management provided to the patient at the injury site and after reaching health care setup by the primary care physician can significantly change the final outcome of these patients.[2]

Scene safety

Primary care physician should ensure scene safety and safe access to the patient. He should be aware of potential violence and the possibility of a crime scene. One should follow standard precautions, putting on a minimum of gloves and eye protection. Scenes with multiple patients may require additional pairs of gloves in the event of tears. Number of patients should be quickly determined and need for additional resources such as utility services, fire department or additional ambulances should be assessed. The mechanism of injury may suggest the injury extent and type; consider the possibility that the patient may have internal bleeding.

Mechanism of Injury

Observe the scene and determine the mechanism of injury. The nature of the problem may not be readily apparent until more information is gathered. Falls, assaults, and motor vehicle crashes are common mechanisms in skeletal trauma. One should be alert for primary and secondary injuries. Spinal immobilization should be considered in any trauma patient with a high velocity mechanism of injury like motor vehicle accidents or fall from heinght.[3]

Form a General Impression

Immediate threats to life should be identified and managed. [3] A rapid scan of the patient will help to identify and manage life threatening conditions. Patient's level of consciousness should be assessed and if he is able to communicate, obtain the chief complaint and type of injury that occurred. A non-lethal orthopaedic injury should not distract the physician from the more important ABCs.

Airway and Breathing

Ensure the airway is open, clear, and self-maintained. Unresponsive patients will need the airway opened and maintained using a modified jaw-thrust man0euvre if a spinal injury is suspected. A patient with an altered level of consciousness may need emergency airway management; consider inserting a properly sized oropharyngeal or nasopharyngeal airway.[4]

Evaluate the patient's ventilatory status for rate and depth of breathing, and respiratory effort. Patients breathing at a rate of less than 12 breaths/min or more than 20 breaths/min may have inadequate breathing that requires assistance. Orthopaedic injuries are not common causes of breathing problems; if a breathing problem exists, assess the patient for other injuries. Continuously monitor the patient's oxygen saturation levels and for additional signs of hypoxia. Administer high flow oxygen at 15 L/min, providing ventilatory support as needed.

Circulation

Observe skin colour and temperature. Assess capillary refill time; if greater than 2 seconds, treat aggressively for shock.[5] Open fractures may cause bone ends to protrude through the skin and may result in life-threatening bleeding. If bleeding in an extremity is not controlled with a pressure dressing then a tourniquet may be applied. Fractures may cause internal bleeding leading to shock. Be alert for signs and symptoms. Evaluate the distal pulse rate, quality (strength), and rhythm. Tachycardia may be an early indicator of shock.

Transport Decision

If the patient has an airway or breathing problem, signs and symptoms of bleeding, or other life threats, manage them immediately and consider rapid transport, performing the secondary assessment en route to the specialized centre. Do not delay transport to perform a lengthy assessment

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or splint simple long-bone fractures. Pelvic and femoral fractures are indicators of severe external forces. Patients suspected of having pelvic, femoral, or bilateral fractures of any long bone should be packaged using a backboard and transported without delay. Simple fractures should be splinted to limit pain and blood vessel and nerve damage.

History Taking

Investigate the chief complaint, and gather a history once life threats have been identified and treated. Ask questions, focusing on the events surrounding the incident and the mechanism of injury. Important information can also be obtained from family and bystanders.

Secondary Assessment

Physical Examination-If the patient is unconscious or multiple systems are affected, perform a full-body scan to identify hidden and potentially life-threatening injuries.[3] Assessment should be rapid if the patient has a poor general impression.

Focus the assessment on an isolated injury once all the systems have been examined. Look for swelling, deformities, asymmetry (compare the injured extremity with the opposite uninjured extremity), and contusions while palpating for tenderness. Look for shortening, rotation, and angulation of the limb. If no external signs of injury are present, and the patient is not reporting pain, ask the patient to move each extremity carefully to assess motor and neurologic status. Perform a focused examination when the patient has nonsignificant trauma. Assess the injured area, including the distal and proximal joints. Check for perfusion, motor, and sensory function. Look for the 6 Ps during musculoskeletal assessment (pain, paralysis, paresthesias, pulselessness, pallor, and pressure).

Vital Signs- Obtain baseline vital signs. Note the patient's level of consciousness. Use pulse oximetry, if available, to assess the patient's perfusion status. Tachycardia or hypotension may indicate hypoperfusion. Reassess the patient's vital signs every 5 minutes to observe trends.

Reassessment

If spinal injury is suspected, stabilize and immobilize the spine as needed. Control external bleeding and treat for shock. In patients with non–life-threatening injuries, splint the affected area in a position that allows for good circulation distal to the injury. Reassess the chief complaint, primary assessment, vital signs, and any interventions already performed.[6] Vital signs should be obtained every 5 minutes and results compared with those obtained earlier. Place the patient in a position of comfort unless shock is suspected, then place the patient supine and treat accordingly.

General Management of Orthopaedic Injuries

Managing life threats to the patient's ABCs is the primary concern with any traumatic emergency.[3] Control bleeding, and treat for shock. Cover open wounds with a dry, sterile dressing and apply pressure to control bleeding. Remove any jewellery the patient is wearing on injured extremities. Choose the correct type and size of splint for the injury. Splints for long-bone fractures should be long enough to stabilize the injured bone and the joint above and below the injury. If swelling is present, a cold pack can be applied to the injured area but do not place them directly on the skin.

Fractures, Dislocations, Sprains, and Strains

Emergency management for fractures, dislocations, sprains, and strains is essentially the same: Prevent further injury, reduce the risk of infection, minimize pain, and reduce the risk of long-term disability.[7.] Emergency treatment of any long bone fracture is splintage . For splinting to be effective, it must immobilize adjacent joints and bone ends. Long-bone injuries can be immobilized with a padded board splint, or other similar device. Isolated femoral fractures should be managed using a traction splint. If a pelvic injury is suspected, a pelvic binder should be applied.[8] Clavicle and shoulder injuries can be immobilized using a sling.

Splinting Devices Basically, any splint incorporates rigidity. In case of road side injury any firm thing can be used for splinting. Sticks, tree limbs, rolled news paper, cardboard, wooden scale etc can be used to splint injured areas. They are secured with items like belts, rope and even torn strips of cloth. In hospital setting crammer wire splints and POP splints are commonly used for upper and lower-extremity fractures.

Cramer wire splints can be rapidly bent to better conform to the shape of the affected extremity and triangular cloth bandages are commonly used to sling and swathe the fractures. It comes in various sizes and easily mouldable

Figure 1. Cramer wire splint

to desired length and shape to achieve immobilization. Adequate cotton padding is applied to part being splinted followed by application of splint and finally wrapping the bandage circumferentially around the limb accompanying splint. (Fig-1)

POP splint or POP slab: Plaster of Paris can be used in the form of slab to provide splintage to injured limb instead of crammer wire. It provides better immobilization as there is minimal movement at injury site.POP bandage is first opened in form of layers. Usually 15 to 18 layers provide

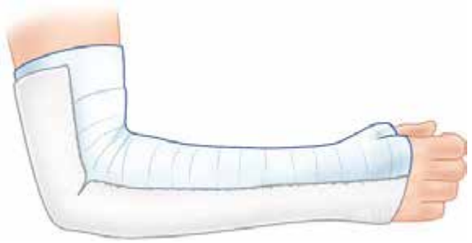

Figure 2. POP splint with POP slab

sufficient strength. Length of slab is identified using opposite normal limb as guide. Cotton padding is wrapped around limb followed by applying the water soaked POP slab and finally wrapping the bandage circumferentially around limb. Excess water is rinsed from the slab before application.

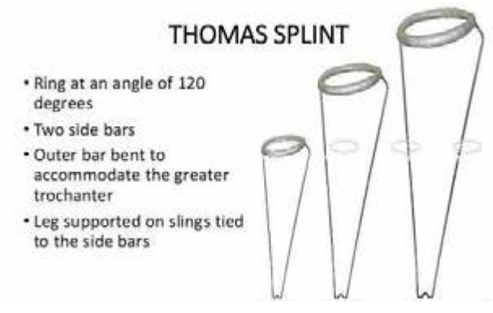

Figure3. Thomas Splint

Thomas splint: Traction splints like Thomas splint are used to immobilize fractures of the femur. These types of splints use tension that's created by pulling straps to place the bone in alignment. It consists of padded oval metal ring covered with soft leather to which attached outer and inner side bars, are of unequal length so that padded ring is set an angle of 120 to inner side bar. The diameter of padded ring is calculated by measuring oblique circumference of thigh at level of gluteal fold and adding 2 inches to it. Length of side bars is measured as distance from crotch to heel and adding 6 to 9 inches to it.

Manual traction and alignment-In most situations, the injured area needs to be returned to as close to a normal anatomical position as possible. Usually, this is done by having one provider giving manual traction, applying tension to the affected extremity, to return fractured bone to a more normal position. This is to cut down on damage to the affected area and assist the effectiveness of the splint.

Fractures of the humerus and forearm bones-After assessing motor function and alignment, splint the arm under the fractured area. For a fractured humerus, the splint should rest at the upper arm and span the length between the shoulder and elbow. For a fracture to the radius and/or ulna, the splint should rest under or along the forearm and span the length between the elbow and wrist. Use triangular bandages to make a sling (supporting the shoulder and arm).Reassess motor function after applying the splint.

Tibia/fibula fractures-After assessing motor function and alignment, place a long leg splint under the affected leg. Immobilize above and below the fracture, and secure the foot in the neutral position.

Pelvic fractures-The simplest way to immobilize pelvic fractures is to stabilize the patient's lower legs. When using a sheet as a pelvic wrap, place the sheet around the patient's pelvis, then gently stabilize the pelvis by pulling the two ends together. Then tie the two ends together.

Open fractures-Fracture management begins after initial trauma survey and resuscitation is complete. Active bleeding should be controlled by direct pressure. Gross debris from wound should be removed and thoroughly wash the wound with copious amount of saline or running tap water and place sterile saline-soaked dressing on the wound. Early IV antibiotics should be initiated along with tetanus prophylaxis as indicated. Fracture should be gently aligned and kept in well padded splint.

Compartment Syndrome

If compartment syndrome is suspected (pain out of proportion to the injury, pallor, decreased sensation, decreased power), splint the affected limb, keep it at or above the level of the heart, and transport immediately[9]. Surgical intervention is required to manage this injury.

Amputation

Ensure that bleeding is controlled at the stump, using a tourniquet if necessary and if local protocols allow. Manage life threats first; do not focus only on trying to save an amputated part. If life threats are under control and if the amputation is complete, wrap the part in a sterile dressing and place it in a plastic bag. The bag containing the amputated part should be placed on top of ice [10]. Transport the amputated part with the patient, but do not delay transport of a seriously injured patient to do so.

Geriatric injuries

Old people usually have a history of trivial tripping at home and come with inability to stand/ walk/ use the limb[11]. These patients mostly have poor bone stock leading to fragility fractures by trivial trauma. To diagnose these fractures, a strong index of suspicion and a basic x ray of the painful area is necessary. Hip joint, pelvis, spine, shoulder and wrist are the common areas of fractures in old age.

Treatment for upper limb fractures consists of splints and plaster casts after gentle manipulation. Lower limb and spine fractures may need expert advice regarding surgery and mobilization.

Summary

In summary primary care physician has a very important role to play in the management of musculoskeletal injuries right from the scene of accident to primary management and stabilization in a hospital setup to rapid and timely transport to a higher level of facility. A suggested protocol of the following points summarizes the role of primary health care provider in the management of these injuries.

- Ensure scene safety.
- Determine the mechanism of injury.
- Consider the need for spinal stabilization.
- Open, clear, and maintain the patient's airway.
- Ensure adequate ventilation.
- Administer high-concentration oxygen via a non-re-breathing mask or bag-mask device as appropriate.
- Control bleeding, and treat for shock. Cover open wounds with a dry, sterile dressing and apply pressure to control bleeding.
- Apply a splint, and elevate the extremity.
- Apply cold packs if there is swelling, but do not place them directly on the skin.
- Position the patient for transport, and transport to the appropriate treatment facility.
- Household trauma in elderly people and play-ground injuries in children should be carefully examined for possible fractures and distal pulsation of the injured limb should be checked.

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CME

Invited Article

Reducing risks of Road Traffic Accidents in India: Policy Initiatives and Implementation

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Introduction

Resulting from man's own choice of behavior and causing more than 100,000 deaths and much more disability the amount of casualties caused in road traffic accidents have been rightly compared to a moderate scale war on annual basis. This proportion of death and disabilities continue to rise, resulting in enormous loss of active and productive years of life especially of working age group falling between 15-64 years and thus wiping off the demographic dividend middle income countries like India may have. RTIs are considered to be the sixth leading cause of death in India with huge proportion of hospitalizations, deaths, disabilities and socioeconomic losses in young and middle-age populations.[1]

With UN declaration of 2011-2020 as decade of Action for Road Safety, the Government has formulated the National Road Safety strategy and action plan for India and has recognized five essential pillars to be implemented for ensuring Road users safety.[2] This paper discusses the current level of implementation of these five essential components and the gaps that need to be bridged.

I - Building Road Safety Management Capacity:

At present, India has no dedicated agency championing the cause of averting road traffic accidents and the huge socio economic effect it has. Further, nonexistence of any program on injuries and trauma results in poor allocation of health budget in this direction. The recommendation of establishing National and State level Road Safety & Traffic Management board is a welcome step in this direction. This coupled with creation of Road Safety Fund to pool in resources from both Government and private/ corporate bodies will enable dedicated funding for effective execution of road safety initiatives.[2]

II - Upgrading Safety in Road Infrastructure:

At present, formal audits are in place before taking up construction of new roads and regular inspection of existing road infrastructure is done as a necessary measure. This must be complemented by information on different types of vulnerable road users and their requirements. Pedestrians, two- wheeler riders and bicyclists are grouped together as vulnerable road users (VRUs)as in the event of crash, they come in direct contact of vehicle they are liable to suffer serious injuries and deaths.[1] The existing road safety policies play a very limited role in providing safe environment to vulnerable road users. Policies to encourage investment on and use by general masses of public transport in both large cities as well as peri- urban and rural areas is an essential strategy in promoting safe environment for VRUs. Setting up of Fatality reduction target on annual basis may stimulate interest of involved stakeholders to work in more coordinated and result oriented manner.

III - Enhancement of Safety in Vehicles:

The existing number of registered vehicle in India is about 114 million, and motorized two and three wheelers comprise 70% of these vehicles.[3] Focused research on crash incompatibility of vehicles[4] due to which design differences between vehicles lead to their disproportionate damage patterns during a collision need to be carried out. Educating manufacturers to provide evidence based safety interventions in vehicles like presence of air bags in cars, front and rear seat belts and other measures to improve vehicle safety features and increasing awareness of masses to demand and use such measures is quintessential. Poor level of implementation of these interventions exists in current scenario more so in a scenario where due to increasing fuel prices, more and more number of people use two wheelers and small passenger cars which are found to be predominantly affected in road crash.

IV - Improvement in Road User Behavior:

It is widely understood, human error is responsible for 90% of road crashes[5] thus encouraging individual road users to behave more responsibly on road is a definite approach to improve road safety. Along with legislative

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Received: 02/06/2016, Accepted: 03/06/2016

measures, public awareness in five areas is recognized to decrease road user risky behavior.

Speed limit regulation in India varies in different states and as per vehicle type. Local authority may specify lower speeds than the prescribed ones. The maximum limit on urban roads and expressways because of poor enforcement is seen to commonly shoot above 60-65km/hr on urban roads and varies between 100 – 120 km/hr on highways.

Ther National drink driving law to curb drunk driving in India limits blood alcohol concentration (BAC) limits at 0.03% or 35 µl alcohol in 100 ml blood. BAC values detected more than this limit is booked and is penalized in following manner : (Table 1)

The National motorcycle helmet law mandates both drivers and pillion riders to wear helmets on two wheelers. Inspite of mass awareness efforts, only 50 % drivers and less than 10% of pillion riders are reported users.[6]

The National seat belt law requires use of restraints by both front and rear seat occupants. Ineffectiveness due to poor enforcement and mass awareness programs is observed as seat belt wearing rate was found to be among only 27% drivers.[6]Besides, till date there is no child restraint law to prevent pediatric age group injury as motor vehicle occupants.

V – Emergency Services for improving Road Safety:

Reiterating Article 21 of the Constitution which obligates State to preserve life, Supreme Court directive emphasizes preservation of human life to be of paramount importance and that none of the existing provisions and legislations under Indian Penal Code, Criminal Procedure Code, Motor Vehicles Act etc. prevent doctors from promptly attending seriously injured persons and accident victims. As per the directive, all government hospitals and medical institutes should provide immediate medical aid to all the cases irrespective of their medico- legal status[7] and the treatment of the patient should not be deferred till police arrives and take cognizance of such cases. The effective delivery of trauma care services is further ensured by mandatory training in Emergency medicine of both doctors and nurses in many health care training organizations country wide.

Table 1. Penalties for exceeding Blood Alcohol Concentration

First Offence	Penalty (and/ or)	
Blood Alcohol Conc.	Fine	Imprisonment
<30 mg/ 100 ml blood	----	-----
30-60 mg/100ml blood	Rs. 2000	6 months
60-150 mg/100ml blood	Rs. 4000	12 months
Any of these offence repeated within 3 years	Rs. 8000	36 months
Blood Alcohol Concentration if above >150 mg/100ml blood	Rs. 5000	24 months
Offence repeated within 3 years	Rs. 10000 and cancel-lation of DL	Jail penalty

The rapid reach to essential trauma care services is the cornerstone in improving post-crash care. At present, multiple emergency telephone numbers are operational throughout country, yet only 11-49% of seriously injured trauma patients are transported by ambulance while rest reach health care facility through other modes of transport.[6] Government of India, envisages to improve trauma care by establishing extensive network of trauma care centers and hospitals with facility of trauma care along National Highway and State Highways. Various other steps like providing exclusive access to emergency vehicles to hospital emergency and trauma centers and enforcing their smooth and fast pace among routine traffic and Emergency room based Injury surveillance system are key areas which need attention to improve trauma care in Indian scenario.

Conclusion: Steps to ensure safe roads and safe behavior on roads is a mammoth task and needs to be integrated at every level of promoting safe roads environment but this cannot be further undermined or the disproportionate loss of lives and health due to road traffic accidents will erase the gains achieved so far due to rapid urbanization and motorization.

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Dissecting the Question Paper

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Abstract

The importance of written examination in medical schools is implied from its wide spread acceptance in our country, and its use over several decades, not only as a tool for evaluation but also sometimes as tool for learning and for getting a feedback on the classroom and bed-side teaching that had taken place sometime in the past.
Though this form of summative or formative assessment is plagued with serious drawbacks like lacking objectivity, reliability, relevance and validity, but still it has survived the test of time, since it is easy to administer and suitable for a large group. However by improving the quality of the question paper with adequate analysis and preparation, these known weaknesses can be minimised if not totally eliminated.

Key Words: Blueprint, Assessment, Question paper.

Introduction

The curriculum, which is set by the Medical Council of India, is a well thought of and debated and finalised guiding principle which clearly sets the must know, desirable to know and nice to know areas of medical education and training for the medical student. It is important and very often followed that the distribution of hours of lectures and stress on specific sub-topics are in accordance with these guiding principles.

The design of a question paper on the other hand is often a prerogative of the University or sometimes the Dean or Examination section of the Institute. During this important task, the curriculum is always kept as the guideline. The various thrust areas of medical education and training, which highlights the predominant problems in the community, are highlighted. The total number of questions, the time allotted, and finally the number of essay type, short answer type, very short answer type and Multiple Choice questions are also decided. Even the final details like whether there will be choices offered for long or short answer questions; what will be the type of the multiple choice question: single best response or more than one correct answer type; the difficulty level of the paper- guidelines have to be set on almost all of these aspects. This is therefore more of a policy decision, and once decided it is followed over the years by the Institute.

However for the regular assessments in our Institutes, we as assessors, often tend to be very conservative and somehow questions tend to be picked up from among the small list of topics on rotation every other year. Though the teaching goes on as per the specific learning objectives, questions tend to be repeating from among a set of few topics every year. Ideally the topics for evaluation should also be divided as per their due stress during their teaching to appropriately evaluate whether the desired learning goal has been achieved or not.

For formative assessments or qualifying exams, which are meant to certify the competence of the student in terms of knowledge, skill and attitude which the student is expected to acquire at the end of the course, the question paper should be made with an aim to find out whether the minimal knowledge and skills have been achieved by the student or not.

Once the above guidelines are set, it is better to have them written in clear simple sentences to be followed by all paper setters. This exercise is very useful for external examiners, who may not be familiar with the examination pattern of some Institutes.

The next step is to prepare a so called the blueprint, also called the table of specifications of the question paper. This provides the test strategy of the examination at a glance.

Blueprinting is the matrix or chart for the number and type of test questions, represented across the topics in

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Received: 21/01/2016, Accepted: 13/04/2016

content area, consistent with the learning objectives and relative weight on assessment to be assigned to each topic. Blueprinting also identifies the specific domain of knowledge which is being tested in the question paper.

Figure 1. Miller's Pyramid of Clinical Competence

Why do Blueprinting?

The purpose of blueprinting a question paper is to develop a conceptual map of the examination format and a content area represented in assessment. Blueprinting provides a list of information:

1. Type of measurement tool and the proportion of each format of assessment adapted relative weightage of each.

2. Relevance of the measurement tool with the learning objectives.

3. Whether the topics have been given the desired relative weightage.

4. Competencies in the form of unidirectional Cognitive domains tested in knowledge and skill domains of Bloom's taxonomy of educational objective and Miller's pyramid of Competency learning respectively. (Fig 1, Table 1)

Table 1. Blooms Unidirectional Taxonomy of Educational Objectives

Cognitive dimensions	Learning objectives / Outcomes				
Creating					
Evaluating					
Analysing					
Applying					
Understanding					
Remembering					

5. To test whether the evaluation tool will assess the knowledge as multidimensional process of learning as proposed as Taxonomy table by Anderson, which includes factual knowledge, procedural knowledge and conceptual knowledge. (Table 2)

Table 2. Anderson's Multidimensional Taxonomy table

Learning Domains	The cognitive process dimension					
	Recall	Understand	Apply	Analyse	Evaluate	Create
Knowledge Dimension						
Factual knowledge						
Conceptual knowledge						
Procedural knowledge						
Metacognitive Knowledge						

Each question in a typical question paper can be analysed into one of the places in the Question paper blue printing chart (Table 3.) When all the questions have been so analysed, the sum total of marks distributed among the various types of questions (the extreme right column), the nature of the questions (Knowledge/ Understanding or Application) and the topic from where the question has been framed (the extreme left column) presents a quick glance of the question paper.

Table 3. Question paper blue printing chart

Objective/ Content area	Knowledge (recall)			Understanding			Application (Problem Solving)			Skill	Total
	O	SA	LA	O	SA	LA	O	SA	LA		
Total											

O= Objective, SA= Short Answers, LA= Long Answers

A standard and typical question can be preserved in the item card (Table 4), where the detailed specification of the question and its desired answer may be maintained for future use. There is one item card prepared for each standardised question.

Table 4. Item card

ITEM CARD		
Objective:	Marks:	
Content Area/ Topic:	Estimated Difficulty level:	
Form of question:	Estimated time:	
Question:		
Model Answer	Points of answer	Marks for each point

Who will use the Blueprint?

Blueprinting being a widely accepted tool used by "stakeholders" to construct examination question papers for ready reference of individuals/ teams involved in question paper setting.

1. Candidates preparing for an exam can use examination blueprints to assess their time management and to measure their preparedness for passing in the exam. However the students must keep in mind that topics not listed in the blueprint are still a part of the curriculum content, which may be evaluated through assignments, student centred learning or formative assessments. Therefore the learner must take responsibility of acquiring a broad based knowledge of all such topics which are not listed in the blueprint but are part of the specific learning objectives.

2. Teaching faculty and course co-ordinators who can ensure the validity of assessment in terms of the question paper being representative of content area documented in the curriculum.

3. External Examiners who can familiarise themselves with the assessment process and review learning among the assesse accordingly.

4. Members of the vetting committee can ensure that the question paper is consistent with the knowledge and skill domain versus cognitive dimension as per the learning objectives. The vetting committee can also ensure that the "must know" areas are not overlooked; and also ensure that there is no repetition of questions from immediate previous years.

Conclusion

1. Assessment is a complex and multifaceted aspect of teaching learning activity, which is perceived differently by different stakeholders. A valid assessment ensures that the acquired competencies overlap with learning objectives of the curriculum.

2. The blueprint is a thorough assessment of the assessment tool, and can document a good evaluation system.

3. The learners get to know what is to be learnt (content), how well to be learnt (superficial to deep learning approaches) and relative weightage of different subtopics the curriculum, depending on how assessment is designed.

4. Teaching –learning context designed as a blueprint of examination questions can motivate adult learning, since it will be target oriented.

5. Assessment imperatives like reliability, validity, relevance and objectivity take central stage during blueprinting of a question paper. Blooms taxonomy of knowledge is used to develop an assessment tool for written and some aspects of practical examination, directing the question paper setter to set more question requiring higher order thinking. Miller's pyramid is useful for practical and clinical skill competency assessment as in the blueprint.

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MEDICAL EDUCATION

Medical Education: Is a Paradigm Shift Required Worldwide?

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Medical school training - early experiences

While undergoing medical training in India, I came to realize very early in our training that the socio-economic undercurrents were a major determinant of health and health care delivery systems in India. As an extension, such an emphasis also formed an important basis of medical education training for future physicians.

Rural Community and Preventive Medicine training in India

We were taught very early on that medical training has to be steeped in the realities of the social fabric of the population we are to serve. I trained at Mahatma Gandhi Institute of Medical Sciences in Sewagram, Maharashtra, India, and a tertiary care center which provides medical care to a predominantly rural population. As medical students, we lived in the village for two weeks each time, two to three times during our four and a half year training period. This was to sensitize many of us urban dwellers to the real social issues that affect health deeply in rural areas. We were assigned three families in the village and were responsible for the public health education, vaccinations and the health of all the individuals in the family. The whole class of medical students visited the village monthly and provided health coverage, with two preceptors who were community medicine faculty to the entire village. The various efforts were geared towards teaching families regarding oral rehydration solution to treatment of diarrheal diseases to kitchen gardens, chlorinating wells, hygiene, sanitation etc. I even diagnosed a family member with tuberculosis and worked up an older individual for cancer. One of the classmates had her village family member diagnosed with twin pregnancy as we heard two heart rates while listening for fetal heart sound and tried to transfer her earlier for preventing perinatal mortality. We often lined up the children to treat them for vitamin A deficiencies by checking for vision and those shiny white Bitot spots in the eye and all would get vitamin A drops, as vitamin A deficiency, a completely preventable and treatable condition is a common cause of blindness amongst young children. We as medical students also went and performed finger sticks for patients at midnight in their homes to obtain blood samples and screen for filaria parasite and the micro filarie could be seen only at that time in the peripheral blood smears. Filaria causes lymphedema of the lower extremities and elephantiasis (elephant like legs) due to parasite lodging in the lymphatic system.

Socio economic disparity exposure

There were with some families of eight members in these villages, sharing just a cup of milk, living in very close quarters, with no bathroom or privacy available. They had never seen some urban dwellers and initially were very hesitant to let us medical students enter their homes, but after getting to know us better, started trusting us more with their problems and developed more confidence in our abilities. The individuals living on the brink of poverty and a marginalized society struggle to just live and there is minimal place for health concerns that goes un noticed by many young trainees who do not have similar exposure.

Also the young teenage brain of many medical students is not able to comprehend the harsh socio economic realities fully, despite growing up in a Country with 50% rural population.

Some of us were exposed for the first time to hunger, poverty, lack of clean water, malnutrition in young children and the fact that the deep seated gender bias could not help many women in need for education, contraceptives, even lack of basic sanitation, sanitary towels, bathrooms and the fact that they had to wait the entire day, for just this very basic need for night fall, to use fields for defecation.

