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Patron, IJCFM

Dr. Ashok Kumar Mahapatra is Director of All India Institute of Medical Sciences, Bhubaneswar since August 2012. Before joining as Director of AIIMS, Bhubaneswar, he has served in various capacities and was Head of the Department of Neurosurgery at AIIMS, New Delhi (2009-2012) and Director of Sanjay Gandhi Postgraduate Institute (SGPGI) at Lucknow (2006-2009). Dr. Mahapatra has over 40 years of experience as a teacher, researcher, and an eminent neurosurgeon. He has to his credit over 650 research publications in reputed national and international journals. He is chairperson and member of various national and international committees. Withstanding his enormous contribution to field of medicine and public health, he has been conferred over 60 reputed awards.

Dr Vikas Bhatia
Editor- In - Chief, IJCFM

Dr. Vikas Bhatia is Dean of All India Institute of Medical Sciences, Bhubaneswar since August, 2012 which has been established by Ministry of Health & Family Welfare (MoH&FW), Govt. of India under Act of Parliament. He is also Professor and Head, Deptt. of Community and Family Medicine at AIIMS, Bhubaneswar and was entrusted with responsibility to start this Journal by MoH&FW, GOI.

He has experience of over 29 years in public health and has also worked as a family physician. During the mission to UNICEF for over 3 years as National Professional Officer/ Health Officer, he made significant contribution with Govt. of Uttar Pradesh in Immunization, creating a network of Health & Nutrition Resource, Japanese vaccination drive, establishing SNCU, NRC, scaling up IMNCI, capacity building and others to strengthen maternal, child survival and development activities.

Dr. Bhatia has been awarded and honoured by UNICEF, MoH&FW, GOI and other organizations. With over 88 publications, authoring and technical advisor of 7 books and contributing 7 chapters, publishing 34 project reports/ document, he has made enormous contributions in academics & public health.

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Dr Sonu Hangma Subba is working as an Additional Professor in the Department of Community & Family Medicine at AIIMS Bhubaneswar. She has done her MBBS, MD and DNB from Lady Hardinge Medical College, Delhi. She is a GSMC-FAIMER fellow 2011 and had completed her PGD in Family Medicine from CMC Vellore. Her experience includes two and a half years in the polio eradication programme of the WHO and Govt of India. She has more than 30 publications and her interests are in medical education, epidemiology, non-communicable diseases and mental health.

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Empowerment of Women and Differently Abled: Proud Moments for India

Vikas Bhatia[1], Ramesh Chand Chauhan[2]

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India with unfavourable gender ratio and limited facilities for differently abled observed some exceptionally proud moments in August/September, 2016. Sex selection before birth and neglect of the female child after birth, in childhood and, during the teenage years has resulted in outnumbering of males to females in many countries. This is more predominant in India and other developing countries, seen in all the strata of society and manifests in various forms.

Also, over the past years, responses to disability have changed largely by the self-organization of people with disabilities and by the growing tendency to see disability as a human rights issue.[1] Due to population ageing and the rapid spread of chronic diseases, as well as improvements in the methodologies used to measure disability, the global estimate for disability is on the rise. During last decade, there is a significant increase in the number of people with disability in India and the data varies widely with the type of disability, age and sex etc.[2]

Recently, India sent its biggest-ever Olympic contingent in Rio but came with two medals by women participants only. India's Paralympians, in spite of small representation, won 4 medals (2 Gold, 1 Silver and 1 Bronze) with Devendra Jhajharia breaking the "World Record" to win a gold medal at the Paralympics.[3]. It is right to say that the glory to India in Olympics is brought by the women and differently abled who may be disadvantaged at home. The entire country was in jubilation on getting its first medal by a daughter of the country.

Government of India has taken many initiatives for gender empowerment and mainstreaming the differently abled people. Establishment of the National Commission for women, Rashtriya Mahila Kosh, Launching of Indira Mahila Yojana, Balika Samridhi Yojana and Rural Women's Development and Empowerment Project etc. are few of them. With the objective of prevention of gender biased sex selective elimination, ensuring survival & protection, education & participation of girl child, Government of India launched "Beti Bachao Beti Padhao" initiative.

Similarly for people living with disability - The persons with disabilities (equal opportunities, protection of right and full participation) act, 1995 has been a landmark legislation. From segregating the people with disability, such as in residential institutions and special schools, policy has now shifted towards community and educational inclusion, and medically focused solutions have given way to more interactive approaches recognizing that people are disabled by environmental factors as well as by their bodies.

Disability is a human rights issue as people with disabilities experience inequalities, are subject to violations of dignity and are denied autonomy. Many people with disabilities do not have equal access to health care, education, and employment opportunities, do not receive the disability-related services that they require, and experience exclusion from everyday life activities. Following the entry into force of the United Nations Convention on the Rights of Persons with Disabilities (CRPD), disability is increasingly

Figure 1. Devendra Jhajharia breaking the World Record to win a gold medal at the Paralympics 2016.

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understood as a human rights issue. India is a signatory of the Convention on the Rights of Persons with Disabilities. The Convention outlines the civil, cultural, political, social and economic rights of people with disabilities. Member States signing the Convention agreed to promote, protect and ensure the full and equal enjoyment of the human rights and fundamental freedoms of people with disabilities and prompt respect for their inherent dignity.

With adoption of CRPD, India passed a bill "The Rights of Persons with Disabilities Bill, 2014." In India, the Department of Persons with Disabilities in the Ministry of Social Justice & Empowerment facilitates the empowerment of persons with disabilities. A large number of schemes are there for empowering the people with disability – Deen Dayal Rehabilitation Scheme, National Awards for People with Disabilities, An Integrated Programme for Older Persons, Vocational Rehabilitation Centre, Incentives to Private Sector Employers for providing employment to persons with Disabilities, Scheme of Assistance to Disabled Persons for Purchase / fitting of Aids, Scheme of integrated education for the disabled children, Scholarships for the disabled, Railway travel concession, Reservation of Jobs, Income tax concessions, Professional tax exemption, Award of dealerships/Agencies by oil companies are some of them.

Every sector has faced the moral and political issue of how best to include and support people with disabilities. This issue is becoming more important in countries like India as the demography of societies is changing and more people live to an old age. In December 2015, with the aims to enable persons with disabilities to gain universal access, equal opportunity for development, independent living and participation in all aspects of life in an inclusive society, the government launched the "Accessible India Campaign". The campaign envisages making at least 50 percent of all government buildings in the national capital and all state capitals fully accessible for the disabled by July 2018. Similar deadlines have been set to make airports and railway stations, public transports accessible to the disabled.

Raising awareness and challenging negative attitudes are often first steps towards creating more accessible environments for persons with disabilities. Community-based rehabilitation (CBR) programmes can challenge negative attitudes in rural communities, leading to greater visibility and participation by people with disabilities.[4] Preventing disability should be regarded as a multidimensional strategy that includes prevention of disabling barriers as well as prevention and treatment of underlying health conditions.[5]

The various programme on women empowerment & reducing poverty are likely to bring good results. Let's make our women, differently abled persons and all others strong to ensure that India ranks high in the medal tally. After all, good health is the minimum commitment we can make to all to bring glory to us.

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IJCFM wishes Prime Minister of India a healthy life. His 66th birthday celebration with 11,000 disabled people is a big hope for bringing a change in their lives.

Department of Empowerment of Persons with Disabilities
Ministry of Social Justice & Empowerment

Accessible India - Empowered India

An Interview with Dr. M.K. Bhan

(National Science Professor, Indian Institute of Technology- Delhi and Former Secretary, Department of Biotechnology, Government of India.)

Dr. Bhan, is currently, National Science Professor at the Indian Institute of Technology, Delhi, Government of India; President of Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry; an Advisor to the World Health Organization and President of National Capital Region Biotech Cluster, Faridabad. He is Former Secretary to the Government of India, Department of Biotechnology, Ministry of Science and Technology and Founder Chairman of Biotechnology Industry Research Assistance Council, Ministry of Science and Technology.He is a MBBS, MD Pediatrics, DSc. (Honorary), Fellow, Indian National Science Academy (FNA), Fellow, Academy of Sciences (FASc) and Fellow, Academy of Medical Sciences (FAMS) and Fellow, Third World Academy of Science (TWAS). He has about two hundred research publications in International, peer reviewed journals. Some of his contributions to research that impacted on heath programs including development of a rotavirus vaccine now in use in India, zinc for treatment of childhood diarrhea, low osmolarity ORS, treatment of persistent childhood diarrhea and Integrated Management of Neonatal and Childhood Illness. In recognition of his services to the country, he was conferred the Padma Bhushan by the Indian government.

IJCFM: You have a vast experience of working as an academician, public health expert and researcher. Your journey is a morale booster for young public health professional, family physicians and researcher. Could you briefly tell our readers about your journey?

Dr. M.K. Bhan: I grew up in Srinagar, Kashmir at a time when the local culture was aesthetically rich, highly respectful of education and scholarship and gentle and nonviolent, closeness to nature gave one a wider prospective and the ability to listen and appreciate. One has to be fortunate to be surrounded by nature's creativity all around. There was a magnificent silence around mixed with hope, optimism and a sense of joy.

I was attracted to broad reading in philosophy, literature and history in addition to the usual school learning. I went to a school that emphasized participation even more than success and pushed us to climb mountains, cross the dull lakes and relish team activities. All these influences were tremendously helpful in shaping my collaborative and problem solving outlook in later years. I was taught that the two characteristics of a life of meaning are either creativity or great service, a view that Gandhi Ji and Einstein are equally virtuous. This influenced my efforts to serve patients and public health directly as well as through research. One needs to find a passion in life and India's children give that to me. There was a compiling need to contribute to a nurturing environment for the most vulnerable and young.

IJCFM: Introduction of rotavirus vaccine in National Immunization Schedule has been a breakthrough achievement for public health in India. Your contribution in the development of Rotavirus vaccine in India is exemplary. Would you like to elaborate on the journey of rotavirus vaccine from laboratory to community?

Dr. M.K.Bhan: The Rotavirus experience has been fulfilling for many reasons. Many people observe interesting phenomena in clinical practice but few pursue novel observations to a logical conclusion.

I was able to visualize very early that the animal, human reassortant strain 116E could be an effective vaccine. In later years, I learnt that the ability to visualize future, the pathways ahead is the most important requirement for leadership. We are often too busy in today to reflect on tomorrow. Our group kept evolving in disciplinary strength, in team design throughout the long journey of strain characterization, vaccine formulation and pilot production, preclinical and clinical development. The skill sets change and the team must have the ability to continuously learn new things, bring in new talent to the group. Possessiveness is the enemy of innovation. Finding the right balance between competition and cooperation, between individual and team interest is critical. An important requirement for successful innovation is to understand the conditions under which a novel product would find acceptance. For Rotavirus, this would mean safety, efficacy and price. And we strived to achieve these. It has always been my desire that young Indians believe in themselves and their ideas to develop endurance over long years of work, and maintain highest rigor and transparency in everything they do in life. Our team was driven by this desire to set a good example and to demonstrate the importance of walking the last mile. The country was gracious in appreciating the hard

work of this very large team by taking the vaccine to our children. This was a team effort of the wonderful bunch of collaborators. The cause of the vulnerable should always be bigger than the illusion of individual success. A key decision was to choose low price by the company rather than royalties and technology transform fees. This works well for social innovation.

IJCFM: You have worked for many years as Secretary, Department of Biotechnology. What are your views on challenges in doing research and development in Indian setting?

Dr. M.K.Bhan: India has been steadily increasing its investment in research although relatively less so in medical research. It is often said that great institutions have outstanding core values but they are also highly adoptable, often redesigning the way they work and seizing new opportunity without worrying about failure. Astute risk taking is the right strategy often not followed by our institutions as well as funding agencies. We are complacent as a 'B' team and need a greater appetite for the frontier, be it in discovery, innovation or health care delivery. The challenge is to strive for greater novelty and impact. We have not learnt how to nurture the young and budding researchers unlike the west. We respect experienced more than fresh minds. We don't invest enough in giving the young experience of trial and error. I also found that lack of mentorship to be a big obstacle.

IJCFM: It seems that there is a gap between academia and industry as far as innovation and product development is concerned. How do you think this gap can be bridged?

Dr. M.K. Bhan: The gap between industry and academia has begun to narrow. Organizations such as BIRAC have done a spectacular job. Institutions must do more novel science to be attractive and industry must invest in academic research to encourage pursuit of novel, risky ideas. The question to ask is not if we will succeed, rather, does it matter even if we succeed. If the answer to second part is no then it's not worth pursuing.

IJCFM: The research output from premier institutes of India is still not up to the mark. Can you suggest how premier institutes can contribute more and provide a leadership role in research and development to improve public health in India?

Dr. M.K. Bhan: I am deeply concerned about the lack of emphasis on research even in the best medical institutions. The ICMR budget is too low to matter and they need a major push in their budget. NIH spends over 30 billion dollars and relatively we spend pennies. If the young faculty today is not incentivized to do research the future is dark because there will be no role models. We need urgent action here.

IJCFM: Six new AIIMS have been established in states having poor health indicators. What are your views regarding collaboration of new AIIMS with international organizations for health system strengthening, research and medical education?

Dr. M.K. Bhan: I am glad that new AIIMSs are being established. I am concerned that this being done without adequate grace and thoughtfulness. A medical institution is not only a hospital; it is even more a place of education and research. The Apex All India Institute at Delhi was nurtured with great care by its founders and that is why it survived the decades of wear and tear in an evolving democracy. I pray that the new AIIMSs receive at least a bit of love and support we received at Delhi.

There is impeccable evidence that international collaboration with the best in the world enhances quality, productivity and impact of our research. Isolation and false nationalism breeds complacency, eliminates genuine creative competition and prevents us from learning from other people's experiences and for them to learn from ours. I strongly encourage collaboration with the best in the world but not with mediocre, simply because they are overseas.

IJCFM: Health system in India can be utilized as an incubator for operational research and innovation. The readers of IJCFM would benefit immensely by your views on how to orient and sensitize doctors working in peripheral health system and family physicians towards research and innovation.

Dr. M.K. Bhan: Dilution of quality and impact as we scale up our programs is a serious challenge for us. There is a lot of knowledge and technology that we are yet to deliver to our people equitably. About a third of India is remote and difficult. Implementation research must receive the highest priority; we must innovate and find better ways of designing and redesigning, health financing and health systems, comprehensive primary care, quality secondary care within the concept of universal health care. Design is a powerful concept and utilizes prototype building as a pathway to reduce loss of quality in translation during scale up.

The discipline of community medicine produces quality people but the concept must be broadened into full blown public health, our departments are not interdisciplinary enough. It does not matter how you are educated and in what. It is important that one is committed to public health and population science. There is unique opportunity today to transform the health system. We have to evolve to be able to play a significant role. We have to be adoptable. Are we ready?

Indian Journal of Community and Family Medicine expresses heartfelt gratitude to Dr. M.K. Bhan for taking out time to answer the interview questions for the benefit of the readers

Organ and Tissue Transplant Policy and Its Future in India

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Background

Organ transplantation is one of the most brilliant developments in the field of Medicine during twentieth century. With the advent of organ transplantation, patients suffering from various terminal diseases and end organ failures can have a better quality of life and hope to live longer. Beginning from Kidney and cornea, organs and tissues like liver, lung, tendons and skin etc are also being transplanted successfully around the world.[1] The global observatory on donation and transplantation in collaboration with the WHO compiles data on organ donation and transplantation. According to GODT, in 2013 around 117,333 solid organs were reported to be transplanted, this is almost ≤10% of the global needs. Majority of these transplantations occur in developed regions, mainly America and Europe. The organ donation rate in India is approximately 1 per million population, as compared to Spain where 35 donations take place per million population.[2]

In India well documented organ transplantations started with kidneys in early 1970s at CMC Vellore.[3] Liver and cornea transplant began slowly in the 1990s & is now being done at many hospitals in various metropolitan cities of India. The number of transplants done annually has been rising gradually. Currently approximately 25,000 corneas, 5,000 kidneys, 1000 livers and around 15 hearts are transplanted annually. However, the demand of organs and tissues surpasses the availability of organs for transplantation. Roughly 200,000 kidneys, 100,000 corneas, 50,000 hearts and 50,000 livers are required for transplantation each year.[4]This gap in demand and supply of organs are making the process of commoditization of organs/tissues an attractive business for some and a respite for others. It has been reported that patients from developed countries are travelling to developing countries for acquisition of organs at a cheaper price.[5] Poverty, lack of a proper health insurance, growing disparity between the rich and poor and weak transplantation legislations had promoted organ trafficking in developing countries, including India.

Organ trafficking can be in the form of traffickers forcing their victims into giving up an organ or victims agreeing to sell an organ but are cheated because they are not paid for the organ or are paid less than the promised price. There have also been cases where vulnerable people like poor migrants, homeless, people in dire need for money are treated for an ailment and their organs have been removed without their knowledge or consent. India witnessed a surge in organ trafficking in the 1990s when foreign patients flew to India for cheap transplants from paid donors.[6]

To curb the problem of illegal organ harvesting in India the Government of India enacted the "Transplantation of Human Organs Act" (THOA) in 1994.

The Transplantation of Human Organs Act of 1994[7]

The Transplantation of Human Organs Act (THOA) came into being in 1994 and Rules followed in 1995. Subsequently it was amended in 2011. The Rules for the amended Act were notified in 2014.[8] The government of India enacted the transplantation of human organs act in 1994 to provide for regulation of removal, storage and transplantation of human organs for therapeutic purposes and for prevention of commercial dealing in human organs and tissues. THOA of 1994 encourages deceased donation; permits living donation from persons who are near relatives and the amended Act has expanded the definition of near relative to include grandparents and grandchildren in addition to parents, children, siblings and spouse. Unrelated donation

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is permitted on grounds of altruism but only with the sanction from an authorization committee. Swap donation is also permitted where a pair of donor and recipient who are near relatives but whose organs do not match for transplantation are permitted to swap organs with another pair with similar incompatibility.

In addition, the act also enhances the penalty for unauthorized removal and transplant of human organs. Simultaneously, THOA has also legalized brain death in India, paving the path for increased deceased donation through procurement of organs from brain stem dead donors. The Act has also laid down criteria that determine brain death.

The main provisions under THOA are:

For living donation - It defines who all can donate organs and tissues without any legal formalities. The relatives who can donate include mother, father, siblings, son, daughter, and spouse and since the 2011 amendment grandparents and grandchildren have also been included. The first relatives are required to provide proof of their relationship to the recipient by either genetic testing and/or by legal documents. In case the donor is not a first relative, he or she is required to seek special permission from the government appointed authorization committee and prove that the motive of donation is purely out of altruism or affection for the recipient.

Brain-stem death and its declaration - "Brain-stem death" is condition where a person no longer has any activity in his/her brain stem, and has permanently lost the potential for consciousness and the capacity to breathe. Under the act to declare a patient as brain dead two certifications are required minimum 6 hours apart from a team of four doctors and two of these needs to be nominated by the appropriate authority of the government with one of the two being an expert in the field of neurology. The patient's relatives can be approached for organ donation after the first positive test, giving them time to decide on donation till the second test series await. The decision to donate organs could also be done by the lawful custodian of the body after the death of the patient.

Regulating authorities- Authorization Committee & Appropriate Authority: In each State or Union Territory the authorization committee regulates the process of approval or rejection of transplants between the recipient and donors other than a first relative. The main duty of the committee is to ensure that the donor is not being exploited monetarily to donate his organ(s). The decision to accept or reject a donor is governed according to the clauses given in the THOA.

The appropriate Authority regulates the removal storage and transplantation of human organs. A hospital is permitted to perform such activities only after being registered by this authority. The removal of eyes from a dead body of a donor is not governed by such an authority and can be done at other premises and does not require any registration.

Pledging of organs: Any person willing to donate his/her organs can do so by filling out the donor consent form available on the Ministry of Health and Family Welfare, Government of India website[9]. One may also approach the National Organ and Tissue Transplant Organization (NOTTO) website for pledging organs and receiving a donor card. NOTTO is a National level organization set up under the aegis of Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.[10] It has two divisions- the "National Human Organ and Tissue Removal and Storage Network" and the "National Biomaterial Centre". Pledging of organs is a voluntary act. The minimum age assigned for pledging organs is 18 years. However, in India, at the time of organ donation, the family of the donor will make the final decision on whether to donate his/her organs irrespective of the pledging status.

Future of organ and tissue transplantation in India

The fundamental requisites for the success of any transplantation program include awareness and willingness to pledge and donate organs, especially deceased donation. In India, awareness about organ and tissue transplantation in the general public needs to be increased. Although, over time, awareness about organ donation has increased, still very few people are aware of brain death and deceased organ donation.[11] More so, people are mostly aware of eyes and kidney as being the only organs/tissues that can be donated. Measures need to be taken to sensitize Indian population towards organ donation and transplantation. In a study carried out by Dolatabadi et al, it was found that educational sessions conducted about brain-death and organ donation showed a significant improvement in attitude and knowledge of respondents.[12] Certain NGOs and non-profit organizations are conducting awareness programs all over the country to increase knowledge about organ donation and brain death.[13,14]

The organ donation rate in India is currently less than 1 per million population and the deceased donation rate is almost insignificant. Therefore, efforts are needed to motivate the general public to pledge and donate organs, especially in conditions of brain death. Studies are being conducted worldwide to establish measures which can promote of pledging of organs among the general population. Offering some form of incentive to families of deceased donors has been tested in countries like China and limited incentives like payment of funeral expenses to donor families has been advocated in some western countries.[15,16]

While people are being motivated for donation, they must also be made aware of the legislations that regulate organ

retrieval and transplant, safeguarding them from organ trafficking. In a study conducted in India, about 74.41% participants were unaware about any legislation regarding organ donation.[17] Khan et al also observed that people who could be donors are reluctant to donate due to lack of knowledge about what happens of their organs and also have fear of their organs being misused.[18] With THOA already in action, the Ministry of Health and Family Welfare (MOHFW) has now also approved the National Organ and Tissue Transplant Program. The aim of this program is to improve access to life transforming transplantations for the needy citizens by providing deceased organ donation and maintain transparency in the organ allocation system.

It is noteworthy that the benefits of transplantation are still not available to a large proportion of India's population. More than 90% of patients in South Asia die within months of diagnosis of organ failures especially kidney, because they cannot afford treatment. It has been estimated that only 2.5% of patients with end stage renal disease in India actually end up getting a transplant.[19] In India, the current allocation policies for deceased donor organs are not uniform between states. NOTTO along with the MOHFW is designing standardized allocation policies and algorithms for all organs that can be transplanted.

There is also poor clarity on whether the organs should be allocated based on severity of disease, waiting period or on an institutional rotation. To address this issue, a computerized countrywide database on recipients is needed to track patients on the waiting list and maintain transparency in the process of allocating organs. The government has made an attempt to centralize this activity by the formation of a national registry under NOTTO. One of the stated objectives of this organization is to develop a national network for organ sharing and also maintain a national transplant registry.[10]

Another issue worth mention is the lack of clarity within the medical fraternity with regards to the rules and procedures related to organ retrieval and transplant. There is a need to educate medical professionals on this aspect. Many potential donors are lost because of lack of concern and awareness within the medical community. According to Tamil Nadu organ transplant registry convener Dr. J. Amalorpavanthan, in 2012 only 17% of hearts received were used by surgeons. The registry received organs from 306 brain dead patients and allotted them to different hospitals based on a waiting list. While 280 livers and 563 kidneys were retrieved for transplant, only 52 hearts and 13 lungs were harvested.[20] The reason for the same was lack of clarity and poor coordination among transplant surgeons, thus causing delay in retrieval and further transplantation.

Along with sensitization of general public and medical fraternity, there is also need for more number of hospitals that are equipped with facilities of organ retrieval and transplant. Currently out of total tertiary care hospitals in India only a few are equipped in terms of the required personnel (qualified doctors and trained transplant coordinators) and equipment to conduct a successful transplant. Attempts are being made to prepare more hospitals for organ retrieval and transplant. The ministry of health and family welfare has made it compulsory for all hospitals conducting retrieval and transplant of organs to get registered with NOTTO. It is estimated that about 250 health facilities in the country are now registered and performing solid organ transplantation and the number is increasing. Although about 80% of these centers are mainly doing kidney transplants and most of these hospitals are in private sector[10].

Conclusion

Continuous efforts are being made in up scaling organ and tissue transplantation in India; although the rates have improved there is still a long way to go. The number of deceased donations has also increased from 196 in 2011 to 411 in 2014.[10] However, more comprehensive awareness programs are required to increase awareness about organ donation and brain death. Media, religious leaders and medical fraternity should be involved. There should be comprehensive training programs for doctors and transplant coordinators on organ donation so that they can recognize potential donors and assist the process of organ retrieval, allocation and transplant. There is also a strong need to bring unanimity between different state governments to develop a centralized organ-sharing network for better coordination and timely utilization of donated organs.