I had learnt early in my career regarding a holistic approach to medicine and am grateful to my alma mater for teaching me that and having me approach medical problems differently, sparking my interest in public health which is tied so closely to all of Medicine.

Many in rural India are working towards empowerment of villagers like, our medicine professor, Dr. UN Jajoo at

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Received: 28/04/2016, Accepted: 23/05/2016

our medical school. His experiential journey started with health and evolved to issues beyond the realms of health, using 'Samanvaya'- co-operation among all the various strata of society, as the core philosophy. In the process, embracing the '**Antim Aadmi**' i.e. the last human being, without forgetting '**Sarvodaya**' i.e. the betterment of the society, at large

He is working in the heart of rural areas with programs like suicide prevention amongst the deeply indebted farmers, vaccination programs, children's education, women's empowerment models or seeds program like Jowhar program, lift irrigation, self-reliance in farming, upliftment of spiritual health etc. These are bringing about a change by tying the knot between public health education model and medicine.

Such approaches in these rural areas have been incredibly successful in reducing infant and maternal mortality rates along with reduction in morbidity.

This Social model is now being replicated across more centers in India as well .Our Medical school was one of the first to advocate decades ago the compulsory rural posting after medical school for two years after completion of internship in order to qualify for post-graduation at the institution. This model ensured physician presence in remote and rural areas and provided care to many rural communities. This is now being widely adopted decades later in other medical institutions across India as well. Similar socio-economic disparity exists in U.S. as well and the driver of medical education today is geared towards learning things which are driving medical education.

The aging population is impacting the health care due to many co morbidities and more in hospital and rehabilitation utilization resulting in increased dollar amount spent on health care resulting in ballooning of costs. Many times I see patients here in USA and realize that we cannot cure all their sickness and ailments. The stressors in life of some, with homelessness, abandonment, mental health problems, and lack of education, financial constraints, and drug abuse by children cannot be cured by lab tests, medications, but perhaps empowerment, education help of social worker. Our state Arkansas has the highest senior hunger in the country, so I am reminded constantly of their spending power before I write each prescription. I check to see if it the prescriptions fall under the dollar 4 prescription plan as otherwise, they will be noncompliant with the medication prescribed.

I am reminded that they may not have basic resources such as all meals available or lack of transportation to buy food, or perhaps are lonely and depressed, when they start losing weight over doing a million dollar work up for weight loss. Instead of just asking those questions, I first check if they need a snack before starting my session as many have not eaten anything before coming to the doctor's office.

Personal perspectives as a medical educator.

As an educator, a common question that gets asked by medical students is how were your medical school days and what did you learn from those experiences?

1. You cannot read in text book you have to experience it,

To summarize the above Medical school experience in India was indeed a unique way to provide coverage to the rural areas and also an excellent community medicine experience for the young medical students trying to learn not just from books and lectures but by actually experiencing it in the rural areas and the homes of the rural families. This way we could assess the needs for each family and each member in the family. It also exposed us to the socioeconomic disparities, cultural sensitivity needed for dealing with patients. I am sure that others trained India in other medical schools have undergone these experiences to varying degrees in their training curriculum as well. In USA many students do rotations in developing countries, camps or volunteer hours to get the similar experience. Some Medical schools have programs mentioned later with Geriatrics to give them the similar experience.

2. Meeting more people from different backgrounds and experiences and working with diverse group people with various experiences broadens your view and is a very enriching experience.

I have had the unique experience of training in two countries, in two education systems with several different models of care. During my training in Master's in public health, while undergoing a summer certificate program in International health at Boston University, I had the opportunity to interact with students from 40 different countries. This helped me understand the medical needs in places where there are no doctors, and the unique health care models in place, it exposed me to hunger and poverty, and the impact on health of individuals across the globe. In addition we were exposed to many successful models in countries like Bangladesh from micro financing to arsenic in well waters that impacted health of the many Bangladeshis in a big way. I also learnt some practices that were cruel but very prevalent like female genital mutilation in Sudan. I had the opportunity to meet people like David Werner, author and public health specialist who worked with the most underserved population in developing countries and brought about major changes in health care.

3. Student empowerment of socio economic realities.

I can never forget that the questions addressed to me in my residency interview, "What does it feel like to be poor"? To what is poverty? How do finances affect the underserved population?

We may be in a country like India with many facing poverty, but I learnt more about it after my public health experience in the West. The green revolution game we played, just made me emotionally experience what poverty actually means. One of the speakers from World Bank was so right in mentioning, a poor person does not know what poverty means. We as a society define poverty by placing people under a certain dollar amount a day but a poor person does not even realize they are poor, and continues to struggle daily. Graham Chapman the inventor of green revolution game and a Cambridge Professor was years ahead of his time in recognizing the value of simulation games as a learning tool and developed it with Elizabeth Dowler in late 1970s.This game simulated small farmer decision-making in a rice-growing area of Bihar, India, at the height of the Asian Green Revolution. Using a simple model of an agricultural society, the simulation demonstrated the complex of decision-making and helped sensitize students and others to the impact of rapid agrarian change from the farmer's point of view. It helped rural bank managers in India to understand the problems of small farmers and political scientists in the UK to gain a greater appreciation of small-group dynamics. Another version of the game Africulture, a board simulation, with a focus on small farmer decision-making in rural Zambia helped with intra-household based interactions and negotiating resource allocation decisions between men and women household members. These gendered aspects of the game, combined with the inclusion of a town to allow rural-urban migration and flows of capital and technology, added important new dimensions to the understanding of agrarian change in Sub-Saharan Africa. These simulations add to the fact that living the learning experience was much better than theoretical or just lecture based learning.

4.Experience may differ by the population curves and Countries and what may work in one place needs a different approach in another.

In US there is an increasing population of older adults daily, currently approximately 44 million or 13% and are thought to double to 88.4 million or by 2050. Geriatrics was a field I was not exposed to in India has more young population over old. Pediatric population is 440 million approximately in India, a country of over 1 billion population and more than the entire population of North America. Even today of over 2400 graduates from our Medical school in India, barely 2-3 are Geriatricians though the entire planet, including India has a rapidly aging population, being called the "ageing Tsunami".Perhaps it is time that Indian Medical schools started actively developing geriatric programs too to cope up with rising needs of elderly in the future. My interest in Geriatrics was sparked during medical residency training in USA, when I took care of many older adults. In my third year of residency I lost my father who I feel had developed some geriatric syndromes after chemotherapy for his rare cancer that went unrecognized.

Again geriatrics opened multitude of socio economic issues affecting health of older adults. Almost 40% the population of older adults in USA are either almost at poverty line or below the poverty line, though all have insurance coverage under Medicare, or Medicaid programs, federal and state government regulated programs providing health coverage to all over 65 years of age.

They have many social dynamics affecting their health such as access to transportation, meals, safety in home environment, education, family and community support etc

Again I was exposed to various models of house calls, an inter professional team based model with physical therapist, nutritionist and social worker to going alone to homes and doing many home assessments for nutrition to lack of transportation to hunger to safety, such as for fall risks, looking for lighting to environmental hazards, overcrowding to loose rugs. I recall my frustrations with the Medical system in India, the nonexistence of palliative care programs, insistence on prolonging life over quality of life and hence realize that palliative care programs and hospice does not even exist in infancy. That we as physicians need to focus on keeping patients comfortable in their dying moments too, need to focus not on aggressiveness of care but also comfort care and quality of life. The goal is o not add years to life but life to years.

My own father was shocked several times despite our requesting a do not resuscitate order as per his treating physician he was not comfortable with it. The shocks causes discomfort in a dying patient, and my heart still aches to think about how he felt in his last moments.

In USA in contrast we have very well developed palliative care models providing coverage to patients on hospice, or end of life with an average expected life span under 6 months due to oncological and other conditions etc.

India is also in dire need of family medicine programs to train those going into general practice, and can learn again from the West where many countries like Germany, Canada and USA have very well developed three year family medicine residency preparing practitioners well for taking care of the entire spectrum of population, and many surgical procedures.

The combination of my experiences in two continents, gave me the unique perspective to be able to compare and contrast the issues faced in medical education in the United States with what I have seen in India. Many of the Universities and Medical schools in USA are working towards community engagement and taking social determinants into account. The community health workers and the agricultural extension model for health education are improving the health in several states such as New Mexico.1

Flexner an educational theorist with no medical training published a critical assessment of the state of the American educational system in 1908 titled: The American College: A Criticism. It was his resultant self-titled Flexner Report, published in 1910, that sparked the reform of medical education in the United States and Canada. However Critics of the Flexner model correctly point out that Flexner himself failed to address issues such as poverty, housing, nutrition and other factors that we now call the social determinants of health.

All social determinants collectively affect health much more than even the $3 trillion health care industry in the US. Hence looking back our medical schools unique model of social and public health education was way ahead of time decades ago envisioned by the founder with Gandhian philosophy Dr Sushila Nayyar.

So many years later we are trying to create pilots on assessment of patients and families in needs in some of the Universities in USA. A recent conference I went to had several unique education models for teaching medical students regarding needs assessment in patients' homes, during home surveys which would be a great educational experience for the students as well as for patients and families.

So perhaps continuous efforts by government and communities to target poverty and find ways to uplift poor more might help to improve the health of the entire planet whether in US or in India.

The medical schools need to continuously expose medical students early to the socioeconomic needs affecting health of individuals so they can incorporate this knowledge in their medical practice.

Like I tell all my students, don't treat a patient chemically but actually, ie getting away from just giving drugs to keeping all their needs in perspective to actually make a difference.

ORIGINAL ARTICLE

Assessment of Mental Health Among Adolescents Studying in Government Schools of Patna District.

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Abstract

Background- Adolescence is a period of physical, psychological, emotional and personality change, which can be affected by stress, and emotional and behavioral problems. Hence this study was conducted to estimate the prevalence of mental health problem among adolescent studying in secondary school of district Patna by using of SDQ Questionnaire.

Method- A cross-sectional study was conducted on the assessment of mental health status of children of 12-16 years. This study was conducted at 15 schools in the rural area and 20 schools in urban area of Patna district from August 2013 to January 2015 using of SDQ Questionnaire.

Result- Conduct problems as well as peer problem were the highest (10.3%) with mean score of 5.59±0.84 and 6.40±0.67 respectively, followed by emotional problem (7.6%) with mean score7.88±1.00. The Conduct problems were significantly higher in males than females (p=0.025). The abnormal score of all domain of the mental problem were more common in the children of urban area except prosocial problem. 20.4% children had definite difficulties in daily life and 11.4% had severe difficulties in daily life**.** The difficulties had interfered in 64.6% of children by different impact factor.

Conclusion: Mental health problems are common among the general adolescent population in India. Early detection and effective intervention will result in better development of the futures citizens of our country

Keywords –Mental health, Adolescent, SDQ

Introduction

Adolescence is a period of physical, psychological, emotional and personality change, which can be affected by stress, and emotional and behavioural problems[1]. Psychiatric problem in adolescents, like anxieties, depressiveness, conduct problem, hyperactivity inattention and peer relationship problems are major health issues in adolescence and these are of great public health concern. These problems are seriously burden the individual as well as their social environment and may be associated with functional impairment in the family and at school. The identification of mental and behavior problem in early age is important to minimize the psychological problem in adulthood. The prevalence of mental health problems among adolescent varies from 14.5% to 25% among various studies done globally.[2-3]The prevalence of mental health problems among adolescents in India to varies from 8.7% to 31.2% by different study.[4-5] Children are the most important asset and wealth of a nation. Healthy children make a healthy nation. With the advancement in modern technology and the competitive world, the adolescents are concerned about their future and career,so they are stressed out and prone for behavioural and mental problems

The aim of the study was to estimate the prevalence of mental health problem among adolescent studying in government schools of Patna district by using of SDQ Questionnaire.

Methods

Study design - This study was a Cross-sectional study on the assessment of mental health status of children of 12-16 years. This study was conducted at 60 schools of Patna from January 2013 to August 2015. Students between 12-16 years of age and whose parents consented to allow their wards to participate were randomly selected from school. A total 1334 students were enrolled in this study.

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Received: 28/04/2016, Accepted: 23/05/2016

Sample Size - The sample size was calculated by taking the prevalence of psychiatric disorder in adolescent as 11% with the 95% confidence interval and 20% acceptable margin of error.[5]The formula used in calculation of sample size was

$$N = \{(Z_{1-\alpha/2})^2 PQ/d^2\} * DE$$

(Putting the Value of Z^2_2= 1.96, P = 0.11, Q = 0.89, d = 20% of P, and design effect (DE) = 1.5)

Considering 10% non-response, the sample size estimated for the study was nearly 1213 students.

Only 1114 students were analyzed because 220 students had given incomplete information so they were discarded.

Subject Recruitment - All the students aged 12-16 years and studying in government high schools were eligible to participate in the study. The study was carried out from August 2013 to January 2015.

A two-stage cluster sampling method was applied to select a representative sample of students. In the first stage, out of 331 schools in Patna district, 25 schools were selected as primary selection unit (PSU) and from each selected school 35 students school aged between 12 to 16 year were selected randomly from a sampling frame of the eligible students. Hence a total of 1225 subjects were selected for the study.

Ethical considerations - Before commencement, the study was approved by the institutional ethical committee. The consent was obtained from the school authorities and the parents of children informing the purpose of this study and assurance to maintain confidentiality. The SDQ questionnaires were distributed to the children in their classrooms during a pre-arranged time. The children were asked to read the questionnaire and answer to the best of their ability. Researchers were available to answer any of the children questions or to clarify instructions. To maintain the confidentially of the participant there was no question related to the name, class and section of the participant.

Study tool - The mental health status of the students was assessed using the Strengths and Difficulties Questionnaire (SDQ) as well as impact supplement, brief behavioral screening questionnaire.[6]The permission from author was sought for the using questionnaire. It exists in several versions, the self-reported version suitable for young people aged around 11-16, depending on their level of under-standing and literacy. All versions of the SDQ consists of 25 questions subdivided into five categories: conduct; hyperactivity, peer problems, emotional and prosocial, with five questions consist in each category. The SDQ produces three final predication of above five scale of mental health status:1) mental disorder improbable 2) mental disorder possible; and 3) mental disorder probable.

Conduct disorder is a psychiatric problem marked by a pattern of repetitive behavior symptoms which include verbal and physical aggression, cruel behavior toward people and pets, destructive behavior, lying, truancy, vandalism, and stealing. The problem was assessed on the basis of the answers written for questions 5, 7, 12, 18, and 22 in the questionnaire used emotional disorders divide into to internal behaviors, external behaviors and low incidence behaviors. Internal behaviors are seen in students who are depressed, withdrawn and anxious. External behaviors occur in students who are aggressive and act out. Low incidence behaviours are behaviors that occur only in particular environmental triggers, such as a specific person or phrase. The emotional disturbance was assessed on the basis of questions 3, 8, 13, 16, and24 of the questionnaire used.

Hyperactivity can be described as a physical state in which a person is abnormally and easily excitable or exuberant. Strong emotional reactions, impulsive behavior, and sometimes a short span of attention are also typical for a hyperactive person. The students were assessed for hyperactivity on the basis of questions 2,10,15,21 and 25.

Pro-social Behavior refers to the phenomenon of people helping each other with no thought of re-ward or compensation. The children were assessed for prosocial behavioral problems on the basis of questions 1,4,9,17,20. Peer problems Children's friendships have inevitable-and downs. Yet the feelings of satisfaction and security that most children derive from interacting with peers outweigh periodic problems. The children were assessed for Peer problems on the basis of questions 6,11,14,19, and 23.

Total difficulty score were generated by summing the scores from all the scales except pro-social behavior. The resultant score can range from 0-40

The children are assessed for impact scores on the basis of difficulties upset or disturbances that affects individual, interfere with home life, interfere with friendships, interfere with classroom life and interfere with leisure activities[1] (Table -1)

Table 1. SDQ scoring value

	Normal	Borderline	Abnormal
Total difficulties score	0-15	16	20-40
Emotional symptoms score	0-5	6	7-10
Conduct problems score	0-3	4	5-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-4	5	6-10
Prosocial behaviour score	6-10	5	0-4

Statistical analysis - Descriptive analyses were performed with the help of SPSS version 22, Chi square test was applied to see the association between two variables.

Results.

In this study 1114 school students were analyzed. The proportion of the student in the early adolescent (12-14 years) was 708 (63.6%) and late adolescent(14-16 years) was 406(36.4%). The mean age of the students was found to be 14.6±0.86 years. Out of total student, girls outnumbered boys (52.7% vs 47.3%).

Mental problems among Indian school going students are common, Conduct problems as well as peer problem were the highest (10.4% vs 10%) with mean score of 5.59±0.84, 6.40±0.67 respectively, followed by emotional problem (7.6%) with mean score of 7.88±1.00 and the proportion of total difficulties score was about (7.5%) with mean score 22.18± 2.43(Table-2)

Table 2. Distribution of mental health problem in school going adolescents. (N=1114)

Domain	Normal n(%)	Borderline n(%)	Abnormal n(%)
Total difficulties score	846(75.9)	185(16.6)	83(7.5)
Emotional problem	939(84.3)	90(8.1)	85(7.6)
Conduct problem	858(77.0)	141(12.6)	115(10.4)
Hyperactivity problem	1003(90.0)	77(6.9)	34(3.1)
Peer problem	662(55.8)	381(34.2)	111(10.0)
Prosocial problem	944(85.7)	105(9.5)	65(5.8)

The proportion of boys having mental health problems was higher as compared to girls in all the five domains(table 3) whereas only the Conduct problem was significantly associated with gender (p=0.025).However, no significant association of other problem was found with gender distribution (table 3)

The emotional problem, peer problem, hyperactivity problem and total difficulty are almost equal in both age groups. But the conduct problem was more common in late adolescent and prosocial problem was more common in early adolescent (table-4)

The abnormal score of all domain of the mental problem were more common in urban area of the children except prosocial problem. The emotional problem, peer problem and total difficulty score are statistically significant associated with adolescents of urban area.

Table 3. Mental health problem associated with gender (n-1114)

Domain	Boy(N=527)	Girl (N=587)	X^2, Df, P
Emotional			
Normal	448(85.0)	491(83.6)	4.422
Borderline	34(6.5)	56(9.6)	2
Abnormal	45(8.5)	40(6.8)	0.110
Conduct			
Normal	387(73.4)	471(80.2)	7.341
Borderline	76(14.4)	65(11.1)	2
Abnormal	64(12.2)	51(8.7)	0.025*
Hyperactivity			
Normal	471(89.4)	532(90.6)	1.069
Borderline	37(7.0)	40(6.8)	2
Abnormal	19(3.6)	15(2.6)	0.586
Peer problem			
Normal	294(55.8)	328(55.9)	1.932
Borderline	174(33.0)	207(35.2)	2
Abnormal	59(11.2)	52(8.9)	0.381
Prosocial problem			
Normal	437(82.9)	507(86.3)	4.500
Borderline	60(11.4)	45(7.7)	2
Abnormal	30(5.7)	35(6.0)	0.105
Total difficulties score			
Normal	390(74.0)	456(78.8)	5.081
Borderline	88(16.7)	97(14.2)	2
Abnormal	49(9.3)	34(7.0)	0.079

Assessment of Difficulties - 589 participants had responded on assessment of difficulties. Out of those only 20.4% children had definite difficulties in daily life and 11.4% had severe difficulties. The rest of the adolescents had minor to no difficulty in daily life. All the difficulties faced by these children, 22.2% claimed the difficulty to be existent for more than 1 year and 69.9%of children faced these difficulties for less than five month.

15.8% of the children were distressed trying to cope with the difficulties, with a significant 7.8%who faced a great deal of distress. The difficulties had interfered by the different impact factor like home life, friendship, classroom learning and leisure activities.

Discussion

The mental health problem contributes significantly so they are called new morbidity in children and adolescent. Medical advancement in recent years indicates that acute-disease in childhood and adolescence could be substantially reduced. It is important to know the extent of mental health problems in the general population as well as in defined risk groups for both prevention and intervention. The aim of this study was to provide a generalized assessment of mental health status of school-going adolescents aged 12-16 years in India using the SDQ.

TABLE 4. Mental health problem associated with age group (N=1114)

Domain	Early Adolescent (age 12-14 years) (N=708) n (%)	Late Adolescent (age 14-16 years) (N =406) n(%)	X2 df p
Emotional			
Normal	591(83.5)	348(85.7)	1.768
Borderline	63(8.9)	27(6.7)	2
Abnormal	54(7.6)	41(7.6)	0.413
Conduct			
Normal	562(79.4)	296(72.0)	8.234
Borderline	86(12.1)	55(13.5)	2
Abnormal	60(8.5)	55(13.5)	0.016
Hyperactivity			
Normal	634(89.6)	369(90.9)	3.642
Borderline	51(7.2)	26(6.4)	2
Abnormal	23(3.2)	11(2.7)	0.162
Peer			
Normal	402(56.8)	220(54.2)	.750
Borderline	236(33.3)	145(35.7)	2
Abnormal	70(9.9)	41(10.1)	0.687
Prosocial			
Normal	603(85.2)	341(84.0)	2.810
Borderline	60(8.5)	45(11.1)	2
Abnormal	45(6.3)	20(4.9)	0.245
Total difficulty Score			
Normal	542(76.6)	304(74.9)	.423
Borderline	114(16.1)	71(17.5)	2
Abnormal	52(7.3)	31(7.6)	0.809

Our study showed that overall 8.8 % of the student had an abnormal SDQ score and more in boys than girls, the current findings are in line with the study reported from Bangalore[1] where the prevalence of students having abnormal SDQ score was 10% but the study was done in urban area and on a very small sample size(n=354). Shobha et al[7] reported similar finding. The current findings are in contrast with the study done by Muzzamil K et al[4]in Dehradun and Anita et al[5]from Rohtak where they have reported the extent of psychosocial problems as high as 31.2% and 16.5 % respectively using different tool than SDQ.

A similar finding was observed in the BELLA study which examined mental health problems from the National Health interview and Examination Survey among Children and adolescents in Germany but this study was done among children aged 7-17year , the prevalence of children with an abnormal extent of symptoms of overall mental health problems as well as reported impairment is 6.3%. Boys (8.8%) are affected approximately twice as much as girls (3.7%)[2]. Also similar study had been reported from Pakistan where conduct problems as well total problems are associated with gender.[8]

Our study showed abnormal score of all domain of mental problem children was more common in urban than rural area, the parental involvement in transition of childhood to adolescent period facilitate to mental development. Lake of parental involvement in the urban area can be one of the risk factor having high proportion of mental disorder among adolescent.

SDQs are a useful tool to identify participants who may have emotional problems (females more than males in this study) and conduct problems (males more than females in this study).

Limitations of the study

1. The socio-economic status of the children is not known.

This was a school-based study in which those registered with the school are enrolled for the study. The adolescent who are not registered in the school might be from vulnerable section of society which are more prone for mental health problem. As a consequence, the proportion of study subjects having mental problems in this study is the tip of the iceberg and an inaccurate estimate of the true prevalence of psychiatric disorders in young adolescents in the community.

Conclusion

Mental health problems are common among the school going children of Patna district. Therefore there is a need for early detection and effective intervention in the adolescents for the wholesome development of the future citizens of our country.

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ORIGINAL ARTICLE

Comparative Study of Health Problems in Geriatric Population of Hilly Region & Plains in Uttarakhand

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Abstract

Background: Global population is ageing; the proportion of older persons has been rising steadily, from 7% in 1950 to 11% in 2007, with an expected rise to reach 22% in 2050. In India, It has been projected that by the year 2050, the number of elderly people would rise to about 324 million. India has thus acquired the label of "an ageing nation". With the advancing age, the physical as well as psychosocial morbidity rises. Though the elderly have increased in number, the welfare plans including health and other social services for elderly are minimal. This study was carried out to study health problems in geriatric population of hilly & plain regions in Uttarakhand.

Methods: The study was conducted from July 2010 to May 2011 in villages of Tehri district of Uttarakhand among 400 participants that were selected by purposive method of sampling.

Results: Out of 400 participants, 220 (55%) participants belonged to the nuclear families, 136 (34%) participants were belonging to below poverty line families. Addiction was present in 130/200 (65%) of men and 88/200 (44%) of women. Most common psychosocial morbidity was lack of monetary support and financial insecurity that was seen in almost half (185/400, 46.3%) of participants. In men, the psychosocial morbidities that were present in higher percentages in plain areas were social insecurity, loneliness, depression and in hilly areas were monetary insecurity, irritability, depression. In case of women also similar findings were reported. In physical morbidity, eye was the most common organ to be affected i.e. in 224/400 (56%). Among men, the physical morbidities which were present in higher percentages in plain areas were of eye, bones, gastro-intestinal tract, psychological, generalized weakness and in hilly areas were of eye, bones, respiratory, skin, generalized weakness. In case of women also similar findings were reported.

Conclusion: There is a growing need for good quality geriatric health care services at the primary level and it should be based on the "felt needs".Focus on national health programs and policies that are initiated for geriatric age group needs to be implemented right away in all health institutions and health centers without further delay.

Key words: Geriatric, Physical morbidity, Psychosocial Morbidity

Introduction

Ageing is an inevitable natural process wherein lots of changes take place at physical as well as mental level in human beings. There has been a sharp increase in the number of elderly persons. Global population is ageing; the proportion of older persons has been rising steadily, from 7% in 1950 to 11% in 2007, with an expected rise to reach 22 % in 2050.[1]Globally, the growth rate for older persons is 2.6% per year, which is much higher than the growth rate of 1.1% annually of population as a whole.[1] The problem is much more severe in Underdeveloped nations; with Asia in particular is facing accelerated aging. It is estimated that by 2040, the number of people in Asia aged above 60 years will surpass the number of children.[2]

India also has not remained unaffected from this problem, here the number of elderly people has increased from 12.06 million in 1901 to 77 million in 2001. This has lead to complicated implications on health, social, and family life.[3]

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Received:11/03/2016 Accepted: 28/04/2016

It has been projected that by the year 2050, the number of elderly people would rise to about 324 million. India has thus acquired the label of "an ageing nation".[5]The year 1999 was declared as International Year of Older Persons by the United Nations, with a view to focus on their needs.[6]

With the advancing age the physical as well as psychosocial morbidity rises. India's health programmes and policies have been focusing mainly on issues such as population stabilization, maternal and child health, and infectious disease control. At this point in time, geriatrics is not a widely recognized specialty in India unlike the other clinical specialties. Current statistics for the elderly in India gives a prelude to a new set of medical, social and economic problems that could arise if a timely initiative in this direction is not taken by the program managers and policy makers.[5]

In India very few institutions have recognized training facilities for geriatrics. Consequently and understandably, funding for geriatric studies and research is limited. The availability, accessibility and affordability of health services are poor in geriatrics due to a number of factors and the condition is further worse in hilly areas. Though the elderly have increased in number, the welfare plans including health and other social services for elderly are minimal, which is a matter of concern and needs to be addressed so as to give them better quality of life. Approximately 40% of them live below poverty line and another 30% live just above subsistence level.[4] In India, there is no universal health insurance system. Whatever schemes are present are for industrial workers and their families and Central Government Health Scheme covers for central government employees. Few of private health insurance has been introduced since few years, but most of these are for middle age adults.

There is a need to highlight the medical and socio-economic problems that are being faced by the elderly people in India, so that strategies can be developed in order to bring about a change and improvement in the quality of life of the elderly people. The study was carried out to study health problems in geriatric population of hilly & plain regions in Uttarakhand.

Methods

The study was conducted from July 2010 to June 2011 in villages of Tehri district of Uttarakhand. Purposive sampling method was adopted. Two hundred elderly people (>60 years of age) from plain area and two hundred elderly people from hilly area were selected by door to door survey. From each area 100 men and 100 women were selected. It was a Community-based cross-sectional study.

Participants were interviewed in which questions related to the socio-demographic characteristics like age, marital status, occupation, education, physical morbidity, psychosocial illness etc. were asked. The data was collected using a pre-defined, pre-tested, semi-structured and indigenously developed questionnaire.

The data was entered into Microsoft-Excel 2007. After cleaning the data, statistical analysis of the data was done on the SPSS 17.0 software. Frequency tables, cross tables were made and chi-square test was applied. A p-value of less than 0.05 was taken as statistically significant.

Results

Total 400 participants were recruited for the study. Out of these, 200 were men and 200 were women. Majority of participants 127 (31.7%) were in the age group of 60-65 years.

Two hundred twenty (55%) participants belonged to the nuclear families. More women belonged to nuclear families when compared to men and this difference was found to be statistically significant (P= 0.016). One hundred thirty six (34%) participants were belonging to below poverty line families. More women were belonging to below the poverty line families as compared to men and this difference was also found to be statistically significant (P=0.035). One hundred sixty four (47.6%) respondents were illiterate. Women illiterates were more 144 (72%) as compared to the man illiterates 48 (24%) and the difference was found to be statistically significant (p<0.001). One eighty-two (45.5%) participants were married. Two hundred eighteen

Table1. Socio-demographic features of the study population (n=400)

Socio-demographic variables	Men (200)	Women (200)	Total (N=400)	Chi-square, df, p- Value
Family type				
Nuclear	98 (49%)	122 (61%)	220 (55%)	X^2= 5.818 df=1 P= 0.016
Joint	102 (51%)	78 (39%)	180 (45%)	
Socioeconomic status				
BPL	58 (29%)	78 (39%)	136 (34%)	X^2= 4.46 df=1 P=0.035
APL	142 (71%)	122 (61%)	264 (66%)	
Education				
Illiterate	48 (24%)	144 (72%)	192 (48%)	X^2=92.308 df=1 P<0.001
Literate	152 (76%)	56 (28%)	208 (52%)	
Marital status				
Married with live spouse	90 (45%)	92 (46%)	182 (45.5%)	X^2 = 0.04 df=1 P= 0.84
Single/ widow/ separated	110 (55%)	108 (54%)	218 (54.5%)	

(54.5%) participants were single (never married, widows or separated) (Table 1).

Agriculture was the occupation of majority of men 72 (36%) and also of most of the women 66/200 (33%). Addiction was present in 130 (65%) of men and 88(44%) of women. Prevalence of addiction was more in hilly area as compared to plain area in both men (82% vs 48%) and women (62% vs 26%).

Most common psychosocial morbidity was lack of monetary support and financial insecurity that was seen in almost half of participants 185 (46.3%). In men, the psychosocial morbidities that were present in higher percentages in plain areas were social insecurity, loneliness, depression and in hilly areas were monetary insecurity, irritability, depression. In case of women also similar findings were reported except for the hilly area where apart from monetary insecurity, morbidities that were present in higher percentages were social insecurity and fear of death.

There was significant difference in the proportion of participants with Psychosocial morbidities e.g. Social insecurity (P<0.001), Loneliness (P<0.001), Depression (P<0.001), Monetary support & insecurity (P<0.001) between the hilly and plain areas (Table 2).

Table 2. Difference in the prevalence of psychosocial morbidity between hilly and plain areas.

Psycho-social Morbidity	Plains (N=200)	Hilly (N=200)	Total (N=400)	Chi-square, p- Value
Social Insecurity				
Yes	108 (54%)	40 (20%)	148 (37%)	X^2=49.59 P<0.001
No	92 (46%)	160 (80%)	252 (63%)	
Loneliness				
Yes	76 (38%)	22 (11%)	98 (24.5%)	X^2= 39.41 P<0.001
No	124 (62%)	178 (89%)	302 (75.5%)	
Fear of Death				
Yes	43 (21.5%)	42 (21%)	85 (21.3%)	X^2= 0.01 P=0.90
No	157 (78.5%)	158 (79%)	315 (78.8%)	
Depression				
Yes	72 (36%)	30 (15%)	102 (25.5%)	X^2= 23.21 P<0.001
No	128 (64%)	170 (85%)	298 (74.5%)	
Irritability				
Yes	44 (22%)	38 (19%)	82 (20.5%)	X^2= 0.55 P=0.45
No	156 (78%)	162 (81%)	318 (79.5%)	
Monetary support & insecurity				
Yes	59 (29.5%)	126 (63%)	185 (46.3%)	X^2= 45.14 P<0.001
No	141 (70.5%)	74 (37%)	215 (53.7%)	

In physical morbidities, eye was the most common organ to be affected i.e. in 224/400 (56%) participants. Among men, the physical morbidities which were present in higher percentages in plain areas were of eye, bones, gastro-intestinal tract psychological, generalized weakness and in hilly areas were of eye, bones, respiratory, skin, generalized weakness. In case of women also similar findings were reported.

Physical morbidities of ear, respiratory system, reproductive system, skin, generalized weakness were reported in higher proportion of participants in hilly areas than in plain areas. Morbidities of Gastrointestinal system, psychological and cardiovascular system were present in higher proportion of participants in plain areas than in hilly areas. There was significant difference in the proportion of participants with physical morbidity of gastro-intestinal tract (P=0.048), respiratory (P<0.001), psychological (P<0.001), skin (P<0.001), cardiovascular (P=0.012), generalized weakness (P=0.0013) between the hilly and plain areas (Table 3).

Discussion

Though we are able to increase the life span but we fail to provide a better quality of life to all those senior citizens who are in need of it. Active aging is the process of optimizing for health, participation, and security to enhance quality of life as people age. By paying careful attention during younger age, the individual risk of developing diseases can be reduced. Some of the modifiable factors are diet and nutrition, introduction of exercise in early life, maintenance of normal weight, cessation of smoking, cessation of alcohol intake, , nutritional deficiencies, fall risk, depression, and infections at high-risk age.

In the present study 180 (45%) out of the sampled 400 elderly persons were living in joint families. This is a little bit higher compared to studies done by Rao et al[7] (26%) in Madurai, Narapureddy et al[8] (34%) in Allahabad, UP. Overall the trend of joint families is declining, warranting more need of social security and support among elderly. Almost half the elderly respondents 192 (48%) were illiterate. Narapureddy et al[8] also found a high proportion (70%) of illiteracy in their study.

Most common psychosocial morbidity was lack of monetary support and financial insecurity that was seen in almost half of participants 185/400 (46.3%). The psychosocial morbidities e.g. social insecurity, loneliness, depression were higher in plain areas as compared to hilly areas while prevalence of financial insecurity was higher in hilly areas. This financial insecurity is further a hindering factor in affordability of health services, perpetuating the health morbidities.

In physical morbidity, eye was the most common organ to be affected i.e. in 224 (56%) participants. Other common

Table 3. Difference in the prevalence of Physical morbidity of body systems between hilly and plain areas.

Physical Morbidity	Plains (N=200)	Hilly (N=200)	Total (N=400)	Chi-square, p- Value
Ear				
Yes	42 (21%)	52 (26%)	94 (23.5%)	X^2 = 1.39 P=0.2383
No	158 (79%)	148 (74%)	306 (76.5%)	
Eye				
Yes	109 (54.5%)	115 (57.5%)	224 (56%)	X^2 = 0.36 P=0.54
No	91 (45.5%)	85 (42.5%)	176 (44%)	
Bones & Joints				
Yes	88 (44%)	90 (45%)	178 (44.5%)	X^2 = 0.04 P=0.84
No	112 (56%)	110 (55%)	222 (55.5%)	
Gastro-intestinal tract				
Yes	83 (41.5%)	64 (32%)	147 (36.8%)	X^2 = 3.88 P=0.048
No	117 (58.5%)	136 (68%)	253 (63.3%)	
Respiratory				
Yes	59 (29.5%)	93 (46.5%)	152(38%)	X^2 = 12.27 P<0.001
No	141 (70.5%)	107 (53.5%)	248 (62%)	
Reproductive				
Yes	62 (31%)	75 (37.5%)	137 (34.3%)	X^2 = 1.88 P=0.170
No	138 (69%)	125 (62.5%)	263 (65.8%)	
Neurological				
Yes	28 (14%)	20 (10%)	48 (12%)	X^2= 1.51 P= 0.22
No	172 (86%)	180(90%)	352 (88%)	
Psychiatry / Psychological				
Yes	93 (46.5%)	32 (16%)	125(31.3%)	X^2 = 43.29 P<0.001
No	107(53.5%)	168(84%)	275(68.8%)	
Skin				
Yes	34 (17%)	114 (57%)	148(37%)	X^2 = 25.39 P<0.001
No	166 (83%)	186 (93%)	352 (88%)	
Cardiovascular				
Yes	21 (10.5%)	8 (4%)	29 (7.3%)	X^2 = 6.28 P=0.012
No	179 (89.5%)	192 (96%)	371 (92.8%)	
Generalized weakness				
Yes	121 (60.5%)	151 (75.5%)	272 (68%)	X^2 = 10.34 P=0.0013
No	79 (39.5%)	49 (24.5%)	128 (32%)	

morbidities were of bones & joint (44.5%), gastro-intestinal tract (36.8%), respiratory (38%), skin (37%), and generalized weakness (68%) etc. In a community-based study conducted in Delhi among 10,000 elderly people, it was found that problems related to vision and hearing topped the list, closely followed by backache and arthritis.[9]

Deepak et al[10] study found the prevalence of musculoskeletal problem in elderly as high as 55%. Joshi et al[11] found the prevalence of osteoarthritis to be 33% in older individuals.

A study conducted in the rural area of Pondicherry reported decreased visual acuity due to cataract and refractive errors in 57% of the elderly followed by pain in the joints and joint stiffness in 43.4%, dental and chewing complaints in 42%, and hearing impairment in 15.4%.[12]

A study conducted by Sahukiaih et al [13] in Mumbai also shows the ocular morbidity to be commonest. After this other body system affected were musculoskeletal, oral cavity disease, gastrointestinal disorder, psychiatric illness etc.

Visual impairment was present in as high as 73.3% of participants in a study done by Ghosh et al[14]. 68.2% were visually impaired in a study done by Bharati et al[15]. A study from rural area of Rohtak district of Haryana, reported that the leading symptom among the male elderly was visual impairment (65%).[16] In a study done by Jaspinder et al[17] after hypertensive disorders, musculoskeletal (37.7%) disorders was the most common morbidity. Gupta et al[18] found in their study that musculoskeletal disorder to be commonest (40.9%) physical morbidity. Srivastava et al[19] seen that 37.2% participants suffered from musculoskeletal problems, 36.4% from gastro-intestinal tract and 35.8% from visual disorders. Kakkar et al[20] in their study found the prevalence of arthritis, and cataract to be 21.2% and 17.5% respectively. Prevalence of cataract was 40.16%, and of joint pain was 23.04% in a study done by Mundada et al[21]

While cure of disease and prolongation of life are the goals in the care for the young, the goal of care for the elders is mainly to improve the overall health function, comfort, and quality of life.

There is scarcity of studies showing the difference in prevalence of various physical and psychosocial morbidities in geriatric population in hilly and plain areas. In the present study, psychosocial morbidities e.g. Social insecurity, loneliness, depression were present in significantly higher number of participants in plain areas as compared to hilly areas. While the psychosocial morbidities of financial insecurity was present in significantly higher number of participants in hilly areas as compared to plain areas.

Physical morbidities of gastro-intestinal tract psychological, cardiovascular systems were present in significantly higher number of participants in plain areas as compared to hilly areas. While physical morbidities of respiratory system, skin, and generalized weakness were present in significantly higher number of participants in hilly areas as compared to plain areas. Knowledge about morbidities will help us to find out the reasons responsible for these and in deriving out actions that can be taken to improve the situation.

It is recommended for a growing need of good quality geriatric health care services at the primary level and it should be based on the "felt needs". There should be sensitization and involvement of non-governmental organizations and voluntary organizations. Focus on national health programs and policies that are initiated for geriatric age group needs to be implemented right away in all health institutions and health centres without further delay, so that the society and the younger bring an end to consider the aged group as a burden to them and to the society.

Conclusions

The high morbidity load among elderly in the present study stresses for efforts to provide specialized healthcare to them, and thus ensure that they remain active members of our society. Elderly need help and support of the medical fraternity. Geriatric assessment should be done regularly. Further research, especially qualitative research, is needed to explore the depth of the problems of the elderly.

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ORIGINAL ARTICLE

Mainstreaming of AYUSH in Health Care Delivery System of Eastern India: Where do we stand?

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Abstract

Background: The Indian Systems of Medicine and Homoeopathy (ISM&H) has an age-old acceptance in India bur experiences suggest that AYUSH doctors are still not fully utilized to provide holistic care at primary level. Present qualitative research was planned with an objective of studying the working pattern, intended functions, challenges at work and expectations of AYUSH practitioners in one of the districts of Odisha.

Method: A face-to-face opportunistic group discussion (GD) was conducted among 14 willing AYUSH practitioners during a pre-planned district level meeting in one of the northern district headquarters of Odisha. Key areas of the discussion were their duties and responsibilities, type of in-service trainings, usefulness of those trainings in day to day work related practices, Challenges and difficulties faced by them while working in the system. Content analysis was carried out by coding the relevant responses and developing categories and themes based on the findings.

Result: Members of the focus group had expressed the view that many of the activities suitable for allopathic system of medicine are imposed up on them; as a result skills of their own system of medicine are underutilized. Other than these, problems related to lack of hands on training, poor job satisfaction were also highlighted by the members.

Conclusion: India is a country where medical pluralisms is officially recognized and encouraged. If the existing difficulties faced by the AYUSH practitioners were not properly addressed, the original purpose of mainstreaming the AYUSH will be a distant goal in the future also.

Key Words: AYUSH, Mainstreaming, health care delivery

Introduction

The Indian Systems of Medicine and Homoeopathy (ISM&H) include Ayurveda; drugless therapies such as Yoga & Naturopathy, Unani, Siddha, Homeopathy (AYUSH) and this has an age-old acceptance in India (probably more than 5000 y).[1] Often, this is the first line of treatment for people suffering from either acute or chronic illnesses especially in rural areas of India primarily due to its holistic approach, easy accessibility, wide acceptability, cost effectiveness, simple technological inputs for manufacture of medicines, and use of natural products.[2,3,4,5]

Year 2005, witnessed the launch of ambitious National Rural Health Mission (NRHM). One of its objective was mainstreaming of the AYUSH doctors into Indian Health care delivery system.[6] The key strategies for main streaming of AYUSH were following : a) Integration and mainstreaming of the Indian systems of medicine and Homeopathy into the existing public healthcare system and the national health programmes, b) Encouragement and establishment of Indian systems of medicine specialty centers c) Facilitation and strengthening of quality control laboratories for the AYUSH system, d) Strengthening drug standardization research, e) advocacy for AYUSH and establishing sectoral linkages for AYUSH.[7]

In 2014, there were 0.73 million registered AYUSH practitioners in India and most of these were from Maharashtra (18.4%), Bihar (18.2 %), and Uttar Pradesh (12.2 %).[8] In Odisha, separate directorate for Indian System of Medicine and Homeopathy came into existence in 1968.Currently, the state of Odisha has only 1.9% of the country's registered AYUSH doctors, and there are 619 Ayurvedic, 561 Homeopathic and 9 Unani dispensaries in the state. [9]

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Received: 12/03/2016 Accepted:18/04/2016

Across India, expansion of AYUSH infrastructure has occurred mostly at primary health care level in response to the locally felt needs. Literatures suggest that AYUSH doctors are still not fully utilized to provide holistic care at primary level.[2,10] We therefore, planned a qualitative research study with an objective of studying the working pattern, intended functions, challenges at work and expectations of AYUSH practitioners in one of the districts of Odisha.

Methods

Department of Community and Family Medicine at AIIMS Bhubaneswar carried out a "District preparedness exercise for newborn & child health intervention packages in the three focus districts of Norway India Partnership Initiative (NIPI) in Odisha" in January, 2014. The authors were facilitators for this activity. During our interaction with various stakeholders in one of the northern districts, we realized that the AYUSH doctors were particularly being underutilized in various programs. The study district had 8 blocks with a total population of 1.27 million and 55 AYUSH government practitioners.[11,12]

We decided to further explore the issue related to mainstreaming of AYUSH practitioners in health care system. We carried out face-to-face opportunistic group discussion (GD) during a pre-planned district level meeting of NIPI that was being organized at district headquarters. At that time, there were 28 AYUSH practitioners in attendance from 8 blocks. We randomly selected 4 blocks and approached all the 14 AYUSH medical practitioners to be a part of our study. Thus, it was a convenient sample. One of the authors facilitated the GD, in a separate corner of a conference hall that had attendance of various other stakeholders for the district level meeting as mentioned earlier. We arranged for a round table with c- shaped seating arrangement to allow proper interaction between all the participants. The activity lasted for 45 minutes. The participants were already familiar with the authors due to their interaction during the district level meeting and readily consented to be a part of the study. All the personal particulars were kept confidential.

At the start of GD, participants were briefed about the purpose and this was followed by round of introduction and then one by one various issues were discussed in a semi-structured manner. Key areas included duties and responsibilities of AYUSH doctors, type of in-service training, usefulness of those training in day to day work related practice, challenges and difficulties faced by them working in the system. The entire conversation was audio recorded and later translated into english by another author. Field notes were prepared by one of the authors to assist the moderators in stimulating comprehensive discussion. Special care was taken to involve all particpants actively and record their views.

Content analysis was carried out by two researchers trained in qualitative research methods. Related responses of a particular question were given a separate code. Later the codes were organized into mutually exclusive categories based on their similarities. No participant feedback was possible after the data analysis as it was an opportunistic activity.

We observed ethical principles as outlined by ICMR throughout the conduct of the study.

Results

Among the 14 AYUSH practitioners, 8 were females. Mean age was 34y (SD 5y) and mean duration of service was 5 y (SD 2 y) Table 1.

Table 1: Composition of the focus group

Participant ID	Sex	Age (yrs)	Duration of service (yrs)
ID1	F	34	6.5
ID2	F	32	5.5
ID3	F	31	5.5
ID4	F	29	1.0
ID5	M	36	6.5
ID6	M	45	4.5
ID7	M	31	5.5
ID8	F	31	5.5
ID9	F	34	1.0
ID10	F	42	5.0
ID11	F	31	6.5
ID12	M	32	5.5
ID13	M	37	5.5
ID14	M	35	4.5

The results has been summerized under 3 broad catagories namely -

A. Duties of AYUSH doctors:
B. Training of AYUSH doctors
C. Difficulties of AYUSH doctors

A. Duties of AYUSH doctors:

Hare activities were mainly concerned with patient care and managerial functions.

a. Patient care related duties: The participants informed that their OPD hours extended from 8. 00- 12.00AM and 3.00-5.00PM on any given day. Besides OPD they also extend care to inpatients. Few Ayurvedic medical officers have highlighted that at there is no Allopathic medical officer available in the PHC/ CHC and in that circumstances they

are made to prescribe the allopathic medicines for their patients. Some of these AYUSH medical officers even had to conduct deliveries without much training. Sometimes they had to do emergency duties too. Many of the participants had mentioned that they don't have any AYUSH pharmacist so they had to dispense medicines for the patients.

b. Managerial activities: AYUSH medical officers are required to maintain registers for Rogi kalyan Samiti (RKS), AYUSH drugs, School health and other health related registers with different activities. Besides they had to conduct training of ASHA, MPW, ANM & AWW, chair monthly meetings at all levels of health facilities.

2. Field level duties

Twice a week AYUSH doctors had to supervise the ASHA, AWW, ANM and MPWs in their respective centers. They had to attend the Village health and nutrition day (VHND) in every Anganwadi centre (AWC). Here, they had to examine the children and give health talks to the attending mothers. Members had also pointed out that they had to visit the school for general check up of the school children, once in a week. All the members of the GDs had mentioned that they also supervised the implementation of national programs. One of the participants had mentioned that at the time of epidemic they had to do epidemic investigation too. Conducting health camps also was yet another duty of AYUSH doctors.

B. Training of AYUSH doctors

Most of them underwent multiple training during the initial part of their joining service, organized by NRHM, covering most national programmes

Component of the training

Majority of the training was mainly theory oriented with minimal practical skill development. One of the members had also informed that the duration of most training was inadequate to understand the topic properly. They had also pointed that in most places there were problems related to adequate training hall, toilet facility, fooding & lodging, training allowances etc.

Usefulness of the training

Most of the members pointed out that maximum number of trainings they underwent were mainly related to Allopathic system of medicine and were mainly for improving supervision or managerial functions. No training was provided to improve or develop their skills of Ayurvedic or Homeopathic treatment. Even they had pointed out that all the trainings were conducted by Allopathic medical officers. No AYUSH doctor was involved in the training as a trainer. As a result they were losing their l skills as AYUSH doctors.

Difficulties faced by AYUSH doctors in Health care system

1. Infrastructure and work related problem:

Participants had expressed that they don't have separate OPD room, AYUSH assistant, residential facility, Ayurvedic medicines etc. One member highlighted that they didn't have proper distributions of work. Whenever and wherever required Medical officer (I/C) usually post the AYUSH doctors. They were involved in all the national programmes irrespective of their other activities. Most of participants expressed the view that they didn't have the vehicles for supervision activity.

2. Job satisfaction related problem: Group discussion had pointed out that AYUSH doctors didn't had any assured carrier progression & seniority structure in the system. No system for monthly meeting between the AYUSH doctors. Most of the time AYUSH doctors were used as data collector/supervisor in the field. So, they didn't have any authority in the system. Beside these they had problems with salary (i.e – timeliness, less amount etc), deficiency of performance based incentives etc. One of the members had highlighted that because of these problems they were losing their interest in the job day by day.

Discussion

The concept of mainstreaming AYUSH and integration of different medical systems got a real thrust from 2005 onwards after NRHM was introduced. In pursuance of Government Policy the two Departments of the Ministry– Department of Health & Family Welfare and the Department of AYUSH made a joint effort to promote integration. According to the government policy of integration most of the PHCs and CHCs have now AYUSH doctors.[8,9] But only physical presence of AYUSH doctor will not benefit the people and real meaning of integration cannot be achieved. Government machinery hardly gives any importance to find out the difficulties or barriers of these AYUSH doctors while functioning in the system.

This present study revealed that AYUSH doctors had to perform duties of allopathic medical practitioners (e.g, prescribing Allopathic medicines, attending emergency services etc). They had to carry out public health related supervision and monitoring activities. A study "Status of Indian medicine and folk healing: With a focus on integration of AYUSH medical systems in healthcare delivery" by Chandra S in few selected states of India had also found that AYUSH doctors were practicing modern medicine where no MBBS doctors were available. Study had also found that in some PHCs AYUSH doctor was the only available doctor.[10]Present curriculum of AYUSH medical education does not train AYUSH doctors in Allopathic medicines. AYUSH education system had only a topic (SWASTHAVRITTA) [13] in the 3rd professional for learning public health activity but that was very superficial

if we consider the kind of work they are going to do as per NRHM in our health care delivery system. If AYUSH doctor is required to practice Allopathic system there is a need for reorienting the AYUSH medical education system. Modification in the AYUSH curriculum could be in the form of inclusion of modules related to National Health Scenario, National Health programmes, Regulatory Acts, pharmaceutical industry, global perspectives in Traditional Medicine etc. However AYUSH guidelines need to be promoted in public health. There should be mechanism for providing periodic updates to enhance professional knowledge of AYUSH Practitioners. Presently, there is no mechanism for regular interaction between the medical professionals of different streams during the course of medical education or during practice. This had in fact given rise to a situation where one system doesn't know the strengths and weaknesses of other. So, there was a need to introduce AYUSH modules in the MBBS curriculum which will give an overview of commonly practiced AYUSH interventions. Many of the states of India have allowed under state Act that AYUSH doctors can prescribe modern allopathic medicine but there was no uniformity in the country.[4,14,15] If paramedical staff (MPW, ANM) can distribute modern medicine than a AYUSH doctor with professional training of 4 and ½ years is definitely capable of prescribing Allopathic medicines with some training. Looking at AYUSH doctor just as a helping hand in the Allopathic system will not do justice to mainstreaming AYUSH in the system. There should be a cafeteria approach of making AYUSH and Allopathic systems available under one roof, for facilitating patient choice and a system of Cross referral should be developed so that people can get the benefit of both the systems. Similar recommendations were also given by other researchers.[16]

AYUSH doctors had received multiple in-service trainings related with managerial activity but there was hardly any AYUSH trainer available during those training. A study by Chandra S also found that for mainstreaming the AYUSH there requires a change in the thinking of the Allopathic system medicine doctors and the administrators.[10] Training should be according to the demand of the job as well as the interest of the trainee. Administrators of the AYUSH department can take a step forward so that training of the AYUSH doctors will be such that it will benefit the society as well as improve their own skill. Moreover both theoretical and practical experiences go hand in hand and each has their own significance. According to Rohtas Goel, CMD, Omaxe Ltd, "At every level, where theoretical knowledge helps the individual to comprehend the basic notion, practical knowledge enables them to execute plans and strategies in the most effective manner."[17] So, planners of the AYUSH training programs can give more attention in making training program more attractive by focusing on skill development.

In our study AYUSH doctors had issues related to dedicated supply of medicines, separate OPD rooms, AYUSH assistant/ pharmacist, regular salary etc. Study by Chandra S also found that in Odisha separate OPD wasn't available for AYUSH doctors in many health facities. Many health facilities were running without any AYUSH drugs. Few of the AYUSH dispensaries were running in rented houses without any supporting staff. In one PHC AYUSH OPD was shifted for 4 times in a year.[10]The problem of infrastructure in public health care system of India was an age old problem but after introduction of NRHM in 2005 has seen some improvement. Physical presence of AYUSH doctors in public health system have increased in last few years (Registered practitioner of AYUSH in Odisha is 3183 per core population in 2013)[8] but their presence is yet to become an advantage for the patients. In absence of supporting staff, physical infrastructure and medicine the functioning capacity of the AYUSH doctors has reduced as a result society has been deprived of one of the oldest system of medicine in India.

Present study suggests that AYUSH doctors don't have any authority nor they have any job satisfaction in the present scenario. They are disappointed because of the irregularity and less salary and incentives etc. A study by Buciuniene. I et al have found that total job satisfaction of doctors working at primary health care system was relatively low and one of the reasons cited was low compensation.[18] Similar result was also found in other studies.[19,20,21] Job satisfaction is one of important factors for determining the quality of services an individual will provide. An unhappy mind is definitely linked with dissatisfaction on his patients, and higher job satisfaction is associated with increased productivity, lower absenteeism.[22,23]

Limiting the number of group discussion to one may be one of the potential limitation of the present study but the participants had activity participated in the discussion & information was worthwhile.

Conclusion

India is a country where medical pluralisms is officially recognized and encouraged. After introduction of NRHM theses medical pluralism got maximum thrust. India follows a "parallel" kind of policy model where the conventional biomedicine and other indigenous systems of medicine are placed "parallel to each other." But concept of medical pluralism was not solely present in the work culture of the modern medicine practitioners. If the present difficulties faced by the AYUSH practitioners was not properly addressed the original idea of mainstreaming the AYUSH will be a distant goal.

Acknowledgement: Nil

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ORIGINAL ARTICLE

Changes in Oral Mucosa of Chronic Smokers in Rural Haryana

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Abstract

Background - Oral cancer being sixth most common cancer in world and more so in developing countries, particularly in people addicted to tobacco and alcohol. Patients usually present in advanced stages when the treatment offered is not much helpful. An early diagnosis is therefore required for improving the results in these patients.

Methods - Patients attending ENT OPD with problems of sore throat and sore mouth with the history of smoking were examined in detail and after basic investigations, a pinch biopsy of the oral mucosa was taken under local infiltration anaesthesia in outdoors and was sent for histopathological examination. The patients already diagnosed with oral cancers or with premalignant lesions were excluded from the study.

Result - Hyperplasia was the most common finding in all (100%) cases. The next significant finding found in 96.7% of the sample was chronic inflammatory infiltrate. Dysplasia was also seen in 16.66% of the cases, bearing a direct relationship with the smoking duration. Keratinization and acanthosis was observed in 3.33% and 6.66% of the samples respectively.

Conclusion -Smoking definitely causes changes in the oral mucosa which can progress to frank malignancy if smoking is continued. Pinch biopsy can be a simple economical method to monitor the progress of disease in smokers.