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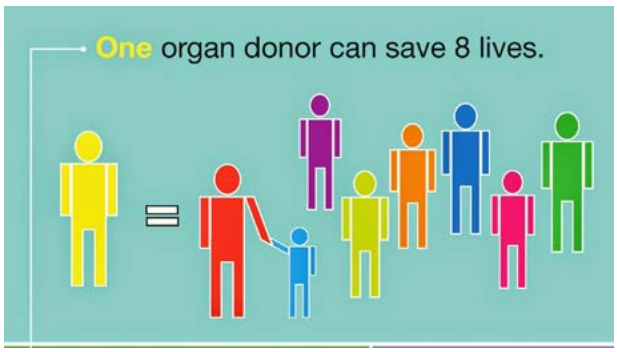

It's an Ad, Ad, Ad World - Strategies of Tobacco Industry in India to Diffuse Tobacco Control Efforts- An Unholy Nexus

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Abstract

World Health Organization (WHO) recommends prohibition of advertisements, promotion and sponsorship of tobacco to reverse tobacco epidemic. Tobacco advertising, promotion and sponsorship (TAPS) is also banned under India's Cigarettes and Other Tobacco Products Act, 2003, with few exceptions. Despite the Act and increasing evidence of advertising linked with smoking behaviours, tobacco companies indulge in it brazenly to neutralise tobacco control efforts and normalize its use, making it seem like any other consumer product. The companies aim at creating a brand franchise for their product through advertisements. Point of sale promotion account for more than three-fourth of marketing spends by tobacco companies. Although India has been a frontrunner in tobacco control, it faced huge legal challenge from the tobacco industry. There is a need to regulate tobacco business by compulsory registration and licensing of tobacco vendors and also effective implementation of Indian Act. Besides, the gap in current research from developing countries on how restrictions on advertising impact tobacco use and its associated behaviour, monitor tobacco industry activity, map vendors and access of products, and economic impact of restrictions on tobacco promotions at POS needs to be fulfilled. Without these measures it will be challenging to counter nefarious, cash-rich and truant tobacco industry.

Background

In 1969, George Fernandes, a trade union leader and member of India's Parliament proposed a bill called the Smoking Hazards Advertising Bill 1969.[1] Globally, many developing countries especially the US and UK were taking effective steps to curtail tobacco use, however Fernandes noticed that global tobacco players (BAT and Philip Morris) which also controlled Indian cigarette companies and leaf production were promoting its use in India. So much so, that the US governments' food aid scheme (PL-480) to reduce hunger and malnourishment had large shipments of tobacco as well. Fernandes used his oratory to ensure that a private members' bill was admitted for debate. The Parliament of India, as in many democracies, forwarded the Fernandes draft to a select committee, which comprised some with interest in tobacco business. The two leading cigarette companies also set about gathering evidence to prove that advertising does not fuel the epidemic, if any; at least not in India. In 1975, the committee decided that it was too premature to ban advertising but put a statutory health warning in English on cigarette packets.[2] It excluded bidis (hand rolled India cigarillos) on the plea that this was the poor mans' smoke. Ever the champion for the poor, Fernandes did not want them to lose their livelihood from growing tobacco or rolling bidis. It was a political measure more than a public health strategy. For the next two decades, the tobacco industry had little to worry about any further attempts to be regulated. The Fernandes experience shows that any attempts for tobacco control from here on would face political challenges.

Tobacco advertising, promotion and sponsorship (TAPS) is banned under the national legislation yet tobacco companies indulge in it brazenly. In May 2003, India drafted a comprehensive legislation for tobacco control in 2003 (i.e. Cigarettes and Other Tobacco Products Act, 2003, or COTPA) .[3] Section 5 of this legislation prohibits any kind of tobacco advertisement, promotion and sponsorship (TAPS) and conform to Article 13 of the WHO's Framework Convention on Tobacco Control. However, it allows advertisement of tobacco products at the Point of sale

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(PoS) under certain circumstances. Targeted marketing (i.e. promotion of different products for different strata of population) increases the power of PoS promotion by segregating customers into groups and tailoring the advertising that appeal them. The tobacco companies pay the stores to display advertisements. In 2008, Godfrey Phillips brazenly declared its advertising expenditure in its annual report. India's large cigarette market and BAT affiliate, ITC contributed equally to all political parties.[4]

The crux of the problem

Tobacco industry is a major vector of premature death among adults globally. The problem of tobacco use in India is immense - one-third of India's adults or nearly 275 million adults use tobacco products in some or other forms.[5] A fifth of all worldwide deaths attributable to tobacco occur in India (or more than 1.2 million premature adult deaths) and millions more become ill from its use.[6]

The global evidence that links advertising and its role in recruiting vulnerable people to use it is overwhelming. There are no trials of the impact of tobacco advertising and promotional activities on people taking up smoking, since it would be unethical to do so. Yet studies from the 1960s to present, conducted by the industry and independent researchers alike has found that youth are more aware and receive positively re-enforcing signals from exposure to advertising (such as the number of tobacco advertisements in the magazines they read or billboards viewed) that tobacco is a socially acceptable product and are therefore more likely to experiment with use.[7] The empirical literature across the globe has found a strong correlation of tobacco advertising on increase in smoking, especially among children.[8-11] The children as young as 3 years old are able to identify tobacco brand logos and understand tobacco advertisements. [12] Tobacco advertisements make quitting even more difficult.[13] Banning advertising has shown to reduce adolescents' exposure to cigarette brands by as much as 83% .[14] Advertisements at POS exposes youth to pro-smoking messages and creates positive attitudes toward tobacco products and brands.[15-16] There is an established relationship between exposure to tobacco promotion at POS and susceptibility to smoking, smoking experimentation, occasional smoking and regular smoking among youth.[17-19] In a study, teenage smokers' choice of Marlboro cigarettes was associated with a greater presence of Marlboro branding in-store and a gift with purchase.[20]

Tobacco industry deploys tobacco advertising, promotion and sponsorship (TAPS) tactics to neutralise tobacco control efforts and normalize its use, making it seem like any other consumer product. [21] Point of sale promotion including price discounts and product giveaways can account for more than 75% of marketing spend by some tobacco companies .[22-23] Despite legislation, tobacco companies continue to violate these restrictions and aggressively use retail outlets to promote their products through several strategies to bypass the legislative restrictions.[24-28] In 2010, the Global Adult Tobacco Survey India (GATS) revealed that nearly 11% of adults observed cigarette advertisements at the POS during the last 30 days, with similar pattern for the advertisement of bidi and smokeless tobacco products, thus depicting non-compliance to the tobacco control legislation.[5] There are very few studies in India which document point of sale advertising. [24-25] One of the first systematic surveys covering 1860 POS from three large jurisdictions (population around 10 million) of India was undertaken by the authors. The study results showed lack of compliance to all provisions of Section 5 of COTPA at POS. Almost all forms of violations at POS like showcasing, dangles and advertisement boards etc. were visible at the locations. Over 80% of POS were found violating legal provision of section 5 for display of advertisement boards in one or other forms. Majority of these boards were oversized, bearing brand name, displaying packs and promotional messages violating the provision of the law. Many advertisement boards were backlit and the lights were left open even if the shops are closed, thus providing 24 hour advertising. Nearly one sixth POS had displayed advertisement boards without any health warning, besides major violations in the display of health warning. The tobacco products were displayed in such a way that made them accessible and visible to minors.[29] These tactics of tobacco industry are pervasive and global; tobacco products and advertisements are often placed near candies and children's items at the front of the store and on counter tops, encouraging children to see them as harmless everyday items.[30-31] Tobacco products often occupy large and prominent display space in stores and are strategically designed to encourage impulse purchasing and promote certain brands while making health warnings less visible (Quit Victoria). To further increase sales, tobacco companies have spent considerable sums of money on price discounts.[32] Price discounts are advertised prominently near display cases and are another means of luring consumers into impulse purchases. The tobacco industry provides retailers with attractive, modern storefront signs advertising cigarette products that they could otherwise not afford. [17] Besides this tobacco industry uses contracts and monetary incentives with retailers to ensure prime placement of their products and advertisements.[33-34] With 1.2 million stores, India has a widespread network of tobacco sellers across the nation. [35]

Advertising and the making of the tobacco epidemic

Although India has been a frontrunner in tobacco control, it faced a legal challenge from the tobacco industry and vendors. The Supreme Court of India has also taken an affirmative step forward in this regard by vacating the stay on rules related to POS advertising, which was imposed by the Bombay High Court in 2006 thereby showing the commitment of the judiciary towards an effective tobacco

control. This has paved the way for stricter enforcement of the rules. Under India's National Tobacco Control Programme (NTCP), monitoring committees especially for Section 5 of COTPA at state and district levels, as well as a national level steering committee, have been mandated, to take cognizance of TAPS.[35] However, tobacco industry finds one way or the other in circumventing the provisions under the legislation.

To regulate the business of tobacco selling and ensuring that tobacco vendors comply with the provisions of COTPA, there must be a mechanism for compulsory registration and licensing as done by excise department in regulating liquor in India. [36] Further, considering the impact of POS advertisement and promotion on increased smoking/tobacco initiation and use, there is an urgent need of effective implementation and enforcement of comprehensive ban on advertisements at point of sale.

Conclusion

But legislating and implementing TAPS is difficult and complex given that several agencies are involved in regulating it and some departments are mandated to promote tobacco use, rather than deter it. The proliferation of new media has added to the confusion of regulation and tobacco industry has exploited it to reach out to youth. Surrogate advertising and brand stretching remain a major stumbling block. Tobacco brand name and logo are commonly used to promote other products and brand names are lent to corporate activities like charity and awards. Diversification by tobacco companies into new products and services is also advertised often using the same tag lines, colours, logos and brand names. The effective means to arrest brand stretching is to review India's Trademark Act (1999). Tobacco companies currently exploit the limited resources – knowledge of the different laws, motivation and manpower – that are available with regulators and tobacco control advocates, and add confusion among ill-equipped enforcers on multiple legislations that impinge of advertising. Tobacco control advocates on the other hand need to identify a serious violation and create legal precedence to send a strong message to the industry. The gap in current research from developing countries on how restrictions on advertising impact tobacco use and its associated behaviour, monitor tobacco industry activity, map vendors and access of products, and economic impact of restrictions on tobacco promotions at POS needs to be fulfilled. Without these measures in place it will be challenging to regulate the hard sell at the point of sale by a nefarious, cash-rich and truant industry.

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Ending the Tribal Nutrition Crises

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Despite constitutional protection, positive discrimination policies and earmarked budgets, India's 104 million tribal people continue to remain among the poorest and most nutritionally deprived social groups in the country. In 2005-06, 54% of India's tribal children under five years of age were stunted (too short for their age) or chronically undernourished. Studies carried out between 2006 and 2013 in different states of rural India reveal that the percentage of tribal children who are stunted remains stubbornly high at above 50%. The latest available data from Rapid Survey of Indian Children, shows that 42% of tribal children in India remain stunted. Though deaths due to severe forms of undernutrition among tribal children are hardly uncommon, only a few catch the headlines. Poverty rates among India's tribals are still unacceptably high (at 47% in rural areas and 30% in urban areas) and nearly every second tribal family in rural India is food-insecure – with low caloric and protein consumption which is 25% to 53% below the recommended dietary allowance (National Nutrition Monitoring Bureau report 2009). Most consume a diet with negligible amounts of dairy products, fresh fruits and vegetables – important sources of essential vitamins, minerals and fatty acids. Less than 20% tribal households have access to safe drinking water source or a toilet facility in their premises.

Has the Indian government been unable to translate affirmative action legislations, policies and programmes into positive nutrition outcomes for tribal children? or Is there a deficiency of nutrition actions for tribal children in the first place?

Legislative provisions that protects the right of schedule tribe to good nutrition, both directly and by addressing its determinants such as food, land and livelihood security. Articles 244(1) and 244(2) protect administrative autonomy of schedule tribes and their right to protect, manage and control sale of their land, forest and natural resources. Yet, field practitioners argue that poor legislative enforcement protecting tribal rights to their land and their administrative autonomy is among the core reason fuelling poverty among schedule tribes, which results in household food insecurity and undernutrition in their children.

Budgets are not a major constraint in nutrition programmes for tribal people. Starting from the fifth five year plan (1974-75), a separate tribal sub-plan (TSP) within the umbrella of the overall state plan is drawn up providing need-based funds for welfare and development in tribal dominated administrative blocks. The Ministry of Tribal Affairs under the special area programmes of Special Central Assistance (SCA) to TSP and Grant under Article 275 (1) of the Constitution also provides top-up funds to states under the TSP. The problem is that most TSP items are focused on infrastructure with negligible attention to nutrition specific activities. Most state and central ministries plans do not apportion funds for TSP as per the schedule tribe proportion. Importantly, even when it is done, the apportioning often lacks prioritization, purpose or even a system of tracking the allocation usage. Further, the TSP is drawn up on a naïve assumption that spending money will automatically lead to the development of schedule tribes.

Is the Ministry of Tribal Affairs (MoTA), the nodal ministry for schedule tribes, doing enough to improve the nutrition situation of schedule tribe children? In all fairness, the primary responsibility for implementing nutrition programming for schedule tribes rests with the respective sectoral ministries, yet the MoTA does have the mandate to coordinate inter-sectoral efforts for tribals and financially supplement the efforts of sectoral ministries, which it can exercise more efficiently.

A secondary analysis of the 2005-06 National Family Health Survey on a sample comprising tribal children in rural areas of the top eleven tribal populated states showed that stunting occurs early in life. The study revealed that one fourth of children 0-5 months were already stunted, and by the age of 18 months, the majority of schedule tribe children (75%) were chronically undernourished. Only 2% tribal children aged 6-11 months were fed complementary foods in recommended quality and

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frequency. The same study also revealed that if the mother was herself undernourished, the likelihood that the child being chronically undernourished increased two-fold. This means that nutritional deprivations before and during pregnancy have contributed to poor child nutrition status early months of life, with poor caring and feeding practices further contributing to further linear growth falter by 18 months. The reasons for high maternal undernutrition in tribal children were obvious – 68% mothers under 20 years and 48% mothers overall were themselves undernourished, inter-pregnancy intervals were narrow and birth orders ranged from 1-12. This compounds the problem for India since the focus of nutrition interventions for Indian children have largely been interventions after birth. Clearly, we are missing the critical time period in which stunting takes place. Another important finding was that nearly 90% tribal children in the sample belonged to families in the two poorest wealth quintiles, in which risk of severe stunting was three times higher compared to children in the two richest wealth quintiles. Again, emphasizing the need to link nutrition promotion and poverty programmes.

The clear case for need for coordinated nutrition action between concerned ministries cannot be overemphasized, given that stunting in children is influenced by multiple factors. At least six ministries directly play a role in this – Tribal Affairs, Health and Family Welfare, Women and Child Development, Consumer Affairs, Food and Public Distribution, Rural Development and Drinking Water and Sanitation. Have these ministries and their respective state departments made special efforts to reach out to schedule tribes? Partly yes, because all line ministries have flexible population norms for outreach services and staff recruitment in tribal pockets in various nutrition, health, water, sanitation, food security and poverty alleviation schemes. However, these efforts are marked by problems of scale and quality. Remote tribal hamlets, with poor road and transport connectivity, makes outreach and field monitoring a challenge. Shortage of skilled human resource, high staff turnover and absenteeism is a major problem in schedule tribe areas, particularly in zones of conflict. Assignments in tribal areas are generally perceived as 'punishment postings'. The fact that only one line ministry (Ministry of Health and Family Welfare) has a dedicated chapter for tribals in its annual plans, and annual reports of line ministries only mention the percentage of budgetary allocation to TSP without reference to any coverage, special schemes, allocations and expenditure for tribals, makes it clear that differential affirmative programming for tribal people is not a common practice.

Another big problem is the absence of nutrition data regarding tribals. The National Nutrition Monitoring Bureau (NNMB) reports on tribal population provide information on select nutrition indicators for only nine states. Evidence on the nutrition of STs is available only at the aggregated level, failing to account for the diversity among ST groups, Schedule V and Schedule VI States and ST blocks. Also, a lack of governance and other failures in implementation and delivery, both in quantity and quality, are significant even across flagship programmes. Though difficult, it is nevertheless essential to distinguish the effects of various factors that negatively influence service delivery in tribal areas. Monitoring and evaluation systems are not designed to provide data disaggregated by tribal blocks so as to assess the real and effective delivery of inputs as well as their quality.

So what needs to be done?

First, improving the 'nutrition of tribal children' needs to become the heart of the equity agenda cutting across key line Departments. *Second,* scope for experimentation an inherent part of tribal programming i.e., contractual staff, hardship allowances, partnerships, rotational postings in tribal locales with dual professional credits and flexi pools. *Third,* civil society and faith-based organizations with established grassroots presence and credibility should be actively partnered with increase outreach, generate community demand to reach out to mothers with timely information, counselling and support on a periodic basis, especially in inaccessible hilly and rugged terrain. Mechanisms for their engagement need to be simplified. *Fourth*, countrywide statistical profile of scheduled tribes in India needs to be widely available and used, as to inform policy programme decisions and scope of the National Nutrition Monitoring Bureau tribal nutrition surveys should be extended to all states. Given that all tribals are not equal, national data should be disaggregated by central and north-east as much as is possible. *Fifth*, while, addressing undernutrition in tribal children focus on scaling-up proven nutrition interventions during the first 1,000 days of life, from conception until two years of age is critical for preventing chronic undernutrition, coupled with livelihood, nutrition promotion and investing in tribal leadership and empowerment for sustained results. *Finally,* core reasons fuelling poverty and hunger in tribal pockets need attention through strict vigilance against poor legislative enforcement protecting their land, forest and administrative autonomy and by investing in tribal leadership and voice.

Conclusion

Accelerating multi-sectoral commitments for improving nutrition of India's tribal children is a moral imperative and right in principle and practice. This calls for a rethinking on differential programming strategies, budget and government accountability mechanisms and new rules, new optics and where tribal communities are not just informants but partners and influencers of change.

Disclaimer: Views presented in this article are personal and do not reflect those of UNICEF India

REVIEW ARTICLE

Challenges and Opportunities for Private and Public Health Care Insurance System in India

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Abstract: Insurance refers to a promise of compensation for any potential future losses. Health insurance is a form of insurance that compensates for medical expenses related to sickness and treatment. Huge portion of Indian population are vulnerable to economic burden in accessing health care. Equity in accessing healthcare is also of great concern in India. In the present scenario, vulnerable population of our country can be protected from impoverishment and catastrophic health expenditure through a model of health insurance that encompasses the entire population. However, health insurance is still in a developing condition in India. In this article we have discussed the challenges and opportunities for both the public and private insurance system in India. Presently there are important challenges in the public sector as well as private sector insurance in India in terms of monitoring, data capturing, administration and oversight. It is also important to gauge the financial sustainability of the insurance programme and develop early warning systems for identification of signs of collapse. Ensuring adequate focus on the primary and secondary level of care including preventive aspects is another area where insurance programmes have to work since majority presently focus only on tertiary care.

Key words: Health insurance, India, Challenges, Public, Private

What is health insurance?

Insurance refers to a promise of compensation for any potential future losses. Health insurance is a form of insurance that compensates for medical expenses related to sickness and treatment.[1] It is a measure whereby, risk of financial burden is spread over a group of individuals. Thus, people who are at risk contribute a small amount to health insurance fund and during sickness the contributors are paid to bear their treatment expenses.[2] Financial protection from the cost of ill health is one of the fundamental objectives of health system. The concept of Universal Health Coverage (UHC) advocates accessibility and affordability of health services to all those who need it without facing financial hardship during paying for their health.[3] A fair health system ensures equity in health care access.[4] People living in low and middle-income countries (LMICs) heavily depend on out-of-pocket (OOP) expenditure to finance their health care,[5] and accordingly a key element of the UHC is financial protection from direct payment in meeting quality assured health needs.[6]

Indians are vulnerable to catastrophic health hazards

In India 350 million people were below poverty line in the year 2009-10.[7] Almost 70% of the Indian population lives in rural area and 90% of workforces were working in informal sector.[8,9] As a result, huge portion of Indian population were vulnerable to economic burden in accessing health care.[5] Heavy dependence on OOP expenditure contributed significantly to household impoverishment in India.[10] Almost half of the of hospitalized Indian population (nearly 40%) borrowed heavily or sold assets to cover expenses and almost one fourth of Indians who were hospitalized, that is, around 39 million people, fell below poverty line annually due to OOP expenditure for addressing hospital expenses.[11,12] At the other extreme, in India, to avoid such catastrophic illness, almost 6% of population did not seek any form of health care.[13]

Healthcare system and OOP spending in India

The most important elements restricting the development of India's health care system are low level of public health spending which has result poor quality of preventive care and health status of the population. According to National Health Accounts, in the year 2012, only 33% of health expenditure was contributed by the government and almost 67% of health expenditure was by private

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out of which, 86% was through OOP expenditure.[14] This low level of public expenditure at the country level hides the heterogeneity across the states. Heterogeneity is also evident at the individual level as people with the highest health care need are least likely to fulfill their health care needs because of the difficulty in accessing health care services.[11] Moreover general populations are forced to seek health services from private sector as public health provision is markedly inadequate and thereby resulted in increase of OOP spending.[15]

Why this article?

In the present scenario, vulnerable population of our country can be protected from impoverishment and catastrophic health expenditure through a model of health insurance that encompasses the entire population. However, health insurance is still in developing state in India. In this article we have discussed the challenges and opportunities for both the public and private health care insurance system in India. We conducted a general review of the literature for the challenges noted in both public and private health care insurance in India. In this article all the government sponsored health insurances were defined as public health insurances and all non-government health insurances as private health insurance.

History of Health insurance in India

The early account of health insurance in independent India started with the Employees' State Insurance Scheme (ESIS) launched in the year 1948. The Central Government Health insurance Scheme for central government employees was launched in the year 1954.

However, according to National Family Health Survey III (2005-06), only 10% of the Indians were covered by some form of health insurance.[12]

Despite the presence of the insurance programs for the workers in organized sector, provision of health security for workers in the unorganized sector was a formidable challenge. The total work force in India is comprised of 459 million, of which around 27 million are in the organized sector, (distributed 18million in public sector and 9 million in the private sector). In the recent times government of India and state governments started schemes like Rashtriya Swasthya Bima Yojna (RSBY) which was launched in the year 2008 for the underprivileged population and to cover Below Poverty Line (BPL) families under health insurance.[18]

State specific Health insurance schemes have already been started that include Rajiv Arogyasri (Andhra Pradesh), Yeshasvini (Karnataka), Kalaignar (Tamil Nadu), RSBY plus (Himachal Pradesh) and proposed Apka Swasthya Bima Yojana (Delhi).[19] All these health insurance schemes are targeted to cover BPL section of the respective state with wider coverage at tertiary care expenses.[19] In the year 2009-10 about 8% of health expenditure by government was through government sponsored health insurances.[19] Apart from these, private health insurance for the people who can pay is also prevailing in Indian market. With economic liberalization in the year 1999 many private insurance companies have entered into the Indian market.

Challenges and Opportunities of Public Health Insurance sector in India

Beneficiary related challenges in public health insurance

Only one tenth of Indian population are covered by health insurance. Most of the insured persons are covered by government sponsored health insurance and these are mainly targeted to population working in organized sector.

Enrolment related challenges: Government has initiated health insurance to cover a large portion of Indian population working at unorganized sector. RSBY is such an initiative. People living below poverty line (BPL) are being enrolled in this health insurance scheme.[20]As the criteria for BPL category is very stringent in almost all parts of our country, most of the APL population falling just above the BPL line become unprotected from the financial catastrophe of health expenditure. Moreover, there have been instances where many eligible BPL families were left out from the list and many ineligible families included in the list. So, enrolment related issues always posed a vital challenge in covering actual needy population.

Coverage related issues: While expenses incurred by the outpatient care and drugs are the principle reasons for impoverishment among poor Indians,[21,22] most of the health insurance covers only hospitalization expenses for secondary and tertiary care but not ambulatory care and out-patient care. Even the expenses covered through insurances are inadequate many a times. A study from Gujarat showed that almost 60% of the insured persons made OOP.[23]

Client satisfaction: Another problem with the public health insurance is of low levels of satisfaction with healthcare services among beneficiaries, making them reluctant to renew the insurance. Unavailability of network of empanelled hospitals in the rural areas hinders the insurance system to efficiently cover the rural population. People from rural area had to travel a long distance to get facilities that make them highly unsatisfied.[24]

Service related information and feedback: Lack of proper information system about the package of services available under the insurance increases the chance of OOP expenditure many a times. As the insured person avail a medical procedure for which he is not covered by the insurance. Absence of proper grievance cell is also a

matter of concern to get proper feedback and continuous improvement.[19]

Insurer related challenges in public health insurance

Enrolment related challenges: The trend of enrolment in public health insurance differs from state to state. It has been observed that districts in states with a poor quality of governance have lower enrolment rate in government-sponsored health insurance.[25] Rural-urban gap in enrolment also adds to it.

Self-sustainability related issues: Self-sustainability is of major concern with most of the government sponsored Health insurance. To tackle this major issue, the fund allocation must be accounted by the government for the initial stages of planning and in maintenance phase of the insurance scheme. Expansion of the scheme should be able to ensure the coverage of already insured and of all those that are entitled to subsidized benefits.[20] There are also challenges in framing eligibility criteria for beneficiaries as we have already discussed the problem of BPL criteria.

Quality control related issues: Little quality control and moral hazardare emerging as a big challenge for government sponsored health insurance.[26,28] High level of claim ratio and false claim are raising. Government of India has already laid a standard treatment guideline for uniform treatment protocol throughout India. Evidences of deviation from standard treatment guideline are quite frequent in India.[29] This malpractice not only extorts extra money from the patients but also expose them to the untoward effects of medicines.