Keywords - Tobacco, Oral Mucosa, Smokers

Introduction

Oral cancer is the sixth most common cancer in the world[1] and third most common in developing countries in males[2]. One half to two-thirds of the oral cancers is attributed to tobacco and alcohol, the two having a synergistic effect[3]. Tobacco is the most common form of addiction used by people all over the world. It is used for smoking, snuffing and chewing (quid). Inhalational smoking is the faster and more efficient way of enjoying nicotine that gives an immediate 'kick' to the central nervous system (sudden rush of adrenaline giving a feeling of excitement). In rural areas of Northern India, particularly Haryana, the masses enjoy another form of smoking i.e., hookah smoking that has recently become trendy with the new generation, which they enjoy in hookah bars. In USA, Canada, Austria and Africa, marijuana is commonly used. Smoking tobacco in any form results in poor oral health and periodontal damage that are considered as risk factors for cancers of head and neck[4]. The brunt of smoking is borne by nasal cavity, oral cavity, nasopharynx and oropharynx, then downward into larynx, pharynx and trachea and then finally into bronchial tree. The chronic inflammatory changes so caused at the cellular level become permanent with time and then cause genetic alterations in the cells. Inflammation also causes tissue damage, which stimulates attempts at regeneration that contributes to carcinogenic change. Besides tobacco and alcohol, genetic susceptibility in certain people may contribute to development of cancers. All these processes lead to permanent changes in epithelial lining of the mucosa that can be demonstrated in cellular nucleus and cytoplasm and also in intercellular matrix of the tissue, but these studies are expensive. These changes are present but not seen clinically. In clinical examination, the mucosa appears to be normal with slight congestion or discoloration. As time goes on, the mucosa shows certain alterations that can be classified as pre-malignant or potentially malignant lesions like leukoplakia, erythroplakia and sometimes melanoplakia, some of which ultimately lead to frank cancers. All the studies show a strong association between aero-digestive cancers and smoking, though a cause-effect relationship is not known. Prognosis of cancer is directly dependent on its staging. Hence early detection and diagnosis or if possible, prediction of development of cancers and their preventive measures (chemoprevention) can be taken in such patients after cessation of smoking. Till now, studies are conducted on cases where suspicious lesions are present on aero-digestive mucosa, but this study is planned on smokers with certain symptoms of chronic sore throat or mouth but no clinically detectable lesion with an insight to diagnose the morbid condition at an earlier stage or to predict its development before it grows to uncontrollable proportions.

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Received: 11/02/2016 Accepted:29/04/2016

Methods

The study aimed to determine the effects of smoking on oral mucosa at the cellular level and to know whether a cause – effect relationship exists between tobacco consumption and oral mucosa.

All the patients attending outpatient department (OPD) of Otorhinolaryngology (ENT) with problems of sore throat and sore mouth with the history of smoking were selected for the study. Patients already diagnosed with oral lesions (pre malignant and malignant) and those who refused to give consent were excluded from the study.

The study was conducted in the department of ENT and Pathology of BPS Government Medical College For Women Khanpur Kalan, Sonepat. The Institutional Ethical Committee (IEC) approval was taken prior to start of the research study. After approval, the study was started and samples were collected. Thirty patients were examined after taking informed consent from all the patients. Their selection was done on the basis of random sampling.

Complete history was taken including details about smoking (duration, form of tobacco intake, number of bidis/ cigarettes). All the patients were subjected to routine ENT examination in detail and after basic investigations; a pinch biopsy of the oral mucosa was taken under local infiltration anesthesia in OPD. A mucosal piece measuring maximum 1x1 cm was taken from the buccal mucosa and was sent to the pathology department for histopathological examination after fixing in formalin solution. The biopsied specimen was examined for the changes in mucosa regarding the qualitative and quantitative changes in the cytoplasm and cells.

A correlation was made between the alterations in the cellular characteristics and magnitude of smoking that could be of use in postulating further development of oral cancer. Data collected was analyzed by SPSS package version 14.0 (where p-value less than 0.05 is considered significant) using Pearson's correlation test.

Results

Out of total 30 patients, 24 were males and 6 were females. The minimum age of the patient was 32 years and maximum was 75 years. The mean age was 48 years. The mean age of males was 47 years and of females was 48 years.

The duration of smoking in the patients ranged from 8 to 40 years. Minimum number of pack years was 1.5 and maximum was 35 pack years.

Of 30 patients, general examination revealed no abnormality in 19 patients, pallor in 9 and 2 patients had jugulodigastric lymph nodes palpable. On local examination, oral mucosa was congested of varying degrees in all the cases. The mucosa showed patchy discolouration in 17 cases, polypoidal appearance in 1 case and the mucosa was rough and granular in one case. One patient showed a shortened and contracted uvula.

Histopathological reports revealed hyperplasia in all (30) the cases. All but one (29) cases showed varying degrees of subepithelial chronic inflammatory infiltrate. Dysplasia was present in 5 cases, acanthosis in 2 and keratinization in 1 case.

In this study, following histopathological changes were observed -

- Hyperplasia was seen in 100% of the samples.
- Chronic inflammatory infiltrate was seen in 96.7% of the samples.
- Dysplasia was seen in 16.66% of the samples with an incidence of 83.4% in samples with pack-years were greater than 20.
- Keratinization was seen in 3.33% of the samples.
- Acanthosis was seen in 6.66% of the samples.

Table 1. Showing the relationship between pack year and hyperplasia, chronic inflammatory infiltration and dysplasia

Character	Correlation coefficient	P value
Relationship between pack year and hyperplasia	1.00	0.000
Relationship between pack year and chronic inflammatory infiltrate	0.98	0.001
Relationship between pack year and dysplasia	0.732	0.0001

The above table shows that the data obtained is highly significant and highly correlated.

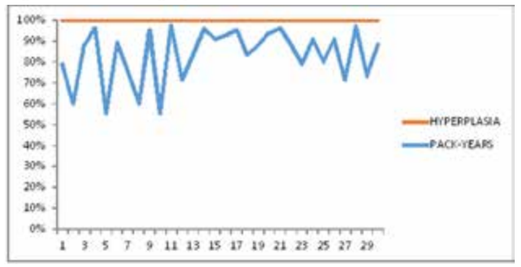

Figure 1. Relationship between pack year and hyperplasia.

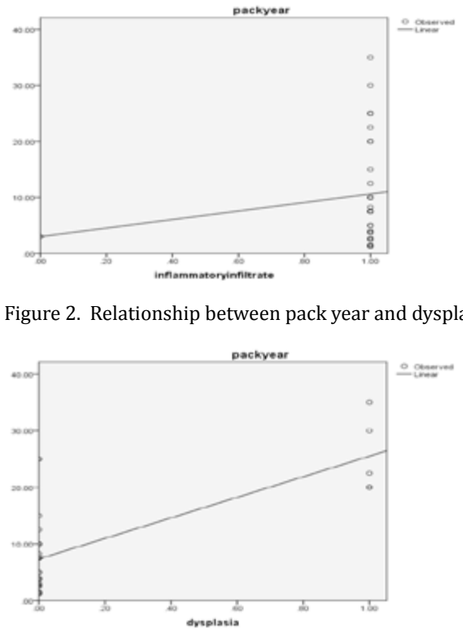

Figure 2. Relationship between pack year and dysplasia.

Figure 3. Relationship between pack year and dysplasia.

Discussion

Since long, tobacco has been implicated as an important carcinogen for aero – digestive cancers. The whole of the aero–digestive tract gets exposed to the smoke of tobacco and the co–carcinogens it contains. There is a definitive correlation between smoking and oral as well as oro–pharyngeal cancers in both active and involuntary smokers[5]. Its synergistic action is seen with alcohol in carcinogenesis. According to concept of field cancerization, the whole of aero–digestive tract exposed to tobacco carcinogens remains at risk of developing malignancy at sometime in life. Which area bears the brunt of smoking the most is not known, but changes occur in all the parts of upper aero–digestive tract and they continue if smoking continues. Studies show that risk for developing cancers in smokers goes on accumulating with increasing exposure and declines if smoking is stopped. Hence, risks are higher in individuals at 75 years of age who continue to smoke. Studies also suggest that individuals who smoke their first cigarette within 5 minutes after waking up are at double the risk of developing upper aero-digestive tract cancers than the ones who smoke 60 minutes after waking up[6]. Following changes are seen in lining epithelium of aero – digestive mucosa with increase in extent of smoking –

In this study, hyperplasia was seen in all the patients with history of smoking. This suggests that it is an early change towards development of malignancy. Also, dysplasia was seen in 5 out of 6 patients with pack year greater than 20.

One pack-year means 20 cigarettes smoked everyday for 1 year[7]. For bidi smokers, pack-years were calculated by applying a weight of 0.5 to cigarette equivalents[8]. For hookah smokers, 12.5 g of loose tobacco was considered as equivalent to 1 packet of 20 cigarettes[9]. This suggests that as the magnitude of smoking increases, chances of malignancy increase, as dysplasia is a step ahead of hyperplasia towards development of malignancy.

Grading of this hyperplasia occurring after chronic irritation is not possible (as in the case of endometrial hyperplasia). Simple reactive hyperplasia is a benign reversible condition but if chronic irritation continues by smoking, alcohol, infections by viruses or other factors, hyperplasia may progress to focal or multifocal epithelial hyperplasia, a condition seen in infection by HPV (human papilloma virus)[10]. HPV infection has been identified in 90% of head and neck cancers. Acanthosis has also been observed in HPV infected cells. It is also a feature of proliferative verrucous carcinoma. Hyperplasia along with acanthosis may point out to a possible sinister progress to a malignant lesion. Simple hyperplasia may also progress to papillary or verrucous hyperplasia and then to malignancy[11]. White keratinized layers described as sharp or blunt papillary projections of squamous epithelium superficial to normal epithelium also have malignant potential. It is also seen in smokers. Hyperplasia for a longer duration leads to dysplasia and then to malignancy. Hence it should not be ignored.

Development of cancer is a multistep process taking months to years to develop. At early stages, mucosa appears normal showing slight congestion or discoloration. With time certain alterations are seen which may be classified as premalignant or potentially malignant lesions known as leukoplakia, erythroplakia and sometimes melanoplakia, some of which ultimately lead to frank cancers.

Along with smoking / carcinogens, there are some genetic predispositions as well as not all the smokers develop cancers and the ones who develop it, have it in different parts of upper aero-digestive tract and take different time for development. Other factors (may be environmental, physical or chemical) are also responsible for these changes.

There are various studies that corroborate that smoking plays a strong role in development of hypo-pharyngeal and laryngeal cancers more than oral or oro-pharyngeal cancers. Areas around these malignant lesions suffer lesser damage and might show a dysplastic change which may further progress to frank malignancy, if not arrested by treatment, cessation of smoking or by addressing certain factors which put the individual at risk. Till date no investigation is known which can predict the development of cancer in this set of individuals or if there are certain changes that can be counted upon as predecessor or precursor of malignancy and action can be taken to arrest it at this particular stage.

Prognosis of cancer is directly dependent on its staging. Hence, early detection and diagnosis and if possible, prediction of development of cancer and preventive measures (chemoprevention) can be taken. The present study was designed to know the association between smoking and changes in the aero-digestive mucosa, whether these changes bear a relationship with the duration of smoking and whether they can be reversed by certain means. Till now, studies have been conducted on cases where suspicious lesions are present in the aero-digestive mucosa but, this study is planned on a population at risk i.e., chronic smokers presenting to ENT department with chronic sore throat or chronic cough indicative of whole upper aero-digestive tract involvement but without clinically detectable lesions with an insight to diagnose the morbid condition at the earliest or predict its development before it grows to untreatable proportions. Most of the cases showed changes indicative of chronic irritation by smoking that can further progress to potentially malignant or malignant lesions.

In this study, an attempt was made to find an easy and economical model to predict the development of malignancy in chronic smokers or to detect it at the earliest. Patients should be motivated to quit smoking and should be kept on follow–ups.

The data obtained suggests that tobacco intake causes pathological changes in oral mucosa increasing risk of oral cancer. Thus, this study can help in detection of oral cancers at an early stage. It can also improve the chances of cure and increase the survival rate in the patients by instituting timely treatment.

Conclusion

Smoking is definitely an important risk factor for development of upper aero-digestive cancers causing certain changes in the mucosa which if not controlled can go on to develop malignancy. Pinch biopsy can be a simple economical method to monitor the progress of disease in smokers.

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ORIGINAL ARTICLE

Socioeconomic and Regional Disparities in Safe Delivery in India (1990-2006)

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Abstract

Background: Giving birth to a child is not only a strain for the body, but it also puts the woman's health at risk. Globally, nearly 300,000 thousand women die each year as a result of pregnancy related complications. India, with a population of more than 1.21 billion, has the highest maternal mortality in the world (estimated to be 56000 in 2010). Addressing the maternity care needs of women may have considerable ramifications for achieving the Millennium Development Goal (MDG)–5. The proportion of births attended by skilled health personnel (safe delivery) is one of the main indicators used to monitor progress in reaching MDG 5. **Objective:** The main objective of this paper is the traces the changes in utilization patterns and determinants of safe delivery care services by women in India, during last one and half decade, 1990-2006.

Methods: Data from three round of the Demographic and Health Survey (DHS), known as the National Family Health Survey (NFHS) in India were analyzed. Bivariate and multivariate-pooled logistic regression model were applied to assessing the trends and determinants of safe delivery care services utilization, over one and half decade, 1990-2006 and also fit models stratified by survey periods and with interactions among key socioeconomic predictors to show the extent of disparity in the utilization of safe delivery care services among women belonging to different socioeconomic strata.

Results: The results from analysis indicate that the coverage of safe delivery has increased from 34 percent to 50 percent during the last one and half decade. Overall, it can be said that, there was an improvement in the level of safe deliveries over the period of time. This improvement was somewhere very marginal, but somewhere very pronounced too. The results shows that women's education, husband's education, religion, caste, mass media exposure, birth order and interval, wealth quintile and region of residence were found to be statistically significant determinants in the utilization of safe delivery care services. Women from the Southern region utilizing the highest safe delivery care services compared to other regions.

Conclusion: The region specific inequalities, which were greater than the socioeconomic inequalities, may be reduced by expanding outreach health programs to bring services closer to the disadvantaged. Promoting the use of family planning, female education, targeting vulnerable groups such as poor, illiterate, high parity women, involving media and grass root level workers and collaboration between community leaders and health care system could be some important policy level interventions to address the unmet need of safe delivery care services among women. Maternity programmes should be designed keeping in mind the socioeconomic and geographically context, especially women who belongs to EAG states, India.

Keywords: NFHS, safe delivery, antenatal care, pooled data, MDG and maternal care.

Introduction

Equal opportunities for health are desirable goal in all societies. It is expected that everyone should have a fair chance to attain their full health potential and that none should be excluded from achieving this. Although the health status in most countries of the world has significantly improved over the past few decades, substantial inequalities

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Received: 29/12/2015 Accepted: 23/04/2016

in health outcomes among nations, socioeconomic groups and individuals have remained.[1] Improving the health of the poor and reducing health inequalities have become the central goals of many development programs.[2] Four dimensions in health such as equal access to available care for equal need, equal utilization for equal need, equal quality of care for equal need, and equity in outcome are emphasized to promote health equity.[3] Previous studies revealed that poverty and ill-health are linked each others and that poverty and marginalization are the major causes of inequities in health.[2,4] The health status of the poor requires to be understood by their social conditions including access to the basic needs and amenities like food, drinking water, housing, education, employment, transport and communication.[5] The socioeconomic well-being of the poorer section of the community has deteriorated in many developing countries in relative terms because the rural poor were generally denied access to resources needed to them by which they could improve their own incomes and living conditions.[6] The poor and women are expected to suffer a greater burden of ill health than do the rest of the population particularly during pregnancy and childbirth. The need of the expansion of reproductive health services in developing countries has now been recognized than ever and more than 500,000 maternal deaths that occur every year of which a quarter to a third of all deaths is the result of complications of pregnancy.[7] The regional variation in reproductive health outcome is also very wide and more than 99% of maternal deaths occur in developing countries. Studies show that a woman living in Africa has 200 times greater risk of dying from complications related to pregnancy than a woman living in an industrialized country.[7] Acknowledging the importance of the issue, the United Nations focused on improving maternal health in the Millennium Development Goals to reduce Maternal Mortality Ratio (MMR) by 75% percent during 1990–2015.[8]Several studies has documented the fact that poor availability of services is a one of the factor in non-use of skilled attendants during childbirth, but even in areas where these services are available certain groups of women, belonging poorest economic strata, illiterate, and rural backgrounds, non using properly these services.[9-11] Several studies have been indicated that countries which have improved their maternal health care services are successful in reducing the maternal morbidity or mortality.[12-14] However every women need access to all maternal care during the pregnancy and child birth. Therefore it is very imperative that all the births delivery at home should be attended by skilled health professionals, as timely delivery care, proper management and careful treatment can make the difference between life and death. Several post research on demographic behaviour has indicated that much disparities in the northern and southern states of India.[15-18]A few attempts have been made to understand the trends in safe delivery care services utilization by women in India, over time period. To feel the gap, present study going to investigate the differentials in the use of safe delivery care services by women in India (1990-2006) and further, this study also traces the changes in utilization patterns and determinants of safe delivery care services by socioeconomic and regional background of women during last one and half decade, 1990-2006.

Methods

This study is based on three round of the Demographic and Health Survey (DHS) data, known as the National Family Health Survey (NFHS) in India, which were canvassed during 1992–93 (NFHS-1), 1998–99 (NFHS-2), and 2005–06 (NFHS-3).[19-21] These surveys used a multistage stratified sampling design. The NFHS is a standard large-scale survey in India, which provides nationally representative estimates on issues related to family welfare, maternal and child health care, and nutrition. Different rounds of NFHS collected information related to place of delivery and assistance during delivery (childbirth) for different reference periods. In NFHS-1 (1992–93), information was collected for the last three births to women in the four years preceding the date of survey. Similarly, in NFHS-2 (1998–99), information was collected for the last two births in the three years preceding the date of survey. However, in NFHS-3 (2005–06), information was collected for the last three births in the five years preceding the date of survey. Considering these inconsistencies across the three surveys, the sample for this study was limited to the information for the last birth in the three years preceding the date of survey. Required information/data in states of Sikkim was missing in NFHS-1. Therefore, in order to retain consistency, samples for Sikkim was excluded from the final analytic samples. Appropriate sample weights were used taking into account the survey design. The details of the sampling weights as well as extensive information on survey design, data collection, and management procedures are described in the NFHS reports of the respective rounds.[19-21]

Outcome variables

The dependent variable, safe delivery was assessed with delivery conducted either in a medical institution or home deliveries assisted by doctor/nurse/Lady Health Visitor (LHV)/Auxiliary Nurse Midwife (ANM)/other health professionals.[22] Yes: coded as 1 and No: coded as 0.

Predictor variables

All models control for a wide range of socioeconomic and demographic predictors such as age of the woman, women's education, husband's education, women's occupation, husband's occupation religion, social group, mass media exposure, birth order and interval, status of child, wealth quintile, place of residence, city wise residence and region of residence were included as predictor variables in the study. Mother's age at birth was categorized into, five age group as 15-19, 20-24, 25-29, 30-34 and 35-49 years of age.

The educational level of the women and their husbands was defined using years of schooling and they were grouped into illiterate, literate but below primary, primary but below middle school, middle but below high school, and high school and above. The religion of the mother was categorized as Hindu, Muslim, and others (Sikh, Christians, Buddhist and others). Identification of the social group was based on the women's self-reporting, Scheduled Castes (SCs), Scheduled Tribes (STs) and Other than SC/ ST. Mass media exposure has been assessed by considering how often the respondents read the newspaper, listen to the radio and watch television or cinema. The birth order of children of women and the interval between the child births were grouped as first birth order, birth order 2/3 and interval <= 24, birth order 2/3 and interval >24, birth order-4+ and interval<=24 and birth order-4+ and interval>24.Similarly, household wealth was also calculated from the standard set of assets owned by the household, which included ownership of consumer items and dwelling characteristics. Individuals were ranked on the basis of their household scores and divided into different quintiles, each representing 20 percent of the score, between 1 (poorest) and 5 (wealthiest).[23] Previous studies indicated that the regional variation in the utilization of maternal health care services,[23] this study also try to adjust the estimates for region of residence. For this purpose, India was divided into six regions based on geographical location and cultural settings. The six regions consist of North (Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan, Delhi and Uttaranchal), Central (Uttar Pradesh, Madhya Pradesh and Chhattisgarh), East (Bihar, Jharkhand, West Bengal and Orissa), North-East (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura), West (Gujarat, Maharashtra and Goa), and South (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu).

Analytical approach

To identify the factors associated with safe delivery care services among women, bi-variate and multivariate-pooled logistic regression analyses were performed. As the sampling design of the NFHS offers an opportunity to make all the three rounds of data comparable, several earlier studies have pooled the different rounds of DHS/ NFHS datasets to observe changes over time.[24-27] Bi-variate analyses were performed to examine the nature of association between safe delivery care services and selected socioeconomic and regional background characteristics. However, binary logistic regression was applied to investigate which factors best explain and predict the utilization of safe delivery care. In the bi-variate analysis, using the Chi-square test, significant variables were identified and those were included in the binary logistic regression model. Cochran-Armitage tests[28] were used to test linear time trend estimates, while $\chi 2$(Chi squared) tests were used for nonlinear trends with tests adjusted for complex survey design [29]. The whole analysis was performed using SPSS version 20.0 and STATA version 13.0. To take into account the survey design (i.e. sampling weights with clustering and strata) while estimating bivariate and multivariate statistics, the SVY command in STATA was used.[30,31] I used pooled multivariate logistic regression models to assess the influence or the strength of selected key socioeconomic predictors. The models were adjusted for a set of socioeconomic and regional factors. In addition I also fit models stratified by survey periods and with interactions among key socioeconomic predictors to show the extent of disparity in the utilization of safe delivery care services among women belonging to different socioeconomic and regional strata. The interactions between the predictor of interest and the survey periods in the pooled dataset were analyzed using Wald tests. For unambiguous presentation of the logit models with number of interaction terms, we report the model-based predicted probabilities (PP), and also proportion of women according to different socioeconomic strata, along with their 95% CI.

Ethical consideration

Present study is based on data available in public domain; therefore no ethical issue is involved. I wish to thank the DHS (NFHS) for making this data available for this study.

Results

Profile of respondents

Table 1 represents the weighted percentage distribution of the women age group 15-49 years, who had delivered the last child during the three years preceding the survey by select socioeconomic characteristics. Majority of the women almost two third had given birth between age 20-29 years irrespective of time period. About two third 64 percent women were illiterate during 1990-93 while more than half 52% and more than two fifth 47% women were illiterate during 1996-99 and 2003-2006 respectively, and majority of them belonged to the Hindu religion irrespective of time period. The social group wise distribution shows that most of the mothers were from other than SC/ST group. More than two third 69% during 2003-06 whereas more than two fifth 47% during 1990-93 and 44% during 1996-99 women had mass media exposure. Among the respondents, almost three-fourth of the respondents belonged to the rural area and about 25% of the respondents belonged to the poorest wealth quintile irrespective of survey time period. Women who had experience of childbirth in their maternal age, almost one third were belonged to the Central regions and more than one fifth from Eastern regions of India.

Differentials in Safe delivery

Table 2 shows the weighted percentage of women who have utilized safe delivery care during last birth by selected

Table 1. Percentage distribution of women who had at least one live birth in their maternal age (aged 15–49) during the last three years preceding the survey by selected background characteristics, in India, 1992–2006.

Background characteristics	NFHS-1 (1990–93)		NFHS-2 (1996–99)		NFHS-3 (2003–06)	
	%	N	%	n	%	n
Maternal age						
15-19	12.2	3205	13.0	3482	09.9	1930
20-24	37.1	10923	38.9	12123	38.9	9053
25-29	28.7	9128	29.3	10078	30.8	8248
30-34	14.3	4531	12.6	4522	13.6	3965
35-49	07.8	2469	06.3	2328	06.8	1950
Women's education						
Illiterate	63.72	17617	52.05	12387	47.47	9654
Literate but below primary	06.51	2062	09.15	2313	06.83	1801
Primary but below middle	11.79	3850	06.85	1803	6.95	1680
Middle but below high school	07.05	2525	16.66	4484	28.85	8387
High school and above	10.92	4131	15.29	4314	9.9	3624
Husband's education						
Illiterate	35.71	9784	28.87	6764	28.14	5769
Literate but below primary	08.81	2619	09.33	2288	07.33	1800
Primary but below middle	15.93	4756	16.44	4153	15.57	3787
Middle but below high school	12.85	4232	14.38	3932	17.41	4574
High school and above	26.7	8724	30.98	8164	31.55	8998
Women's occupation						
Not working	73.23	21807	68.27	17492	65.73	16933
Agricultural work	17.62	5484	25.54	6055	23.87	5084
Skilled/Unskilled work	06.41	1901	03.71	877	06.56	1612
Professional work	02.73	1088	02.49	877	03.84	1498
Husband's occupation						
Not working	02.92	825	02.66	688	01.1	307
Agricultural work	40.7	11317	38.84	9154	30.17	6416
Skilled/Unskilled work	31.19	9482	35.33	8940	42.01	10216
Professional work	25.19	8644	23.18	6519	26.72	8109
Religion						
Hindu	79.61	23006	79.72	18858	78.31	17406
Muslim	15.11	4016	14.97	3579	16.96	4203
Others	05.28	3258	05.31	2835	04.72	3537
Social group						
Scheduled caste (SCs)	12.98	3835	20.07	4653	20.88	4,405
Scheduled tribe (STs)	09.29	3858	09.97	3730	09.76	3,963
Others than SCs/STs	77.74	22587	69.96	16918	69.36	15,874
Mass media exposure						
No exposure	52.08	14523	55.84	10377	30.7	5830
Any exposure	47.92	15757	44.16	14924	69.3	19316
Birth order and interval						
Birth order 1	25.85	8040	27.94	7070	29.25	7770
Birth order-2/3 and interval<=24	11.69	3710	12.17	3079	13.5	3482

Birth order-2/3 and interval>24	30.79	9325	32.76	8174	31.59	8059
Birth order-4+ and interval<=24	07.21	2117	06.25	1647	06.52	1523
Birth order-4+ and interval>24	24.47	7088	20.88	5331	19.14	4312
Status of the child						
Wanted	76.68	23155	79.19	20021	78.41	19755
Unwanted	23.32	7119	20.81	5280	21.59	5390
Wealth quintile						
Poorest	25.29	6281	24.97	5484	24.86	4375
Poorer	25.27	6527	24.76	5680	22.1	4556
Middle	20.56	6420	20.39	5456	19.38	5062
Richer	16.49	5877	17.76	4961	18.29	5554
Richest	12.38	4617	12.13	3720	15.37	5599
Type of residence						
Urban	23.03	8251	22.85	6733	25.85	9683
Rural	76.97	22029	77.15	18568	74.15	15463
City-wise residence						
Capital, large city	06.99	2327	05.59	2355	08.41	4332
Small city	07.55	2486	06.73	1359	07.12	1582
Town	08.49	3438	10.53	3019	10.32	3769
Countryside	76.97	22029	77.15	18568	74.15	15463
Region						
North	11.87	6841	13.09	6061	12.85	4533
Central	29.49	7134	24.07	4626	28.82	5542
East	22.2	4983	24.02	4686	25.5	4026
Northeast	04.19	3330	03.56	3504	03.87	4519
West	13.22	3257	14.37	2732	12.89	2886
South	19.02	4735	20.89	3692	16.06	3640
Total	100.0	30280	100.0	25301	100.0	25146

background characteristics. The proportion of women availing themselves safe delivery care services in India increased by nearly ten percentage points from a level of 34.3% during 1990–93 to 44.7% during 1996-99 while nearly five percentage points from a level of of 44.7% during 1996-99 to 49.9% during 2003-06. However, there was an increase of nearly 16 percentage points from a level of 34.3% during 1990–93 to 49.9% during 2003-06. A considerable growth in the level of safe delivery utilization was observed in the women belonging to the Sheduled caste (SC) and Scheduled Tribes (ST). The prevalence (%) of safe delivery among Scheduled Tribes (ST) women grew by 78%, Scheduled Caste women grew by 77%, compared to an increase of about 44% among Others then Scheduled Caste/ Scheduled Tribes women. A considerable increase was observed in the proportion of safe delivery availed by uneducated women and also women whose husbands were uneducated. The prevalence (%) of safe delivery among uneducated women grew by 53%, compared to an increase of about 9% among women who had been completed their high school and above education. Women whose husbands were uneducated grew 62%, compared to an increase of about 28% among women whose husbands had been completed their high school and above education. The proportion of women availing themselves safe delivery care in India increased by 16 percentage points from a level of 34.3% during 1990–93 to 49.9% during 2003-06. A considerable growth in the level of use of safe delivery care services was observed in the poorest, poorer, middle and the richest wealth quintiles. The prevalence (%) of safe delivery among poorest quintile women grew by (46%), poorer wealth quintile women grew by (73%), middle wealth quintile women grew by (58%), compared to an increase of about 11% among women who were belongs to richest wealth quintile. The prevalence (%) of safe delivery among rural women grew by 63%, compared to an increase of about 13% among urban women. A considerable growth is higher in the level of use of safe delivery care services was observed in the North, Central, East and Northeast regions as compared to West and South regions.

Table 2. Percentage of women who experiencing safe delivery by selected background characteristics, in India, 1990–2006

Background characteristics %	NFHS-1 (1 990–93)		NFHS-2 (1996–99)		NFHS-3 (2003–06)		Relative Change (%)			P-tren
	95% CI	%	95% CI	%	95% CI	a	b	c	d	
Maternal age	χ2=268.657***		χ2=217.175***		χ2=278.124***					
15-19	33.1	[31.0-35.2]	42.4	[39.8-45.1]	47.0	[44.0-50.1]	28.1	10.8	42.0	0.001
20-24	37.3	[35.7-38.8]	48.4	[46.6-50.2]	53.2	[51.4-55.1]	29.8	09.9	42.6	0.030
25-29	36.5	[34.9-38.1]	45.7	[43.7-47.9]	52.2	[50.2-54.3]	25.2	14.2	43.0	0.080
30-34	30.6	[28.8-32.4]	39.6	[37.2-42.1]	44.8	[42.2-47.5]	29.4	13.1	46.4	0.062
35-49	21.2	[19.3-23.3]	31.7	[28.9-34.5]	34.0	[30.8-37.3]	49.5	07.3	60.4	0.033
Women's education	χ2=7206.356***		χ2=5341.654***		χ2=5318.845***					
Illiterate	18.4	[17.5-19.4]	25.1	[23.7-26.5]	28.2	[26.6-29.8]	36.4	12.4	53.3	0.002
Literate but below primary	42.8	[39.4-46.3]	45.3	[42.4-48.2]	49.7	[46.4-53.1]	05.8	09.7	16.1	0.187
Primary but below middle	51.7	[49.3-54.2]	52.0	[49.1-54.8]	50.8	[47.5-54.0]	00.6	-02.3	-01.7	0.000
Middle but below high school	64.3	[61.4-67.1]	66.5	[64.5-68.6]	70.9	[69.0-72.6]	03.4	06.6	10.3	0.000
High school and above	84.4	[82.7-86.0]	84.8	[83.1-86.5]	92.3	[90.7-93.6]	00.5	08.8	09.4	0.188
Husband's education	χ2=3117.027***		χ2=2488.377***		χ2=2897.297***					
Illiterate	17.0	[15.9-18.1]	24.9	[23.2-26.6]	27.5	[25.7-29.5]	46.5	10.4	61.8	0.004
Literate but below primary	30.8	[28.4-33.3]	36.5	[33.9-39.2]	39.8	[36.6-43.1]	18.5	09.0	29.2	0.029
Primary but below middle	35.0	[32.9-37.1]	42.7	[40.6-44.9]	49.4	[46.9-51.9]	22.0	15.7	41.1	0.037
Middle but below high school	40.4	[38.3-42.5]	49.7	[47.4-51.9]	53.4	[50.9-55.8]	23.0	07.4	32.2	0.369
High school and above	55.5	[53.6-57.5]	64.5	[62.6-66.4]	71.0	[69.1-72.8]	16.2	10.1	27.9	0.385
Women's occupation	χ2=860.524***		χ2=1001.012***		χ2=1316.229***					
Not working	37.3	[36.0-38.8]	49.5	[47.9-51.2]	56.2	[54.4-58.1]	32.7	13.5	50.7	0.005
Agricultural work	19.8	[18.2-21.5]	28.6	[26.7-30.5]	31.5	[29.4-33.7]	44.4	10.1	59.1	0.194
Skilled/Unskilled work	28.6	[25.7-31.8]	49.9	[44.1-55.7]	40.3	[36.5-44.2]	74.5	-19.2	40.9	0.000
Professional work	60.2	[55.6-64.5]	69.7	[64.3-74.6]	71.2	[67.2-74.9]	15.8	02.2	18.3	0.008
Husband's occupation	χ2=2340.853***		χ2=1681.538***		χ2=1313.071***					
Not working	39.2	[35.0-43.5]	50.6	[45.4-55.7]	51.9	[44.5-59.2]	29.1	02.6	32.4	0.000
Agricultural work	21.0	[19.9-22.2]	31.4	[29.7-33.1]	37.5	[35.4-39.7]	49.5	19.4	78.6	0.000
Skilled/Unskilled work	35.0	[33.2-36.8]	45.6	[43.6-47.6]	47.5	[45.4-49.5]	30.3	04.2	35.7	0.928
Professional work	54.4	[52.1-56.7]	65.1	[62.7-67.4]	67.5	[65.3-69.5]	19.7	03.7	24.1	1.488
Religion	χ2=369.338***		χ2=222.529***		χ2=187.749***					
Hindu	33.7	[32.5-35.0]	43.9	[42.3-45.5]	50.9	[49.1-52.6]	30.3	15.9	51.0	0.007
Muslim	29.9	[26.7-33.3]	41.9	[38.8-45.1]	41.9	[38.1-45.8]	40.1	00.0	40.1	0.165
Others	55.7	[51.5,59.9]	64.4	[60.3-68.2]	62.1	[57.3-66.7]	15.6	-03.6	11.5	0.244
Social group	χ2=749.463***		χ2=722.060***		χ2=716.292***					
Scheduled caste (SCs)	24.2	[22.2,26.3]	38.6	[36.4-40.9]	43.1	[40.5-45.8]	59.5	11.7	78.1	0.217
Scheduled tribe (STs)	16.1	[14.0-18.4]	22.8	[19.9-26.0]	28.5	[25.6-31.5]	41.6	25.0	77.0	0.225
Other than SCs/STs	38.2	[36.8-39.7]	49.5	[47.8-51.2]	55.2	[53.3-57.1]	29.6	11.5	44.5	0.002
Mass media exposure	χ2=4225.614***		χ2=3551.049***		χ2=2490.374***					
No exposure	17.3	[16.4-18.3]	23.7	[59.6-63.2]	26.2	[24.6-28.0]	54.9	-57.3	51.4	0.000
Any exposure	52.8	[51.0-54.6]	61.4	[22.5-24.9]	60.3	[58.6-62.0]	-55.1	54.4	14.2	0.006
Birth order and interval	χ2=1791.430***		χ2=2111.222***		χ2=2612.384***					

Birth order 1	49.0	[47.2-50.8]	63.2	[61.2-65.3]	68.8	[67.0-70.6]	29.0	08.9	40.4	0.077
Birth order-2/3 and interval<=24	38.8	[36.6-41.0]	46.7	[44.1-49.4]	50.9	[48.4-53.4]	20.4	09.0	31.2	0.175
Birth order-2/3 and interval>24	36.0	[34.4-37.7]	45.0	[43.0-47.0]	51.7	[49.7-53.8]	25.0	14.9	43.6	0.056
Birth order-4+ and interval<=24	21.1	[18.9-23.6]	25.4	[22.8-28.3]	25.0	[22.3-28.1]	20.4	-01.6	18.5	0.193
Birth order-4+ and interval>24	18.4	[17.3-19.6]	24.1	[22.5-25.7]	25.5	[23.6-27.6]	31.0	05.8	38.6	0.023
Status of the child	$\chi2$=0.261		$\chi2$=9.951***		$\chi2$=162.941***					
Wanted	34.4	[33.1-35.7]	45.2	[43.5-46.8]	52.0	[50.3-53.7]	31.4	15.0	51.2	0.026
Unwanted	34.1	[32.4-35.8]	42.7	[40.6-44.9]	42.2	[39.9-44.5]	25.2	-01.2	23.8	0.039
Wealth quintile	$\chi2$=6657.683***		$\chi2$=5639.613***		$\chi2$=6029.901***					
Poorest	14.6	[13.5-15.8]	18.5	[17.0-20.1]	21.3	[19.6-23.1]	26.7	15.1	45.9	0.107
Poorer	19.6	[18.3-21.0]	30.2	[28.5-31.9]	34.0	[31.9-36.1]	54.1	12.6	73.5	0.005
Middle	33.1	[31.3-35.1]	48.3	[46.3-50.4]	52.4	[50.0-54.8]	45.9	08.5	58.3	0.006
Richer	55.2	[52.8-57.6]	68.4	[66.1-70.5]	70.6	[68.5-72.7]	23.9	03.2	27.9	0.087
Richest	82.1	[80.1-84.0]	88.5	[86.7-90.1]	91.0	[89.7-92.2]	07.8	02.8	10.8	0.034
Type of residence	$\chi2$=4197.659***		$\chi2$=2831.315***		$\chi2$=2625.344***					
Urban	66.7	[64.0-69.2]	75.6	[72.8-78.2]	77.2	[74.7-79.6]	13.3	02.1	15.7	0.043
Rural	24.7	[23.3-26.1]	35.6	[34.0-37.2]	40.3	[38.6-42.0]	44.1	13.2	63.2	0.004
City-wise residence	$\chi2$=4441.944***		$\chi2$=2926.714***		$\chi2$=2675.573***					
Capital, large city	75.6	[70.3-80.2]	83.6	[80.0-86.7]	81.9	[78.5-84.9]	10.6	-02.0	08.3	0.000
Small city	71.2	[67.3-74.9]	79.6	[75.4-83.2]	79.3	[74.3-83.5]	11.8	-00.4	11.4	0.000
Town	55.3	[51.7-58.7]	68.8	[64.5-72.8]	72.0	[67.4-76.1]	24.4	04.7	30.2	0.145
Countryside	24.7	[23.3-26.1]	35.6	[34.0-37.2]	40.3	[38.6-42.0]	44.1	13.2	63.2	0.004
Region	$\chi2$=3479.432***		$\chi2$=3201.435***		$\chi2$=3544.256***					
North	31.8	[29.8-33.9]	44.9	[42.-,47.1]	52.0	[48.4-55.6]	41.2	15.8	63.5	0.000
Central	20.0	[18.0-22.1]	26.8	[24.-29.1]	32.4	[29.9-34.9]	34.0	20.9	62.0	0.016
East	24.2	[21.8-26.7]	32.4	[30.0-34.9]	39.4	[36.2-42.6]	33.9	21.6	62.8	0.023
Northeast	22.9	[19.6-26.5]	28.9	[25.0-33.1]	36.8	[32.1-41.7]	26.2	27.3	60.7	0.771
West	51.5	[47.1-55.9]	58.3	[53.8-62.7]	70.3	[66.5-73.9]	13.2	20.6	36.5	0.057
South	60.5	[57.5-63.5]	73.1	[70.3-75.9]	82.9	[80.4-85.1]	20.8	13.4	37.0	0.002
Total	**34.3**	**[33.1-35.6]**	**44.7**	**[43.1-46.3]**	**49.9**	**[48.2-51.5]**	**30.3**	**11.6**	**45.5**	**0.028**

aCalculated as relative change = [(period 2 %-period 1%)/period 1%*100].
bCalculated as relative change = [(period 3 %-period 2%)/period 2%*100].
cCalculated as relative change = [(period 3 %-period 1%)/period 1%*100]
dBased on Cochran-Armitage time trend analyses{(for linear trend) and x2 analyses (for nonlinear trend) with Rao-Scott adjustments to assess significant trends over time.

Determinants of Safe Delivery

Table 3 demonstrates the results of the multivariate analysis of the utilization of safe delivery care services by women in India during 1990-2006. The results shows that women's education, husband's education, religion, caste, mass media exposure, birth order and interval, wealth quintile and region of residence were found to be statistically significant determinants in the utilization of safe delivery care services. As expected, utilization of safe delivery care services increases with the increase of women's educational level. Compared with uneducated women, those with high school and above education were more likely to use safe delivery care services (OR=4.454, 95% CI=1.191-1.565) during 1990-93, (OR=2.909, 95% CI=2.477-3.416) during 1996-99 and (OR=3.936, 95% CI=3.093-5.009) during 2003-06. Although husband's education appeared to be a significant factor for the utilization of safe delivery care services, but it was not as strong a factor as women's education. The likelihood of using safe delivery care services was low among women belonging to Muslim (OR=0.700, 95% CI=0.603-0.814) during 1990-93, (OR=0.793, 95% CI=0.702-0.896) during 1996-99 and (OR=0.677, 95% CI=0.579-0.791) during 2003-06, compared with women

belonging to the Hindu religion. The probability of utilizing safe delivery care services was found to be less among Scheduled Tribe (OR=0.781, 95% CI=0.616-0.990) during 1990-93, (OR=0.679, 95% CI=0.564-0.818) during 1996-99 and (OR=0.693, 95% CI=0.569-0.845) during 2003-06, compared with women belonging to the Scheduled caste while the probability of utilizing safe delivery care services was found to be more likely among women who belongs other than SC/ST caste as compared to Scheduled caste women. Women who had any exposure of mass media were more likely to use safe delivery care services (OR=1.231, 95% CI=1.122-1.350), during 1990-93, (OR=1.150, 95% CI=1.048-1.263) during 1996-99 and (OR=1.203, 95% CI=1.076-1.345) during 2003-06, compared than women who did not have any mass media exposure. Birth order was also found to be a significant determinant in the utilization of safe delivery care services. Women who had previous experience of childbirth were less likely to utilize safe delivery care services compared with those women who experienced childbirth for the first time. Rural women, compared with their urban counterparts, were less likely to undergo safe delivery (OR=0.477, 95% CI=0.388-0.515), (OR=0.506, 95% CI=0.439-0.583) and (OR=0.561, 95% CI=0.483-0.651) over the period 1990-

Table 3 Socio-economic and demographic predictors for women who accessing safe delivery care services, in India, 1990–2006

Background characteristics	NFHS-1 (1990–93)		NFHS-2 (1996–99)		NFHS-3 (2003–06)	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Maternal age						
15-19 (ref)	1.000		1.000		1.000	
20-24	1.226***	[1.084-1.385]	1.317***	[1.159-1.495]	1.376***	[1.189-1.592]
25-29	1.551***	[1.342-1.792]	1.668***	[1.443-1.927]	1.862***	[1.562-2.219]
30-34	1.915***	[1.606-2.284]	2.068***	[1.724-2.480]	1.951***	[1.590-2.394]
35-49	1.804***	[1.456-2.234]	2.197***	[1.736-2.781]	2.368***	[1.823-3.075]
Women's education						
Illiterate (ref)	1.000		1.000		1.000	
Literate but below primary	1.720***	[1.471-2.011]	1.616***	[1.408-1.855]	1.736***	[1.479-2.038]
Primary but below middle	1.958***	[1.733-2.212]	1.651***	[1.417-1.924]	1.457***	[1.241-1.709]
Middle but below high school	2.491***	[2.119-2.927]	2.168***	[1.909-2.461]	1.942***	[1.716-2.198]
High school and above	4.454***	[3.759-5.277]	2.909***	[2.477-3.416]	3.936***	[3.093-5.009]
Husband's education						
Illiterate (ref)	1.000		1.000		1.000	
Literate but below primary	1.309***	[1.118-1.532]	1.123	[0.970-1.301]	1.130	[0.953-1.339]
Primary but below middle	1.294***	[1.135-1.476]	1.092	[0.976-1.222]	1.334***	[1.177-1.513]
Middle but below high school	1.431***	[1.243-1.648]	1.308***	[1.153-1.485]	1.265***	[1.109-1.444]
High school and above	1.365***	[1.191-1.565]	1.179***	[1.045-1.330]	1.221***	[1.058-1.409]
Women's occupation						
Not working (ref)	1.000		1.000		1.000	
Agricultural work	0.715***	[0.630-0.813]	0.793***	[0.713-0.883]	0.892**	[0.791-1.006]
Skilled/Unskilled work	0.895	[0.753-1.065]	1.078	[0.843-1.378]	0.832**	[0.689-1.006]
Professional work	1.160	[0.929-1.450]	1.112	[0.864-1.433]	1.075	[0.855-1.352]
Husband's occupation						
Not working (ref)	1.000		1.000		1.000	
Agricultural work	0.923	[0.733-1.163]	0.861	[0.678-1.092]	0.943	[0.646-1.376]
Skilled/Unskilled work	1.093	[0.857-1.394]	0.955	[0.751-1.213]	1.122	[0.763-1.651]
Professional work	1.128	[0.891-1.429]	1.090	[0.853-1.394]	1.084	[0.740-1.587]
Religion						
Hindu (ref)	1.000		1.000		1.000	
Muslim	0.700***	[0.603-0.814]	0.793***	[0.702-0.896]	0.677***	[0.579-0.791]
Others	1.623***	[1.354-1.945]	1.445***	[1.197-1.743]	1.113	[0.908-1.365]
Social group						

Scheduled caste (SCs) (ref)	1.000		1.000		1.000	
Scheduled tribe (STs)	0.781**	[0.616-0.990]	0.679***	[0.564-0.818]	0.693***	[0.569-0.845]
Other than SC/ST	1.157***	[1.027-1.303]	1.017	[0.901-1.147]	1.170***	[1.044-1.312]
Mass media exposure						
No exposure (ref)	1.000		1.000		1.000	
Any exposure	1.231***	[1.122-1.350]	1.150***	[1.048-1.263]	1.203***	[1.076-1.345]
Birth order and interval						
Birth order 1 (ref)	1.000		1.000		1.000	
Birth order-2/3 and interval<=24	0.533***	[0.470-0.604]	0.380***	[0.332-0.435]	0.409***	[0.354-0.474]
Birth order-2/3 and interval>24	0.534***	[0.481-0.593]	0.392***	[0.351-0.437]	0.402***	[0.357-0.453]
Birth order-4+ and interval<=24	0.325***	[0.272-0.390]	0.250***	[0.206-0.303]	0.245***	[0.196-0.305]
Birth order-4+ and interval>24	0.321***	[0.276-0.373]	0.256***	[0.219-0.300]	0.268***	[0.226-0.318]
Status of the child						
Wanted (ref)	1.000		1.000		1.000	
Unwanted	1.025	[0.934-1.126]	1.076	[0.965-1.199]	0.935	[0.840-1.041]
Wealth quintile						
Poorest (ref)	1.000		1.000		1.000	
Poorer	1.069	[0.943-1.213]	1.313***	[1.164-1.482]	1.230***	[1.076-1.406]
Middle	1.424***	[1.242-1.632]	1.888***	[1.654-2.155]	1.730***	[1.493-2.004]
Richer	2.207***	[1.874-2.600]	2.716***	[2.306-3.199]	2.548***	[2.143-3.031]
Richest	3.667***	[2.953-4.554]	5.443***	[4.327-6.848]	5.936***	[4.703-7.492]
Type of residence						
Urban (ref)	1.000		1.000		1.000	
Rural	0.447***	[0.388-0.515]	0.506***	[0.439-0.583]	0.561***	[0.483-0.651]
Region						
North (ref)	1.000		1.000		1.000	
Central	0.954	[0.804-1.132]	0.683***	[0.580-0.804]	0.742***	[0.616-0.894]
East	1.332***	[1.119-1.585]	1.100***	[0.945-1.280]	1.218**	[1.001-1.481]
Northeast	1.140	[0.923-1.409]	0.697***	[0.565-0.859]	0.735***	[0.581-0.929]
West	3.141***	[2.632-3.749]	1.825***	[1.549-2.151]	2.080***	[1.685-2.568]
South	5.879***	[5.029-6.871]	4.273***	[3.654-4.997]	5.259***	[4.255-6.501]

Levels of significance: *p<0.10; **p<0.05; ***p<0.01.
City wise residence was excluded from the multivariate analysis after examining high collinearity between type of residence and city wise residence.

93, 1993-96 and 2003-06 respectively. After women's education, the economic status of women was one of the most significant determinants in the utilization of safe delivery care services . As compared with women who were poorest wealth quintile, the women from the richest wealth quintile, were 3.7 times (95% CI=2.953-4.554) during 1990-93, 5.4 times (95% CI=2.953-4.554) during 1996-99 and 5.9 times (95% CI=4.703-7.492) during 2003-06, more likely to use safe delivery care services. The odds of utilization of safe delivery care services were higher in the South region (OR=5.879, 95% CI=5.029-6.871), during 1990-93, (OR=3.141, 95% CI=1.716–3.126), during 1996-99 and (OR=5.259, 95% CI=4.255-6.501) during 2003-06 compared with the North region.

Multivariate-pooled logistic regression results for receiving safe delivery care services

Table 4 presents the results of the pooled logistic regression models to examine the effect of individuals, household and community characteristics on utilization of safe delivery care services by women in India, during last one and half decade, 1990-2006. Along with the adjusted odds ratios, the table provides observed (or unadjusted) odds ratios for each correlate, which permit direct comparison of observed and adjusted effects. The study estimated the baseline effect of each variable on utilization of safe delivery care services in the unadjusted model, and then controlled for other variables in the adjusted one. The result from the both model unadjusted

and adjusted shows that the time period, maternal age, mother's education, father's education, birth order and birth interval of child, mass media exposure, religion, social group, economic status and region of residence emerged as significant factors affecting the utilization of safe delivery care services. The overall probability of women availing themselves of safe delivery care services appeared to increase by only 48% (95% CI=1.379-1.594) between 1990–93 and 1996-99 whereas the probability of women availing themselves of safe delivery care grew by 2 times (95% CI=1.857-2.176) between 1990–93 and 2003-06. The probability of safe delivery increased significantly with the increasing age of women. Women's education transpired as the most influential socio-demographic predictor leading to higher probability of women's availing themselves of safe delivery care services during 1990–2006. Women with high school and above education were found more than 3 times (95% CI=3.095-3.803), more likely to availing themselves of safe delivery care services as compared to uneducated women. The economic status of women was one of the most significant determinants in the utilization of safe delivery care services after women's education. The probability increased significantly with the increasing economic level (that is, wealth quintile) of the safe delivery care. As compared with women who were poor, the women from the richest wealth quintile, were 5 times (95% CI=4.448- 5.720) more likely to use safe delivery care services. Women belonging to the ST social group appeared to be disadvantaged with 28% less probability to avail themselves of safe delivery compared to SC social group women, whereas women belonging with other than SC/ST social group were found more (OR=1.119 95%CI=1.045-1.198) as compared to SC women. However Muslim women were also almost equally disadvantaged (with 28% less probability) than Hindu women. Similarly, women with birth order-2/3 and interval<=24 had 55% and women with birth order-4+ and interval>24 had 71% less probability to avail themselves of safe delivery care services compared to women with first birth order. Women who had exposure to mass media were more likely to utilize safe delivery care than women who did not have any mass media exposure (OR=1.187 95%CI=1.122-1.255).

Table 4 Socio-economic and demographic determinants of utilization of safe delivery care services in India (1990-2006)

Background characteristics	Bivariate		Multivariate	
	Odds ratio	**95% CI**	**Odds ratio**	**95% CI**
Period				
1990–93 (ref)	1.000		1.000	
1996–99	1.417***	[1.300-1.545]	1.483***	[1.379-1.594]
2003–06	1.903***	[1.738-2.084]	2.010***	[1.857-2.176]
Maternal age				
15-19 (ref)	1.000		1.000	
20-24	1.280***	[1.206-1.358]	1.289***	[1.199-1.387]
25-29	1.217***	[1.142-1.296]	1.690***	[1.550-1.842]
30-34	0.898***	[0.833-0.968]	1.936***	[1.743-2.151]
35-49	0.588***	[0.535-0.646]	2.057***	[1.801-2.349]
Women's education				
Illiterate (ref)	1.000		1.000	
Literate but below primary	2.779***	[2.576-2.998]	1.655***	[1.523-1.797]
Primary but below middle	3.567***	[3.328-3.823]	1.724***	[1.595-1.864]
Middle but below high school	7.262***	[6.813-7.740]	2.102***	[1.953-2.263]
High school and above	20.828***	[19.069-22.750]	3.431***	[3.095-3.803]
Husband's education				
Illiterate (ref)	1.000		1.000	
Literate but below primary	1.949***	[1.842-2.062]	1.209***	[1.109-1.317]
Primary but below middle	2.553***	[2.440-2.671]	1.254***	[1.172-1.343]
Middle but below high school	3.476***	[3.323-3.636]	1.359***	[1.262-1.463]
High school and above	7.006***	[6.737-7.285]	1.286***	[1.194-1.384]
Women's occupation				
Not working (ref)	1.000		1.000	
Agricultural work	0.006***	[0.331-0.356]	0.813***	[0.761-0.868]
Skilled/ Unskilled work	0.021***	[0.649-0.733]	0.917	[0.820-1.026]
Professional work	0.097***	[2.382-2.762]	1.10	[0.967-1.258]
Husband's occupation				
Not working (ref)	1.000		1.000	
Agricultural work	0.031***	[0.424-0.546]	0.882*	[0.763-1.020]
Skilled/ Unskilled work	0.056*	[0.792-1.012]	1.035	[0.894-1.198]
Professional work	0.124***	[1.712-2.197]	1.094	[0.944-1.268]

Religion				
Hindu (ref)	1.000		1.000	
Muslim	0.820***	[0.753-0.893]	0.721***	[0.667-0.779]
Others	2.121***	[1.922-2.340]	1.402***	[1.257-1.563]
Social group				
Scheduled caste (SCs) (ref)	1.000		1.000	
Scheduled tribe (STs)	0.512***	[0.462-0.568]	0.726***	[0.647-0.814]
Other than SCs/STs	1.533***	[1.440-1.632]	1.116***	[1.042-1.195]
Mass media exposure				
No exposure (ref)	1.000		1.000	
Any exposure	5.149***	[4.893-5.418]	1.190***	[1.126-1.259]
Birth order and interval				
Birth order 1 (ref)	1.000		1.000	
Birth order-2/3 and interval<=24	0.016***	[0.517-0.579]	0.448***	[0.415-0.482]
Birth order-2/3 and interval>24	0.011***	[0.493-0.538]	0.446***	[0.419-0.474]
Birth order-4+ and interval<=24	0.009***	[0.186-0.220]	0.280***	[0.251-0.313]
Birth order-4+ and interval>24	0.006***	[0.178-0.200]	0.289***	[0.265-0.316]
Status of the child				
Wanted (ref)	1.000		1.000	
Unwanted	0.021***	[0.825-0.906]	1.016	[0.959-1.078]
Wealth quintile				
Poorest (ref)	1.000		1.000	
Poorer	1.743***	[1.634-1.860]	1.223***	[1.141-1.312]
Middle	3.667***	[3.423-3.928]	1.699***	[1.572-1.836]
Richer	8.462***	[7.831-9.143]	2.484***	[2.264-2.725]
Richest	32.026***	[28.958-35.418]	5.044***	[4.448-5.720]
Type of residence				
Urban (ref)	1.000		1.000	
Rural	0.184***	[0.169-0.200]	0.509***	[0.470-0.552]
Region				
North (ref)	1.000		1.000	
Central	0.470***	[0.451-0.491]	0.727***	[0.661-0.800]
East	0.625***	[0.598-0.653]	1.177***	[1.068-1.297]
Northeast	0.824***	[0.787-0.863]	0.816***	[0.720-0.924]
West	2.465***	[2.341-2.595]	2.100***	[1.892-2.331]
South	3.416***	[3.253-3.586]	4.679***	[4.246-5.156]

Levels of significance: *p<0.10; **p<0.05; ***p<0.01; OR= Odds ratio
City wise residence was excluded from the multivariate analysis after examining high collinearity between type of residence and city wise residence.