Provider selection issues: Identifying the insurance scheme partner or company in a transparent manner through open tender who can deliver the services at a competitive rate and creation of network hospitals with grading who agree to provide quality treatments at the approved package rates are other emerging challenges in health insurance sector. (27)Many hospitals refused the chronically ill patients under RSBY coverage. Evidences of false insurance claim and poor focus on quality have come into notice.[30]

Opportunities for Public Health Insurance System in India

Using existing health infrastructure as a platform: A well-structured government health system consisting of primary, secondary and tertiary healthcare facilities is already in existence in India. Revamping the linkage and referral system can establish the whole health infrastructure over a solid base. Government sponsored health insurance system can then potentially cover Indian population universally over this platform.

Untapped market: India, with lower health insurance coverage, provides a huge opportunity to expand for the insurance market in breadth and depth.

Wide range of coverage: Most of the insurances support only inpatient care cost, whereas most of the OOP expenditure is due to outpatient and medicinal cost. Additionally, ignorance of early disease also push a majority into severe stage of disease, there-by over-burdening them with major inpatient cost. So insurance covering outpatient care facilities, early diagnosis and treatment of illness would be able to prevent the larger financial burden in the long term.[34] A study in Andhra Pradesh discussed an integrated model where health insurance covers benefits fromall health care tiers, while providing a greater benefit to families living below poverty line.[31]

Using existing institutes: Existing bodies like ESIC and railways, have a vast infrastructure and large experience in the field of health insurance that could be expanded for better risk pooling.[20,35]

Improvement of quality services: A study has proposed that government sponsored scheme has scope for improvement in strategic purchasing, quality of care, continuous audit and in-built evaluation.[31] To overcome the shortage of skilled specialists and critical infrastructure, government may purchase the tertiary care for the beneficiary from private sector. But a robust regulatory system with periodic and social audit is needed to control malpractice and treatment standardization.[32]

Challenges and Opportunities of Private Health Insurance sector in India

Beneficiary related challenges in Private health insurance

Affordability issues: Though a large difference is present in cost of medical care between urban and rural areas, the existing health insurance policies do not recognize the fact resulting in a common premium for all and many a time rural population are not able to purchase health insurance due to high premium rate.[34]

Cream skimming: The private insurance usually is unlikely to cover elderly and sick people (*cream skimming*), and thus adversely affecting the goal of health insurance.

Regulation of cost: There is also a tendency to increase the health care cost for insured persons by the hospitals, by rationalizing approaches to extended stay, higher levels of use of diagnostics, and procedures that what is warranted. Health insurance if not regulated properly, can only lead to unethical practices and further victimize the patients.[36]

Insurer related challenges in private health insurance

Less interest among private sectors: India has experienced economic liberalization 25 years back but still private companies contribute 30% of health insurance market which is almost 5 times lower than the world average. As the claim ratio in private companies is almost 100%, most

of the insurance companies do not show interest in health insurance.[37]

Moral hazards related issues: Evidences from Community Based Health Insurance (CBHI) model in Gujarat, reported increased health-seeking behavior among the insured. From public health perspective it may project as a good sign, but we cannot rule out the moral hazard which may affect self-sustainability of the insurance model.[38] Secondly, registered practitioners and healthcare facilities were lightly regulated at best. It has been seen that the hospital admission rate among insurance covered population is almost double the national average of hospital admission.[32] Another CBHI from Andhra Pradesh, Rajeev Arogyashri, based on PPP model is also posing to be non-sustainable due to high moral hazards from the beneficiary and providers.[39] Uncontrolled private sector inadvertently may increase overall health cost by open ended, fee-for-service payment system.[19]

Provider accreditation related issues: Doctor accreditation is another key obstacle in India and any proposed introduction of an accreditation program raises alarm from examining stakeholders. Presence of vast number of non-registered medical practitioners who fall outside the formal system is another hindrance in ensuring a net of care and payment system.[40]

Opportunities for Private Health Insurance System in India

Untapped market: In view of the limited penetration of private insurance among population, a customized, personalized and flexible scheme can attract more people. As the health care cost isrelatively low in rural areas, "one size fit for all" approach can be transformed into a differential rural health insurance scheme fit for rural population. A proper rating mechanism of healthcare services is needed to control the provider pricing. Newer schemes to cater the changing needs of the society, especially insurance covering sick and elderly population is the need of the hour.[33]

Better infrastructure of private sectors: Private health insurance system has the financial edge to implement a quality data collection and reporting system.

Reducing burden on public health sectors: A proportion of Indian public health expenditure is consumed by economically advanced section of our society.[41] Lucrative and better insurance schemes may attract them towards private hospitals with better treatment facilities, which in turn will give more opportunities for the public health sector to spend for the economically poorer section of India. So the formation of a differential area based insurance policy can popularize it among general population. So cost control and package based approach is an alternative to tackle this problem.[19]

Conclusion

Health insurance in India is in its incipient stage. With increasing health care cost Indian population is at higher risk of catastrophic health expenditure which ultimately leads to impoverishment. Health insurance can protect this huge potentially vulnerable population and fulfil India's desire to achieve Universal Health Coverage. However, presently there are important challenges in the public sector as well as private sector insurance in India in terms of monitoring, data capturing, administration

Table 1: Challenges in different types of Health Insurance Schemes

Challenges in Public health insurance	Challenges in Private health insurance
Beneficiary's perspective 1. Enrollment issues (e.g. Based on BPL criteria). 2. Selective coverage, specially covering only secondary and tertiary care patients. 3. Services of empanelled hospitals are not satisfactory. Rural people are not able to avail health facility in their neighborhood. 4. Lack of information about package of services. Proper feedback system yet to be functional.	**Beneficiary's perspective** 1. Acceptability issue due to high cost 2. Uniform premium for rural and urban areas 3. Cream skimming
Providers' perspective 1. Non-uniform enrollment (Acceptability issues) 2. Self-sustainability issues 3. Quality control and emerging moral hazards 4. Selection of provider 5. Malpractice and deviation from standard treatment guideline	**Providers' perspective** 1. Moral Hazards 2. Problem in accreditation of health facilities 3. Lack of interest among insurance companies

and oversight. We believe that the presence of the pool of human resources in the community medicine departments in the medical colleges across the country should come forward to address this challenge. They could focus on any or more of the components e.g, on data capture, treatment standardization, monitoring, quality assurance, administrative support by providing supportive supervision, ability to do certain audits for malpractices including overbilling. Ministry of Health and Family Welfare could help organize relevant trainings in this relation. It is also important to gauge the financial sustainability of the insurance programme and develop early warning systems for identification of signs of collapse. Ensuring adequate focus on the primary and secondary level of care including preventive aspects is another area where insurance programs have to work since majority presently focus only on tertiary care. Finally, regulation of health insurance, especially in the private sector is very crucial, as has been explained recently in the opinion piece published in Indian Express, 'Where the health insurance system was not tightly regulated, as in the United States, people were at the mercy of insurance companies that could refuse coverage to or charge high premiums from all but the healthy, and find pretexts for refusing to reimburse an insured person who needed care.

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REVIEW ARTICLE

Can Draft National Health Policy-2015 Revamp Mental Health System in India?

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Abstract

Mental Health is an indispensable dimension for human development. It deals with human thoughts and emotions, and provides a pathway for healthy minds and contributes to a healthy living. Absence of healthy mind poses a great burden to the economic, political, and social functioning of human beings, society and nation. Mental health in India is a neglected paradigm with the shortage of trained staff and inadequate infrastructure. Mental illness has been veiled in stigma, ignorance and superstition since a long time in India. Lack of political and administrative leadership, financial commitments and human resources, are missing in the national and expanded district programmes. Efforts have been put in recent times by the government to oversee the disease burden and provide remedial measures. Draft national health policy formulated in 2015 had thrown a light of hope in this scenario. The gap in the provision of efficient health care to the needy was the building block of this draft formulation.The hassles in the existing system should be identified and efforts to cut down the over-burdened system should be made to cater to the actual needs of the community.

Key-words: Mental health, India, Health system, Draft National health policy, Way forward

Introduction

Mental Health, which deals with human thoughts and emotions, and provides a pathway for healthy minds, is a vital resource for human development. Absence of healthy mind poses a great burden to the economic, political, and social functioning of human beings, society and nation.[1]Mental health, as defined by the world health organization (WHO) is "a state of well-being in which every individual realizes their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community".[2] Though knowledge regarding mental health has been in vogue since ancient ages, it merely attracted attention of policy makers in last few decades. With burgeoning burden of mental health all over the world in terms of cases of mental illness and loss of productivity, government of India has started laying extra efforts to mitigate the burden of mental illness and associated problems. Recently published draft national health policy 2015 (DNHP-2015) has made a note on mental health and its future perspective. This article discusses about mental health burden and government of India initiatives to tide over the burden.

Historical context

Evidences of mental health illness have been documented since ancient age. The first psychiatric hospitals were built in the medieval Islamic world in the 8th century in Baghdad (705 AD) followed by Fes and Cairo.[3] Many Indian scriptures including Atharva-Veda, Ramayana and Mahabharata mentioned about disordered mental states and coping measures.[4,5] Traditional Indian system of medicines viz Unani system of medicine and Charak Samhita have mentioned about various types of mental disorders and various attributes for running mental health hospitals.[6,7] Mental health has drawn special attention even during precolonial and colonial era when many mental health hospitals and asylums were established in India.[8] The first psychiatric outpatient service, precursor to the present-day general hospital psychiatric units (GHPU), was set up at the R.G. Kar Medical College, Calcutta in 1933.[9] On the recommendation of the Bhore committee, All India Institute of Mental Health was set up in 1954, which later became the National Institute of Mental Health and Neurosciences (NIMHANS) in 1974 at Bangalore. The first training program for Primary Health Care was started in 1978-79.[6] Various training programs

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for psychiatrists, clinical psychologists, psychiatric social workers, psychiatric nurses and primary care doctors were conducted at Sakalwara unit during 1981-82.[10] Early drafts of the National Mental Health Program were formulated and subsequently adopted by the Central Council of Health and Family Welfare, in 1982. Since its inception, there has been development of a model District Mental Health Program, and development of training materials and programs for practitioners and academicians.[11]

Global burden of mental health disorders

It has been found that 4 out of 10, that is almost 25% of global population suffer from any of the mental illnesses in their life time.[12] In 2010, mental and substance use disorders accounted for 183·9 million DALYs or 7·4% of all DALYs worldwide. The burden of mental and substance use disorders increased by 37·6% between 1990 and 2010. Most of the DALY loss was reported in the age group of 10-29 years.[13] A study by Vigo D et al using published data, estimated the disease burden for mental illness which showed higher estimate of disease burden than earlier estimation. The study estimated that the global burden of mental illness accounts for 32·4% of years lived with disability (YLDs) and 13·0% of disability-adjusted life-years (DALYs), instead of the earlier estimates suggesting 21·2% of YLDs and 7·1% of DALYs.[14] As per global burden of diseases report 2004 by WHO, DALY lost due to unipolar depressive disorder was 26.5 million (3.2%) in low income countries and 29 million (5.1%) in middle income countries. The same report also estimated that unipolar depressive disorder itself would become the disease with highest DALY loss (6.2%) by the year 2030. [15]

Burden of mental illness in India

In India, approximately 6.5% of population was reported to be suffering from some form of serious mental disorder. The problem is equally distributed among urban and rural areas with slightly higher female preponderance.[16] A systematic review estimated that almost 20% of the adult population in the community is affected by some psychiatric disorder. The reported prevalence of mental disorders is widely acknowledged to be an underestimation of the true burden as wide spectrum of mental disorders like suicidal attempts, aggression, violence and widespread use of substances are mostly not reported.[17] A study by Lakhan R et al using national sample survey organization survey report (2002) data estimated that overall prevalence of mental illness was14.9/1000. The prevalence was higher in rural area (17.1/1000) than urban area (12.7/1000). A strong linear correlation was found with age both in rural and urban area, the prevalence being higher in younger age group.[18] A study conducted by Indian Council of Medical Research found that the overall prevalence of psychiatric morbidity in rural dwelling, older adults aged more than 60 years was 23.7%.[19] (Table 1)

Economic consequences of mental health

World Economic Forum concluded that the indirect costs of mental illnesses are much higher than the direct costs i.e., the negative economic consequences of not treating the mental illness is much higher than the costs of treatment.[21] Mental health and socio-economic development appear to go hand in hand. Investing in mental health is therefore investing for development.[22] It is imperative to focus on mental health as most of the people affected are in the age group of 25-44 years indicating that the productive workforce of the community is at stake. [23]

Existing mental health infrastructure in India

In India, expenditure towards mental health by the government is 0.06% of the total health budget which is only 4% of National GDP. The availability of mental health outpatient facilities in India is 0.329/100,000 population. There are 0.82 beds per 100,000 population in general hospitals. In India, there are only 43 mental hospitals with 1.469/100,000 beds, and a workforce of 0.047/100,000 psychologists and 0.301/100,000 psychiatrists. There is shortage of trained staff, the availability of nurses trained in mental healthis0.166/100,000 and that of social workersis0.033/100,000. [20]

Mental health initiatives in India: (Table 2)

a. National Mental Health Program (NMHP)

India's National Mental Health Program (NMHP) has been implemented since 1982. Under the NMHP, community mental health services are provided through the District Mental Health Program (DMHP) by integrating mental health care at the primary care level, with supervision and support from a mental health team at the district level.
Integration and delivery of mental health care through primary health care was the reason for scarcity of mental health professionals. Curtailed budgetary estimations and failure of financial support from the government led to the failure of the program. [24]

Though three decades have passed since the inception of the NMHP, at present only 123 districts are covered under the DMHP. In addition, it is dysfunctional in many districts. Integration efforts paved a way for effective provision of mental health services by ensuring increased availability of psychotropic medications. But lack of in-patient facilities at the district level, non-empowerment of physicians, failure of out-reach activities to reach the needy beyond the district level have resulted in limited impact on patient services.

The primary health care system, being a gate-way to a holistic approach, and providing a basket of health care services, is already overburdened. The endeavor of providing mental health care services, through primary health care system, although a novel idea, is threatened

Table 1: Burden of mental illnesses in India

Authors (Year)	Study Method (Settings)	Reported prevalence/DALY
Charlson FJ et al (2016)	Systematic review	1. Around one sixth of Global DALYs attributable to mental, neurological and substance use disorders were found in India (31 million). 2. The increase of burden from 1990 to 2013 was by 44%. 3. The estimated increase of burden of mental, neurological and substance use disorders is estimated to increase by 23% in India between 2013-2025.
Malhotra S et al (2014)	Systematic review and Meta-analysis	1. The prevalence rate of child and adolescent psychiatric disorders in the community has been found to be 6.46% and in the school it has been found to be 23.33%.
Math SB et al (2010)	Systematic review	1. Epidemiological studies report prevalence rates for psychiatric disorders varying from 9.5 to 370/1000 population in India.
Bhola P et al (2003)	Systematic review	1. From community based studies the prevalence of psychiatric disorders was reported to be 0.48% to 29.4% 2. From 23 school based studies the prevalence of psychiatric disorders was reported to be 3.23% to 36.5%.
Deswal BS et al (2012)	A community based cross-sectional study including 3000 adults aged more than 18 years (Pune, Maharashtra)	1. Overall lifetime prevalence of mental disorders was found to be 5.03%. 2. Rates among males (5.30%) were higher as compared to females (4.73%). 3. Among the diagnostic group, depression (3.14%) was most prevalent followed by substance use disorder (1.39%) and panic disorder (0.86%).
Sathyanarayana Rao TS et al (2014)	A community based cross-sectional study including 3033 individuals of all age group (Suttur, Karnataka)	1. It was found that 24.40% of the subjects were suffering from one or more diagnosable psychiatric disorder. Prevalence of depressive disorders was found to be 14.82% and of anxiety disorders was 4%. Alcohol dependence syndrome was diagnosed in 3.95% of the population. Prevalence of dementia in subjects above 60 years was found to be 10%.
Charlson FJ et al (2016)	Systematic review	1. Around one sixth of Global DALYs attributable to mental, neurological and substance use disorders were found in India (31 million). 2. The increase of burden from 1990 to 2013 was by 44%. 3. The estimated increase of burden of mental, neurological and substance use disorders is estimated to increase by 23% in India between 2013-2025.
Malhotra S et al (2014)	Systematic review and Meta-analysis	1. The prevalence rate of child and adolescent psychiatric disorders in the community has been found to be 6.46% and in the school it has been found to be 23.33%.
Math SB et al (2010)	Systematic review	1. Epidemiological studies report prevalence rates for psychiatric disorders varying from 9.5 to 370/1000 population in India.
Bhola P et al (2003)	Systematic review	1. From community based studies the prevalence of psychiatric disorders was reported to be 0.48% to 29.4% 2. From 23 school based studies the prevalence of psychiatric disorders was reported to be 3.23% to 36.5%.
Deswal BS et al (2012)	A community based cross-sectional study including 3000 adults aged more than 18 years (Pune, Maharashtra)	1. Overall lifetime prevalence of mental disorders was found to be 5.03%. 2. Rates among males (5.30%) were higher as compared to females (4.73%). 3. Among the diagnostic group, depression (3.14%) was most prevalent followed by substance use disorder (1.39%) and panic disorder (0.86%).
Sathyanarayana Rao TS et a(2014)	A community based cross-sectional study including 3033 individuals of all age group (Suttur, Karnataka)	1. It was found that 24.40% of the subjects were suffering from one or more diagnosable psychiatric disorder. Prevalence of depressive disorders was found to be 14.82% and of anxiety disorders was 4%. Alcohol dependence syndrome was diagnosed in 3.95% of the population. Prevalence of dementia in subjects above 60 years was found to be 10%.

Table 2: Existing government policy and programs on Mental Health in India.

National Mental Health Program (1982)
1. District Mental Health Program
2. Manpower Development schemes
3. Modernization of State run hospitals
4. Up gradation of Psychiatric Wings of Medical Colleges/General Hospital
5. Information Education Communication
6. Training and Research
7. Monitoring and Evaluation
National Mental Health Care Act (2013)
1. Government need to assure right to access mental health care by all and that will be funded by government.
2. Government is required to fulfill manpower requirement according to international standard within 10 years.
3. Assurance of multiple rights of persons with illness.
4. Registration of health facilities as mental health establishments (Hospitals with facilities for mental health care).
4. Banning of unmodified Electro convulsion therapy (ECT).
5. Need of approval from Mental Health Review Board for ECT to minors.
6. Exemption of General Hospital Psychiatry Unit from scope of this bill.
National Mental Health Policy (2014)
1. Promotion of Mental Health
2. Prevention of Mental disorders and suicide
3. Universal access to mental health services
4. Enhanced availability of human resources for mental health
5. Community participation
6. Research
7.Effective Governance and accountability
8. Monitoring and Evaluation

because of the lack of effective counseling time given by the health care provider. Lack of practical training to manage common psychiatric conditions among the health care providers is also a major lacuna.

The program largely focused on curative services, with relative lack of provision of preventive and promotive services. Issues like suicide prevention, stress management at work place and adolescent counseling services which could help in effective participation of community and increased program efficacy were lacking. A disease focused approach was taken into consideration rather than primary prevention.

b. 12thFive-year plan (2012-2017) and mental health

The plan formulates a special focus to deal with mental health with special training to community workers, primary care teams and care-givers. A new insight into integration of Indian System of Medicine with modern system of medicine to promote mental health of the elderly in view of rejuvenation therapies has been given. Provision of para-health workers as mental health therapists, re-orientation of medical curriculum with focus on mental health teaching has been made. The target formulated in the plan was to focus on the extension of coverage of care provision to all the districts by the end of 2017. [25]

c. National Mental Health Policy (2014)

Mental health, a neglected paradigm, is gaining a renewed attention in recent years. Government of India launched its first ever National Mental Health Policy in October 2014 with a vision of promotion of mental health and prevention of mental health illness.

An effort to provide an insight into the neglected paradigm of mental illness has been made by formulating new strategies. To deal with the lack of resources, increase in creation of specialists with public financing, integration with the primary care approach to ensure early identification and timely referral, follow up with telemedicine linkage was suggested.[26]

Sustainable Development Goals and mental health

Sustainable developmental goals were formulated in 2015 with a view to address environmental, economic and social sustainable development. Six elements of dignity, people, prosperity, planet, justice and partnership were framed that would reinforce the universal, integrated and transformative nature of a sustainable development agenda. A focus on mental health was made a special

note to promote mental health and well-being and reduce pre-mature mortality from non-communicable diseases. Targets were formulated emphasizing the need for mental health promotion. By 2020, 80% of countries should possess national policy/plan for mental health, possess functioning national, multi-sectoral mental health promotion and prevention programs, to routinely collect and report a core set of indicators and50% countries to possess national law for mental health. Indicators for evaluation of health care system accessibility were made as 20% increase in service utilisation by persons suffering from severe mental disorder and 10% reduction in suicide death rate. The formulation of targets and indicators would envisage the goal of improvised and sustained efforts in achieving mental health and well-being of the community. This indicates the efforts of nations to identify and mitigate the burden of mental illnesses. [27]

Issues and challenges in mental health

Mental illness has been shrouded in stigma, ignorance and superstition since a long time in India. Deprivation and poverty are the strong factors favoring mental disorders. Lower levels of education, low household income and lack of access to basic amenities predispose individuals to high risk of mental disorder.[28] Evidence shows highest lifetime risk of affective disorders, panic disorders, generalized anxiety disorder, specific phobia and substance use disorders among illiterate and unemployed persons.[29]

Rapid social change, gender discrimination and social exclusion place females at higher risk.[30] Notwithstanding, the higher risk of developing mental illness, studies have found that women abstain themselves from health care seeking, mainly because of social stigma.[31,32]

Paucity of trained workforce to oversee the problem burden and to cater to health care needs of mentally ill is posing a major burden.[33] The increasing burden of mental diseases and existing health care service system shows that providing mental health services is a challenging task. The concern prevails more-so for rural areas with limited accessibility of health care system for mental disorders. Lack of mental health services, low literacy, socio-cultural barriers, traditional and religious beliefs, and stigma hinder people in rural areas from seeking health care services.[34] A collective move towards infrastructural, architectural, and programmatic reforms might throw a light of hope to deal with the disease burden.

Like other developing countries, India has undergone rapid urbanization over the past fifty years with the increase of population living in urban areas. In India urban population increased from 286 million (27.8% of total population) in 2001 to 377 million in 2011 (31.1% of total population).[35] The size of the country's urban population is projected to increase to nearly 586 million by 2030.[36] Urbanization affects mental health through the influence of increased stressors and factors such as overcrowded and polluted environment, high levels of violence, and reduced social support. As rapid urbanization attracts younger population to migrate, older population who stay back in rural areas face deprivation of care and suffers from mental stress.[37] Rapid urbanization and following rapid migration has added high number of mental illness cases and made many more vulnerable to develop mental illness. [38]

Though, in India, public health care delivery system has been structured in three tiers viz. primary, secondary and tertiary care system, it is grossly underfunded, under staffed, and poorly equipped.[39]

Finally, the keypillars in effective provision of services i.e., political and administrative leadership, financial commitments and human resources, are missing in the national and expanded district programmes.

Draft National Health Policy 2015

Draft national health policy (DNHP-2015) was formulated with the urgent need to revamp the performance of health system. The gap in the provision of efficient health care of the needy was the building block for need of this draft formulation. Notwithstanding existing efforts to provide equitable and accessible health care for all, disparities exist across the country both in terms of urban-rural and also among urban with urban poor being deprived of basic amenities. The policy underlies the Government's determination to influence economic growth for achieving effective health outcomes since equity in health care provision can be approximated by development of nation's economy. Concerted efforts to reform the prevailing health system was done in the draft with increased allocation of 2.5% of GDP to public health expenditure promising an enlightening era in seeing through the ambitious goals.

Poor state of mental health and gap between demand and supply in mental health services has been readily acknowledged in DNHP-2015.DNHP-2015 has advocated simultaneous improvement in the area of recruitment of specialists, training of existing staff and utilization of information – technology. Increase in creation of specialists with special preferences for those who are willing to work in public system and to limit emigration as it is found to be a major problem leading to low number of specialists in India has been proposed in DHNP-2015. Integration with primary healthcare system, building a well-functioning referral system and follow-up with medication and telemedicine linkages would be another area to develop significantly. DNHP-2015 also envisages training of general duty medical officers and nurses in managing cases of mental illnesses in areas where immediate recruitment of specialists would not be possible. These mid-level specialists would be enabled by telemedicine linkage. DNHP-2015 has also planned to recruit counsellors and psychologists at primary level facilities. They would counsel and support

mental illness cases at primary care facility level. The policy would put an extra effort to create a network of community members who would provide psycho-social support for mental health problems and de-stigmatize the psychological disabilities. Existing institutions would be supported with necessary financial and human resource support and supervision for ensuring humane and caring approaches to inmates. Another envisaged strategy is to involve ASHAs to provide mental health services at village level. In the DNHP-2015 draft, a mention was also made on improving legal framework for health care and the right to health. For addressing the legal inadequacies, mental health bill has been put under review.