Rural women, compared with their urban counterparts, were less likely to undergo safe delivery (OR=1.190, 95% CI=1.126-1.259). The odds of utilization of safe delivery care services were higher in the South region (OR=4.679, 95%CI=4.246- 5.156), followed by the West region (OR=2.100, 95%CI=1.892- 2.331) and East region (OR=1.177, 95% CI=1.068- 1.297) compared with the North region.

Interaction effect of socioeconomic characteristics in safe delivery

Table 5 presents the adjusted predicted probability (PP) for paired interactions of socioeconomic characteristics of women who accessing safe delivery care services, in India, during last one and half decade, 1990–2006. Rural women with no education in the poorest wealth quintile were almost 62–65 percentage points less likely to avail safe delivery care services, compared to urban women with high school education and more in the richest wealth quintile during 1990–2006. Interacting with the social group of women, the probability of availing safe delivery by rural SC/ST women belonging to the poorest wealth quintile was 53-55 percentage points lower compared to urban non-SC/ST women in the richest wealth quintile during last one and half decade, 1990-2006. Similarly, the rural SC/ST women with no education in the poorest wealth quintile had 63-71 percentage points less probability to avail themselves of safe delivery, compared to urban non SC/ST women with high school education and more in the richest wealth quintile during last one and half decade, 1990–2006.

Discussion

The present study has comprehensively demonstrated the trends in women's availing themselves of safe delivery with considerable disparities across key socio-demographic and economic, regional spectrum in India

Table 5 Adjusted predicted probability (PP) for paired interactions of socioeconomic characteristics of women who accessing safe delivery care services in India, 1990–2006.

Paired interaction of Covariates	NFHS-1 (1990–93)		NFHS-2 (1996–99)		NFHS-3 (2003–06)	
	PP	95% CI	PP	95% CI	PP	95% CI
Safe Delivery						
Rural*No education*Q1[a]	0.273	[0.185-0.361]	0.267	[0.174-0.360]	0.352	[0.214-0.490]
Rural*HS & above*Q5[b]	0.846	[0.799-0.991]	0.829	[0.654-0.911]	0.906	[0.048-0.960]
Urban*No education*Q1[c]	0.445	[0.156-0.734]	0.434	[0.119-0.750]	0.317	[0.125-0.509]
Urban*HS & above*Q5[d]	0.938	[0.260-0.975]	0.945	[0.609-0.998]	0.972	[0.102-0.986]
Rural*SC/ST*Q1[e]	0.224	[0.101-0.348]	0.259	[0.145-0.373]	0.316	[0.175-0.457]
Rural*Non SC/ST*Q5[f]	0.644	[0.157-0.845]	0.698	[0.146-0.743]	0.782	[0.475-0.838]
Urban*SC/ST*Q1[g]	0.393	[0.034-0.820]	0.444	[0.026-0.862]	0.422	[0.059-0.785]
Urban*Non SC/ST*Q5[h]	0.773	[0.658-0.804]	0.840	[0.949-0.928]	0.854	[0.018-0.925]
Rural*SC/ST*No education*Q1[i]	0.233	[0.075-0.379]	0.272	[0.120-0.425]	0.344	[0.130-0.558]
Rural*Non SC/ST*HS & above*Q5[j]	0.870	[0.690-0.930]	0.848	[0.780-0.876]	0.921	[0.240-0.982]
Urban*SC/ST*No education*Q1[k]	0.383	[0.070-0.836]	0.389	[0.016-0.795]	0.387	[0.015-0.789]
Urban*Non SC/ST*HS & above*Q5[l]	0.946	[0.662-0.954]	0.955	[0.750-0.961]	0.980	[0.794-0.994]
Proportion of women	%	95% CI	%	95% CI	%	95% CI
Rural*No education*Q1[a]	94.8	[94.2-95.4]	96.8	[96.4-97.3]	93.2	[92.3-94.0]
Rural*HS & above*Q5[b]	80.0	[78.5-81.5]	21.1	[19.6-22.7]	20.7	[19.2-22.3]
Urban*No education*Q1[c]	05.2	[04.6-05.8]	03.2	[02.7-03.6]	06.8	[06.0-07.7]
Urban*HS & above*Q5[d]	20.0	[18.5-21.5]	78.9	[77..3-80.4]	79.3	[77.7-80.8]
Rural*SC/ST*Q1[e]	96.0	[95.2-96.7]	96.9	[96.3-97.4]	94.5	[93.5-95.4]
Rural*Non SC/ST*Q5[f]	21.3	[20.1-22.6]	22.1	[20.9-23.5]	23.7	[22.5-25.0]
Urban*SC/ST*Q1[g]	04.0	[03.3-04.8]	03.1	[02.6-03.7]	05.5	[04.6-06.5]
Urban*Non SC/ST*Q5[h]	78.7	[77.4-79.9]	77.9	[76.5-79.1]	76.3	[75.0-77.5]
Rural*SC/ST*No education*Q1[i]	96.0	[95.1-96.8]	96.9	[96.3-97.5]	94.8	[93.7-95.7]
Rural*Non SC/ST*HS & above*Q5[j]	19.6	[18.1-21.2]	21.0	[19.5- 22.7]	20.0	[18.4-21.7]
Urban*SC/ST*No education*Q1[k]	04.0	[03.2-04.9]	03.1	[02.5-03.7]	05.2	[04.3-06.3]
Urban*Non SC/ST*HS & above*Q5[l]	80.4	[78.8-81.9]	79.0	[77.3-80.5]	80.0	[78.3-81.6]

Multivariate model controls for mother's age, husband's education, mother's occupation, husband's occupation, religion, mass media exposure, birth order and interval, status of the child and region of residence besides all variables shown in the table.

[a]Rural women with no education in the poorest wealth quintile.
[b]Rural women with high school & above education in the richest wealth quintile.
[c]Urban women with no education in the poorest wealth quintile.
[d]Urban women with high school & above education in the richest wealth quintile.
[e]Rural SC/ST women in the poorest wealth quintile.
[f]Rural Non SC/ST women in the richest wealth quintile.
[g]Urban SC/ST women in the poorest wealth quintile.
[h]Urban Non SC/ST women in the richest wealth quintile.
[i]Rural SC/ST women with no education in the poorest wealth quintile.
[j]Rural SC/ST women with high school & above education in the richest wealth quintile.
[k]Urban SC/ST women with no education in the poorest wealth quintile.
[l]Urban SC/ST women with high school & above education in the richest wealth quintile.
Note: All the predicted probabilities were significantly different at p,0.001.

during 1990–2006. Over the last one and a half decades, a negligible and modest increase in safe delivery care, was evident among women in India. Ever since the integration of the Safe Motherhood and Child Health Program into the Reproductive and Child Health Program (RCH) in 1996, the Government of India has made several efforts to improve the maternal healthcare utilization. Moreover, because of the less safe delivery among women has been always a central focus among policy makers. Thus, considering the distinct disadvantage over poor than the non-poor and among the rural and uneducated women, the present study assesses the safe delivery among women who had given

birth in the three years preceding the survey. The study has used data from the National Family Health Survey (NFHS) conducted during 1992–93, 1998–99, and 2005–06. The objective of the study is to examine the factors that significantly affect the safe delivery among women in India. This study has investigated the factors affecting the safe delivery, with the aim of improving the information available to decision-makers who are responsible for planning and administering maternal health and maternal care programs. This study has also identified several other determinants that have a significant influence to the safe delivery such as women's education, social group, religion, economic status, birth order and interval, health provider's visit and region of residence.

The utilization of safe delivery care was found to be significantly lower among Muslim women than among women belonged to other religions. However, few studies observed mixed effects of religion on maternal care services utilization; Hindu and Muslim women residing in urban India do not avail delivery care services equally as documented earlier.[32,33] A recent study suggested a possibility that the 'purdah', a physical segregation of the sexes, and the requirement for women to cover their bodies and conceal their form, may be contributing to the low utilization of safe delivery care. There has been considerable discussion about the influence of religious and cultural practices on overall health behavior independent of socioeconomic processes.[35-38] In India, the religious differentials in the socioeconomic and demographic profiles have been well documented due to cultural and regional diversity and, political interests.[39-44] The most studied issue in public health literature in India has been on Hindu-Muslim differences in fertility and family planning.[45-47] Few studies have also explored child survival prospects across different religious groups.[48] A study in India highlighted that Muslim women tend to put the baby to the breast sooner after birth and this may perhaps explain the Muslim child survival advantage.[49] This study also observed the same finding that Muslim women gave birth outside medical facilities more than then Hindu, Therefore supporting the problematical. Offering economic support and incentives to girls and their families, especially to girls belonging to the least advantaged groups in socioeconomic spectrum in rural areas can also be one of the effective ways of preventing early childbearing. The rationale behind this approach is that immediate economic opportunities provide an acceptable alternative to marriage, and increase the value and contribution of a daughter to her parental family.[50]

Conclusion

This study concludes that over the last one and a half decades, a negligible and modest increase in safe delivery care, was evident among women in India. The marginalization of women in utilizing safe delivery care services in India over one and a half decades is clearly evident in this study. The finding of this study revels less utilization of safe delivery care services for the second and higher order births compared with the first birth order. Hence, there is need to look at the causes related to the utilization of safe delivery care services by higher birth order and special efforts must be made by government to reach higher birth order mothers for timely and appropriate counselling regarding the adverse effect of safe delivery care services. In addition the present study suggests the focus should be motivating mothers with more than one child to access services from the health system will be ensure positive maternal heath outcome of safe delivery care services decrease with increase in the parity of women. This has immense implication in the regulation of maternal mortality in India. Girl's education is the most important weapon to deal with such concerns in any society. Since 2005, the government of India has launched several programs, including the National Rural Health Mission (NRHM). Besides, the socioeconomic vulnerability regional disparities clearly evident from this study among considerable population who are disadvantaged in using safe delivery care services, could foster adverse reproductive outcomes. Incentives and better facilities, like transportation vehicles, should be provided to health personnel working in adverse geographically area specially rural and tribal areas of the country.

Limitation of the study

While, this study explores several unfold dimensions of safe delivery care by women in India but still it suffers from some of the limitations too. The population belonging to the so-called ''Other Backward Classes'' (OBC) are identified as economically and socially deprived by the Mandal Commission that reported to the Indian government in 1980 [51]. Since the NFHS-1 (1992–93) data contained only three categories of the social/caste group–SC, ST and Other, to avoid the inconsistency in all three round of survey, to pool OBC and the Other social group in the successive two NFHS rounds (i.e., NFHS-2 (1998–99), and NFHS-3 (2005–06)), which provided separate information for OBC. Some others predictors variables of utilization of maternal and child health care services such as type of family, presence of ASHA, visited health provider during pregnancy, women autonomy and anemia in women, which were not collected in NFHS-1 and NFHS-2, could not be used for this study to maintain consistency across the three round of survey.

Acknowledgments

An earlier version of this paper was presented in the 12th SEA Regional Scientific Meeting of the International Epidemiological Association 2015 (IEA-SEACON 2015)" and The 2nd Annual conference of the Journalists and Writers Foundation during 24–26 November, 2015, Bangkok, Thailand. Authors are grateful to session chairpersons and participants for their comments and constructive suggestions facilitating improvement in the paper. The author also thank Dr. Lucky Singh and Kh. Jitenkumar Singh from the National Institute of Medical Statistics (ICMR), India, for their useful comments and suggestions.

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Courtesy: World Health Organization

ORIGINAL ARTICLE

Understanding the Problem of Dyslexia Among Children of 3 to 7 years: Case Control Study

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Abstract

Introduction: Dyslexia is the most common learning disability in children and persists throughout life. Children who repeatedly experience failure in reading may become demoralized. This influences their self-esteem. This decrease in self-esteem is also accompanied by an increase in tension, apprehension and anxiety. A dyslexic person may react differently to social situations, because of their social immaturity, causing embarrassment to others. Present study was carried out to explore the risk factors for dyslexia and to find out the role of literacy environment at home in dyslexic children. **Materials and Methods:** In the present case control study 3 to 7 years children with and without dyslexia were enrolled. The data was collected on sociodemographic profile of children, types of dyslexia, regularity in attending school from the caregivers of children. **Statistical analysis** was done with proportions and 95% confidence limits. **Results:** 75 cases and 76 controls participated in the study.

Key Words: Dyslexia, case control study

Introduction

The term "dyslexia" was coined in 1887 to refer to a case of a young boy who had a severe impairment in learning to read and write in spite of showing typical intellectual and physical abilities.[1] `Dyslexia' has often, over the years, been dismissed as a term used by pushy, middle-class parents to explain the difficulties their child is experiencing with reading and spelling at school. The International Dyslexia Association (IDA) defined dyslexia as "difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction."[2]

Dyslexia is the most common learning disability in children and persists throughout life. The prevalence of dyslexia ranges from 3 to 17 percent of the school age all over the world including India.[3] It has been known for many years that dyslexia, like other neurodevelopmental disorders, runs in families and studies of large twin samples demonstrate that reading and the phonological skills that underpin it are highly heritable. Dyslexia is not just hereditary. In fact, there are different types of dyslexia, acquired or developmental and deep or primary dyslexia. Although all types present similar reading problems, each can be distinguished from the others.[4,5] Dyslexia doesn't just affect reading - it causes problems with hearing as well. [6]

In the preschool period, they have significant difficulties in phonological processes as well as with broader language skills and in acquiring the foundations of decoding skill (letter knowledge, phonological awareness and rapid automatized naming [RAN]).[7] As dyslexic children grow up their emotional needs become just as important as their academic development. These emotional and social problems may be associated with or secondary to reading difficulties.[8]

As the school entry phase i.e. early childhood is the crucial period in the life of children we wish to target this group of children in the present study was carried out to explore the risk factors for dyslexia and to find out the role of literacy environment at home in dyslexic children.

Methods

Study design & selection of study participants: Present case control study was carried out after institutional ethical clearance. The cases were children with dyslexia

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Received: 1/6/2016 Accepted: 8/6/2016

selected from one of the organizations working for dyslexia in Chennai and the controls were children without dyslexia selected from the school of the same area for children without dyslexia. The study participants were children with and without dyslexia of 3 -7 years. All the children, were selected randomly and their mothers as primary caregivers and fathers as secondary caregivers were recruited for the study. **Study period**: The study was carried out between January and October in 2011.**Data collection:** Data was collected by interview technique with pretested semi structured questionnaire for socio demographic data, type of dyslexia, learning environment at home school attendance etc. For information related Dyslexia the medical record was checked. **Statistical analysis:** The statistical analysis was carried out with EPI INFO 2007. The proportions and 95% confidence limits were calculated.

Results

In our study total number of children with dyslexia was 75 and without dyslexia were 76.

Discussion

In the present case control study 75 children with dyslexia and 76 children without dyslexia of 3 to 7 years were enrolled. The children with dyslexia and without dyslexia were matched for age and geographical location of their schools. There was male gender preference, out of 75 dyslexic children 68% were boys and 32% were girls.(table no.1). In other studies, significantly more males than females with reading disabilities were reported. [9] It has also been suggested that females may be less susceptible to environmental factors such as teaching methods and socioeconomic status [10] and that genetic influences may be more important as a cause of reading difficulties in females than in males. [11,12]

Table.1 Sociodemographic profile of Children with & without Dyslexia

Characteristics	Cases (75)	Controls (76)
Gender of Children		
Boys (89)	51 (68.0%)	38 (50.0)
Girls(72)	24 (32.0%)	38 (50.0%)
Age in years (n=151)		
3-4 (21)	10(13.3%)	11 (14.5%)
4-5 (25)	13 (17.3%)	12 (15.8%)
5-6(32)	16 (21.3%)	16(21.1%)
6-7(25)	12 (16%)	13 (17.1%)
7-8(48)	24(32%)	24(31.6%)
Father's Occupation		
Unemployed(11)	8(10.7%)	3(3.9%)
Salaried(87)	50(66.7%)	37(48.7%)
Professional(53)	17(22.7%)	36(47.4%)
Mother's Occupation		
Unemployed(113)	61(81.3%)	52(68.4%)
Salaried(22)	8(10.7%)	14(18.4%)
Professional (16)	6(8%)	10(13.2%)

Table 2. Literacy environment in the home of children with dyslexia & without dyslexia

Literacy environment	Cases	Control
Father's Education		
Illiterate or Primary (62)	40(53.3%)	22(28.9%)
Diploma or Graduates (43)	19(25.3%)	24(31.6%)
Postgraduates (46)	16(21.3%)	30(39.5%)
Mother's education		
Illiterate or Primary (66)	44(58.7%)	22(28.9%)
Diploma or Graduates (51)	23(30.7%)	28(36.8%)
Postgraduates (34)	8(10.7%)	26(34.2%)
School Attendance		
Irregular (17)	17 (22.7%)	0
Regular (58)	58 (77.3%)	76(100%)

The socioeconomic status of families of dyslexic children was poor as compared to control (table1), number of unemployed parents of dyslexic children was more,10.7% fathers & 81.7% mothers were unemployed. As suggested by Rutter & Maughan social-demographic factors can also affect reading attainments and it is well-known that there is a social gradient in reading attainment such that reading is poorer in disadvantaged groups.[13] The parenteral literacy and the regularity in attending the school was examined for cases and controls. The literacy environment was better in control group than in cases(Table 2) 53.3% fathers and 58.7% mothers were illiterate and 22.7% dyslexic children were irregular in attending their schools whereas none of the child from control group was irregular in attending the school. (Table 3) Among the factors that could account for demographic variation are differences in parental education level.[14] Moreover, evidence suggests that the home literacy environment may at least partially mediate the influence of socioeconomic status (SES) on children's literacy outcomes.[15]

Among dyslexic children 8% had family history of dyslexia, all of them were first degree relatives. Different authors observed that there is a familial risk in dyslexia. [7]Gilger et al. (1996) found that offspring affection rates were higher in families with two compared to one dyslexic parent (76 % vs.57 %, respectively).[16] Thompson et al. found that the family risk of dyslexia is a strong predictor of literacy outcome.[17] Schulte-Körne et al observed that inheritability of word reading (50–60%), as well as of spelling (50–70%).[18] Contrary to these findings Pennington et al observed that parent education and parent reading history had no effect on reading skills.[19]

Table 3. Characteristics of Children with Dyslexia

Characteristics	Number	Per cent	95% CI
Gender			
Girls	24	32%	21.7% - 43.8%
Boys	51	68%	56.2% - 78.3%
Family history of dyslexia			
No	69	90.2%	83.4% -97%
Yes	6	8%	3% -16.6%
Family members affected with of dyslexia			
Not affected	69	92%	83.4% -97%
Father	1	1.3%	0 -7.2%
Mother	2	2.7%	0.3% -9.3%
Sibling	3	4.9%	0.8% -11.3%
Type of dyslexia			
Primary	58	77.3%	66.2% -86.2%
Secondary	17	22.7%	13.8% -33.8%
Function affected			
Reading	58	77.3%	8.2% -28.1%
Hearing	11	14.7%	7.6% -24.7%
Writing	6	8%	3% -16.6%
School attendance			
Regular	58	77.3%	66.2% -86.2%
Irregular	17	22.7%	13.8% -33.8%

In 77% children it was primary dyslexia and 23 % had secondary or developmental dyslexia. This proporton is similar to the incidence of developmental dyslexia, as observed by Shaywitz and Shaywitz, 2005.[20] Developmental dyslexia is multifactorial disorders with respect to genetic, environmental and cognitive etiology; all include deficits in phonological processing.[21] Out of all dyslexic children 77% had reading problem, 14.7% hearing problem and 8% had writing problem.(Table 3) Dyslexia tends to co-occur with other disorders, including specific language impairment, speech sound disorder, and attention-deficit/hyperactivity disorder. As observed from table 4 the attendance in school was poor amongst those with secondary type of dyslexia (35%) as compared to primary type of dyslexia(19%). Those with hearing problem had poor school attendance (36.4%), followed by those with reading problem (20%) and writing problem (16.7%). This suggests that early identification and intervention to address this issue of learning problem in dyslexia will help in correcting the academic and social problem in these children.

Table 4. Effect of dyslexia on the children's regularity in attending school

School attendance	Irregular (17)	Regular (58)	Statistical test
Children with Dyslexia (75)	17 (22.7%)	58 (77.3%)	
Children without Dyslexia (76)	0	76(100%)	
Type of Dyslexia			
Primary (58)	11(19.0%)	47 (81.0%)	Chi-square =1.18, p=0.09
Secondary/ Trauma (17)	6(35.3%)	11(64.7%)	
Function affected			
Hearing(11)	4(36.4%)	7(63.6%)	
Writing(6)	1(16.7%)	5(83.3%)	
Reading (58)	12(20.7%)	46(79.3%)	

Acknowledgement: Present study is short term student ICMR project.

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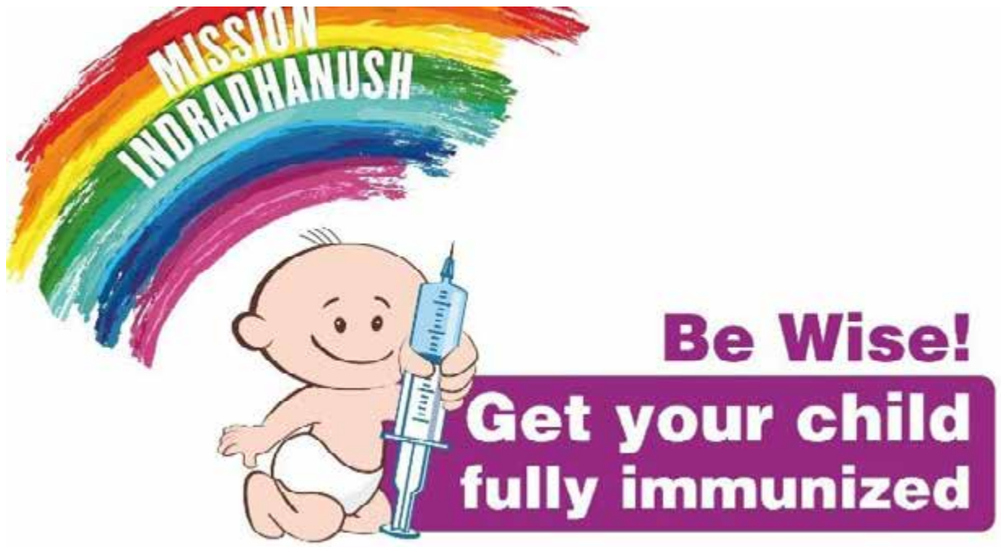

SHORT COMMUNICATION

Awareness of Flu in a Rural Population of Jammu

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Abstract

Background: Flu has been a major cause of concern in recent times. It creates fear and panic among common people. Government of India has been making concerted efforts to increase the awareness regarding flu through various mass media approaches. The idea is to empower the population to take preventive actions and ensure appropriate action if it strikes. Keeping this in mind, the present study was designed to assess awareness of general public regarding various aspects of flu in a rural population of Jammu.

Methods: 393 participants aged 15 years and above were interviewed using pre-tested semi-structured questionnaire. The interviewers collected information about various aspects of flu by subjecting the respondents to an array of closed and open ended questions and recorded relevant socio-demographic characteristics of the population.

Results: Study population comprised of 186 males and 207 females. 40.9%respondents were in the age group 21-40 years. Nearly half (47.3%) of the respondents had studied Higher Secondary Certificate (HSC) and above. Majority of respondents (93.6%) had heard of flu. Mass media was credited as a source of information by 72.3% respondents. Majority (80.4%) was aware of Flu presenting as fever. Cough and cold were correctly reported as presenting symptoms by almost two thirds (65.4%) of respondents. 52.1% knew correct route of transmission. Hand washing and use of face mask as a mode of prevention was known to15.4% and 55.4% respectively. 5.4% respondents were unaware of any preventive measures. Only about half of the respondents were aware of diagnostic tests, treatment and vaccine for flu.

Conclusion: Persistent efforts are needed to enhance awareness about various aspects of Flu. Mass media initiatives need to be supplemented by focused health education sessions regarding prevention and management of flu among general public.

Key Word: Awareness H1N1, Flu

Introduction

Flu has been a major cause of concern in recent times & has created fear across various sections of the society in Jammu & elsewhere. Flu closely mimics common cold and is caused by many strains. Swine flu is an acute respiratory disease, caused by a strain of the influenza type A virus known as H1N1.[1]Influenza is one of the oldest and most common disease known to man. Swine influenza was first proposed to be a disease related to human influenza during the 1918 flu pandemic. Also known as Spanish flu, it caused approximately 50 million deaths and was considered to be the worst disease outbreak in the last century.[2]

More recently, H1N1 virus of swine origin emerged in Mexico during spring of 2009 and was given name Pandemic influenza A(H1N1) 2009 virus. On 11 June 2009, the World Health Organization (WHO) raised its pandemic alert to the highest level, meaning that H1N1 flu had spread to more than two continents.[1]Till June 2010, it caused over 18,172 deaths in more than 214 countries.[3]Most illnesses, especially the severe ones and deaths had occurred among healthy young adults. The symptoms of the swine flu are similar to those of other types of flu, such as fever, cough, sore throat, body aches, headache, chills and fatigue. Vaccines are available for different kinds of flu. Prevailing awareness, attitude and practices (KAP) of people regarding swine flu is a cornerstone in prevention of virus spread and outbreak.[4]

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Received:02/11/2015, Accepted:15/02/2016

Globally India is ranked 3rd among the most affected countries for cases and deaths due to swine flu. The highest numbers of cases and deaths were reported in 2009(27,236) and 2011(1,763) respectively.[5]

The Government has been trying hard to provide relevant information to people on flu. Electronic media has played a major role in educating people by inviting doctors and experts to provide information about the deadly virus.[6]The investigators, therefore undertook the present study to assess awareness regarding flu of the rural population in field practice area of Department of Community Medicine. the present study was designed to assess awareness of general public regarding various aspects of flu in a rural population of Jammu.

Materials and Methods

The present cross-sectional study was carried out in the month of May and June 2015in the field practice area of Department of Community Medicine, Govt. Medical College Jammu after obtaining approval from Institutional Ethics Committee, Govt. Medical College Jammu. The health services in field practice area of the Department of Community Medicine are rendered through a network of institutions including one CHC, 8 PHCs and 26 Sub-centres. The block is divided into 8 administrative zones. The study was conducted in the Miran Sahib Zone. An updated list of villages falling in the selected zone was prepared and one village selected randomly. A total of 393 participants aged 15 years and above were interviewed after obtaining informed consent. The participants were interviewed in person by using pre-tested semi-structured questionnaire which was prepared in English. The questionnaire was translated to colloquial and back translated to see if it is correctly understood by the participants. The interviewer collected information on relevant socio-demographic characteristics and posed closed and open ended questions aimed at assessing awareness about various aspects of Flu.

Results

The characteristics of the study population are presented below in Table 1.

As evident, the sample comprised of more females (M:F ratio, 0.89:1). Nearly two fifths of the participants (40.9%) were in 21-40 years. 47.3% had studied Higher Secondary Certificate (HSC) and above.

Majority of respondents (93.6%) had heard of flu and therefore further questioning was limited to them. Nearly three fourths of them i.e., (72.3%) reported that they got information regarding flu from mass media (TV, Radio, newspaper), while 19.0% subjects got the information from friends and relatives. Only 8.7% heard about it from health workers (Fig 1).

Table 1. Socio-demographic distribution of population.

Socio-demographic variable	Frequency (N=393)	Percentage
Gender		
Male	186	47.4
Female	207	52.6
Age		
15-20	74	18.8
21-40	161	40.9
41-60	112	28.4
61 and above	46	11.7
Education status		
Illiterate	33	08.3
Primary	57	14.5
Middle	63	16.0
Secondary	54	13.7
Higher secondary certificate and above	186	47.3

Nearly two fifths (80.4%) of respondents correctly reported common symptom of flu as fever while cough and cold as presenting symptoms were known to 65.4% of the respondents. A higher percentage (69.2%) knew breathlessness as presenting symptom. Nearly one in three (36.5%) reported headache. Nearly half of respondents (52.1%) knew about correct routes of transmission (Table 2).

Hand washing and avoidance of crowded places as a precautionary measure was known to only 15.4% and 11.6% respondents. 55.4% knew that using face mask prevents from flu. Only 5.4% respondents were unaware of any preventive measures. Availability of treatment and vaccine against flu were known to nearly half of the respondents (50.8% and 54.0% respectively). Two in five respondents (39.9%) were aware that test to detect flu is available (Table 3).

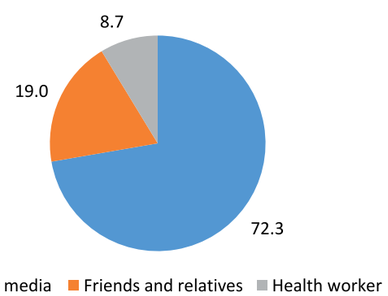

Figure 1. Source of information regarding swine flu

Table 2. Awareness regarding symptoms and route of transmission of flu.

Knowledge regarding	Frequency (N=368)	Percentage
Symptoms		
Fever	296	80.4
Bodyache	176	47.7
Cough and cold	241	65.4
Breathlessness	255	69.2
Headache	135	36.5
Vomiting	64	17.3
Loose stools	43	11.6
Route of transmission		
Inhalation	192	52.1
House flies and mosquitoes	40	10.8
Food and water	43	11.6
Eating pork	73	19.8
Don't know	20	05.4

Table 3. Reported knowledge regarding prevention, diagnosis and management of flu.

Flu	Frequency	Percentage
Prevention		
Face mask	204	55.43
Avoid crowed places	43	11.68
Killing pigs	30	08.15
Hand washing	57	15.48
Ayurvedic treatment	14	03.80
Not aware	20	05.43
Treatment availability		
Yes	187	50.8
No	63	17.1
Don't know	118	32.1
Vaccine availability		
Yes	199	54.1
No	63	17.1
Don't know	106	28.8
Diagnostic Test availability		
Yes	147	39.9
No	172	46.7
Don't know	49	13.3

Discussion

Flu occurrence had led to alarming situation in India since 2009 although the numbers afflicted and reported in Jammu & Kashmir has been low. Less number of cases were reported in 2015 (56) as compared to 2009 (96). But the number of the deaths reported increased from 2 to 6 including death of one of the doctor who was involved in taking care of patients suffering from Swine Flu.[5] Very few epidemiological studies on flu have been conducted in India and this is the first study of its kind among adults in the state of J&K. We reviewed studies conducted by various researchers from other states (Kerala,[7] Punjab,[8] Gujarat[9] and Uttar Pradesh[10]) of India and made an attempt to understand a broader picture of the epidemiological situation regarding various aspects of flu and its management.

A higher proportion of respondents in our study correctly reported common symptom of flu as compared to the figures reported by investigators from Punjab.[8] Socio-demographic differentials and intensity of awareness campaigns at different places might also account for the observed differences. Discrepant figures reported by other workers with regards to routes of transmission can be explained similarly.[8-11.]

Figures reported by respondents on the preventative aspects however reveal disturbingly low figures for Jammu. These figures suggest that a large room exists for improving awareness about various components of Flu particularly with respect to removal of misconceptions regarding management of Flu.

Conclusions and recommendations:

In the prevention of airborne infectious diseases, awareness regarding routes of transmission is critical, especially for diseases that have potential to cause large-scale epidemics. Higher literacy does not by itself ensure higher health and disease awareness. Specific health education sessions focusing on critical aspects of flu prevention and control are needed to create awareness among general public and health workers. Role of mass media need to be sublimed.

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Courtesy: World Health Organization

SHORT COMMUNICATION

Trend of Dengue at a Tertiary Care Hospital in South Rajasthan (2011-2013): A Retrospective Analysis

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Abstract

Introduction: Dengue is a viral disease caused by an arbovirus of genus flavivirus. In India several dengue epidemics have been took place. In absence of any study from Southern Rajasthan, present study is focussing light on trend of disease in this area.

Method: This is a retrospective analysis of all Dengue cases during year 2011, 2012 and 2013. IgM capture ELISA positive cases were considered Dengue positive.

Results: Male to female sex ratio of cases was1.5:1. Maximum cases were from 16 to 45 Age Group. Cases begin to increase form August and peaks during September, October and November months.

Discussion: Gradual increase in toll of dengue cases every year indicates ineffective control measures in the area and is a threat for coming years. Association of post-monsoon season (September, October and November) and dengue is clearly evident. So the dengue control measures should come into full action towards the end of monsoon season.

Key words: Dengue, Arbovirus, Southern Rajasthan, IgM capture ELISA, Post-monsoon season.

Introduction

Dengue is a viral disease caused by an arbovirus of genus flavivirus, of which four serotypes namely DEN-1, DEN-2, DEN-3 and DEN-4 exist. Aedes aegypti and Aedes albopictus are mainly responsible for dengue transmission. Dengue is endemic in South-East Asia, Western Pacific regions, Eastern Mediterranean, Americas and Africa. Globally approximately 2.5 billion people are at risk of the disease.[1] In India several dengue epidemics have been took place. Some of them are from Calcutta (1963), Vishkapattanam (1964), Asansole of West Bengal, Vellore (1968), Ajmer (1969), Kanpur (1969), Delhi (1970), Jalore of Rajasthan (1985) and Delhi (1996).[2]In absence of any study from Southern Rajasthan, present study is focussing light on trend of disease in this area so preventive measures can be taken before onset of epidemic in coming years.

Methods

This is a retrospective analysis of all Dengue cases presented to MB Hospital, Udiapur a tertiary care Hospital, during year 2011, 2012 and 2013. All suspected dengue cases were subjected to rapid diagnostic kit test. Rapid diagnostic kit test positive cases were further subjected to IgM capture ELISA in Microbiology Department. ELISA positive cases were considered dengue positive. All positive cases were reported to Community Medicine Department, from where report was send to Chief Medical &Health Officer, Udaipur on weekly basis. After taking permission data was obtained from the database of Community Medicine Department and was analysed using SPSS.

Results

Total 280 cases were reported over 3 year period with male to female sex ratio of 1.5:1. Table 1 shows increasing number of cases over years.

Table 1. Year and Sex wise distribution of cases

Year	Male Case (%)	Female Case (%)	Sex Ratio	Total (%)
2011	45 (57.69)	33 (42.31)	1.36	78 (100)
2012	56 (62.92)	33 (37.08)	1.7	89 (100)
2013	67 (59.29)	46 (40.71)	1.46	113 (100)

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Received: 01/04/2015, Accepted: 09/09/2015

Table 2 shows maximum cases were from 16 to 45 Age Group while minimum cases are from below 5 year children group.

Table 2. Age Group and Year wise distribution of cases

Age Group	2011 Case (%)	2012 Case (%)	2013 Case (%)
Below 5 Year	1 (1.28)	1 (1.12)	1 (0.88)
6 to 15 year	8 (10.26)	20 (22.47)	4 (3.54)
16 to 45 Year	57 (73.08)	57 (64.04)	84 (74.34)
Above 45 year	12 (15.38)	11 (12.36)	24 (21.24)
Total	**78 (100)**	**89 (100)**	**113 (100)**

In both urban and rural areas maximum number of cases were from 16 to 45 year age group but in below 15 year age groupa significantly higher proportion of cases were from rural area (Table 3).

Table 3. Age Group and area wise distribution of cases

Age Group	Urban Case (%)	Rural Case (%)
Below 5 Years	0 (0)	3 (1.52)
6 to 15 Years	4 (4.88)	28 (14.14)
16 to 45 Years	68 (82.93)	130 (65.66)
Above 45 Years	10 (12.2)	37 (18.69)
Total	82 (100)	198 (100)

p = 0.021

Cases begin to increase form August and peaks during September, October and November months. (figure 1)

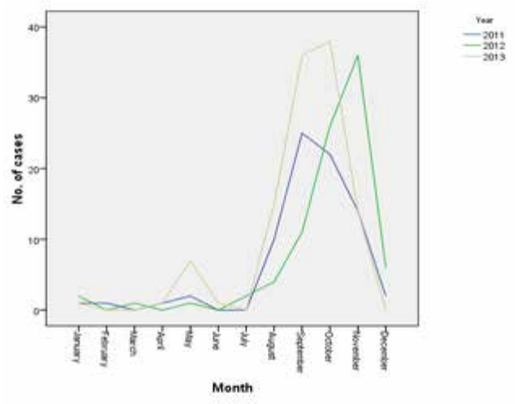

Figure 1. Seasonal trend of dengue cases

Discussion

In present study males were affected more than females as evident in several other studies.[3-8] Majority of patients were from 16-45 year age group and below 5 year age group represented minimum cases. This finding is also supported by several other studies.[3-6,8] Male preponderance and maximum involvement of 16-45 year age group indicates transmission of infection at work sites. Gradual increase in toll of dengue cases every year indicates ineffective control measures in the area and is a threat for coming years. Greater proportion of cases below 15 year of age from rural area may be due to more outdoor activity by adolescents in rural areas. Months of June, July and August comprise rainy season in study area. Association of post-monsoon season (September, October and November) and dengue is clearly evident in the study and further supported by several other studies.[5,7,9,10] So the dengue control measures should come into full action towards the end of monsoon season.

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SHORT COMMUNICATION

Prevalence of Underweight and its Predictors Among Underfive Children in an Urbanized Village of East Delhi

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Abstract

Background: Delhi's per-capita income grew at the rate of seven percent per annum during the seven year period 2005-06 to 2012-13, enabling the capital state to become the richest in India. Still the proportion of underweight among under-five children in urban slum of Delhi still was high (35.3 %) as reported by National Family Health Survey (NFHS) 2005-2006. The present study was conducted to estimate the prevalence and associated risk factors of underweight among 0-5 year children in an urbanized village of east Delhi Methods: The present cross sectional, community based study was conducted in Ghazipur, an urbanized village of East Delhi where 422 children aged 0-5 years were studied using a random sampling method. Bivariate and multivariate analysis was done to find out the risk factors associated with underweight status. Results: In all, 422 children were studied and the prevalence of underweight as well as severe underweight was found to be very high i.e. 39.34% and 12.09% respectively. In bivariate analysis, the risk factors found associated with underweight were a higher birth order, lesser previous birth interval, lower maternal education, lower occupation level of father and history of diarrhea in the last two weeks, whereas for severely underweight children, lower occupation level of father was found to be a significant risk factor. Lower level of occupation of father and non-availment of the supplementary nutrition benefit from anganwadi centres were independent risk factors of severe underweight. Conclusions: Delhi, even being the capital state of India and having the highest per capita income in the country has certain geographical pockets where undernutrition among children is very high and most of the risk factors are modifiable.

Introduction

Malnutrition is the underlying contributing factor in about 45% of all child deaths, making children more vulnerable to severe diseases.[1] As undernutrition among underfive children is a public health problem in India, it seems unlikely that India will meet the target 4 of Millenium Development Goal which aims at reducing the under five mortality rate by two-thirds between 1990 and 2015.[2]

Delhi's per-capita income grew at the rate of seven percent per annum during the seven year period 2005-06 to 2012-13, enabling the capital state to become the richest in India.[3] Still the proportion of underweight among under-five children in urban slum of Delhi still is high (35.3 %) as reported by National Family Health Survey (NFHS) 2005-06. [4]

Urbanized villages are a unique characteristic of Delhi and nearly half of the populations of these are immigrants from surrounding states. Migrants constitute 20% of the population of Delhi, taking into account 20 years duration of migration.[5] These urbanized villages, even though do not have agriculture as their main occupation, but retain many of the cultural characteristics of a rural North India. There is no recent published data on the burden of undernutirion among under five children in these urbanized villages of Delhi. Local evidences and strategies are needed to combat under nutrition among children and hence this study was planned with the following objectives. A) To estimate the prevalence of underweight among 0-5 year children in an urbanized village of East Delhi. B) To find out the associated risk factors of underweight among the under five children.

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Received: 31/05/2015, Accepted: 28/11/2015

Material and methods

The present cross sectional, community based study was conducted in Ghazipur, an urbanized village of East Delhi In case of more than one under five children in the family, the youngest child was included in the study. Children less than five years of age on the date of data collection were included and those with gross physical and mental impairment were excluded.

Weight measurement was recorded nearest to 0.1 kg using a zero-adjusted digital weighing scale with minimum clothing on the child.[6] Age was assessed from the birth certificate or vaccination card of the child. If not available then local events calendar was used. In cases where only month and year could be assessed, the day of the month was randomly imputed by WHO Anthro software used for calculation of weight for age z scores. Weight for age z (WAZ) score cut off < -2 was considered as underweight and for WAZ< -3 as severe underweight according to the WHO criteria.[7]

Based on an estimated national prevalence of underweight in under fives as 43% [8] and taking type I error as 0.05 and an allowable error as 5%,and attrition rate of 10%, the sample size calculated was 415 (Epi Info version 6 for Windows). Considering the proportion of under-five children as 13%, 2900 individuals were to be surveyed. The average family size was taken as five and hence 600 families were surveyed by systematic random sampling.

The data was collected by interviewing the parent (preferably mother) after obtaining the informed consent. Information was collected on socio-demographic variables, possible risk factors of under nutrition and anthropometric measurements, using a pre-designed and pre-tested questionnaire.

The study was approved by the Institutional ethics committee and informed written consent was taken from either parent of the child..

WHO Anthro software (version 3.2.2, January 2011) was used for calculating weight-for-age z (WAZ) scores based on the new WHO child growth standards 2006.[9] Statistical analysis was conducted in R statistical software (version 3.15.0) [10] and epicalc package[11] was used for analysis. Chi square test was applied for comparing proportions. One way ANOVA was applied to compare the mean WAZ scores across the five age groups of one year each. Risk factors whose p value was less than 0.25 in the bivariate analysis were included in stepwise multiple logistic regression. All p values less than 0.05 were considered as statistically significant.

Results

In the present study, 422 children aged 0-5 years were studied. Their overall mean±SD age was 24.54 ± 15.58 months and 190 (45.02%) were females. Around half i.e. 219 (51.90%) of the fathers were involved in semiskilled or unskilled occupations, 200 (47.39%) in skilled or higher occupations and 3 (0.71%) were unemployed and the median monthly family income was Indian National Rupee (INR) 9000 (Range: INR. 4000 to 50,000). Around half (49.52%%) of the families have immigrated in the area less than five years prior to the conduct of the study.

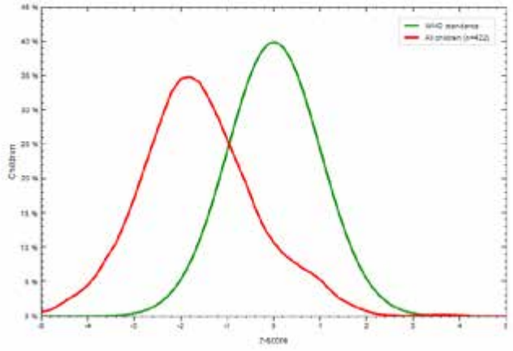

Figure1. Distribution of weight for age z scores in the study sample with respect to the WHO standards

Prevalence of underweight (WAZ<2) and severe underweight (WAZ<3) was 39.34% (95% CI: 34.68 – 44.19) and 12.09% (95% CI: 9.20-15.67) respectively. Figure 1 shows the distribution of weight for age z scores in the study sample with respect to the WHO standards.

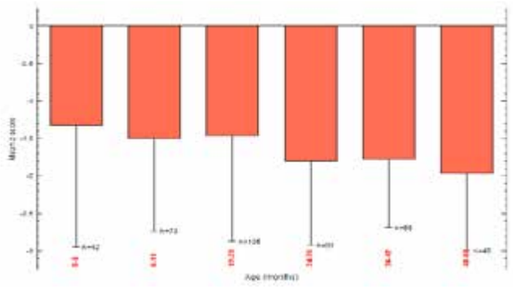

Figure 2. Mean weight for age z scores with respect to age groups of underfive children

Figure 2 shows the mean weight for age z scores with respect to age groups of underfive children. A significant increase in the mean WAZ scores was seen across the five age groups (One way ANOVA F value=2.656 , d.f. 4, p=0.033).

Table 1 shows the distribution of undeweight and severe underweight among the children 0-5 years with respect to their age and sex. Underweight status was not significantly associated with age group (χ^2= 4.40, 4 d.f., p=0.354 and sex (χ^2=0, 1 d.f., p= 0.958). It was also found that there was no statistically significant association of severe underweight status with age group (χ^2=6.199, 4 d.f., p= 0.185) and sex (χ^2=0.1, 1 d.f., p= 0.755) of the studied children.

Table 1. Distribution of underweight and severe undeweight children among the underfives studied with respect to their age and sex.

Characteristic	Underweight (WAZ<-2) n(%)	Severe undeweight (WAZ<-3) n(%)	Total n(%)
Sex			
Male	91 (39.22)	27 (11.64)	232 (54.98)
Female	75 (39.47)	24 (12.63)	190 (45.02)
Age group (months)			
<12	40 (34.78)	10 (8.70)	115 (27.3)
12-23	41 (39.04)	13 (12.38)	105 (24.9)
24-35	37 (40.66)	17 (18.68)	91 (21.6)
36-47	24 (36.92)	5 (7.69)	65 (15.4)
48-60	24 (52.17)	6 (13.04)	46 (10.9)
Total	**166 (39.34)**	**51 (12.08)**	**422 (100.00)**

In bivariate analysis, the risk factors found associated with underweight were a birth order more than three, previous birth interval less than two years, lower maternal education, lower occupation level of father and history of diarrhea in the last two weeks, whereas for severely underweight children, lower occupation level of father was found to be a significant risk factor. (Table 2)

Stepwise multivariate logistic regression was applied on the risk factors for which p<0.25 was obtained by bivariate analysis. It revealed that underweight children were more likely to have birth order more than three (AOR =2.55 , 95% CI 1.27-5.09), history of diarrhea in the past two weeks (AOR = 1.68, 95% CI:1.05-2.7) and lower level of fathers occupation (AOR = 1.55, 95% CI 1.03-2.32) whereas severely underweight children were more likely to have a lower level of fathers occupation (AOR = 2.62 , 95% CI 1.27-5.41) and be not taking food regularly from the anganwadi centres (AOR = 2.98 , 95% CI 1.03-8.66).

Discussion

A cross sectional study was conducted among 422 children 0-5 years of age in an urbanized village of Delhi to find out the prevalence and risk factors of underweight.

With respect to the WHO standards, severity of malnutrition was found to be very high in the present study [12].

Similar results have been shown by other studies from India [13-15].

It was found in the present study that the whole anthropometric curve was displaced to the left in comparison to the WHO standards. This means that all individuals, not only those below a given cut off point are affected and hence interventions may consequently have to be directed at the whole population[6].

A decrease in WAZ scores with increasing age has also been reported by certain studies[13] and another study has reported the highest proportion of underweight among children aged 48-60 months, similar to the present study[16]. There may be a possibility of a cumulative deteriorating effect of poor nutrition and poor environmental factors which make the child unable to catch up with normal growth pattern and thus showing declining WAZ scores with age.

As in the present study, no sex difference has been reported for the risk of underweight by other studies also [14, 16] whereas some other studies have reported a higher risk of underweight among female children. [13, 18]

Underweight was found to be associated with maternal education by bivariate analysis in the present study and many studies across the world have reported similar findings. [14, 17]Maternal education makes the mother more autonomous in decision making and knowledgeable regarding feeding practices of the child, thus preventing the development of underweight.

Father's occupation as an unskilled worker or being unemployed emerged as an independent risk factor for underweight among the children and this finding is corroborated by other studies also. [17, 19, 20]

Mahgoub SE et al have reported that children in single-parent households suffered from underweight to a significantly higher level than children brought about by both parents. [21] It is possible that father's occupation may have an effect on the type of parenting which in turn can have an impact on the nutritional status of the child.

The present study did not find an association between underweight/severe underweight and the economic status among the studied children.

Subramanyam MA et al. found no significant association of economic growth in India and risk of child undernutrition after studying the data from the three National family health surveys conducted in India.[22]Other studies have also reported similar findings.[23, 24] where as many other studies have found an association between underweight and socioeconomic status of the family.[15, 17]

Higher birth order has been reported to be a risk factor

Table 2. Associated risk factors of underweight and severe underweight among children 0-5 years.

Risk factor	**Underweight n(%)**	OR (95% CI)	Severe underweight n(%)	OR (95% CI)	Total n(%)
Maternal education					
< high school	131 (42.1)	1.58 (0.98-2.58)	40 (12.9)	1.34 (0.64-3.01)	311 (73.70)
>= high school	35 (31.5)		11 (9.9)		111 (26.30)
Father's occupation level					
Less than skilled	99 (43.2)	1.6# (1.06-2.42)	36 (16.2)	2.38#(1.22-4.85)	222 (52.61)
Skilled and above	67 (33.5)		15 (7.5)		200 (47.39)
Monthly family income (INR)					
<= 9000	92 (43.2)	1.39(0.92-2.00)	29 (13.6)	1.34 (0.71-2.54)	213 (50.47)
> 9000	74 (35.4)		22 (10.5)		209 (49.53)
Birth order					
>3	23 (60.75)	2.58# (1.24-5.5)	13 (10.3)	0.78 (0.37-1.57)	38 (9.00)
<=3	143 (37.2)		38 (12.8)		384 (91.00)
Previous birth interval (years)*					
<= 2	24 (61.5	2.53# (1.2-5.48)	9 (23.1)	2.45 (0.92-6.09)	39 (14.50)
> 2	89 (38.7)		25 (10.9)		230 (85.50)
Initiation of breastfeeding (hours)					
>= 2	99 (42.5)	1.34 (0.89-2.04)	30 (12.9)	1.18 (0.63-2.26)	233 (55.21)
<2	67 (35.4)		21 (11.1)		189 (44.79)
Imunization status					
Incomplete/None for age	64 (40.0)	1.05 (0.68-1.59)	16 (10.0)	0.72 (0.36-1.4)	160 (37.91)
Complete for age	102 (38.9)		35 (13.4)		262 (62.09)
History of diarrhea in last two weeks					
Yes	47 (50.5)	1.8# (1.12-2.95)	12 (12.9)	1.1 (0.50-2.27)	93 (22.04)
No	119 (36.2)		39 (11.9)		329 (77.96)
Receiving supplementary nutrition from AWC					
Occasionaly /never	138 (39.7)	1.08 (0.63-1.88)	47 (13.5)	2.73 (0.95-0.77)	128 (30.33)
Almost daily	28 (37.8)		4 (5.4)		348 (82.46)

*As previous birth interval was not applicable for a birth order of one, those children were excluded from this analysis and hence n=269 for this variable. # Significant at p < 0.05. OR – Odds Ratio

for underweight status of children by other studies also. [19, 25] With children of increasing birth orders, it is probable that the resources for child care gets divided and also the younger children are cared by their elder siblings in the family, which in turn may lead to their poor nutritional status.

In accordance with the present study finding, association of a shorter previous birth interval with underweight among children has been reported by other studies also. [17, 26]

Due to shorter time duration between two children, it may become difficult for the mother to pay undivided attention towards both the children with its repercussions on their nutritional status.

Diarrhea as a risk factor for underweight among children has been reported by many cross sectional as well as longitudinal studies throughout the world. [16, 24] Infection and malnutrition form a vicious cycle with one leading to another.

Not receiving regular supplementary nutrition from the anganwadi centere was found to be an independent risk

factor for severe underweight but not for underweight in the present study. This finding was similar to that of a study done by Merta BR and they have pointed that ICDS intervention improves the status of severely underweight children but it does not have a significant impact on those moderately underweight because the design of intervention in the present form where the child who reaches the moderately underweight level is considered as improved, whereby all extra services are stopped. They also suggest that the ICDS services should be extended till the child reaches the normal weight.[27]

Similar finding have been reported by other studies also. [28, 29]

Conclusion

Delhi, even being the capital state of India and having the highest per capita income in the country has certain geographical pockets where undernutrition among children is very high. Even adjusting for income, father's occupation was associated with underweight, which hints that there may be something related to parenting rather than economic status which plays a role in nutritional status of children. Even availment of supplementary feeding benefit from anganwadi centres was found to be protective against severe underweight which in encouraging from the ICDS point of view.

Source of funding: Intra Mural Research Grant from the institute.

Conflict of interest: Nil

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CASE REPORT

Giant Intrapartum Vulvar Haematoma: A Case Report

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Introduction

The uterus, vagina and vulva during pregnancy have rich vascular supplies that are at risk of injury during the birth process, which may result in formation of a hematoma. Incidence reported is 1 or 2 per 1000 deliveries[1]. Spontaneous vulvar haematomas during labour are rare.

Case Report

A 23-year-old, primigravida female at 41+5 weeks' gestation, with history of mishandled labour at home, presented to the Hospital with pain in abdomen and genital region, bleeding & large swelling in vulvar region. The patient was conscious, oriented and febrile. General examination revealed pallor, tachycardia and dehydration (BP=100/60 mm Hg, PR=114 per min, temp=99.50F). Per abdomen uterus was term size, irritable and fetal heart sound was not localized. On local examination, a right-sided vulvar bluish-black cystic swelling (15 x 10 cm2) was seen. Per vaginally, Os was 8-9 cm dilated, cervix was 90% effaced, membrane was absent, and station at +2 and pelvis seemed adequate. The patient was rehydrated with intravenous fluids; antibiotics were started and transferred to operation theatre for exploration and evacuation of the haematoma. In operation theatre, the vulvar hematoma was opened at the most dependent site & exploration was done under spinal anaesthesia. Around 600 ml of clots were removed. After evacuating the hematoma, a female baby was delivered by forceps vaginal delivery with right mediolateral episiotomy with an Apgar score of 0/10 and weight of 2.7 kg. The pelvis was examined abdominally and no pelvic haematomas were identified. The vulvar haematoma was explored for extension. A further 200ml of blood was evacuated from the upper anterior base, the bleeding points on the base were identified and haemostasis was achieved by applying several interrupted sutures. Vulva and episiotomy were then repaired in layers. A small corrugate drain was left in the base of the hematoma and the incision was closed with interrupted mattress sutures. There was a marked reduction in the size of the vulva. The total blood loss from the vulvar haematoma was estimated as 1000ml. Post-operative recovery was uneventful. The drain was removed after 24 hours and there was no further collection noted. The patient was discharged in good health with hemoglobin of 9.3 gm/dl on post-operative day 5 with oral antibiotics, analgesics and iron tablets. The patient was followed up six weeks postnatally and good healing with no evidence of infection was found.

Discussion

Non obstetric injuries are an uncommon cause of vulvar with an incidence of 3.7%[2]. Trauma has always been considered as the major reason behind it however in lack of evidence spontaneous vessel rupture should be taken into account.

Due to the reflex adduction of thighs in case of impending trauma, perineal injury and therefore vulvar hematoma due to trauma is rare. However it is susceptible to frontal injuries in face of its rich vascular supply and anatomical location, mostly due to compression of soft tissue of vulva between the object and the underlying pubic bone. This may lead to lacerations and hematoma formation.

During pregnancy there is a physiological increase in the vascularity, venous insufficiency and altered coagulation which can accentuate hematoma formation. Howsoever trivial it may seem but vulvar hematoma presenting during labour may present with rupture and obstructed labour.

Incidence of vulvar hematoma outside pregnancy is not known with very few literature reported. There are no specific guidelines for the management. Benrubi et al in their study concluded that patients with a longitudinal and transverse diameter product of>= 15 when managed conservatively had a longer hospital stay[3]. There was less infection and tissue necrosis if the clots were evacuated. Kanai et al treated hematomas with longitudinal diameter > 5 cm surgically and there were no sequelae[4]

It was observed by Propst et al in a retrospective study that, if the hematoma is acute but non expanding then conservative management is often successful[5]. Puerperal and non-peurperal hematoma can be successfully managed

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Received: 01/11/2015, Accepted: 02/02/2016

by selective arterial embolization of the guilty artery [6,7].