In light of dealing with the heavy burden of mental illnesses, government's decision to create more number of specialists appears to be promising. The problem of emigration among Indian medical graduates is reported to be high in India. A study by Jenkins R et al reported that 4687 Indian psychiatrists are registered in high income countries.[40] Another study also substantiates the findings of high emigration among Indian psychiatrists.[41] Sustained efforts by Indian government in exploring mechanisms to retain psychiatrists back in the country, would mitigate the burden of mental illness to a great extent. But DNHP 2015 did not provide any lay out on how it would actually execute the same. The policy draft also mentioned about giving preferences to those who are interested to serve in rural areas. Shankar RP et al conducted a study among first and second year medical students in Nepal on student's perception about working in rural areas after graduation. The study found that doctors are reluctant to serve in rural areas due to inadequate facilities, low salary, less security, problems with professional development, less equipped health centers, being away from home and difficulties in communicating with illiterate and rural population.[42] India with poor public healthcare infrastructure especially in rural areas would face hardship in finding psychiatrists willing to work in public system.[43] Rural-urban disparities also exist with few psychiatrists catering to rural areas which comprise about 2/3rds of population of the country.[44] Factors favoring physicians to engage themselves towards private sector should be made a special focus on. At present, only 12% of the registered doctors work in public sector.[45] Efforts are also needed to lower the gap of supply side in filling up the vacant posts in primary health care level.[39]

Mental health is being mostly addressed at secondary care centers. The increased involvement of private sector in secondary care levels and tertiary care levels through insurance based packages would hinder the accessibility and timely utilization of services, more-so among the marginalized rural population. More-over, most of the available insurance schemes do not cover the chronic diseases like mental health disorders.[46] To manage mental illnesses at secondary care level of public healthcare system by mid-level specialists might not be a prudent decision owing to complexity of disease management. Though it has been envisaged to use telemedicine in providing healthcare services and enabling mid-level specialist, implementation of telemedicine is still limited among few private and prestigious tertiary care public hospitals. Moreover, the cost of teleconsultation is too high to introduce in remote healthcare settings.[47]

For implementing nation-wide policy, budgetary support is the prime determining factor. Though the government is trying to implement the national mental health policy through national health mission, requisite financial allocation is lacking. Government has not allocated a single rupee for mental health in 2015 budgetary allocation and mental health has been merged with National Health Mission which has also had its funding curtailed.[48] The proposal of engaging community members in giving psycho social support and decision to revise mental health bill would be a positive push toward mitigating problem of mental illnesses.

Focus on primary health care system integration still prevailed in the draft but it would just be re-packing and re-introducing the existing system. Unless the hassles in the existing system would be identified and efforts to cut down the over-burdened system is made, no new policy would cater to the actual needs of the community. Telemedicine linkage was proposed as a mechanism to deal with the burden, which can be efficient with the launch of digital India.

Way Forward

Mental health is one of the neglected areas of Indian health system. Though primary health care system has made a large stride to improve overall health scenario of the country, mental health care is still lacking the much needed attention. With worldwide rising focus on mental health, immediate action is imperative for betterment of mental health care in India.

It would be a prudent decision to create a designated fund for mental health care program. The funding must be used effectively to improve infrastructure and train manpower. Availability of doctors trained in mental health and free medicines are minimum requirements to provide mental health care at PHC level. A brazen step to train health care professionals in accordance with the primary health care of mental illnesses to enhance skills and confidence in managing common psychiatric conditions at the primary health center level is the need of the hour. As government has already stepped forward to increase number of doctors and paramedics trained in psychiatric illnesses, exposure of undergraduate and nursing students in management of psychiatric illnesses should be incorporated in medical curricula in a more consolidated way to increase their

acumen in managing common psychiatric illnesses.

Development of information, education and communication strategy (IEC) with focus on mental health is imperative to combat mental health issues in our country. Increasing awareness among general population is imperative to encourage their health seeking behavior. In the era of technological revolution, effective use of audio-visual media need to be harnessed to spread awareness on common mental health problems prevailing in our society and sensitizing general population to reduce stigma associated with mental health. Special IEC activities including display of short films, drama or local folks need to be organized to sensitize Indian society for social inclusion of ostracized patients suffering from mental illness.

Special cadre can be trained to build a work force dedicated in mental health care. Imposing additional duty on already overburdened accredited social health activist might not be a wise decision to adopt. Mental health must not act as a second fiddle to general health, rather it should get special importance as other non-communicable diseases.

Public private partnership (PPP) model has been proved to be an effective add on in multiple national health programs.[49] PPP model can be incorporated in mental health program for further strengthening its capacity with special enforcement directing inclusion of mental health in available health insurance schemes coverage spectrum. Though utility of PPP is not very affirmative in proving direct medical facilities for mental illnesses, non-government organizations can be sought as an aid in training of health care force, IEC programs, medical intervention services and for maintenance services at health care facilities.

Conclusion

Mental Health is a neglected domain of Indian health care system. In view of increasing burden of mental illnesses, special emphasis is laid on mental healthcare by government of India in recent years. Recently launched DNHP-2015 acknowledges the problem and provides insight into government's will to mitigate the problem. Though there are many shortcomings in the draft policy, it ushers a ray of hope in the barren land of mental healthcare in India. Concerted efforts by policy makers and various stakeholders is the constitutive need of the hour to restore hope and dignity in the terrain of mental health care system in India.

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Ultrasonography with Doppler Assessment of the Fetus with Intrauterine Growth Restriction(IUGR)

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Abstract

There is a strong association between stillbirth and fetal growth restriction. Early detection and management of IUGR can lead to reduced related morbidity and mortality. In this paper we have reviewed effectiveness of Doppler velocimetry for the detection and surveillance of high risk pregnancies. Serial fundal height measurement plotted on customized charts is a useful screening tool, whereas fetal biometry and Doppler flow are the mainstay for investigation and diagnosis of IUGR. Among high-risk pregnancies with suspected IUGR, the use of umbilical arterial Doppler assessment significantly decreases the likelihood of labour induction, caesarean delivery, and perinatal deaths. Ante partum surveillance with Doppler of the umbilical artery should be started when the fetus is viable and IUGR is suspected.

Key words: Doppler, intrauterine growth restriction, umbilical artery, uterine artery, middle cerebral artery.

Introduction

Intrauterine growth restriction (IUGR) is defined as sonographic estimated fetal weight at one point in time during pregnancy being at or below the 10thpercentile for gestational age.[1] According to the American College of Obstetricians and Gynaecologists, IUGR is one of the most common and complex problems in modern obstetrics.[2] Several demographic factors, including advanced maternal age, assisted conception technologies and pregnancy with maternal co morbidities interact to steadily increase the risk of IUGR and stillbirth in third trimester.

Most cases of IUGR are caused by placental insufficiencies either primary or secondary to maternal aetiology. Placental insufficiency, whether primary or secondary to maternal factors such as hypertension, poor nutrition, etc., is the most common cause of intrauterine growth retardation (IUGR), which is an important obstetric problem on account of the high associated perinatal mortality and morbidity. It is essential to recognize placental insufficiency early so that its hazards can be reduced, if not prevented. Suboptimal growth at birth is linked with impaired intellectual performance and diseases such as hypertension and obesity in adulthood.[3]

Current challenges in the clinical management of IUGR include accurate diagnosis of the truly growth-restricted fetus, selection of appropriate fetal surveillance and optimizing the timing of delivery.[4,5] Despite the potential for a complicated course, antenatal detection of IUGR and its ante partum surveillance can improve outcomes. IUGR has been categorized as symmetrical or asymmetrical. Fetuses with symmetrical IUGR are proportionately reduced in size, whereas in asymmetrical the fetal abdomen is disproportionately small in relation to head & limbs.[6] Numerous sonographic criteria using both conventional & Doppler have been proposed for antenatal diagnosis of IUGR.

Sonographic criteria for IUGR

- Advanced placental grade.
- An elevated ratio of femoral length to abdominal circumference (AC).
- An elevated ratio of head circumference (HC) to AC.
- Low EFW.
- Unexplained oligohydramnios[7].

Fetal weight below 10th percentile has negative predictive value of 99%, a sensitivity of 89%, and a specificity of 88% for the detection of IUGR. An elevated HC-to-AC ratio has a negative predictive value of 98%, a sensitivity of 82%, and

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a specificity of 94% for the detection of IUGR. Decreased weight with decreased amniotic fluid and the presence of hypertension are good predictors of IUGR.

Doppler study

IUGR is a pathological condition strongly related to the development and function of the uteroplacental and fetoplacental circulations. An adequate fetal circulation is necessary for normal fetal growth. To facilitate this, remarkable changes occur in the maternal, placental and fetal vasculatures.

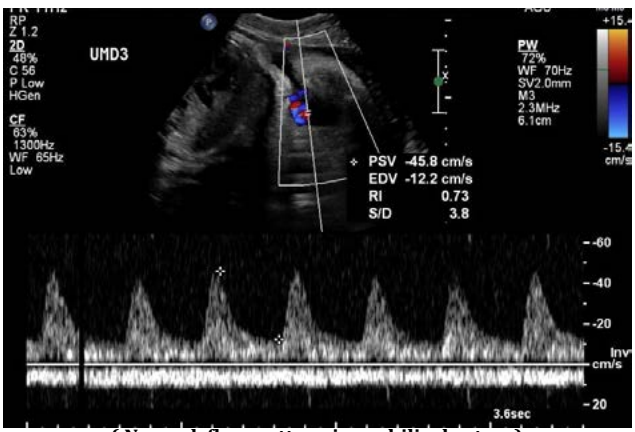
Doppler USG enables a better understanding of the hemodynamic changes and has therefore become one of the most important clinical tools for fetomaternal surveillance in high-risk pregnancies. It can be credited with causing a significant decrease in perinatal mortality and morbidity.

Doppler criteria

- Systolic/diastolic (S/D) ratio
- Pulsatility index (PI)
- Resistive index (RI)
- Spectral waveform pattern

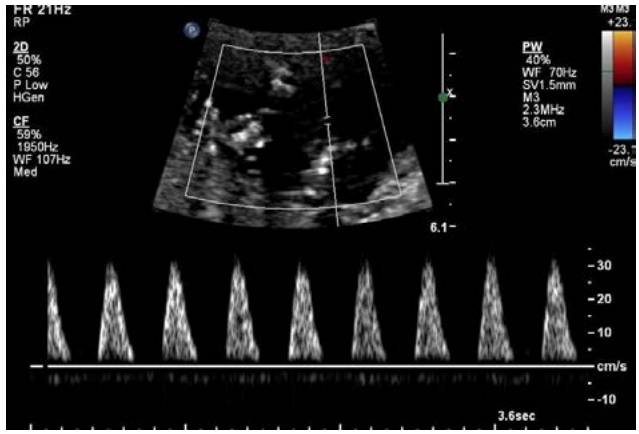
Umbilical artery Doppler

Doppler velocimetry of the umbilical artery assesses the resistance to blood perfusion of the feto placental unit. As early as 14 weeks, low impedance in the umbilical artery permits continuous forward flow throughout the cardiac cycle.

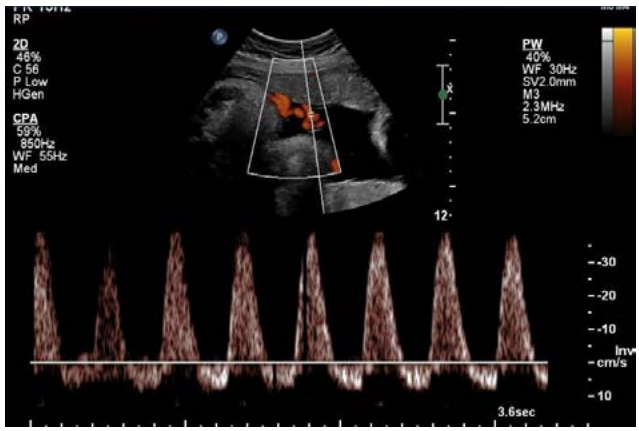


(Normal flow pattern in umbilical artery)

In IUGR, umbilical blood flow is significantly reduced, mainly due to changes in the placental vascular resistance. Maternal or placental conditions that obliterate small muscular arteries in the placental tertiary stem villi result in a progressive decrease in end-diastolic flow and then reversed flow during diastole are evident in the umbilical artery.



(Absent diastolic flow in umbilical artery)



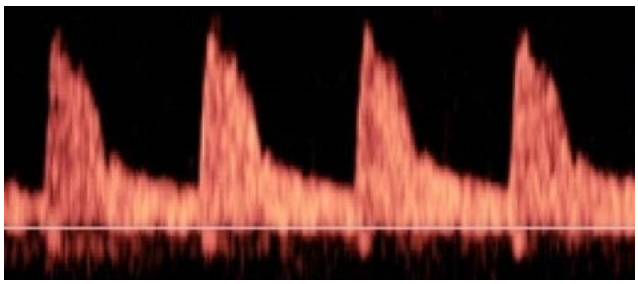
(Umbilical artery: reversed diastolic flow)

Doppler waveform - The use of umbilical artery Doppler studies in women with suspected IUGR has maternal and perinatal diagnostic benefits. Absent end-diastolic flow and presence of reversed diastolic flow within in the umbilical artery is associated with 40% and 70% perinatal mortality, respectively.

Middle cerebral artery Doppler

Under normal conditions, the cerebral circulation is a high impedance circulation with continuous forward flow present throughout the cardiac cycle. The middle cerebral arteries, which carry 80% of the cerebral circulation, represent major branches of the circle of Willis and are the most accessible cerebral vessels for ultrasound imaging in the fetus.[6] In the presence of fetal hypoxemia, central redistribution of blood flow results in increased blood flow to the brain, heart and adrenal glands and a reduction in flow to the peripheral circulations. This redistribution of blood flow, known as **brain-sparing reflex** is characterized by increased end-diastolic flow velocity (reflected by a low Pulsatility Index) in the middle cerebral artery. Doppler assessment of brain sparing can also be assessed with the **cerebroplacental ratio**, defined as middle cerebral artery PI/umbilical artery PI. Middle cerebral artery Doppler velocimetry has been found to identify a subset of IUGR fetuses at increased risk for caesarean delivery

due to abnormal fetal heart rate patterns and for neonatal acidosis.[7]

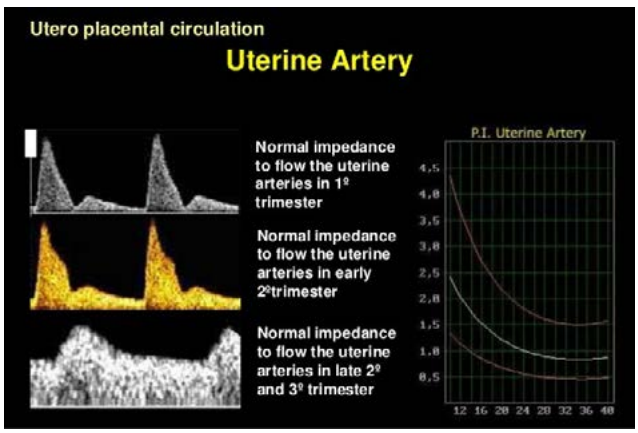


(Normal pattern of MCA)

Abnormal middle cerebral artery Doppler flow with increased diastolic flow (brain sparing)

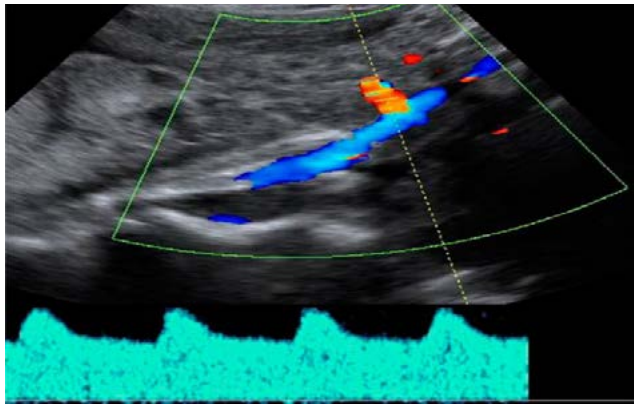
Uterine artery Doppler

Uterine Artery (UA) velocimetry correlates with hemodynamic changes in the fetoplacental circulation. With an increase in the number of tertiary stem villi and arterial channels, as the fetoplacental compartment develops the impedance in the UA decreases. A diastolic component in the UA flow velocity waveform progressively increases with an increase in the gestational age. A mature UA is usually achieved by 28- 30 weeks. The normal UA waveform pattern shows low impedance and high diastolic flow with a low PI.



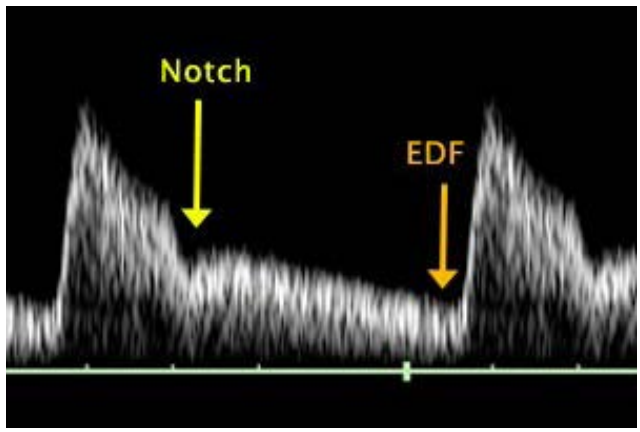
(Normal uterine artery wave form)

In early gestation, a notched uterine artery Doppler waveform and low diastolic flow is evident due to high vascular impedance. With advancing gestation, decreasing vascular impedance is reflected by increased flow in diastole and disappearance of the notch.



(Normal uterine artery low impedance, high diastolic flow and decreased pulsatility index)

The persistence of a uterine artery notch in the late second and third trimesters has been used to identify abnormal uterine circulation in pregnancy.



(Uterine artery notch)

Bilateral notching is more suggestive of abnormal uterine circulation. Unilateral notching on the ipsilateral side of the placenta is of same significance as bilateral notching if placenta is along one lateral wall (right or left).

When Doppler abnormalities are detected in the fetal arterial circulation, weekly follow-up Doppler studies are considered sufficient if forward umbilical artery end-diastolic flow persists. When IUGR is complicated by oligohydramnios, absent or reversed umbilical artery end-diastolic flow, Doppler surveillance should be done for up to 2-3 times per week.[13]

Traditional surveillance of the IUGR fetus has relied on fetal heart rate testing by cardio-tocographic or ultrasound-derived biophysical profile testing. Twice weekly non stress testing with weekly amniotic fluid evaluation, or weekly

biophysical profile testing, is commonly recommended when IUGR is Suspected.[10,11,12] The combination of ultrasound and cardio-tocographic surveillance techniques has been shown to improve outcome for IUGR fetuses. Once IUGR is suspected, umbilical artery Doppler studies should be performed usually every 1-2 weeks to assess for deterioration; if normal.

In cases of intrauterine growth restriction, enhanced ultrasound examination to include a detailed review of fetal anatomy, placental morphology and Doppler studies of the uterine and umbilical arteries & amniotic fluid volume should be performed to aid in the differential diagnosis of intrauterine growth restriction and increase the accuracy of the diagnosis of placental insufficiency. In pregnancies affected by intrauterine growth restriction, umbilical artery Doppler studies after 24 weeks may prompt intervention that reduces perinatal mortality and severe perinatal morbidity due to intrauterine growth restriction.

Conclusion

Detection and management of IUGR using maternal BMI screening, symphysis-fundal height measurement and targeted ultrasound could be effective method of reducing IUGR related stillbirths. Doppler velocimetry of umbilical and fetal arteries for surveillance of identified high risk pregnancies leads to a reduction of 29% (95 % CI 2% to 48 %) in perinatal mortality. It is important to take into account that Doppler ultrasound is a screening test and cannot influence clinically important outcomes itself. The clinical outcomes depend on availability of appropriate facilities to manage the patient.

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Community Based Medical Education at Mahatma Gandhi Institute of Medical Sciences, Sevagram - a Gandhian Way to Achieve Social Accountability of an Academic Institute

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"All other pleasures and possessions pale into nothingness before service, which is rendered in a spirit of joy."
Mahatma Gandhi

Background

In the last century, the fields of Health Care System and Academics, both, have made significant progress. However both these fields are confronted with new sets of challenges. With the ever-increasing crisis in health care systems all across the globe and the widening health disparities, the need to focus on reducing health inequity and the delivery of safe, effective, acceptable, affordable and community-centered health care is now more important than ever. The main challenge for the education of health professions in the 21st century resides in the responsibility of academic institutions for a greater contribution to the improvement of both health systems performance and people's health status.[1,2]

The World Health Organization (WHO) and the new global coalition endorse Universal Health Coverage (UHC) as the quintessential strategy to combat this health crisis. The goal of UHC is to ensure that all people obtain the health services they need without suffering from any financial hardship when availing them. This will need a strong, efficient, well-run health system; having the necessary financing system with access to essential medicines and technologies and a sufficient capacity of well-trained, motivated health staff.[3]

The Government of India (GOI) aims to provide UHC to all its citizens and expects the current medical teaching to yield competent '*Physicians of First Contact'.* Towards meeting this aim, an 'Indian Medical Graduate (IMG)' is expected to have required knowledge, attitudes, skills, values and responsiveness, so as to function appropriately and effectively as a physician of first contact of the community while being globally relevant. In order to fulfill this goal, the IMG is expected to be **Five Star Doctor** who is able to function in the **ROLES** of a **Clinician** who understands and provides preventive, promotive, curative, palliative and holistic care with compassion, a **Leader and member of the health care team** with capabilities to collect analyze, synthesize and communicate health data appropriately, a **Communicator** with patients, families, colleagues and community, a **Lifelong learner** committed to continuous improvement of skills and knowledge and a **Professional**, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.[4,5]

Medical institutes in the country will have to keep in mind these expectations that their products are expected to fulfill and accordingly modify the methods of training that they use. While the medical institutes earnestly strive to improve the quality and relevance of their education, they will also need to contribute for improving quality, equity, relevance and effectiveness in health care delivery. Through their medical graduates, they have the responsibility for a greater contribution for improving the health systems performance and health status of the society at large.[6]

The medical institutes will be judged by their capacity to anticipate the kind of doctors required by constantly evolving health systems and the community and their own capacity to produce such doctors. The big question is if our medical institutes are prepared for this? Are they ready and willing to shoulder the responsibilities so as to contribute to the development of healthier society?[7]

The experts believe that, being thoughtful of this

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fundamental issue should be the stepping stone towards making the medical institutes *Socially Accountable* towards the responsibilities that the medical institutes discharge.[6] Social accountability in medical education is a strategy that can make an important contribution.

The WHO defined "Social accountability" for medical institutes in 1995 as: *"the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/ or nation they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and the public."*[8] Global Consensus for Social Accountability of Medical Schools (GCSA) defines a socially accountable medical school as one that: "responds to current and future health needs and challenges in society, reorient its education, research and service priorities accordingly, strengthens governance and partnerships with other stakeholders and uses evaluation and accreditation to assess their performance and impact".[2]

Social accountability spectrum is a continuum that moves from social responsibility to social responsiveness and social accountability. Under "social responsibility" the medical education program focuses on producing a "good "practitioner, leaving the onus on respective medical institute to define which competences are the most appropriate to meet health needs of patients. Under "social responsiveness", the medical education program focuses on attaining the clearly defined competences that are defined from an objective analysis of people's health needs. Under "social accountability", the medical education program aims to produce health system change agents that would have a greater impact on heath system performance and ultimately on people's health status, implying a quest for innovative practice modalities combining individual and population based services.[10-12]

The available evidence suggests that implementing such a social accountability framework is feasible and yields the desired results of producing socially responsive competent medical physicians.[11] For excellence in medical education, we believe, there is much that can be learned from each other's experience. It is in those places where the gap between the community's needs for health care and the availability of doctors has been greatest that innovation in medical education has flourished. We therefore share the experience of implementing community based medical education for more than last four decades at Mahatma Gandhi Institute of Medical Sciences (MGIMS) Sevagram. Our humble submission is that the attempt at MGIMS is not the most perfect model and has its own limitations and flaws. However we share this with the same spirit, which, the Founder-Director of MGIMS Late Dr Sushila Nayar used to quote *"An Attempt is a small thing, but, it can be a promise for the future".*

Community Based Medical Education: The Sevagram Model

The Mahatma Gandhi Institute of Medical Sciences, Sevagram (MGIMS) was established in 1969 with the objective of producing doctors with a bias towards underprivileged and rural areas. The institute has made several innovations in its curriculum to raise the social consciousness of medical students as well as to equip them to work in rural areas. These innovations have been woven into every stage of the medical curriculum at MGIMS, Sevagram. MGIMS Sevagram partners with the community on the one hand and the district health system on the other hand, for the mutual benefit of all partners.

Settings for Community-Based Medical Education

Through its innovative approach, the institute has developed a very good setting for imparting community-based education to its students.

General out-patient department (GOPD)

The GOPD has been a unique feature of MGIMS, Sevagram since its inception and it serves as a linkage between health system, peripheral health activities and Kasturba Hospital, Sevagram. It works as replica of a primary health centre in a teaching hospital. It was started basically to reduce the workload of specialists by filtering out the patients who require specialist care. Besides serving as a referral unit, the GOPD provides treatment for minor illnesses. The GOPD also runs a counseling/ guidance cell, immunization clinic and DOTS and microscopy center. GOPD provides a setting for training of interns, where they treat minor illnesses under supervision of post-graduate students and faculty members of Community Medicine. It also provides training in General Practice to postgraduates in Community Medicine.

Decentralized health care delivery through rural and urban health training centers

The Department of Community Medicine, MGIMS, Sevagram has adopted four PHCs; Anji, Gaul, Kharangana and Talegaon with a population of more than 120,000 and developed a model of decentralized healthcare delivery at village level through Community-based Organizations and the Panchayati Raj Institutions. It has formed 275 self-help groups, 10 *Kisan Vikas Manch* and 89 *Kishori Panchayat* in the adopted villages, which provide a platform for dissemination of behavior change communication (BCC) messages. It runs community outreach clinics in 23 villages to provide curative health care to the rural populace. Through innovative strategies, family life education is provided to adolescent girls both in schools and out of schools in all the villages.