Very few case reports have been published referring to management of vulvular hematoma. In one case report there was rupture of a rapidly expanding spontaneous hematoma at the time of delivery [8] and in another case report there was an uneventful delivery few weeks after the drainage of hematoma at 35 weeks [9].

In the present study the hematoma was evacuated under spinal anaesthesia and then the female baby was delivered by forcep vaginal delivery. Later on the haemostasis was achieved and patient was discharged on 5th post operative day.

Conclusion

Though reported rarely, vulvar haematoma should be managed aggressively taking into consideration the maternal and foetal wellbeing. For patients presenting in labour, the decision for caesarean or normal delivery should be taken considering chances of wound disruption. In near future evidence based management will have a critical role in the management based on present studies till further studies are done.

Fig.1. Vulval haematoma: pre operative

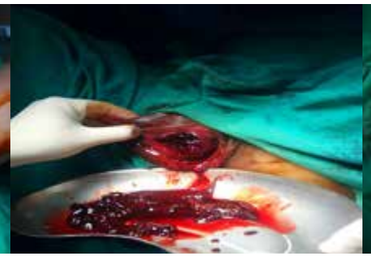

Fig.2. Vulval haematoma: intra operative

Fig.3. Vulval haematoma: post operative

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Newer Trends in Nursing

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Introduction

Healthcare providers are on the frontline of immense innovation and growth. The advancement in technology has also lead to massive change in medical field as well as in nursing fields. Upsurge of newer trends in nursing has been seen since the last decades. Scientific logics and evidence based practices has become the core of nursing care.

Changing demographics

Traditionally the nursing profession was filled with middle aged Caucasian females however, over the past two decades these demographics have began to shift.[1]Recent nurse graduates are more ethnically diverse and younger more men are entering the profession than before prior to 2001, only 6% of nursing graduates were male compared with 10% today. [2] The new generation is not confined only to the conventional clinical practices but also interested in the non-clinical nursing carriers such as informatics, health policy, education and hospital administration.

Non- nurse practitioner

An emerging trend in the field of nursing is the rise of colloquially termed (non-nurse) nurse practitioners. (Non nurse) nurse practitioners are individual who becomes a nurse practitioner without previously working as a nurse. [3]These individuals major in nursing as an undergraduate and then attend nurse practitioner school upon graduation.

Evidence based practice

EBP is a problem solving approach to clinical decision making within a health care organisation. It integrates the best available scientific evidence with the best available experiential (patient and practitioner.EBP consider internal and external influences on practice and encourages critical thinking in the judicious application of such evidence to the care of individual patients, a patient population or a system.[4]

The 3 phases of EBP

PRACTICE-Develop and refine your question and your team.

EVIDENCE- Search, appraise, summarise and synthesise internal and external sources of evidence.

TRANSLATION- Create and implement an action plan evaluate outcome disseminate findings.

Forensic nursing

Forensic nursing is an innovative and evolving nursing speciality that seeks to address health care issues that have a medico legal component. These nurses can again further pursue specialization and work as:-

Clinical forensic nurse- Care for the survival of crimes related injury and deaths occur within the healthcare institution.

Forensic nurse investigator- Employed in a medical examiners, jurisdiction and investigates the crime scene and circumstances of death.

Other specialists are:-

Forensic nurse examiner, Forensic correctional, institutional or custodial nurse, Legal nurse consultant, Nurse Attorney, Nurse coroner.[2]

Nurse practitioner

A nurse practitioner is advanced practice registered nurses who provide health care service similar to those of physician. They may choose specialised in family, paediatric or geriatric nursing. Common duties includes diagnosing and treating illness and injuries , prescribing medications and educating patients, may also order diagnostic tests and analyse the results. Basic education – the nurse practitioner will need to earn a degree to qualify for necessary graduate study. Registered nurses with the bachelor degree who are interested in becoming nurse practitioner can qualify for the position by earning a master's or doctorial degree in nursing.

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Received: 23/05/2016, Accepted: 04/06/2016

Sky rocketing salaries

Over the past decades nurse practitioner salaries have risen much faster than inflation. Employment of registered nurses is projected to grow 19% from 2012 to 2022. [1]Psychiatric nurse practitioner earns the highest annual income followed closely by neonatal nurse practitioner.

High job demand

Demands for nurse practitioner job continue to soar.[3]Most registered nurses work as a part of a team with physician and other health care specialist. Some registered nurses overseas nurse licensed practical nurses, nursing assistant and home health aides. Many possibilities for working with specific patient group exist. Some examples are:- Addiction nurses, cardiovascular nurses, Critical care nurses, Genetic nurses, Neonatology nurses, Nephrology nurses, Rehabilitation nurses. Therefore, it is clearly understandable that the nursing practices are not confined to the age old practices but a booming advancement has been seen currently.

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Courtesy: World Health Organization

BOOK REVIEW

Textbook of Chronic Noncommunicable Diseases, the Health Challenge of the 21st Century,

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Chief Editors – Jai Prakash Narain, Rajesh Kumar, India
Publisher: Jaypee Brothers Medical Publishers (P) Ltd.
http://www.jaypeebrothers.com/pgDetails.aspx/book/9789352500437/textbook-chronic-noncommunicable-diseases
Year of Publication: 2016, Pages: 1-274
Price: Rs.775/- (as quoted on publishers website)
ISBN: 9789352500437

The "Textbook of Chronic Non-communicable Diseases: The Health Challenge of 21st Century" published in 2016 is contributed by the well-recognized national and international experts in the field. Aimed at medical and public health scholars, professionals to advance their understanding, policy makers and program managers to gain new insight the book brings together various aspects of non-communicable diseases (NCDs) including cardiovascular diseases, diabetes, cancers, chronic respiratory diseases, obesity, and mental health in one volume. It provides the most up-to-date data and information on the subject and may serve as a treatise on the arising global defies and quickly becoming a major cause of mortality and morbidity in India.

It has 18 chapters, contributed by 37 experts and can broadly be divided into four parts. The first part provides a review of the epidemiology including the burden and trends, the social determinants or risk factors, economic impact and impact on the poor, the global lessons learnt, and plans for non-communicable diseases (NCDs) control in India.

The second part covers in detail specific NCDs, such as cardiovascular disease, cancer, diabetes, chronic respiratory diseases, obesity, and mental health, each contributed by the subject-matter experts.

The third part of the book deals with important topics such as medicines for treatment of Diabetes and hypertension, health promotion and disease prevention, link between communicable and non-communicable diseases, priority areas for research, and lessons from tuberculosis (TB) and human immunodeficiency virus (HIV) programs that can be applied to NCDs.

The fourth section articulates various approaches essential for NCD control such as the interface with primary health care, imperativeness of the inter-sectoral engagement, and the role of the United Nations.

The book has been written in a wholesome manner and in a very lucid language easy to understand and grasp in Indian context. The flow of the book also clenches the readers and provides a vivid description of the NCDs along with a story like read. The data are accurate, taken from reliable sources and up-to-date as per need of the hour. The book provides descriptions of NCDs in a comprehensive manner touching all the aspects and leaving a few to imagination.

The book is complete in itself considering the epidemiological aspects. But still a few minute flaws infect the book. It fails to touch the pathophysiological aspects that I expect should have been dealt with a little more. Also a tad more illustrations and colour would have done the book a way more justice considering the mammoth arena it covers.

In summary, the book is an accurate, convincing and reliable source of up-to- date technical information on NCDs and is recommended as a must read for public health professionals, scientists, scholars as well as physicians interested in the subject. It is a must for the national program staff and all those who are engaged in combating NCDs in the country.As it also encompasses the global best practices for each NCD, the book can be widely acclaimed internationally.

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Received: 28/05/2016, Accepted: 3/06/2016

SUCCESS STORY

A Fight Against Malaria: A Success Story of ASHA from Odisha

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The Nilgiri is the only tribal block of Balasore. The village Tenda (2) is located in forest fringe & foot hill area inside the Kuldhia sanctuary. The major part of the population belongs to Scheduled tribe with poor literacy & low economic condition. Total population of the village is 657 with 126 numbers holding.The village spreads in 8 Sq. Kms area. There were blind beliefs among the tribal people on magic healers & witchcraft. People often approach to the magic healers on onset of fever or any other diseases. Malaria is a common disease in the area. The geographical condition is favorable for the Anopheles mosquito, the vector for malaria. The breeding site of Anopheles is the seepage water & irrigation channel of Ashoknal dam, slow moving stream. A total of 199 positive cases were detected in the sub-center contributing 25 % of cases to district in 2014.

Smt. Jamunamani Sing a housewife belonging to the scheduled cast was engaged as Accredited Social Health Activist (ASHA) under National Health Mission in 2009-10. She was trained on various health & family welfare activities. Since her engagement in the Mission, she has shown active participation as well as dedication to work for the community. During the capacity building workshops, she has shown her interest to learn the practical aspects of the modules.

Being an ASHA of this village with above condition, Smt. Jamuna Mani Sing, ASHA had taken active interest in mobilizing the community for use of mosquito nets, bed net impregnation & seeking medical services. By the effort of Smt. Jamunamani Sing, Community response & participation in malaria sibira & impregnation programme is very encouraging in the area where there is natural barrier between health service provider & geographical condition, tribal population, road communication and poor literacy of community. But these barriers have not come in her way to provide prompt service to the community inside the Kuldhia forest range. She has diagnosed 35 number of Malaria positive cases in 2014-15 & provided the complete treatment with IEC. By her efforts, these patients were identified early and prompt treatment was given. Not a single case of malaria death occurred in the area. She treated highest Malaria cases among all ASHAs in this period in the district

Her efforts to provide services for control of Malaria in such a situation were appreciated by the district administration. On the occasion of Independence Day-2015, she was awarded for her contribution towards malaria control in the district, by the Smt.Usha Devi, Hon'ble Minster of Women & Child Development, Govt. of Odisha.

Not only in Malaria, but her work in the field of Reproductive,

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Maternal, Child health programme is also remarkable & praiseworthy. With her efforts 6 sterilizations, 11 number of women received intra uterine contraceptive device (IUCD), 8 eligible couple used condoms & 10 used oral contraceptive pills for spacing between the Children, gave support to 17 institutional deliveries, no home delivery occurred in the area and zero maternal & infant death during 2014-15. This is not all, she has also taken initiative for the detection of three Tuberculosis cases in the area.

The pride moment came when the Hon'ble Prime Minister Sri Narendra Modijei praised her work on 29th of Nov 2015 in the "Mann Ki Baat" programme. When the Hon'ble PM was praising her efforts, she was busy in her paddy field harvesting the paddy. When she got this news, she could not believe it at first.

In his radio address, PM Modiji said that Jamunamani had resolved not to allow a single person die of malaria in her village.

"One ASHA worker of the village, Jamunamani Singh, has resolved not to allow a single malaria related death in the village. She visits every house in the village. She reaches the house as soon as she gets information about someone falling ill. She stresses every house to use insecticide mosquito net." Prime minister went on to say.

Hon'ble PM further said: "Singh works with full dedication to ensure that every child sleeps properly like her own. And she fought against malaria, prepared the entire village to fight against the disease. There will be so many Jamuna Manis."

Really Jamunamani is now became an Idol for the ASHA Workers to follow.

IJCFM acknowledges her commitment, dedication and appreciation. Let this success story be a role model for many community level health social workers and volunteers.

IJCFM publishes success story of a dedicated person who has contributed immensely at grassroot level. IJCFM acknowledges the commitment of such persons and invites write-ups from various parts of the country.

LETTER TO EDITOR

Importance of Early Identification of Hearing Impairments

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Background

A process of identifying apparently healthy people, who may be at increased risk of a disease or condition, is called screening. A hearing screening camp basically aims to deliver ear care services and to create awareness about hearing disorders amongst the society. A hearing screening camp was organized to mark "World Hearing Day" on 03/03/2016 with the theme of 'Childhood hearing loss-Act now, here is how!' at AIIMS, Raipur. A total of 70 children (0-14 years) participated in camp.

Method of evaluation.

Out of 70 children, 19 children (12 Male, Mean age: 6.54years & 7 Female, Mean age: 7.21years) were identified with hearing loss as they failed the hearing screening (SNR value < 3dB), using TEOAE (Transient Evoked Otoacoustic Emission) as screening test.[1] All identified participants were later subjected to detailed audiological evaluation and were found to be having severe to profound hearing loss in both the ears.[2, 3] The audiological test battery included Pure Tone Audiometry (PTA), where participant was tested for different octave frequencies from 250 Hz to 8 KHz at varying intensity levels to know the type and degree of hearing loss[4,5] and the awareness level (Speech Detection Threshold) for ling sounds /a/,/i/, /u/,/m/,/s/ and /ʃ/.[6] To cross check the thresholds obtained from PTA, an objective test, Brainstem Evoked Response Audiometry (BERA) was also done, for very young participants where reliable responses could not be obtained using conventional methods.[7]

Intervention and Outcomes.

All these individuals with severe to profound hearing loss were given trial with different amplification devices (hearing aids) according to the degree of hearing loss and were advised to use most suitable one at the earliest. 15 out of 19 who started using hearing aid responded well and were enrolled for next level of intervention i.e. speech and language therapy sessions. Using an amplification device along with intensive speech and language therapy helps in faster development of speech and language for hard of hearing children.[8, 9] Four cases were lost to follow up. Participants and their parents who were from distant places were demonstrated the activity to be carried out at home for auditory stimulation and speech & language development. A follow up after 2 months clearly indicated the improvement in the children's listening abilities. They responded to various environmental sounds and recognized different objects from the sounds they produced.

Conclusion

The ability to communicate is a crucial aspect of human life and the audition is very important for normal development of speech and language. So, hearing screening at an early age has become the expected standard of care internationally. The findings of this screening camp highlight the need for timely identifying the hearing impairment and interventions thereafter. If the hearing loss is not detected early, the intervention lags behind, resulting in poor speech and language development. Such camps also make general population aware of the fact that majority of the hearing disorders are preventable and if hearing loss is detected early, it can be managed medically/surgically or by using different amplification device as the case may be.

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Received: 17.05.2016, Accepted: 26.05.2016

Courtesy: World Health Organization

Health of Women - The Road Ahead

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Women are the backbones of any society. They have myriad roles to play, often associated with potential health hazards. From giving birth to raising a child, they play important role in shaping the future and fate of human race. Maternal mortality is high is developing countries. In the year 2013, nearly 300 000 women died due to causes related to pregnancy and childbirth. [1,2&3]

Women living in rural area have less right and means to assess healthcare facility. [1] Safe Motherhood Initiative in developing countries is a welcome initiative to provide access to health care facility. [1,2] According to the Millennium Development Goals report 2014, between the year 1990-2013, worldwide maternal mortality ratio was reduced by 45%. [3] The original goal set by Millennium Development Goals (MDGs) was to reduce maternal mortality ratio by three-quarters by 2015.[3]

Other than the issues related to giving birth, women also suffer from various communicable and non-communicable diseases. For this they need special care from their family and the society. [1] It is indeed high time that we recognize, respect and value their contribution to the society. Women do need financial and social security. As noted by the Food and Agriculture Organization of the United Nations 2011 report, majority of the agricultural workers are women.[4] They were of the view that closing the gender gap in agriculture is an effective ways to boost the economic benefits of farming families and fight malnutrition in children.[4] This can be achieved by giving equal access to land, water, fertilizer etc. to women farmers.[4]

We believe that in closing the gender gap and empowering women, the family as a whole should be taken into consideration. The emphasis on a family concept will help the larger society. Instances of females as head of the family are seen in very few families especially in developing countries. Traditionally women take back seat, with little control over financial or decision making activity. Therefore family health should be promoted as a whole. Education can play a vital role in lessening the suffering of females. Taking help of local institutions who are better versed with local situation and government authorities who have power and personnel at their disposal will definite make an impact.

The road ahead to have substantial achievement as far as women's health is concerned will have many unforeseen obstacles. With a strong will and good planning, definitely the dream of happy and healthy mother/women can be achieved in near future.

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Received:23/12/2015, Accepted: 03/03/2016

Farmers Suicide in India: Need for Public Mental Health Initiative.

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India has one of the highest suicide rates in the world; 26.3 for men and 17.5per lakh population for women. Farmers are one of the most vulnerable population with suicide gradually turning into an epidemic.[1,2] Almost every day there is a newspaper report of a suicide in the farming community. While farmer suicides were reported from the states of Maharastra, Andhra Pradesh, Karnataka, Punjab, Madhya Pradesh and Chattisgarh, the recent reports of farmer suicide from Odisha has reignited debate on this complex issue.[3]

The agrarian crisis of 1990's had given rise to the spate of farmer suicides and the liberalization of Indian economy with absence of any safety net for farmers was understood to have caused distress by increasing the price of agriculture and reducing that of the produce. Farmers with small land-holdings, those who were into cash crops, specially cotton growing farmers using the genetically modified seeds were at higher risk of suicide.[1] Verbal autopsy reports in the suicide epicentre i.e., Vidarbha enumerated debt and decline in economic conditions as the most common reason.[4]

Sociologists have researched the central issue of debt but gave conflicting report about the magnitude of debt and its impact on suicide. Case studies of farmer suicides indicated instances of suicide when debt was decades old, the amount of debt taken was often not proportionate to the distress perceived. Debt was incurred for buying material comfort like motorcycle or spending in marriage rather than for farm expenditure. Ego-anomic hypothesis of suicide based on Durkheim's social theory was conceptualized to explain farmer suicide. Failure of social regulation in controlling the gap between increasing needs and limited means precipitated anomic forces leading to suicide in higher class farmers. Whereas egoistic forced generated by failure to meet individual aspirations of socio-economic development by farmers belonging to the lower economic class was also construed as causative of suicide.[5]

Indian farmers are gradually going into despair; according to the 70th National Sample Survey about 52% of Indian agricultural households are in debt. [6] Farming due to unpredictability of weather conditions and lack of returns is gradually losing sheen and farmers are gradually opting out of the occupation; 76% of farmers say that they want to give up farming.[7] The appalling socio economic conditions of the farmers often force them to become farm labourers or migrant labourers with obvious health hazards.

Farming is known as a dangerous occupation which is at high risk for suicide. There are reports of poor mental health in this population owing to the nature of the work itself, susceptibility to inclement weather conditions and prevailing stigma against mental illness and unavailability of mental health care.[8]Although the mental health of Indian farmers has not been systematically studied high rates of suicide point towards poor mental health. Though there is absence of categorical diagnosis of mental disorders in Indian farmers one cannot ignore the dismal picture of their mental health.

Economic deprivation like debt and low income are known risk factors for poor mental health and manifest as anxiety disorders and depression.[9] People belonging to lower income groups are three times at risk of developing common mental disorders than those in higher income groups. [10] This population is also at higher risk for drug dependence.[11] Unemployment results in poor self-esteem and has detrimental effect on mental health. Socio-economic inequality and deprivation is a known risk factor for mental disorders. Poor mental health and substance dependence are independent risk factors for suicide.[12]

The variation in cause of suicide observed in Indian farmers needs further exploration of risk factors for causing suicide. How individual vulnerability is enhanced by stressful socio-economic forces needs to be understood. Enumerating the magnitude and understanding the contributory role of these forces on mental health would be pivotal in evaluating the risk factors for mental disorders. Evaluation of prevalence of mental disorders and provision of accessible mental health interventions would be imperative. Psychiatric epidemiology and public mental health approaches can address the unique needs of this vulnerable population.

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Received:23/12/2015, Accepted: 03/03/2016

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Instructions for Authors

About the Journal and its scope

Indian Journal of Community and Family Medicine (IJCFM) envisaged during the Community and Family Medicine Conclave held in the National Institute of Health & Family Welfare, New Delhi in December 2013. Approved by the Ministry of Health & Family Welfare, Government of India, it reflects the commitment to promote research and improve health care.

Objectives of the journal

1. To promulgate high quality research carried out in the institutes of national importance.
2. To provide a platform for disseminating information, ideas and innovative developments in the field of Family Medicine and Community Medicine.
3. To serve as an important and reliable source of information for the health professionals, decision makers as well as the general population.
4. To build a strong scientific base for both clinical and public health practices and policies.

IJCFM will to cater to the needs of

1. Medical Officers at various levels of health care institutions
2. Faculty members of medical colleges
3. Policy makers at state and national level
4. Functionaries of the National Health Mission
5. Consultants in hospitals and institutions
6. Researchers in academic and other institutions
7. Junior and Senior Residents
8. Non-governmental and international organizations
9. Private practitioners
10. Medical Students

The journal will endeavour to encompass all fields of community medicine and family medicine. It will include original research relevant to the practice of medicine at primary care level and public health. There will be case reports that will be relevant to medical officers in general practice. It will also cover the latest diagnostic and treatment guidelines for communicable and non-communicable diseases. The section on health policy initiatives can be a forum for disseminating programmatic policies. It will include interviews with doyens of community and family medicine for them to share their vision for healthy nations. It will also strive to share the success stories from various parts of the country and the world, which will serve as inspiration for the readers. The aim will be to range from empowering medical officers at a primary health centre to enrich and inspire the accomplished researchers in academic institutions.

Types of articles

1. Editorial (by invitation)
2. Review articles
3. Original research
4. Short Communication
5. Case reports
6. Perspective
7. Current Updates
8. Continuing Medical Education
9. Book Review
10. Interviews (by invitation)
11. Health policy initiatives (by invitation)
12. Correspondence/ Letter to editor
13. News and events
14. Public Health Success stories
15. Student/Medical Residents corner

Preparation of Manuscripts

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journals" developed by the International Committee of Medical Journal Editors (October 2006). Strict guidelines regarding authorship criteria and ethics should be followed.

There should be uniformity of format with equal 2.54 cm margins on all the sides. First lines of the paragraphs should **not** be indented. Font should be Times New Roman, size 12, pages should be justified, double spaced with page numbers on the bottom right corner. Each section should start in a new page. Manuscript should be written in British English.

Cover page: This should contain the title, running title, category of article, authors names and affiliations (not degrees), institution name and address, key words, number of words in abstract and main text, number of tables and figures, source of fund and conflict of interest.

Abstract: for research communication, should be of 250 words and structured as Background, Methods, Results & Conclusion. However it may not be structured in review article, CME, perspectives or health policy initiatives.

Introduction: should be short, specific, relevant and justify the study objectives.

Methods: should talk about all components of research including study design, study participants, study tools and statistics. There should be clear mention of the institutional ethics board approval and informed consent form. For clinical trials, registration number, and where the trial is registered should be mentioned.

Result: Text should not repeat the information in the tables and figures. Figures and tables should be serially numbered, separately in Arabic numbers. It should be in logical sequence and should not consist of inferences.

Discussion: should be in relation to the findings of the study, in view of prevailing situations/conditions or results of other researchers. Results should not be repeated here. Recommendations should be included along with limitations of the study in this section.

Conclusion: should be based on the study findings and comprise of salient points.

References: Listing of references should be in Vancouver style. After six authors, et al should be used. Citation within the text should be in superscript at the end of the sentence. Unpublished work should not be used for reference. Do **not** type the numbers but use bullets for numbering the references. Webpage citations should be accompanied by URL and citation date in parenthesis.

Tables and figures: Tables & figures should be made in Excel and then pasted into word. They should feature after references. Each should be in a new page. Figures should not be in colour. There should be a maximum of three tables and three figures.

Photographs: can be black and white or coloured in jpg/jpeg and TIF/TIFF formats

Word Limits

Original article (Maximum 4000 words)

Review articles: should be structured with relevant headings, which should include background and conclusion. (Maximum 3000 words)

Short Communication (Maximum 2000 words)

Updates & Perspectives (Maximum 1500 words): This will encompass the recent clinical guidelines, updates in the national programmes, opinions and viewpoints toward important clinical, health programmes, educational, policy issues.

Case report (Maximum 1000): They should be reflective of the types of cases seen by a general practitioner or a family physician.

Continuing Medical Education: 2000 words

Book Review/Public Health Success stories/Resident or student corner (Maximum 1000)

Clinical Trial registration

All clinical trials should have been registered in the relevant Clinical Trial Registry to be accepted for publication. Clinical Trial number and date of registration should be clearly mentioned. An unregistered or retrospectively registered trial will not be considered for publication.

Units

Système international units should be used throughout the text.

Drugs

Whenever drugs are mentioned, generic names should be used except when proprietary brands are used. In latter case, first the generic name should be used with manufacturer's name in parenthesis, then the trade name can be used in rest of the manuscript.

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Only well known and accepted abbreviations may be used in the manuscript. Whenever an abbreviation is used for the first time, it should be written in full with abbreviation in parenthesis. Thereafter it can be written as such in rest of the text.

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Any conflict of interest should be clearly mentioned; whether it be personal, professional or funds are involved.

Funding

Source of funding should be clearly mentioned

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Only those individuals who qualify for authorship should be included in the authors list. They should have made substantial contribution to the article and there should be no gift authorship.

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Acknowledgment should be given at the end of the manuscript before the references. Those individuals who helped in the research but do not qualify for authorship should be thanked in this section.

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Forthcoming Events

1. National Seminar on Occupational Health & Workshop on Pre - hospital trauma Care in Occupational Injuries is schedule to be held at AIIMS, Jodhpur between 7th -8th July 2016. Details can be accessed from: http://aiimsjodhpur.edu.in/OHW2016/
2. 21st International AIDS Conference is scheduled to be held at Durban, South Africa on 17-22nd July 2016.
3. National Conference of Family Medicine Residents and Medical Students is schedule to be held at Kanas city convention center between 28th -30th July 2016. Detais is available from: http://www.aafp.org/events/national-conference/about.html
4. 2nd International Conference on Public health is schedule to be held at Colombo, Srilanka on 28th – 29th July 2016. Details can be accessed from: http://publichealthconference.co/2016
5. Asia Pacific Geriatrics Conference 2016 is schedule to be held at Singapore between 10th -13th August 2016. Details is available at: http://www.sgms.org.sg/
6. World Public Health Nutrition Association conference is schedule to be held between 30th Aug – 2nd sep 2016 at Capetown, South Africa. Details is available at: http://wphna.org/conferences/capetown2016/
7. International Conference on Occupational & Environmental Health is schedule to be held at New Delhi between 23rd -25th September 2016. Details can be accessed at: http://www.conferenceoeh.com/
8. The 26th Scientific Meeting of the International Society of Hypertension is schedule to be held at Seoul, Kore between 24th – 29th September 2016. Details is available at: http://www.ish2016.org/
9. 4th International Conference on epidemiology and Public Health is schedule at London, United Kingdom between October 3rd-5th 2016. Details is available at http://epidemiology.conferenceseries.com/
10. 5th International Conference on Climate change Adaption 2016 is scheduled to be at Toronto, Canada between 15th -16th October 2016. Details of the conference is available from: http://www.globalclimate.info/
11. HIV Drug therapy 2016 is schedule to be held at Glasgow, UK between 23rd – 26th October 2016. Details is available from: http://hivglasgow.org/
12. World Diabetes Congress, IDF is schedule to be held at Abu Dhabi between 4th -8th December 2017. Details of the conference can be accessed from: http://www.idf.org/congress/welcome
13. 15th World Congress on Public Health is scheduled to be organized at Melbourne, Australia from 3rd to 7th April 2017. The details of the congress can be accessed from www.wfpha.org.
14. IAPSM Annual National Conference 2017 is schedule to be held at Kolkata on March 2017.
15. IPHA Annual National Conference 2017 is schedule to be organized at AIIMS, Jodhpur between 24th -26th February 2017.

Institutions/ Organisations are requested to send the information about forthcoming events (conferences, workshop, seminars, etc.) to the Editor in Chief, IJCFM at ijcfm2015@gmail.com. These will be published in subsequent issues for wider dissemination

ISSN 2395 -2113 (Print)

Indian Journal of Community & Family Medicine

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