The Institute has developed two Rural Health Training Centers at Anji and Bhidi, and an Urban Health Centre in the

campus of Gandhi Memorial Leprosy Foundation at Wardha. A faculty member from the Department of Community Medicine with one post-graduate student, medical officer, interns, social worker and auxiliary nurse midwives reside at each rural and urban health training centre. The centres work in close collaboration with the District Health System. Apart from work at the community level, the rural health training centers at Anji and Bhidi work in close collaboration with Primary Health Centre, Anji and Rural Hospital, Bhidi and support these centres in serving effectively. In turn, these government health facilities provide settings for training of our interns and postgraduates. At the Urban Health Centre, OPD services are provided through a general outpatient department, in addition, a multispecialty OPD has been started at Urban Health Centre. Weekly specialty clinics are also organized at the Rural Health Training Centers where specialists from different clinical departments viz. Medicine, Surgery, Obstetrics & Gynecology, Psychiatry, ENT, Ophthalmology and Orthopedics visits on weekly bases to extend their services.

Partnership with community through intense social mobilization efforts

The Department of Community Medicine (DCM), MGIMS, Sevagram is actively involved in Social mobilization in approximately 80 villages in four primary health centers under its field practice area. DCM acts as a catalyst to form community-based organizations (CBO) and builds their capacity for health action. The community-based organizations being promoted by MGIMS, Sevagram in its field practice area are:

A. Women's Self-Help Groups: Women's Self-Help Group (SHG) is a very effective tool for not only women empowerment, but also overall development of the community. MGIMS fully appreciates the critical link between women empowerment and community development and plays a catalytic role to add health action agenda to their primary microfinance function. With this, women have been empowered to determine health priorities and play a proactive role in health care delivery in their villages. The department has now achieved formation of 3-4 SHGs per village in all villages in its field practice area. A total of 275 Self-Help Groups were functioning on Mar 31, 2016 in the adopted villages of the Institute. Apart from these Self Help Groups formed by MGIMS, Sevagram also provide support to the Self Help Groups formed by other non-governmental organizations in these villages.

B. Kisan Vikas Manch: Kisan Vikas Manch (Farmers' club) has evolved as a way to involve men in health activities at village level. The Institute provides learning opportunities for members to improve their agricultural yield and in turn improve their economical status. The health action agenda is added to the primary purpose so as to empower them to actively participate in the health program. Kisan Vikas Manch in the villages of Anji PHC area came together to form a federation. The federation engages experts in agriculture sector for capacity building of the members of Kisan Vikas Manch, so that farmers can get better yield from their agricultural land.

C. Adolescent Girls' groups (Kishori Panchayat): The Institute has taken an initiative to form groups of non-school going adolescent girls in all the villages of its field practice area. At the village level, an elected body of the adolescent girls has been formed, which is known as Kishori Panchayat. Adolescent to adolescent education programme is undertaken in all villages through these groups. These groups have been oriented towards issues of adolescent health, maternal health, child survival, environmental health, and family life education, RTI/ STD, HIV/ AIDS etc. In turn, these girls will train their peers and younger adolescents in their villages. A resource center for Kishori Panchayat has been developed at the RHTC, Bhidi since 2008-09. This includes a library of health education material for adolescents with 5 satellite libraries at the school level and 10 satellite libraries at the village level.

D. Panchayati Raj Institutions (PRI) and Village Health Nutrition and Sanitation Committee (VHNSC): DCM continuously engages with PRI members in all villages in its field practice area. Orientation sessions are organized through the Rural and Urban Health Training Centers to empower the PRI and VHNSC members for health action at community level. Due to its continuous engagement with VHNSC, in most of the villages in the field practice area, monthly meeting of VHNSC members are ensured. DCM has also developed a system of community monitoring of health, which has successfully been piloted in few villages in its field practice area.

The CBOs and engagement with local governing bodies ensure an enabling environment for individual and group behavior change. Individual and group behavior change in this context translates into community norms which once adopted will be sustained through intergenerational communication networks.

Formal interaction of students with community-based organizations is arranged during the social service camp, and subsequently during their monthly village visit, they witness the activities of community-based organizations. This helps aspiring doctors understand the role of individuals, families and communities in preventing disease, maintaining and promoting health, and improving health-seeking behavior.

Partnership with district health system and Integrated Child Development Services (ICDS) scheme

Over the years, MGIMS, Sevagram has built a strong relationship with the District Health System and Integrated Child Development Services (ICDS) Scheme. Through RHTCs, it not only supports delivery of routine health care

services to the community, but also organizes training of frontline workers and supports capacity building for better implementation of national health programs. DCM has developed a system of continued professional education through the regular monthly meetings of frontline workers at PHC level. On request of the district health system, it has provided support for investigation and control of epidemics.

DCM has developed close liaison with ICDS scheme. It has provided training to Anganwadi workers (AWWs) and its supervisors in Early Childhood Care and Development (ECCD) to build their capacity in delivery of child health, nutrition and development services. At present, DCM, in collaboration with WHO and INTERVIDA, a Spanish organization, is working to develop a model for promotion of ECCD through strengthening of home visits by ASHA and AWWs, organization of mothers' meetings, and parenting workshops.

DCM has also been given the responsibility to monitor the activities of ICDS in Maharashtra by National Institute of Public Cooperation & Child Development (NIPCCD) New Delhi.

School health education programme

School going children are at the most receptive age, and many community programmes for infusing new ideas into the community have utilized this. Children can be utilized to disseminate health education messages to families and neighborhoods to change the attitudes and traditional practices of the community. The Department of Community Medicine started a continuing school health programme in two schools in Anji through its Rural Health Center in January 1999. Gradually, this programme has been undertaken at all the centres of the department. At present the programme is going on in 14 schools of Wardha District.

Milestones in community-based learning at Sevagram

The various innovations have been developed at MGIMS to create social consciousness among the medical students:

Milestone 1: Orientation camp in Gandhi ashram

Candidates from all over the country are selected on the basis of a common eligibility examination, which included a mandatory paper on Gandhian thought. Soon after admission into the Institute, students attend a 15-day orientation course where they learn about a value system based on Gandhian ideology. They are thus helped to appreciate the humanistic dimensions of their profession. The students engage in self-help by washing their own utensils and cleaning their own clothes. Students also participate in community activities like spinning yarn (khadi) and in morning and evening all-religion prayers. Observation of this code of conduct helps towards an understanding the value of honesty, dignity of labor, and the need for religious tolerance. The students are taught about the relevance of Gandhian ideology in today's world with reference to personal hygiene, environmental sanitation, nutrition and spiritual health, and the roles of yoga and nature cure are discussed.

Milestone 2: Village adoption scheme

Social Service Camp: During the camp period, students stay in the adopted village for a fortnight and visit their adopted families daily. With the help of interns and staff of MGIMS they conduct socio- demographic, dietary and health appraisals in their adopted families. The students also observe how community leaders, social organizations and village health committees work together for health. The roles of village health workers, village health committees, schoolteachers and other stakeholders are examined. This community–academic partnership offers a unique opportunity for learning the social and cultural determinants of health. Thus, the village serves as a laboratory and a demonstration center for the students to learn public health. The concept of family health care is brought home to students with the help of auxiliary nursing midwives, social workers, health educators, sanitary inspectors, psychologists and public health physicians working in the villages.

Criteria for selection of village for Social Service Camp

- Demand from the village in the form a resolution passed by the Gram Panchayat
- Distance of the village from institution preferably less than 30 km
- Adequate space so that the following could be arranged:
    1. Space at a central location in village for erecting a *pendal* for camp activities
    2. Space for Health Exhibition
    3. Lodging arrangement for boys and girls separately
    4. Lodging arrangement for staff staying at the camp site
    5. Space for common kitchen and dining
    6. Improvised sanitation facilities for camping students and staff
- Usually the village school building is used for accommodating the camping students after obtaining permission from the District Education Officer. The institute also makes alternative arrangement for conducting classes of the school students
- Provision of water and electricity, for which the Institution pays the actual charges.

- Assurance of active participation and support from villagers

Health care services provided to the adopted village: The Institute extends its health care services free of cost to the village for the duration of the social service camp. Complete health check-up of all the villagers is conducted. Blood, urine and stool investigations are carried out for each villager and those who are found to have any abnormality on these investigations are provided free treatment. General OPD is run each day, both in the morning and evening, and specialist visits are organized to meet the referral demand. The camping students ensure that all members in their adopted families get complete treatment for their ailments. Those who require hospital admission are also provided treatment free of cost if they get admitted to the Kasturba Hospital Sevagram during the duration of camp or within 7 days of completion of the camp.

Monthly follow-up of the adopted families: Following the Social Service Camp, for the next three years, the students visit their adopted village every month on a Saturday. In the first year, the students study personal hygiene, basic sanitation, housing, immunization, diet, nutrition, growth and development. During the subsequent period, groups of students undertake improvement projects on topics of sanitation, drinking water, nutrition, personal hygiene, immunization and other relevant issues.

During these years, the social workers of the department also work for overall development of the village through formation of different community-based groups, e.g. Self-Help Groups, Kisan Vikas Manch etc. Efforts are being made to gradually strengthen these groups.

The Institute runs a free OPD for the villagers during these visits. This also provides the students with an opportunity to learn from the villagers.

Essential community based national health research: To build research aptitude and interest in priority health topics among undergraduate students, they are provided opportunities to participate in conducting community-based research on priority health topics (Essential National Health Research). To orient undergraduate students to research methodology, initially a two-day workshop is organized for students. The workshop aims at providing the student's knowledge and skills on 'asking the right question', 'designing an appropriate study design to answer the question', 'searching relevant literature' and 'writing a protocol' for carrying out a project. During the workshop, students in groups identify a topic of their interest for further enquiry. The students conduct the project in groups in their adopted villages under the guidance of a faculty member from the Department of Community Medicine. Community-based projects, with the interventions related to behavior change are encouraged, so that the community also gets benefitted in this process. With the help of faculty members, the students perform data entry, analyze it and write a report for their project. Posting during Re-orientation of Medical Education (ROME) Camp, of 15-days duration in fourth year, provides another opportunity to learn how to identify community needs using rapid survey methodology and qualitative research methods.

Opportunity to learn leadership skills: Leadership is a broad term and an amalgam of the subset of following skills; viz. envisioning, team building, strategic and tactical planning, decision-making, being a change agent (activism and lateral leadership), communication skills (including active listening, persuasive communication and negotiation), and conflict resolution.

Social Service Camp and subsequent monthly village visits provide an excellent platform for learning leadership skills through participation in community-based activities. Interactive sessions are conducted for students on leadership skills; including communications skills, activism, working as a change agent, problem solving, team building, assertiveness etc. Through interaction with the family members, students develop good rapport with the family, empathy and communication skills. During the camp, students convince and mobilize families allotted to them to avail the benefit of screening and curative services provided through the camp. This helps them practice persuasive communication and negotiation skills. The students also get ample opportunities to interact with the community-based organizations and formal and informal leaders in the village. This enhances their understanding. Group exercises during the fieldwork and classroom teaching also helps them learn team building, negotiation and conflict resolution. Group exercises also help students to identify their own strengths and weaknesses for the leadership skills and prepare a personal improvement plan.

Milestone 3: Re-orientation of medical education camp (ROME camp)

A field camp lasting for two weeks is organized for students, after 2nd Professional examination. The students stay at one of the Rural Health Training Centres of MGIMS, Sevagram. The camp is organized with the objectives; 1) to expose students to the health care delivery system; other support systems available in the community and implementation of national health programs at PHC level; 2) to make students understand the effect of family and social environment in the etiology of diseases; community beliefs and practices related to health and illnesses; and treatment-seeking practice; 3) to expose students to community health need assessment.

During this camp, the student's visits different levels of health care facilities and interact with health care providers. Through this, they are exposed to the functioning of a primary

health centre and the roles of its various staff members. District level program managers for various national health programmes discuss with them implementation of national health programmes; their strengths; and barriers and challenges in implementation of these programmes.

Clinical case discussion is organized at the family level through which attention of students is drawn to the influence of social and environmental factors in the causation of disease. Students also come to understand the common community beliefs and practices related to health and illness and treatment seeking practices of the community.

The students design and conduct small community surveys for community health need assessment in rural area. Through these surveys, they become acquainted with the collection, entry and analysis of data and with report writing. Their insight gained into essential national health research earlier through the workshop and project conducted in their adopted village is further enhanced.

Milestone 4: Internship training

Interns are posted in the department for two months out of their 12 months internship period. During this period they are posted at General OPD, KRHTC Anji & Bhidi and Urban Health Centre. The setting at Sevagram provides them with an opportunity not only to learn management of illnesses at individual level, but also learn organization and functioning of Primary Health Centre & various National Health Programmes.

Milestone 5: Rural placement scheme

In 1992, MGIMS, Sevagram designed a programme for placement of graduate students in rural areas. Under the programme, if a graduates desires to take up post-graduation at MGIMS, they have to compulsorily serve in a rural area for a period of two years. The institute collaborates with select non-governmental organizations (NGOs) to identify peripheral health care centres. These are approved based on their patient load, facilities and supervision available. Until 2014, 23 batches (1120 students) have been posted to over 90 rural centres across India. After introduction of NEET, we have to find an alternative approach in order to sustain the programme.

Through its innovative curriculum, MGIMS Sevagram has brought a changed paradigm to medical education by providing students with community experiences that serve as laboratories for transferring appropriate values and developing fundamental knowledge, skills and attitudes required to make them socially responsive. Through partnership with the community, the district health system and other departments, the institute has created a conducive environment for student learning in community settings.

Way Forward and Challenges Ahead

So far the Department of Community Medicine have been able to generate the funding through various funding agencies (more than 65 during last twenty years). However sustaining these resources will be the key for implementing long-term plans of the Department. At institute level we have to sustain these activities within the guidelines of the University & MCI for which we require leadership with strong community orientation & commitment both at department & at institute level.

Although in informal manner we have been able to develop the assessment tools for Community Based Medical Education but we require strong advocacy to bring it in the guidelines of the MCI. The newly developed AIIMS, which also have the same mandate, can also develop their own model in this direction, which may prove as a good advocacy effort.

At present we have developed an interface between community, health system & MGIMS, which requires further nurturing in a manner that all three stakeholders sustain their commitment. The MGIMS has to play a central role to nurture & further develop this partnership in order to discharge its social responsibility in short term & social accountability in long term.

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Amalgamation of Teaching / Training of Public Health with Clinical Medicine and Concepts Beyond

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Abstract

Background: For health of populations, teaching / training of public health with clinical medicine is essential. Also health providers, educators need to remain sensitive, while training public health, clinical medicine about things beyond. We have collected information about teaching training of public health with clinical medicine and concepts beyond.

Methods: Information was collected by simple review with help of different search engines.

Results: There is void of guidance on practice-based teaching for personal health with public health. Socio-environmental determinants of health strongly interact with demands of everybody's life. For all medical conditions indicated, treatments are prescribed, but many unanswered questions remain. Answers are searched in gadgets, forgetting that, in medicine there is much room for judgments which help in re-adaptation to demands of life. Also many barriers exist in achieving practice-based teaching with public health for social justice.

Conclusion: Public health teachers need to provide linkage of public health issues of disease to symptoms, signs, prevention, cure. Clinical teachers need to link the same to public health issues of disease. Public health education needs to be a shared enterprise with clinical teaching in health professionals' schools, who have mission of teaching, service, research for populations. In addition to caring for those who seek services, gaps between academia, practice, public health need bridges so that personal health as well as public health are ensured for healthy communities. Amalgamated teaching training of clinical medicine, public health, concept of social justice, accountability, and vision beyond for health wellness, needs to be mission of medical schools.

Keywords: Amalgamation, Public health, Clinical Medicine, Wellness.

Introduction

In the concept paper entitled "Profiling Public Health Workforce in countries of the South-East Asia Region", Miraj[1] reported that the mission of "Public Health", defined as "the collective action for sustained population wide improvement in health", is to improve the health of populations and reduce inequalities. For health of populations there has to be a system of teaching / training of public health inbuilt with clinical medicine. Presently there is fragmentation in health professionals teaching / training. Individual's symptomatology, signs and curative issues are stressed during clinical teaching. There is lack of integration with preventive and rehabilitative medicine which is believed to be the responsibility of public health personnel, who are away from clinical medicine. During health care there is concentration on developments for personal health rather than public health. End result is that we have clinicians who teach about diseases and therapies and we have public health personnel who teach public health, making it difficult for the future health professionals to learn holistic medicine, which is essential to have healthy communities. The need is to evolve the concept of 'health promoters' from treatment providers[2]. It is essential that the future health providers / health educators not only remain sensitive to the needs while learning public health or clinical medicine but also think about what is not visible as there are things beyond. Objective was to collect information related to teaching training of public health with clinical medicine and concepts beyond about health of people.

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Method

Information about integration of teaching training of public health and clinical medicine and health of people was collected by simple review with the help of different search engines.

Results

Mahan[3] has reported that the existing void of guidance on practice-based teaching for personal health with public health, explanation, significance, and conduct, has somewhat been filled by *Demonstrating* Excellence for Practice-Based Teaching for Public Health. An understanding of health and disease requires appreciation of complexity of science. A new dimension for diagnosing and treating patients needs to be there which includes the potential to improve health in a way that hitherto was practiced only exceptionally. The relevant features of the Meikirch model and to reveal in detail how the model and complexity science may be applied for a better understanding of a patient's disease and for its treatment[4].

Bircher[5] reported that social determinants of health strongly interact with the demands of life and the potentials of the individual. Equity and equality, social concerns, working conditions, autonomy and social participation also affect health and longevity[6,7] and are major determinants of health. Likewise, environmental determinants of health are factors in living and working conditions affecting each person. They may sometimes be of global significance like natural resources, population growth and climate change[8,9]

Bircher et al.[4] advocated that for all medically diagnosed conditions, treatments are to be prescribed as indicated. Yet, in medicine, indications generally leave much room for judgments. Therefore the findings collected by assessing all components and interactions of the Meikirch model must be considered and integrated as much as possible.

In internal medicine and general practice there are many patients who come for consultations because they feel ill. Yet, on examination no clear pathology is found. Patients then receive drugs that may be symptomatically beneficial or placebos, more often than not harmful or noceboes. Instead of acting with benign neglect, the Meikirch model[4] offers a true and positive alternative approach. So far, such complaints are explained as functional and often are degraded by physicians as unimportant (Fig I). In many cases it will help the patient to understand his / her problems, to readjust his / her potentials and to advance his / her readaptation to the demands of life. Thereby patients may again come closer to a state of health and wellbeing[4]. Many barriers exist in achieving practice-based teaching with public health for social justice.

Discussion

For 'Health for All', teaching of public health and clinical medicine needs to be amalgamated, clinical medicine with public health by clinicians and public health with clinical medicine by public health personnel. Modalities need to be crystallized. Public health teachers need to provide linkage of public health issues of a particular disease to symptoms, signs, prevention, cure and clinical teachers need to link symptoms, signs & cure to public health issues of a particular disease. Public health education needs to be a shared enterprise with clinical teaching in health professionals schools, which have a responsibility of ensuring the health of the public through their mission of teaching, service and research for populations, in addition to caring for those who seek services, bridge the gap between academia, practice and public health so that personal health and public health are ensured to have healthy communities. Also methodology of teaching should apply current theories and concepts of personal health to real-world public health problems for holistic learning, so that students refine critical thinking skills and develop the capacity to understand and create "best practices" in relation to the needs of communities and patients are treated holistically, not just the disease. Also instead of focusing excessively on the individual level, health professionals teachers could make their teaching more relevant by applying the understanding of the social context of health and ill health.

Undergraduate medical education lays the foundation for future health providers. The need is to train for competence in holistic medicine, encompassing preventive, curative, rehabilitative and promotive aspects of common and uncommon diseases as a continuum through integration. Every discipline in medicine has something linked to public health, be it life style diseases or maternal child health, or treating and preventing blindness or disorders needing minor or extensive surgeries, all have so much of public health. Medical schools need to enhance teaching the aspects of public health that allow physicians to practice effectively for individuals as well as populations. The intricacies of today's public health problems necessitate partnerships and collaborations between public health, clinical teaching and communities.

Modalities and measures of integration of public health with teaching of clinical medicine.

There is a need to focus more on how integration of teaching of public health and clinical medicine can be done effectively. While practice-based, public health oriented teaching can be accomplished in a variety of ways, there are no "rights" or "wrongs" courses of action. Modalities and measures of integration of public health with teaching of clinical practice could be inter-professional, interdisciplinary, multidisciplinary and multidimensional. They should provide a meaningful way in which students can use knowledge

learned in one context as a base for other in and out of the medical schools and hospitals. Given the complexity of most public health challenges, the logical step would be roping the medical teachers, to play the role of "health promoters" from "treatment providers"[10]. In this way 'Prevention is better than cure 'will also get strengthened. Promotion of a public health culture within the health professionals schools and their practice partner institutions that nurture and sustain practice-based teaching is essential. However, measures of integration mean differently to different people, the two aspects of structural and functional integration, need to be remembered.

The mission of public health should also be concept of social justice with social responsiveness and accountability. How teachers use available / created opportunities by visualizing the needs of communities, can bridge inequalities. An important characteristic of a medical school's commitment to practice as an organization for the best of health of communities not just individuals, is imperative. So, amalgamated teaching training of clinical medicine and public health and vision beyond into concepts of health and wellness needs to be the mission of medical schools. Administrators need to have commitment for the same.

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ORIGINAL ARTICLE

Prevalence of Internet Addiction, Internet Usage Patterns and Associated Factors: A Cross Sectional Study Among Students of a Medical College in Odisha

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Abstract

Background: With the universality of internet, the problems with its overuse and abuse have been increasing in recent times.

Methods: This cross sectional study was conducted among all the students on rolls of MKCG medical college, Berhampur using the young's internet addiction test for assessment of internet addiction.

Results: Mobile phones were the primary source of internet in 73.9% subjects. Average online time was 3.59 hours per day. Prevalence of mild or moderate internet addiction was 26.3% with no significant difference between males and females. Significant positive correlation was found between the BMI of the subjects and duration of internet use in the last 24 hours. The mean amount of money spent by the students to purchase internet connection per month is Rs.290.30. There was significant negative linear correlation between the estimated daily time spent on the internet (μ=3.59, SD=3.51) and time spent on studies (μ=4.38, SD=2.5) (r = -0.107, p=0.016); and time of continuous night sleep (μ=7.07, SD=1.39) (r= -0.237, p<0.01). The most frequent cause for internet access overall was social networking followed by educational uses. Average duration of internet usage in a typical day, internet usage in the past 24 hours, the amount of money spent per month on internet services, and duration since internet use commenced showed significant positive correlation as predictors of internet addiction (Adjusted R^2=0.089, p<0.01).

Conclusion: The findings of this study imply that internet addiction is a rising public health problem with multiple contributing factors

Key Words: Internet addiction, internet usage

Introduction

From being a small network for defence contractors in the 70's to the universal presence it has in society today, the internet is one of the great achievements of mankind in the 20th century.[1] As of 2015, the estimated users of the internet in the world are over 3 billion. The number of users of the internet has grown 753% in the last 15 years alone.[2] 269 million Indians use internet actively as of June 2015. With only 20% of the country's population having access to internet, the number of users is set to grow rapidly over the next years.[3] The availability of Smart Phones has facilitated the growth of internet in a big way with 159 million Indians accessing internet through their mobile phones in 2014.[4]

Internet overuse has been increasing in recent times leading to many physical and psychological health problems.[5] Internet addiction is characterized by excessive or poorly controlled preoccupations, urges or behaviours regarding computer use and internet access that lead to impairment or distress.[6] Although it is not yet recognized as a disorder, the American Psychiatric Association has decided to include the diagnosis of Internet addiction in the Appendix of DSM-5, as further studies are being conducted.[7]

A simple to use screening tool is available to assess internet addiction: The Young's 20-point Internet Addiction Test. This is adapted from the criteria to diagnose compulsive gambling behaviour in DSM-4. [8]

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There are limited numbers of studies estimating how common the issue of Internet addiction is in India in the current rapidly evolving scenario. With this background, the following study was undertaken with the objectives to estimate the prevalence of internet addiction, internet usage patterns, associations and effects of internet among students of MKCG Medical College.

Methods

This was a cross sectional study conducted among the undergraduate students of MKCG Medical College, Berhampur, Odisha.

There were 598 students enrolled in all the undergraduate batches at the time of conducting this study. All of them were approached for participating in the study. 595 gave consent, and were administered the study instrument. 89 students gave incomplete or partial answers and so were excluded from the study. This gave the final sample size of 506.

IEC clearance was obtained. A pre-designed and pre-tested questionnaire was used for data collection. A pilot study was conducted among 20 students and necessary modifications were made to the final questionnaire. Consent was taken from all participants.

The questionnaire included three parts. First part recorded the internet usage patterns and behaviours, expenditure, habits and opinions of the respondents. The second part recorded their physical and physiological data. The third part consisted the 20 Young's Internet Addiction Test questions (YIAT-20), which were used after prior permission from Dr. Kimberly Young of St. Bonaventure University, Allegany, New York.

YIAT-20 is a simple screening tool that been validated in previous studies and meta-analysis. [9,10] The questionnaire conceptualized the eight criteria for the disorder: preoccupation with internet, need to use for satisfaction, loss of control over usage, mood changes, duration of use, significant risk due to overuse, concealing tendency, and using internet to escape problems. It has 20 questions with scoring of answers in a scale ranging from 0 (not applicable) to 5 (always). The score is added to give the likelihood of internet addiction in the individual. The score is categorized as follows: Normal Range: 0–30 points Mild: 31–49 points Moderate: 50–79 points Severe: 80–100 points.[8]

Data was analysed using the open source GNU-PSPP Statistical Analysis Software: ver.1.3. Univariate analysis was done and Chi-Square test and t-test were used as the tests of significance. ANOVA test was used for comparing multiple groups. Multivariate analysis was done and linear association was measured using correlation techniques. All analysis was done at the level of significance of 0.05 and 95% confidence intervals.

Results

Out of the 506 participants, 59.5% (301) were males and 40.5% (205) were females. The mean age was 22.5 years (range: 18-28 years). The age distribution for males and females was similar (μ=22.75 years for males and μ=22.18 years for females). 98.8% (500) possessed a mobile phone that had internet capabilities and 63.6% (322) owned a laptop/PC. In 73.9%(374) students, mobile phone was the source of internet access. Laptop was the source in 9.5% (48) students whereas 16.6% (84) used both of these. Average "online" time per day for the students was 3.59 hours (SD=3.51) and the mean duration of internet usage in the last 24 hours was 2.91 hours (SD=3.01). There was no significant difference between the sexes with regards to the average internet usage time (p=0.08).

The prevalence of internet addiction in the sample is shown in Table-1. There was no significant difference with respect to addiction status between males and females, p=0.062 (χ^2=7.34, *df*=3).

61.9% respondents had some form of computer/ internet education in school (58.1% males and 67.3% females).21.6% (65) of males and 50.7 % (104) of females knew about availability of internet in the central library of the institute.

Table-1 : Prevalence of Internet Addiction

Addiction status	YIAT-20 score	Male N (%)	Female N (%)	Total N (%)
No addiction	0–30	74 (24.6)	55 (26.8)	129 (25.5)
Mild addiction	31–49	136 (45.2%)	108 (52.7)	244 (48.2)
Moderate addiction	50–79	88 (29.2%)	42 (20.5)	130 (25.7)
Severe addiction	80–100	3 (1.0)	0 (0.0)	3 (0.6)

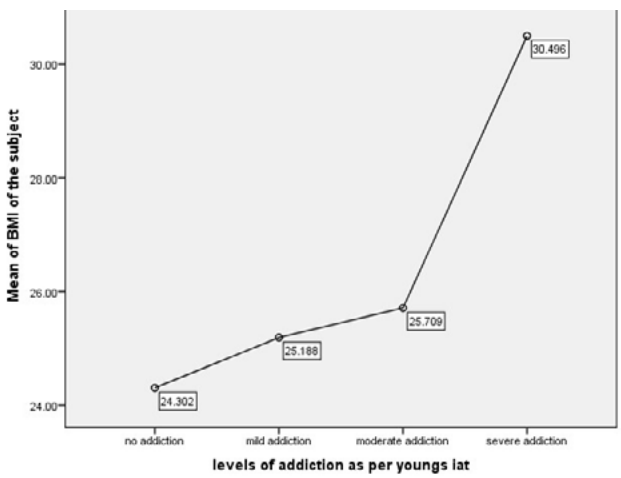

Figure 1- mean plot of addiction status vs B.M.I.

Table-2: Money spent per month to purchase internet services according to sex

Amount spent for internet services per month (in rupees)	Male N (%)	Female N (%)	Total N (%)
≤100	61(20.3)	48(23.4)	109(21.5)
101-200	102(33.9)	110(53.7)	212(41.9)
201-300	39(13.0)	21(10.2)	60(11.9)
301-400	15(5.0)	7(3.4)	22(4.3)
401-500	26(8.6)	10(4.9)	36(7.1)
>500	58(19.3)	9(4.4)	67(13.2)
Total	301(100.0)	205(100.0)	506(100.0)

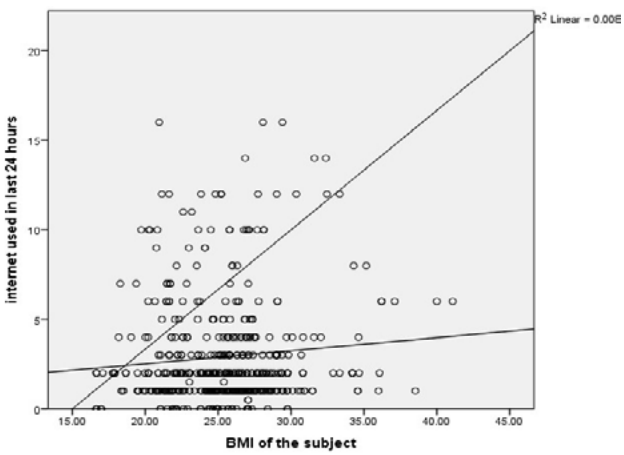

Figure 2 - correlation scatter plot between BMI and 24 hours internet usage

The median age of starting internet use was 17.00 years (range: 8-23 years) and the mean duration of internet usage till date was 6.1 years (SD=3.13). This duration of internet usage was significantly associated with internet addiction status. (ANOVA test: F=6.04, p<0.01).

The mean BMI of the group was 25.28 (SD=3.72). Significant association was found between internet addiction levels and BMI of the subjects (ANOVA test: Between groups: p=0.02, F=5.12, *df*=3). The mean BMI of the categories of addiction is shown in Figure-1.Significant positive correlation was found between the BMI of the subjects and duration of internet use in the last 24 hours. (Pearson's Correlation Coefficient r=0.09, p=0.043). (Figure-2).

The mean amount of money spent by the students to purchase internet connection per month was Rs.290.30 (range: Rs.36-1700). Males spent significantly more amount of money on internet than females (p=0.001). (Table-2). There was significant positive correlation between amount of money spent per month and internet addiction status. (Pearson's correlation coefficient r=0.134, p=0.002) The mean amount of money spent per month by each addiction category is shown in Figure-3.

Table 3: Most frequent cause of internet access vis-à-vis sex:

Most frequent cause of internet access	Sex		Total N (%)
	Male N (%)	Female N (%)	
Social networking	135(44.9)	104(50.7)	239(47.2)
Education	27(9.0)	39(19.0)	66(13.0)
Pornography	51(16.9)	2(1.0)	53(10.5)
Downloading	28(9.3)	18(8.8)	46(9.1)
Surfing	20(6.6)	15(7.3)	35(6.9)
News	19(6.3)	4(2.0)	23(4.5)
Shopping	3(1.0)	17(8.3)	20(4.0)
Games	10(3.3)	2(1.0)	12(2.4)
Music	3(1.0)	4(2.0)	7(1.4)
E-mail	5(1.7)	0(0.0)	5(1.0)
Total	301 (100.0)	205 (100.0)	506 (100.0)

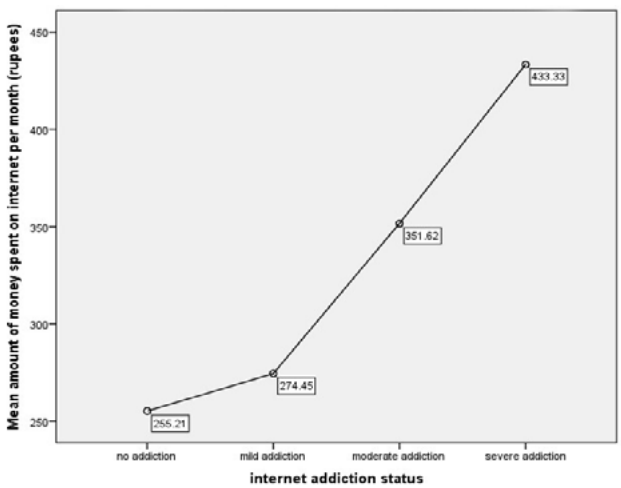

Figure 3 - Means plot of Internet Addiction status and amount of money spent on internet per month.

The most frequent cause for internet access overall was Social Networking followed by educational uses. (Table-3) The second most frequent cause of internet access in males was pornography (16.9%, n=51); in females it was Educational purposes (n=39, 19%)

There was significant negative linear correlation between the estimated daily time spent on the internet (μ=3.59, SD=3.51) and a) Time spent on studies (μ=4.38, SD=2.5) (r = -0.107, p=0.016); and b) Time of continuous night sleep (μ=7.07, SD=1.39) (r= -0.237, p<0.01).

Questions about perception of internet addiction showed that 47.2% of respondents thought that people of their age group were "highly or very highly addicted" to internet where as 31.4% of respondents accepted that their own usage was "more than necessary".

50.6% of the subjects thought that the most common cause of internet overuse in their classmates was Social networking and 17.0% thought it to be Pornography.

Multiple regression models showed that duration of internet usage in a typical day, internet usage in the past 24 hours, amount of money spent per month on internet services, and duration since internet use commenced were significant positive predictors of internet addiction status as proposed by the YIAT-20 scores.(Adjusted R^2=0.089, p<0.01).

Discussion

The study was conducted among the undergraduate students of MKCG Medical College. Though there are post graduate students of various departments present in the college, they were excluded from the study as they were, in general, above the age group which had higher risk for internet addictive behaviour.[11,12]

The age group studied ranged from 18-28 years (μ=22.5 years). 59.5% subjects were males and 40.5% females. This was similar to the studies of Malviya et al in a medical college of central India and Grover et al among professionals in India.[13,14]

Smartphone usage was 98.5% which was greater than the global Smartphone penetration in the similar age group, which is 62%.[15]Consequentlymobile phones were the primary source of internet in the subjects at 73.9%. The mean time spent online was 3.59 hours which was higher than that found in other studies including that of Grover et al.[13,16] It was in concurrence with the study of Shields & Kane on Social and Psychological Correlates of Internet Use among College Students.[17]

The prevalence of moderate and severe internet addiction was 26.3%. Similar findings were reported by Chathothet et al. in undergraduate medical students in Mangalore.[18]A study by Sharma et al in professional colleges of central India reported prevalence of 35% mild, 7.4% moderate and 0.3% severe internet addiction.[19] A study on internet addiction disorder among medical students in China reported a prevalence of 16.2%.[20] This is however, much higher than some other studies published in the past. [11,12,21-25]

The varying results might be because of the following reasons: the population studied is not homogenous and these studies fail to differentiate between essential and nonessential Internet use. There has been a change in the classification of Young's internet addiction scores into mild, moderate and severe addiction since 2011and some of the studies pre date this.[8] This being a recent and comprehensive study, it might also indicate growing addiction patterns in young adults. Penetration and accessibility to internet is increasing at a rapid rate and data from recent studies find an increasing trend in addiction status.

There was no significant difference in addiction status between males and females. Similar results were reported by Malviya et al in a medical college of central India.[13] This finding, however, was in contrast to other studies where males were at greater risk of addiction.[11,21,24-30] This may be due to the fact that females have an equal access to internet in professional medical colleges. Internet usage levels of females have also increased in recent years.[31]

There was lack of knowledge about availability of internet in the college library (66.2% unaware) leading to poor utilization of internet services provided by the institute and hence higher out of pocket expenditure (μ= Rs.290.30).

Addicts spent significantly more amount of money on internet service than non-addicts. There was a significant association between duration of years of internet use (μ=6.1 years) and internet addiction status (p<0.01). Similar findings were reported by Grover et al in professionals in India. [14]This indicates a growing propensity for internet addiction with time of usage. This is also suggested by Black et al and Young et al.[32,33] This may also be due to the recent accessibility improvements of internet in India.

Mean BMI was 25.28 and significant positive association was found between internet addiction and the BMI of the subjects. This was similar to the findings of a study conducted by Canan et al in Turkey in 2013.[34] This indicates towards increased sedentary lifestyle habits of internet addicts. However, as BMI is dependent on many factors, further detailed studied might be needed to establish this finding.

A negative correlation was found between time spent daily on the internet and the time spent sleeping and on studies. Other associated co-morbidities like mood disorders and anxiety disorders were reported with internet overuse by Black et al and Shapira et al.[5, 32]

The most common cause for internet access in both sexes was Social networking (44.9% for males and 50.7% for females). The 2nd most common cause for internet access in males was pornography (16.9%). In females it was Educational purposes (19.0%). Corroborating results were reported by Krishnamurty and Chetlapalli among college students in Bengaluru. [35]

Multiple regression analysis showed that Internet addiction status of the respondents was positively affected by: duration of internet usage in a typical day; internet

usage in the past 24 hours; amount of money spent per month on internet services; and duration since internet use commenced. But as internet addiction seems to depend on many number factors, further specific studies are needed to establish the strength of each of these associations.

As only medical students of one college were taken as the sample, further multi-disciplinary studies are needed for generalization of the findings.

Conclusion

The findings of this study imply that internet addiction is a rising public health problem with multiple contributing factors. There is a need to recognize it as a clinical disorder and device a standardized screening and diagnostic criteria. Furthermore, this internet addiction of the medical undergraduates may be utilized towards educational purposes by diverting the usage habits. Further research is needed to assess the extent and long term effects of internet addiction.

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ORIGINAL ARTICLE

Prevalence of Distressed Financing among Elderly in a North Indian District

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Abstract

Background: In some instances health related out of pocket expenditure can be catastrophic thus compelling individuals to raise money through unusual means. Such a situation becomes unavoidable if, there are either too many illnesses or shortage of money. We carried out this study to assess the proportion of elderly who availed distressed financing while availing health care and whether or not they avoided any health care need due to shortage of money.

Methods: This was a community-based cross-sectional study. The present study was conducted on a total of 404 elderly residing in both the urban and rural parts of Lucknow district. Participants were selected from the community using multistage random sampling. Data was collected with the help of a pretested questionnaire, it collected information related to health care utilization, health care financing and health care need deferred due to shortage of money.

Results: Overall the children were the most common source for healthcare financing and 16.8 % study participants faced financial hardship while availing health care. Most common reason for seeking distressed financing was for buying medicine (58.8%).

Conclusion: Use of distressed financing was not uncommon. Families need to be protected from catastrophic health expenditure through an effective social insurance to prevent financial hardship.

Key Words: Elderly, out of pocket, distressed financing, India

Introduction

Senescence is marked by decrementing physical, mental and intellectual capacity. As a person grows older and older, he acquires more and more diseases. Disease burden leads to the encumbrance of health expenditure. Health expenditure is a double burden, firstly because of sickness, a person is unable to earn leading to loss of wages and secondly, it leads to expenditure from savings of the individual/family. Expenditure on health in India is about 5.0 % of GDP, of this public/state expenditure is only 1 % and rest 4 % emanates from the private sector.[1] Consequently, the out of pocket/ private expenditure on health in India is very high. Out of pocket (OOP) payments account for over 70% of the total health care financing in India .[1]Another report states that out of pocket expenditure on health in India is among the highest in the world and at the same time the public expenditure on health in India is among the lowest in the world.[2] Such is the condition when the government of India is already running a general social health insurance scheme and social security programs for elderly. But these schemes are proving to be ineffective because the financial assistance through these schemes is scantly low.[3,4]

"Distressed financing/ financial hardship" is a naïve concept in the field of health care financing which has been brewing since last decade.[4,5] While some scholars have referred to borrowing (with or without interest) and selling of household assets as distressed (hardship) financing, a few consider only borrowing with interest payments, i.e., loan and selling off assets as distressed financing. There are more than sufficient evidence that sometime expenditure on health can be catastrophic, and it can push a family into poverty, especially in economically weaker sections of the society.[6,7] Many studies have been done in the past

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to assess the health expenditure and a few of them have shown the impoverishing effects of OOP payments on Indian households and how the health expenditure can be catastrophic in amount.[8,9] Such a level of expenditure can put an elderly into a situation to either evade availing required health care or buying a health care need which drives his/her family into poverty.[10,11] Because all elderly are not financially independent, a few might not always get the financial support needed for treatment of a health condition either because family members do not have enough money or have a different priority for spending money. In the above-described scenario, we carried out this study with the objective to assess what proportion of elderly faced distressed financing while availing health care, whether or not they avoided any health care need due to lack of money. We also assessed the different sources of financing used by elderly for availing health care.

Methods

Present study is a part of master's degree dissertation to study the interaction of a person in the geriatric age group with the health system. This was a community based cross-sectional study carried out in the Lucknow district, the capital of the state of Uttar Pradesh, the most populous state in India from August 2013 to July 2014.[12] Both rural and urban parts of Lucknow district were covered in the present study. Person 60 years and older were eligible for study.[13]All elderly residing in the urban and rural parts of Lucknow district who were able to answer the questions/ and gave written informed consent for the study were included in the study. Sample size was calculated based on assumption that 50 percent of the households which has at least one elderly, made a health care out of pocket expenditure within last six months.[14] Applying to this estimate a confidence level of 95 percent, precision level of 5 percent, and a non-response rate of 10 percent, a sample size of 404 was calculated. The study employed multi-stage random sampling technique.[15] As per Sample Registration System (SRS) – 2012, the proportion of elderly in Uttar Pradesh residing in urban and rural areas was about 49.0% and 51.0% respectively.[16] Thus, we collected 198 (49 %) study subject from an urban area and 206 study subject (51 %) from the rural area. Chief election commission of India has divided the Lucknow district into nine assembly constituency (legislative assembly no. 168-176) out of which five constituencies (171-175) cover the urban areas of Lucknow district and rest four (168-170,176) covers the rural parts of Lucknow district.[17]A complete list of all person who were 18 years age and older (eligible voter) according to its polling booth distribution is available on the website of the chief election commission of Uttar Pradesh.[17]40 elderly were selected from first four assembly constituency, and 38 study subjects were selected from the last assembly constituency. Thus a total of 198 required study subjects were collected from urban areas. From the complete list of a polling booth in each urban constituency, ten polling booths were selected randomly. Then from each polling station, four study subjects were selected. From the last polling station of the last assembly constituency (assembly constituency no. 175), we selected only two study subjects. As mentioned previously rural Lucknow is covered by four assembly constituency. So, 52 study subjects were selected from first three constituencies and 50 study subjects were selected from the last assembly constituency. Thus, a total of 206 study subjects were selected from the rural area. From the complete list of a polling booth in each rural constituency, 13 polling booths were selected randomly. Then we selected four elderly from each polling booth by simple random sampling. From last polling booth of the last assembly constituency (constituency no. 176), we selected only two study subjects (total 50). From the list of all eligible voters for each polling station/booth 20 elderly were shortlisted by simple random sampling technique. When approached to elderly in the community, the identity of the individual was confirmed by voter identification card that she/he possessed. After verification, if individual fit in our inclusion criteria, then the further interview was conducted otherwise next individual from the list was approached and so on. This procedure was followed till the requisite numbers of elderly were interviewed from a given polling station. To cover the required sample of 404 we approached a total of 463 elderly in the community. Informed consent was obtained from all individual participants included in the study.

The schedule 60_25.0 utilized by National Sample Survey Organization (NSSO) for their survey titled 'Morbidity and Health Care' from January to June 2004 was reviewed in detail.[18] A pre-structured questionnaire was then prepared, and the same was mailed to experts in the field of assessing out of pocket expenditure. Suggestion and rectification were included in the final version of the questionnaire. The questionnaire was then translated from English into Hindi (native language). The questionnaire was pretested on a sample of 30 elderly, 15 from the community and 15 from elderly admitted to the ward and visiting the out-patient department of Gandhi Memorial hospital. This was carried out to check whether questionnaire covered all aspect of health care utilization, health expenditure and to test the precision of responses. The results of pretest were excluded from final analysis. The study questionnaire had four components i) socio-demographic ii) health status of elderly iii) household income and expenditure and iv) health care utilization, healthcare expenditure & source of financing,etc. Total health care expenditure consisted of following three components self-medication expenditure for the past one month, out-patient care expenditure for past three months and in-patients care for past six months. Questions were asked about illnesses episodes and whether the sick elderly availed health care or eschewed it. For treated illness episodes, data was amassed on expenditures incurred as (i) direct medical expenditures, like doctor's

fees, medicines, investigations, procedures/surgery, and hospital charges. (ii) Indirect medical expenditures like transport, spending on escort and food during the period of stay. Wherever possible the spending as mentioned by the elderly was cross-checked with the bills of hospital/ prescription slip, but this was not possible in every case. All expenditureswere calculated in Indian National Rupee (INR).

Total medical expenditure was computed by summing direct as well as the indirect medical cost. All forms of health care expenditures weather of modern medicine, dental, physiotherapy, Ayurveda, traditional healers and buying medical aid were included to estimate total healthcare out of pocket expenditure. When the source of financing was insurance, the net amount paid by the insurance company was deducted to calculate net out of pocket expenditure made by elderly. Because contribution from multiple sources was common, we for the purpose of study consider that the main source of funding was the source which contributed to more than 60.0 % of total out of pocket expenditure. Data analysis was done utilizing an SPSS-20.0 version. A descriptive analysis was done to assess the baseline characteristics of the enrolled elderly, health care expenditure on illness, source of financing,etc. Distressed Financing /Financial hardship, for the purpose of study, has considered that any amount of money that has to be returned either with interest or without and money obtained as a result of the sale of assets constitute as distressed financing/financial hardship.[4,5]The main outcome variable was the proportion of elderly who experienced distressed financing for coping with total health care out of pocket expenditure. The present study was approved by the ethical board of the institute.

Results

To cover the required 404 sample for study, 463 elderly were approached of which 59 refused/excluded for various reasons mentioned in exclusion criteria. Of the 404 who completed the interview, 133 reported utilizing inpatient care during the antecedent six months and 254 reported utilizing out -patient medical and dental care during antecedent three months from the date of assessment.

Overall 68 (16.8 %) study participants while availing any of the types of health care within the stipulated study frame (not shown in table). Table 1 details the source of health care financing availed by the elderly. Among participants availing inpatient care in rural and urban areas the most frequent source of funding was contributions from children (16.4%) and distressed financing (17.3%) respectively. While for out-patient care children (17.7%) were the most common source of funding in urban areas, whereas in the rural area both the spouse and the children were equally the most common source with 16.9 % each. The incidence of the distressed finding was higher for inpatient care (38/133) as compared to outpatient care (30/254).

Table 1: Distribution of study participants by source of financing for availing health care

Source# of payment	Inpatient Care(n=133)		Out Patient Care(n=254)	
	Rural N (%)	Urban N (%)	Rural N (%)	Urban N (%)
Self	8(6.0)	17(12.8)	21(8.3)	35(13.8)
Spouse	11 (8.2)	15(11.3)	43(16.9)	31(12.2)
Children	22(16.4)	17(12.8)	43(16.9)	45(17.7)
Relatives/ Others	0(0.0)	2(1.5)	4(1.6)	2(0.8)
Insurance	1(0.75)	2(1.5)	0(0.0)	0(0.0)
Distressed financing	15(11.3)	23(17.3)	10(3.9)	20(7.9)

#- Person who contributed more than 60 % of total expenditure.

Distressed financing is one thing while the type of distressed financing sought is entirely another aspect. Table 2 details the types of distressed financing faced by the elderly. Borrowing of money without interest (45.6 %) was the most common type of financial hardship closely followed by funding by the sale of assets. Mostly money in the range of INR 1001-5000 was the most common amount generated as a result of distressed financing. There were two extreme values in the average amount generated (not shown in table). One was INR 75,000 and second was INR 1.3 lakh both patients had cancer. The purpose of all those who generated/needed amount > 10,000 INR through

Table 2: Distribution of study participants by type of distressed financing and amount obtained

Features	Urban N (%)	Rural N (%)	Total N (%)
Type of distressed financing(n=68)			
Borrowed	19(27.9)	12(17.6)	31(45.6)
Loan	5(7.4)	3(4.4)	8(11.8)
Sale of assets	19(27.9)	10(14.7)	29(42.6)
Average amount (in INR) generated from distress financing(n=68)			
0-1,000	15(22.1)	9(13.2)	24(35.3)
1001-5,000	15(22.1)	10 (14.7)	25(36.7)
5001-10,000	9(13.2)	5(7.4)	14(20.6)
>10,000	4(5.9)	1(1.5)	5(7.4)
Status of Borrowed amount/loan (n=39)			
Paid back completely	14(35.9)	8(20.5)	22(56.4)
Paid back partially	7(17.9)	7(17.9)	14(35.9)
Didn't Paid back	3(7.7)	0(0.0)	3(7.7)

Table 3: Distribution of study participants by reason for availing distressed financing and deferring health care needs was sought (n=68)

Health care needs for which distressed financing was sought			
Health care need	**Urban N (%)**	**Rural N (%)**	**Total N = 68 (%)**
Surgery /procedure	11(16.2)	6(8.8)	17(25.0)
Medicine	33(48.5)	17(25.0)	40(58.8)
Investigation/Lab	4(5.9)	0(0.0)	4(5.9)
Others	5(7.3)	2(2.9)	7(17.9)
Healthcare needs postponed /avoided			
Healthcare need Postponed /avoided	**Urban N (%)**	**Rural N (%)**	**Total N = 404 (%)**
Consulting doctor	0(0.0)	0(0.0)	0(0.0)
Medicines	54(13.4)	33(8.2)	87 (21.5)
Investigation	20(5.0)	11(2.7)	31 (7.7)
Surgery/ procedure	28(6.9)	31(7.7)	49 (12.1)
Implants /prosthesis	10(2.5)	17(4.2)	17 (4.2)

distressed financing was to meet the expenditure for inpatient care. Of total 39 elderly who either borrowed the money with or without interest, 56.4 % had paid back their money completely, 35.9 % had paid back partially, and 7.7 % did not pay back any money at all.

Health care need for which distressed financing was sought detailed in Table 3. Most study participants sought distressed financing for buying medicine (58.8%), followed by the need for surgery (25.0%) and a minimum of 5.9 % needed distressed financing for Investigation/ Lab test. In our study, we found that buying medicine for in-patient care was a more common need for distressed financing when compared to out-patient care (not shown in table). Health care need in "others category" included the expenditure incurred while buying medical aid, implants, lenses etc.The second part of table 3 shows health care need deferred by elderly either due to lack of money, lack of funder to lend money or lack of resources to sell. In our study, 45.5 % subjects avoided availing one or more type of health care needs due to financial constraints. Among all maximum of 21.5 % elderly avoided buying medicines (more commonly for chronic diseases as compared to acute diseases), followed by evading the necessity of surgery (12.1 %) and need for investigation (7.7 %).

Discussion

It is for long known that households incur financial debt or sold households assets to cope with medical care payments.[4] As per World Health Survey (2002–04),the prevalence of borrowing and selling was 22 and 10%, respectively.[4,19] Ghosh S showed that OOP payments increased the poverty ratio by 4.0 percentage points in 1993-94 and 4.4 percentage points in 2004-05.[8] In India, 35 million people in 1993-94 and 47 million people in 2004-05 were pushed into poverty due to out of pocket health expenditure.[8] Hence it is a matter of serious concern in a country such as India where a sizable proportion of the population is already poor, and also they have to face financial hardship while availing health care.

In this context, we studied 404 study participants (elderly) in Lucknow. We observed that for elderly the most common source of health care financing came from their children and least common source offunding was from insurance (0.75 %). Our finding was similar to the conclusion of Misra S, et al (2013) who in their study conducted at Lucknow observed that household earnings and personal savings were the most common sources of payment for illness, and none of the households settled health expenses through insurance.[14]

We also observed that 16.8 % elderly faced financial hardship and most common type of distressed financing sought was borrowing money (7.7 %) from others without interest, and least common was lending money from someone against interest (2.0 %). The incidence of financial distress was rather ineluctable and amount engendered was very high when seeking care for cancer. While Bhojani U et.al in their study conducted at Bengaluru observed that to cope with OOP payments, 4.20 % households borrowed money in and occasionally sold and/or mortgaged their assets.[10] Joe, W., (2014) shows that 47%, 19%, and 7% rural households with hospitalization cases have respectively, used borrowings, contributions from friends& relatives and sale of assets to finance OOP expenditure on inpatient care.[20] In comparison, the incidence among urban households with hospitalization cases is 29, 16 and 4%, respectively. The incidence of financial distress is unavoidable while seeking inpatient care for cancer and cerebrovascular diseases. Towards meeting expenses toward hospitalization of elderly incidence of borrowings were 39.0% and 20% in rural and urban areas respectively.[20] Unlike inpatient care, in a case of outpatient care, around 10% of households use distressed means of health care financing. In our study, we observed that the incidence of distressed financing was more for inpatient care as compared to out-patient care.

A largely self-financed outpatient care indicates that few elderly may be spending from savings of families or their pension/earning, thereby leaving less money for meeting other needs. Elderly whose health care need is met either by the spouse or by themselves may be spending as per their ability to pay, and it is plausible that many elderly

would have deferred health care needs due to financial constraints. In this regard, we observed that of 404 elderly studied, 45.5 % reported avoiding one or more type of health care needs due to financial constraints. Among all maximum of 21.5 % elderly avoided buying medicines, followed by avoiding the need for surgery (12.1 %) and need for medical tests/investigations (7.7 %). In a government report it was observed that among all those who avoided availing healthcare need, the proportion of those who had avoided due financial problem was 28.0% and 20.0% respectively in the rural and urban area during the year 2005(NSSO 2006).[18]

The analysis presented in this article was able to record the experience of merely a hand full of elderly. Maybe this study had just scratched the surface of the problem and perhaps problem may be far too serious and far too deep rooted. The observed incidence of distress financing and the likely need of exact financial protection needed by the elderly may be even greater than what was observed in our study.

In the end, we would like to bring one thing to the notice of policy makers that sale of assets and borrowing money is possible only for families who have resources, those who do not have any means/ resources for obtaining money have no options other than compromising on their health. Due to financial and time constraints, we could not assess the impact of illness and related expenditure on the future course of the life of patients and their families. Any future work on this topic should also include an effort to assess the indirect cost of illness in term of loss of wages. This aspect is important in the Indian context as a large proportion of the population is involved in daily labor. A study such as ours can be replicated in a larger way in any part of India as the list of elderly is available for each and every polling station/booth of the country. Results generated from such studies all over India can be pooled to give a better idea about the extent and seriousness of the problem. The present study can also be replicated for different age group and different health care needs.

Conclusion

In conclusion, it may be stressed that excessive out of pocket expenditure on health in India is a major concern, both regarding its incidence and the impact it has on the future of those affected by it. As the proportion of elderly is steadily increasing, there are two points on which government needs to give special attention. First, is promoting healthy aging as mentioned by WHO in one of its recent themes for world health day. Secondly, the government should devise a better social security scheme for elderly& social insurance scheme for all population. Although the announcement was made more than a decade ago in national health policy 2002, increasing public health expenditure in India is still an unfulfilled promise. To reduce the burden of out of pocket expenditure on its citizens, the government must increase its share of spending on health.

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ORIGINAL ARTICLE

Hearing Loss in Children of an Underprivileged Community of Delhi

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Abstract

Background: Nearly 360 million people in the world have disabling hearing loss, out of which 32 million are children. In India, total number of person with deafness were 63 million of which 26.4 million is contributed by school aged children. Chronic Suppurative Otitis Media (CSOM) is the commonest cause of persistent mild to moderate hearing impairment in children.

Methods: The study was done among 5-14 years old children residing at Kalyanpuri, a resettlement colony of East Delhi. A convenient sample of 1398 children were studied and out of them 102 children were found to have hearing impairment on screening by tuning fork. Screen positive children were subjected to pure tone audiometry to confirm deafness.

Results: Out of total 1398 children studied, 744 (53.2%) were boys and 654 (46.8%) girls. Prevalence of hearing loss was 3%. The main causes of hearing loss found were CSOM (48.8%). Hearing loss was significantly associated with unsafe ear cleaning practices.

Conclusion: It is evident from the present study that causes of hearing loss in children is mostly preventable. Raising awareness of community for early diagnosis of ear problems is important to bring down the burden of hearing loss and deafness.

Key words: Hearing loss, hearing impairment and children, middle ear infection, ear cleaning practices

Introduction

Nearly 360 million people in the world have disabling hearing loss, out of which 32 million are children.[1]Hearing loss if occurs early in life, can affect speech, language, cognitive skills, social and emotional development, behavior and academic achievements.[1,2] Measles, mumps and chronic middle ear infection are some common acquired conditions that may cause damage of the auditory mechanism of middle ear and lead to hearing loss. About half of the causes of childhood hearing impairment can be prevented by simple public health measures.[1]

Among middle ear diseases Chronic Suppurative Otitis Media is the commonest cause of persistent mild to moderate hearing impairment in children in developing countries[3] Such infections can result in perforation of tympanic membrane if not treated adequately and in time. WHO has classified its prevalence of >4% in children in a community as a massive public health problem.[4] Hence, early detection of ear infections in childhood is highly important, which can be done through identification and treatment of common ear symptoms like ear pain, discharge, itching and hearing inability in children.

The etiological factors causing hearing impairment can be easily identified by simple screening tools.The World Health Organization suggests that children should be screened for hearing impairment at school entry age in developing countries.[1]

In India, total number of person with deafness is 63 million of which 26.4 million is contributed by school aged children.[5] Majority of deafness are preventable or treatable. Government of India initiated National Programme for prevention and control of deafness in 2007 on pilot basis and is now proposed to cover entire country by 2017.[6] But the pace of functioning of the programme is still behind the desired level.

There is lack of community data about hearing impairment

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among children in India as the data available is mostly derived from hospital or school based studies. The present community based survey was therefore done in a socioeconomically disadvantaged colony of Delhi, to find out the magnitude and pattern of hearing impairment in school age children.

Methods

The study was done among 5-14 years old children residing at Kalyanpuri, a resettlement colony of East Delhi. There was around 6800 children of 5-14 years spread over 4612 households. A convenient sample of 20% children (i.e.1360) was decided to study considering resources and time constraints in mind. Prior ethical clearance was provided by the Institutional Ethical Committee and informed verbal consent was taken from the head of the households to get their children enrolled in the study. To reach the study population every fifth (20%) household from all the blocks of the area were covered. All children in the selected sampled households were included in the study. Thus there were 1419 eligible children out of which 1398(98.5 %) were finally studied.

A semi structured pre tested interview schedule was developed in local language to collect information on socio demographic profile, environmental factors and clinical history of ear problems. One of the parents (preferably mother) was the main respondent for each study subject. Clinical examination of ear of all the subjects was done which included otoscopy and screening for hearing. Screening methods used included voice test and tuning fork tests (Rinne's test, Weber's test and Absolute Bone Conduction test). Of the 102 children who were found to have hearing impairment on screening by tuning fork, 79 could be followed up for confirmatory test by pure tone audiometry in a local tertiary care hospital. Data was analyzed statistically using SPSS version 12. Chi square test was applied to find out significant association between variables and a p value <0.05 was considered statistically significant.

Results

Out of total 1398 subjects studied, 744(53.2%) were boys and 654 (46.8%) girls. 436 (31.1%), 473 (33.8%) and 489 (34.9%) children were in the age group of 5-8 years, 9-11 years and 12-14 years respectively (Table 1).The mean age was 9.18 ± 2.80 years. 85% children were Hindus by religion and 62.9% belonged to upper lower socioeconomic class (according to Modified Kuppuswamy scale).

Table 1: Age and Sex wise distribution of study subjects

Age in years	Study subjects		Total (%)
	Boys Number (%)	Girls Number (%)	
5 – 8	230 (52.7)	206 (47.3)	436 (31.1)
9 – 11	246 (52.0)	227 (48.0)	473 (33.8)
12 – 14	268 (54.8)	221 (45.2)	489 (34.9)
All	744 (53.2)	654 (46.8)	1398 (100.0)

The mean age = 9.18 + 2.80 years

Table 2:Probable causes of hearing loss

Causes	Number of children	%
Chronic suppurative otitis media	21	48.8
Otitis media with effusion	11	25.6
Acute suppurative otitis media	5	11.7
Trauma	3	6.9
Ototoxic Drugs	2	4.6
Foreign body	1	2.4
Total	43	100.0

102 children were found to have hearing deficiency on screening with tuning fork tests (Rinne's test, Weber's test and Absolute Bone Conduction test). Out of them 79 children were subjected to pure tone audiometry and 43 (54.4%) were confirmed to have hearing loss. The main causes of hearing loss found were Chronic Suppurative Otitis Media (48.8%) followed by Otitis Media (25.6%) and Acute Suppurative Otitis Media (11.67%). Other causes found were trauma, drugs and foreign body in ear canal (Table 2).

Table 3: Hearing lossby audiometry according to socioeconomic status of study subjects

Socio economic status	Hearing loss present N(%)	Hearing loss absent N(%)	Total N(%)
Lower middle & above	2 (4.7)	189 (13.9)	191 (13.7)
Upper lower & below	41 (95.3)	1166 (86.1)	1207 (86.3)
Total	43 (100.0)	1355 (100.0)	1398 (100.0)

χ^2 =5.035 df= 2 p= 0.08

Out of 43 children with hearing loss 43 were in upper lower and lower socio economic status and 2 were in middle and above socioeconomic class but the difference was not statistically significant(p = 0.08) (Table 3). Most (34 out of 43 i.e.79%) of the hearing loss was mild in nature. There were 6 moderate, 2 moderate severe and 1 profound hearing loss. Mild and moderate hearing loss was present in equal proportion of 50% in 5-8 years of age where as in 9-11 and 12 -14 years mild loss was predominantly prevalent (Table 4).

Table 4: Degree of hearing loss according to age of study subjects

Age of subjects (yrs)	Degree of hearing loss					
	Mild	Moderate	Moderate Severe	Severe	Profound	Total
	N(%)	N(%)	N(%)	N(%)	N(%)	N
5-8	4 (50.0)	4 (50.0)	-	-	-	8
9-11	13 (76.4)	2 (11.8)	2 (11.8)	-	-	17
12-14	17 (94.4)	-	-	-	1 (5.6)	18
Total	34 (79.0)	6 (14.0)	2 (4.7)	-	1 (2.3)	43

Hearing loss was detected in majority of subjects(76.7%) who practiced unhygienic ear cleaning and the association of ear cleaning and hearing loss was found to be statistically significant($p<0.05$)(Table 5).

Table 5: Hearing loss and unsafe ear cleaning practices among study subjects

Methods of cleaning of ear canal	Hearing loss present N(%)	Hearing loss absent N(%)	Total N(%)
Cleaning ear canal	33 (76.7)	801 (59.1)	834 (59.65)
No Cleaning ear canal	10 (23.3)	554 (40.9)	564 (40.34)
Total	43 (100.0)	1355 (100.0)	1398 (100.0)
$\chi^2 = 5.38$	df= 2	p = 0.0203	

Discussion

The socioeconomic impact of hearing loss and deafness in children is substantial, particularly in developing countries like India. In developing countries such children rarely receive any schooling which leads to higher unemployment rate in adulthood.

The information on hearing impairment in children in India is mostly school or hospital based. In school based studies prevalence was documented 9.2% in Belgaum, 11.7% each in Pune and rural south India by Gaonkar[7], Kalpana[8] and Jacob[9] respectively. However in a recent hospital based study from Ghaziabad by Sinha et al[10] 9.3% hearing impairment was reported.

In our study the overall prevalence of hearing loss (on the basis of audiometry) was found to be around 3%. There are couple of well functioning primary care centers and one tertiary care hospital within the reach of the community of Kalyanpuri, which may be one of the reasons for relatively low prevalence in present study.

Middle ear infection was associated with 86% of hearing loss, CSOM being the most common (around 50%) in our study. Middle ear diseases as a leading cause of hearing impairment in children has also been reported by other authors in India.[7-9,11-13]

Hearing loss was mainly conductive in our study (>90%) as well as in other studies.[11-17] Majority (79%) of subjects had mild degree of hearing loss. Similar findings were also reported by other Indian studies by Gaonkar[7], Sharma,[16] Chandra and Kapur[12], and Sinha.[10]

Self-ear cleaning by unsafe means is a widely prevalent practice in communities.[18-21] Such practices may significantly attribute to chronic middle ear infection and lead to hearing loss. In our study almost 60% of subjects would practice unsafe cleaning of ear canal and the association between hearing loss and ear cleaning was found statistically significant.

One of the limitations in the present study was noncompliance by 23% among screen positive children to be put under pure tone audiometry for confirming hearing loss and so some underestimated prevalence might have been resulted. If all 102 screen positive children were subjected to audiometry the prevalence of hearing loss could have been little higher, probably to around 4% with the same trend of positivity (43/79 i.e. 54%).

Conclusion

It is evident from the present as well as other studies that hearing loss in children though a serious concern is mostly preventable. Raising awareness of community on importance of early detection of middle ear infection by identification of its common signs and symptoms and improvement in health seeking behavior through periodic ear screening camps may bring down the burden significantly. Schools may also play a vital role in detecting the ear problems in early stage and may function as an effective referral unit for suspected hearing impairment. Training of school teachers for early detection of ear infections and hearing impairment in young children may be a useful strategy for lowering down the burden of hearing loss in the community.

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ORIGINAL ARTICLE

Health Risk Assessment of People Living in Urban Slums of District Sonipat, Haryana

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Abstract

Background: Migration has led to development of slums. Slum area improvement and clearance act, 1956, slums have been defined as mainly those residential areas where dwellings are in any respect unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements or lack of ventilation, light, sanitation or combination of these factors which are detrimental to safety, health and morals, thereby compromising health of people leading to morbidity and mortality. About 22 % of the total population reside in slums.

Methods: 10% of total families residing in the slums were selected by systematic random sampling. First family was selected randomly and subsequently every 10th family was included in the study sample

Results: 13.2% population was under 5 years of age, out of which 2.7% were infants and 3.5% of the population was above the age of 60 years. 60% of the children <5 years of age who were examined were undernourished as per weight for age. 70% of adult females and 75% of children aged <5 years were anaemic.

Conclusion: The study found a large number of respondents living in overcrowded and insanitary conditions, basic amenities were not available in majority of the households and families. Antenatal care and immunization status of the beneficiaries were lacking.

Introduction

Health is not mainly an issue of doctors, social services and hospitals. It's an issue of social justice.[1]Modern medicine has made progress, became complex and treatment more costly but the benefits not penetrated to the social periphery. Goal of medicine is not merely treatment of diseases but "prevention of diseases, promotion of health and quality of life of individuals and community". It's essential component of socio economic development of a nation. The population in recent years has increased geometrically but means of subsistence grow arithmetically. There is increase in population especially in urban areas where people come from rural areas for better living standards, job avenues, education etc. This migration has led to development of slums.[2] Under section-3 of slum area improvement and clearance act, 1956, slums have been defined as mainly those residential areas where dwellings are in any respect unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements or lack of ventilation, light, sanitation or combination of these factors which are detrimental to safety, health and morals, there by compromising health of people leading to morbidity and mortality. About 22 % of the total population residing in slums.[3] Under National Health Mission umbrella the urban health also came in existence in 2014 with the concept that there should be availability, accessibility of health services in the urban slum areas and should be affordable to the community to improve health status of the people living in urban slums.[4]

Keeping above background in mind the present study was designed to assess the risk of diseases, promote health and create awareness regarding health seeking behaviour among people living in urban slums in district Sonipat Haryana.

Methodology

Two Urban Health Centres and seven Urban Primary Health Centres were opened in the slum area of district Sonipat to provide comprehensive health care services to the community. For the study purpose 10% of total families residing in the slums were selected by systematic

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random sampling. First family was selected randomly and subsequently every 10th family was included in the study sample. Data was collected using a pre tested semi-structured interview schedule by house to house visits in the selected family.

Socio demographic, environmental, and nutritional and health profile of each and every family member was collected in the interview schedule. The detailed physical examination was done to identify the morbidity if any among the individuals.

The data was collected by two independent observers who were appointed on contract basis for two months. These observers were graduates with basic medical knowledge. They were formally trained for the research by principal and co investigators to hone their skills in data collection as per the requirement of the study. After data collection the investigators, one deputy Civil Surgeon NHM and other a faculty from Medical College, ensured the quality of data then the data was entered in excel sheets, analysed statistically by applying both quantitative and qualitative tests.

In this study the Medical Officer, MPHWs, ASHAs of nearby health centres were deployed to carry out health check-ups and other laboratory investigations of individuals having some morbidity. A mapping of the area was also carried out by the investigators through several visits of the study area to get the first-hand knowledge of the area and prevailing/ existing issues affecting health of people. Then two formal meetings were organized by investigators with the district administration to apprise about prevailing issues related to various health related sectors. After that three visits were made with district administration officer and officers of other health related sectors and the community members for clearing issues came out during study and visits of investigators.

Results

In the present study 2531 were included residing in 606 families. Total number of males were 1344 (53.10%) and 1187(46.89%) were female. Most of the family in the slums were nuclear type i.e. 570 (94%). Overall sex ratio in the slums was 882 and child Sex ratio (0-6yr) was 984 as shown in table1.

In the study population 13.2% population was under 5 years of age, out of which 2.7%were infants and 3.5% of the population was above the age of 60 years as shown in table 1. The distribution of males and females was not statistically significant across the ages.

Literacy: Overall literacy was 76.3%, females literacy rate was 65.2% while 85.8% of males were literate in the study population. Around 16% of the study population were literate more than matriculation level as shown in the table 2.

Table1: Age and sex distribution among study population (N=2531)

Age group	Sex		Total
	F	M	
0-1 year	37 (3.1)	31 (2.3)	68 (2.7)
1-5 years	132(11.1)	133(9.9)	265(10.5)
5-14 years	211(17.8)	270(20.1)	481(19.0)
15-45 years	659(55.5)	734(54.6)	1393(55.0)
45-60 years	113(9.5)	123(9.2)	236(9.3)
60-65 years	21(1.8)	22(1.6)	43(1.7)
>65 years	14(1.2)	31(2.3)	45(1.8)
Total	1187(100.0)	1344(100.0)	2531 (100.0)

Table 2: Literacy status among study population i.e population aged >7years (N=2090)

Literacy	Sex		Total
	F	M	
Illiterate	336 (34.8)	160 (14.2)	496 23.7)
Primary	212 (21.9)	235 (20.9)	447 21.4)
Matriculation	279 (28.9)	517 (46.0)	796 38.1)
Senior sec.	92 (9.5)	132 (11.7)	224 10.7)
Graduate and above	47 (4.9)	80 (7.1)	127 (6.1)
Total	966 (100.0)	1124 (100.0)	2090 (100.0)

Table 3: Toilet usage among study population i.e. families (N=606)

Toilet usage	Number of families	%
In house toilet	470	77.56
Community toilets	40	6.60
Open defecation	96	15.84
Total	606	100

Around 16% of the families in the study population still defecate in open whereas only 25 families were having sewage connection. There is no refuse disposal system in the area and 98% study families dispose the household waste indiscriminately (Table 3).

Nearly 2/3rd (65.14%) of the families were using ground water as a drinking source of water , 42% of the families still using biomass fuel as the main fuel for cooking purpose. Overcrowding and inadequate ventilation was there in the all houses surveyed.

Morbidity, health risks profile and health seeking behaviour:

Malnutrition: More than 60% of the children <5 years of age who were examined were undernourished as per weight for age.

Anemia: More than 70% of females who were examined were clinically found anemic. Nearly 75% of children aged <5 years were clinically anemic.

Antenatal care: 26% pregnant women were found in the area during the study, out of which only 6 ie less than 1/4th were registered and received any antenatal care. Rest of pregnant women were not even registered for check-up.

Immunization: Immunization coverage was also poor in the area ie only 27% of the under 5 years children were found fully immunized for age, rest of children were either partially immunized or not immunized at all.

Hypertension: Among the population, checked for blood pressure, nearly 10% were found hypertensive and 18% were in borderline group ie at risk of developing hypertension. It's also found that hypertension was more in females than males in borderline group.

Discussion

Improving living conditions in urban slums as housing, employment, literacy, quality of living environment, social support, and health services is central to improving the health of urban populations.[5] The study found a large number of respondents living in overcrowded and insanitary conditions and these findings are similar with findings of other researchers.[6]

Availability of basic amenities such as good housing, safe water, and sanitation would have a positive impact on health status.[7] In our study these basic amenities were not available in majority of the households and families. Findings of other researchers also suggested that these simple measures have not penetrated down to the slum areas. There were some gaps in care of pregnant women also similar to our findings.[6]

According to the National Family Health Survey–3 report, cited by Ray [8] almost half of the children below 5 years of age (48%) are stunted and 43% are underweight. In our study we found that more than 60 % of under-five children were underweight.

Kadri et al, in slums of Ahemdabad city observed that the vaccination coverage among 70.3 per cent of the children were fully immunized which was less than the desired goal.[9]

Similar level of coverage was documented in other studies by Khokhar et al and Kar et al in urban slums of Delhi.[10,11] In the present study only 27% of the under 5 years children were found fully immunized for age, rest of children were either partially immunized (58%) or not immunized (15%) at all. This was quiet less than the coverage observed by other researchers. The poor female literacy and migratory nature of the families might be the reasons.

Limitations

As we have covered a sample of population, it might be possible that certain issues may still remain unaddressed concerned to other families which were left out in the study sample.

As far as the anemia is concerned we had only assessed the anemia clinically and didn't assess the causes of anemia among study population.

Some of the environmental issues i.e. overcrowding and ventilation issues were not addressed in details as per standard criterion.

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SHORT COMMUNICATION

Moving Beyond Validity and Predictive Values: Use of Clinical Utility Indices to Identify Optimum Cut Offs of Body Mass Indices to Rule in and Rule out Obesity

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Abstract

Background: Considering the limitations of validity and predictive values as stand-alone indicators of evaluating a screening/diagnostic test, this study assesses a composite index - Clinical Utility Index- of Body Mass Index (BMI) for assessment of obesity.

Methods: The secondary data of bus drivers of an urban transportation facility regarding weight, height, age and body fat percentage collected during a health camp were used to calculate the validity, predictive values and clinical utility indices for different cut off values of BMI. Positive Clinical Utility Index (+CUI) was calculated by multiplying sensitivity and posited predictive value. Negative Clinical Utility Index (-CUI) was calculated by multiplying specificity and negative predictive value.

Results: A BMI cut off value of 25kg/m^2 had the maximum positive clinical utility(+CUI=0.75) and 26 kg/m^2 had the highest negative clinical utility (-CUI=0.82). The BMI cut off of 25kg/m^2 had good clinical utility across all age groups.

Conclusions: BMI cut off value of 25kg/m^2 has good clinical utility to diagnose obesity and BMI cut off of 26 kg/m^2 has excellent utility for ruling out obesity in this high prevalent setting.

Key words: Obesity, Validity, Predictive Values, Clinical Utility index

Introduction

The established health risks and substantial increase in prevalence has made obesity a major global health challenge. Body Mass Index (BMI)is a useful measure of obesity. WHO defines a BMI more 30 kg/m^2 as obesity.[1] A BMI cut off of 25 kg/m^2 has been recommended for defining obesity in the Asia Pacific region.[2]

Validity and predictive values are commonly used to evaluate a screening / diagnostic test. Validity is important from the public health point of view while for the clinicians predictive values are relevant. A relatively new index -Clinical Utility index - is a composite index using both validity and predictive values.[3] It helps to identify an appropriate cut off value of BMI to rule in and rule out obesity.

We conducted this study to demonstrate the clinical utility of BMI in the assessment of obesity amongst the bus drivers of the public transportation facility of Pune city.

Methods

A health check-up of the drivers of the public transportation facility of Pune city was conducted in December 2014. All drivers on the rolls of the public transportation facility of Pune city were invited to participate in the camp. The secondary data collected during this health check-up was used for this study.

Approval was obtained from the institutional ethics committee. All identifiers of the data were detached during data entry and data regarding age, height, and weight and body fat percentage were collected.

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Obesity was assessed by calculating BMI as well as Body Fat percentage. Measurements were taken using standardized equipment and standard technique. Height of all participants were measured using a stadiometer in standing position without footwear to the nearest 0.1 cm. Weight was measured with minimum clothes using a calibrated electronic scale with digital readout to the nearest 0.1 kg. BMI was calculated by weight (kg) divided by height (m) squared (kg/m^2). Body Fat % was measured using the Body composition analyzer (BC 420 MA).Body fat percentage is the amount of body fat as a proportion of one's body weight. A body fat percentage more than 25%, which has been used in other studies, was defined as obesity.[4,5]

Analysis was done in Microsoft excel and SPSS version 20. Validity and predictive values were calculated using body fat percentage as gold standard. Pearson's correlation coefficient was calculated to assess the correlation between BMI and Body fat percentage. Validity, predictive values and clinical utility indices were calculated for different cut off values of BMI. An ROC curve was drawn to identify an optimal cut off value of BMI to diagnose obesity. Positive Clinical Utility Index (+CUI) was calculated by multiplying sensitivity and posited predictive value. Negative Clinical Utility Index (-CUI) was calculated by multiplying specificity and negative predictive value. The validity and clinical utility indices were calculated for the optimal BMI cut off value in different age groups. The qualitative interpretation of the clinical utility indices were as follows: ≥ 0.81= Excellent; ≥ 0.64= Good; ≥ 0.49= Fair; <0.49= Poor; < 0.36=Very poor.[3]

Results

Out of 1315 drivers on the roll, 1204 (91%) drivers attended the health camp. The mean age of the drivers was 45.04 years (sd=7.51 years). The mean body mass index was 24.84 kg/m^2 (sd =3.92kg/m^2) and mean body fat percentage was 23.91% (sd=5.21%). A total of 507 (42%) drivers had body fat percentage more than 25%.

There was a strong positive correlation between BMI and Body Fat % [Pearson's Correlation coefficient= 0.856; p<0.05].

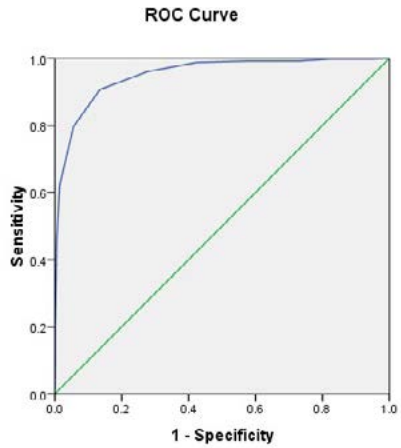

Figure 1: ROC curve for different cut off values of BMI for assessment of obesity

Table 1: Validity, Predictive values, accuracy, misclassification and clinical utility of different BMI cut off values for assessment of obesity (Body Fat % > 25)

BMI	Sensitivity (%)	Positive Predictive Value (%)	Positive Clinical Utility	Qualitative interpretation	Specificity (%)	Negative Predictive Value (%)	Negative Clinical Utility	Qualitative interpretation
>18	99.80	43.43	0.43	Poor	5.45	97.44	0.05	Very poor
>19	99.80	44.42	0.43	Poor	9.18	98.46	0.05	Very poor
>20	99.80	46.85	0.47	Poor	17.65	99.19	0.18	Very poor
>21	99.21	49.65	0.49	Fair	26.83	97.91	0.26	Very poor
>22	99.21	55.52	0.55	Fair	42.18	98.66	0.42	Poor
>23	98.82	62.86	0.62	Fair	57.53	98.53	0.57	Fair
>24	96.06	71.62	0.69	Good	72.31	96.18	0.69	Good
>25	90.73	83.03	0.75	Good	86.51	92.77	0.80	Good
>26	79.68	91.20	0.73	Good	94.40	86.47	0.82	Excellent
>27	62.13	96.92	0.60	Fair	98.57	78.16	0.77	Good
>28	45.17	98.28	0.44	Poor	99.43	71.37	0.71	Good
>29	29.59	98.68	0.29	Very poor	99.71	66.06	0.66	Good
>30	20.12	99.03	0.20	Very poor	99.86	63.22	0.63	Fair
>31	13.61	98.57	0.13	Very poor	99.86	61.38	0.61	Fair
>32	9.47	97.96	0.09	Very poor	99.86	60.26	0.60	Fair

Table 2: Age wise Validity and Clinical Utility of BMI for diagnosis of obesity for the BMI cut off of 25kg/m²

Age group (in years)	Prevalence of obesity	Sensitivity (%)	Positive Predictive Value (%)	Positive Clinical Utility (CU+)	Qualitative interpretation of CU+	Specificity (%)	Negative Predictive Value (%)	Negative Clinical Utility- (CU-)	Qualitative interpretation of CU-
21-30	26.41	78.6	100	0.79	Good	100	92.9	0.93	Excellent
31-40	36.8	81.5	93.8	0.76	Good	96.8	90	0.87	Excellent
41-50	50.17	81	93.3	0.76	Good	92.5	79.3	0.73	Good
51-58	48.69	81.9	84.1	0.69	Good	85.4	83.2	0.71	Good

The area under the ROC was 0.951 (0.94 to 0.963) and the value of BMI to the left uppermost corner of the ROC was 25 kg/m². [Figure 1]

The maximum positive clinical utility index was 0.75 (good) for a BMI cut off value of 25 kg/m² and the maximum negative clinical utility index was 0.82 (excellent) for a BMI cut of value of 26 kg/m². The negative clinical utility index for BMI cut off value of 25 kg/m² was 0.80 (good). (Table 1)

Table 2 describes the validity and clinical utility of BMI for diagnosis of obesity for the BMI cut off of 25kg/m² according to different age groups. The sensitivity of cut off value for BMI of 25 kg/m² varied from 78.6% to 81.9 %, specificity from 85.4% to 100% and the predictive values were more than 75% in all the age groups. The positive clinical utility indices for cut off value of BMI of 25 kg/m² varied from 0.69 (good) to 0.79 (good) while the negative clinical utility varied from 0.71(good) to 0.93 (excellent) in the various age groups.

Discussion

Overall the prevalence of obesity in the study group was 42.1%. There was a good positive correlation between BMI and body fat percentage. The area under ROC curve indicates that BMI can effectively differentiate individuals with and without obesity. As the value of BMI which was at the upper left corner of the ROC curve was 25 kg/m², this was identified as the optimal cut off of BMI for diagnosis of obesity for this study group. A BMI cut off of 25 kg/m² has been recommended to define obesity for Asian as well as Indian population.[2,6]

A positive clinical utility index reports the combined probability of 'testing positive if a person has the disease and having the disease if the test is positive'. A negative clinical utility index reports the combined probability of 'testing negative if a person does not have the disease and not having the disease if the test is negative'.

A cut off value for BMI of 25 kg/m² had good clinical utility for ruling in as well as ruling out obesity. The highest negative clinical utility was for a BMI cut off of 26 kg/m² which would be an optimal cut off for ruling out obesity. However, usually BMI will be used for diagnosing (ruling in) obesity so that appropriate interventions in terms of health education and therapeutic interventions can be planned. For this, BMI of 25 kg/m² is the most appropriate cut off for assessment of obesity in this study group. The clinical utility of a BMI cut off of 25 kg/m² for ruling in and ruling out obesity was good across all age groups studied.

There are other measures to assess the usefulness of screening/diagnostic tests. Validity of a test is the ability of the test to detect a person with disease or exclude a person without the disease. A major limitation of sensitivity and specificity is that they cannot be used by clinicians to estimate the probability of disease in individual patients because they are defined on the basis of people with and without the disease.[7] Predictive values describe a patient's probability of having disease once the results of the tests are known. They are determined by the tests sensitivity, specificity and prevalence of the condition for which the test is used.[7] Likelihood ratios indicate how many times more or less likely patients with a disease are likely to have a particular result compared to patients without the disease and can also be used to calculate the probability of disease for individual patients.[8]

ROC curves help in identifying an optimal cut off point for correctly identifying individuals with and without disease.[9] The clinical utility indices of a screening/diagnostic test can be used to identify optimum cut off values to rule in as well or rule out a condition. For example if the objective of screening is to identify individuals with obesity so that they can be referred for interventions to reduce obesity i.e. rule in the diagnosis, the optimum cut off would be 25 kg/m². In cases were screening is done for recruitment purposes and it is decided not to recruit obese individuals i.e. rule out the diagnosis, the optimum cut off would be would be 26 kg/m². In addition it has an advantage that it gives weightage to both validity and predictive values and can be graded qualitatively.

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Hypopituitarism: A Preventable Cause of Maternal Mortality

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Background

Hypopituitarism is defined as deficiency of one or more pituitary hormone and pan hypopituitarism is defined as deficiency of three or more pituitary hormones.[1] One of the major cause of hypopituitarism is postpartum necrosis leading to lactation failure, and progressive secondary amenorrhea and hypothyroidism.

Case Series

Here we are presenting three cases of hypopituitarism of which two are Sheehan's syndrome.

Case 1

A 50 year old female with no chronic illness, presented in casualty room with complaints of nausea, vomiting and decreased mentation since 1 month. On examination her pulse rate was 62/ min, Blood pressure 94/ 50 mm Hg, Pallor was positive and facial puffiness present. Systemic examination was normal. Investigations are summarized in table 1.

She was treated with 3% normal saline and other symptomatic treatment. On reviewing history, she had postpartum amenorrhea with lactation failure after her last child birth and there is history of hysterectomy 2 yr back (reason unknown).

MRI pituitary revealed empty sella. She was put on 7.5 milligram per day of prednisolone.

Case 2

A 51 yr old female was admitted through emergency with complaints of fever, generalized weakness and progressively low platelet count for 10 days. She was a known case of hypothyroidism taking 100 microgram of levothyroxine irregularly.

Last child birth happened 20 years back. There was history of lactation failure after last delivery. She had her menstruation after this but periods were irregular

Table 1: Clinical Parameters of Selected Cases with Hypopituitarism

Parameter	Reference range	Case 1	Case 2	Case 3
Hemoglobin	12-14 gm%	9.9	9.6	11.4
TLC	4-11x 10^3cu mm	8400	2350	10,700
Platelet	2- 4 lakh/cumm	0.76	0.10	0.84
Serum Sodium	135-145meq/dl	109	111	132
Serum Potassium	3.5-5.5 meq/dl	3.3	3.5	4.4
Serum TSH	0.4-4.2 MIU/L	2.75	1.08	6.48
Free T4	0.7-1.24 ng/dl	0.35	0.82	0.24
Serum Cortisol	5-25 microgm/dl	2.0	4.0	1.0
Serum FSH	Post menopausal female: 18-153IU/L Male:1-12 IU/L	-	11.4	-
Serum LH	Postmenopausal female: 16-64 u/l Male 2-12 u/l	-	2.2	-
Serum Growth Hormone	0-5 microgm/l	-	-	-
IGF-1	34-245 ng/ml	-	-	-
Serum Prolactin	Female: 1.2-25 ng/ml Male: 2.5-17 ng/ml	-	1.7	-

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and scanty till 2008, when she got hysterectomy done for unknown reason. There was no history of bony pain, indigenous drug use, bleeding from any site, or melena.

On examination she had coarse facies with fine wrinkling at lateral angle eyes. Pallor was present, normal gums, no clubbing/ cyanosis/lymphadenopathy. Blood pressure was 100/70 mm Hg and pulse rate was 70/minute. Systemic examination was normal. Results of Investigations are summarized in Table 1. Her MRI brain showed empty sella.

This confirmed our diagnosis of hypopituitarism secondary to post-partum pituitary necrosis. Treatment was started with prednisolone 15 mg per day and levothyroxine 150 microgram/day. The patient responded well to the treatment.

Case 3

A 35 yr old female patient presented in casualty room with complaints of non-healing ulcer in left forearm since past one month followed by hypotension and giddiness. The patient was having amenorrhea for last four years. Pallor and facial puffiness was present with a low systolic BP of 70 mm Hg. The patient was put on vasopressors because of hypotension. Results of investigations are summarized in Table 1. Ejection fraction was low (20%) with global hypokinesia. Serum cortisol level was observed to be 1 microgram/dl (normal reference range 4-22 microgram/dl). Patient was started on levothyroxine 100 microgram/day and injectable steroid and antibiotics. However, patient succumbed after 10 days of admission.

Discussion

Commonest causes of maternal mortality in our country are: post partum bleeding (15%), complications from unsafe abortion (15%), hypertensive disorders of pregnancy (10%), postpartum infections (8%), and obstructed labour (6%).[11]

Out of these causes postpartum bleeding may cause pituitary apoplexy and sudden hypotension and hypoglycemia leading to death. As acute hypopituitarism contributes to maternal mortality, its long term impact also contributes to morbidity and mortality in females.

In a population-based study of hypopituitarism in 1998, the prevalence of hypopituitarism was 46 cases per 100,000 individuals and the incidence was 4 cases per 100,000 per year.[1] There is scant data on hypopituitarism from India despite estimated total prevalence of pituitary disorders to 4 million in the year 2000.[2] Although the clinical symptoms of this disorder are usually nonspecific, it can cause life-threatening events and lead to increased mortality. Gundgurth et *al*. have described the largest published series of hypopituitarism (91cases) till date in India.[3] In their study they concluded that most common cause of hypopituitarism was pituitary tumour. However, in India, Sheehan's syndrome and snake bite also make significant contribution to hypopituitarism. Presentation varies from asymptomatic to acute collapse, depending on the etiology, rapidity of onset, and predominant hormones involved.[4] From Kashmir valley Zargar *et al* described the clinical profile of Sheehan's syndrome. They reported 149 patients with Sheehan's syndrome and documented one, two, three, four, and five pituitary hormone deficiencies in 17.4%, 23.5%, 18.8%, 17.4%, and 22.8%, respectively.[6]

Patients can present as lethargy, decreased alertness, weight gain due to hypothyroidism, lactation failure due to prolactin deficiency, amenorrhea, infertility due to deficiency of FSH/LH deficiency, hypoglycemia, poor tanning of skin and hypotension due to ACTH deficiency, growth failure and fasting hypoglycemia in children and increased abdominal fat, poor energy, reduced muscle mass and strength, dyslipidemia in adult due to GH deficiency. Both deficiency in GH and gonadotropins can lead to fine facial wrinkling. Patients can present in altered sensorium secondary to hyponatremia due to hypothyroid or cortisol deficiency. Other associations include anemia, pancytopenia, and cardiac abnormalities like cardiomyopathy and acute kidney injury.[7-10] Pancytopenia is associated with hypo cellular marrow and complete recovery has been shown to occur after achieving eucortisolemic and euthyroid state, and it has been shown that glucocorticoid replacement is more important than thyroxin replacement in reversing pancytopenia in these patients.[8]

Diagnosis can be done by demonstration of low or inappropriately normal serum level of the appropriate pituitary hormone concurrent with low level of target organ hormone (ACTH, TSH, FSH and LH). To diagnose GH and Prolactin deficiency, pituitary stimulation tests has to be done.

In the presence of clinical or biochemical evidence of hypopituitarism, visualization of the sella/suprasella areas is needed to identify the nature of the causative disease process.

Management includes replacement of hormones concerned like cortisol, thyroxine and GH replacement and estrogen and progesterone replacement. If patient have cortisol and thyroid deficiency then cortisol should be replaced with steroids and thent thyroxine should be added to avoid precipitation of adrenal crisis.

Conclusion

Hypopituitarism is an uncommon entity, but in our country Sheehan syndrome i.e. postpartum pituitary damage is underreported and remain undiagnosed for years because of its nonspecific symptoms. Timely diagnosis is important as treatment is simple, cheap and do not require much of the monitoring.

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Post MBBS Pre PG Phase-Is it Really the Worst Phase or Something Even Worse Awaits!!!

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DOCTOR, a word which used to attract me when I was a child. My parents hoped for me the best & the best in India means- obviously to become a doctor. Little did I know at that point of time the very ground reality of becoming a doctor. The continuous scrutiny I have to go through and not to forget the huge burden of books. But as we are aware to get the best, we need to sacrifice something. So accepting that, I moved forward in life hoping post my MBBS, I will be at least able to earn loads and enjoy life to the fullest. But as always life is full of surprises and the worst thing that awaits- POST MBBS & PRE-PG PERIOD.

A period which can lead to havocs - bring about a complete change in the personality, push a fully active person into depression, make him irritable and the unending list of negativity – supplemented with the continuous taunts of relatives asking about our future plans and which stream we are aiming to get, as if it is completely in our hands. For me, it was a waiting period of 6 months which was enough to make me realize how difficult and worrisome this phase of life can be. Just out of curiosity, I wanted to know if it's only me who feels this way or others are in the same boat.

The responses which I got-

- *Am becoming an insomniac, getting detached from all relationships*

  - Dr. Aditya

- *In this preparation phase I am not able to buy anything as per my wish and its just so not possible to ask my parents for money*

  - Dr. Kumar Ranjan

- *Only the temptation of having Dr. as a prefix to my name made me choose this stream & now I am suffering like hell*

  - Dr. Susmita

- *Why can't I be satisfied just with my MBBS. Enough is enough*

  - Dr. Swagat

To add to our owe, all these coaching institutes have now cropped up claiming to make us toppers in various entrance examinations. Because of these institutes we are not even able to enjoy our MBBS period to the fullest, as the weekends are filled with their classes. Despite having many negative opinions regarding these institutes, we don't stop enrolling – me being no exception – just because our friends are doing it, and peer pressure is a thing which always plays a great role in deciding what we ought to do.

- *I am being forced to study a thing within a limited span of time and that is killing all pleasure of studying*

  - Dr Preetam

- *I am not studying to be knowledgeable. I am only doing it so that I can secure a rank in a good college*

  - Dr Susmita

- *As if the entrance examinations were not enough, these people come up with exams every week making us realize our dumbness now and then*

  - Dr Preeti

But what amazed me was the opinion of some of my friends who were quite positive in their approach towards life and were enjoying to the fullest by ditching the aim of getting into a MD/MS course immediately after passing. Rather they joined in some private hospitals or went to PHCs/ CHCs.

- *I know I can't crack these entrance exams, so its better I join this hospital and earn money*

  - Dr Swagat

- *I can't take so much of stress, so I am joining in a PHC, so that I get a MD/MS seat after 3 years of service in in-service quota*

  - Dr Loknath

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However, I really hoped this would be the last big hurdle I need to cross, so I struggled hard and got into residency only to wake up to the reality that the road doesn't end here. The day I got my admission, along with best wishes from my seniors & friends, I received so many comments regarding the PG/ Residency life I had least hoped for.

- *Your life is going to be hell now*

  - Dr Snehasis

- *Your life will be controlled by your faculties now, you won't have a say in anything – be it right/ wrong. You just have to nod all along*

  - Dr Snehil

- *You will be missing those lovely days of late night outings and partying, as you won't get any time to sleep in these 3 years*

  - Dr Sarthak

Being on the verge of tears hearing all these, I was in a dilemma whether my Post MBBS Pre-PG phase was really that bad or something even worse waits ahead. The tag of AIIMS lured me, but the journey to become a doctor had already made me realize not to be a victim of such temptations. Keeping my fingers crossed, I decided to go ahead thinking – everything else can wait. And life is all about surprises and living the moment, rather than spending time worrying about what will happen next. Moreover, not every institute, not every faculty is the same. Positivity and negativity lies all around us and it's completely upto us to accept what is best for us, organizing our days so that we have time for everything we love, doing justice to the tag of DOCTOR and bring forward the best foot. Hope this residency of mine will be a memorable, knowledgeable, eventful and enjoyable in all its aspects. Wishing for brighter days ahead that would make me cherish the day I chose to become what I am today.

Kishori Panchayat: A platform for Empowering Adolescent Girls- A Community Initiative Through Village Level Workers (ASHA)

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Girls in *Adarsh Kishori Panchayat*

Kishori Panchayat: A platform for Empowering Adolescent Girls

Excited voices and smiles greet a visitor who walks into the roomful of adolescent girls. They lean against each other affectionately, bonded both by their adolescence and their belonging to the group- ***Kishori Panchayat*** - in the village of Padegaon in Wardha district of Maharashtra. This collective of girls between the ages of 12-16 years was formed in the year 2004, when CLICS *doot (Now ASHA)* Ms. Alka Sathaone started spreading the word about its advantages. Her daughter Ashwini and that of another community health worker Baby Dyaneshwar Mendule's daughter Arti and their friend Tina Bakane were the first three members in the Kishori Panchayat. Slowly and steadily the group grew, despite resistance from the girls' families and some people in the community. "Families were afraid we would ruin their daughters," remembers Alka. Several trips were made to the girls' homes to convince their families of the advantages of the group. Some of the girls also needed convincing. Pragati, who was the leader of this *Kishori Panchayat,* says she was approached twice before she consented to join. "I told my friends that I would rather watch Television than waste my time in such meeting!" she laughs, describing her initial reaction to the idea.

An initiative of the CLICS (Community led Initiatives for Child Survival program of Department of Community Medicine, MGIMS, Sewagram), the *Kishori Panchayat* is intended to provide a platform for adolescent girls to discuss the problems of growing up, learn life skills, develop capacity for decision making for their own health. *Adarsh Kishori Panchayat*, which is what this particular group of girls has named, has 15 members today. While this is the 'nodal' collective, most of the girls have taken the initiative of starting their own groups in different areas of this village. These sub-group *Kishori Panchayats,* in which the girls act as peer educators, have up to 20 members each!

Kishori Panchayat Girls in a short play on Female Foeticide

Today the contribution of the group to improving the lives of young girls in the community is acknowledged by everyone. They disseminate health messages through wall writings, impart health education to pregnant and postnatal mothers,

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supervise the growth monitoring of under-five children. They are also involved in decision making at village level. Their voices are heard in village matters especially in health and sanitation related matters.

89 such groups exist in the four PHC area of Wardha district today and the girls are regarded as role models for others in the area. The members of each Kishori Panchayat belong to one of the four committees: Education, Health, Cultural and Sanitation. A monthly group meeting led by the ASHA serves as a forum for discussion on diverse topics that range from dealing with menstruation to the importance of ANC and PNC, management of diarrhea, healthy eating practices, good hygiene, and safe water. They are also taught about the importance of delaying marriage and motherhood. Vocational training and recreational activities are a part of the agenda and the girls participate in plays with these themes, staged regularly in their own village and others. Breaking into songs about diarrhea and clean water is part of the group practice: In fact one of the rules of the group is to begin each session with a song.

The group meetings provide a safe space in which the girls share their feelings and problems. Confidentiality is assured and the ASHA plays a vital role in holding the group together. Most perceive her as a mother figure, with the added advantage of being able to ask questions they are afraid to broach to their own mothers.

Many express huge enthusiasm about the improvements in their lives since they joined *Adarsha Kishori Panchayat*. Pooja says her performance in school has improved since she became a member. "I did not have a voice earlier," she explains. "Being a member of this group taught me to speak up and now I can ask questions in class without feeling embarrassed." For Suvarna, the body changes brought about by adolescence were frightening to deal with alone. Being a part of this group of girls has helped ease her fears and shown her "the light in the midst of darkness." Ashwini and Dipali, too, say that being in this group has helped them deal with the changes in their own bodies. "Our own mothers told us we should hide these events," they say. "It is a relief to learn that there is nothing to be ashamed of."

Increased confidence and better health has also resulted in better friendships and relationships for all the girls. Being able to speak out in front of an audience, being heard the way they have never been before, being seen and recognized for their talents… these are just some of the factors that have contributed to an increase in the self-esteem of the girls. Their role play on "Save the girl child" received first prize in a competition held at regional level at Nagpur. They are excited about the future of the group and feel that they can achieve lots more.

The present Kishori Panchayat is the fourth generation of adolescent girls. The three founder members of Kishori Panchayat viz. Ashwini, Arti and Tina have become idols for the newer generation. Presently Ashwini Sathaone is pursuing her Masters in Social Work, Arti is doing Bachelor in Science and Tina is working as a Nurse in a Corporate hospital in Pune.

Kishori Panchayat Girls Receiving arts & Craft training

CLICS doot Alka (Now ASHA) is a role model for the Kishori girls of the village Padegaon

CLICS Doot Alka is working as ASHA.. Alka has become a family member of every household in the village. Her leadership skills, communication skills and her dedication for creating health awareness are lauded by the community as well as by the health system and ICDS. She is invited in various forums to share her experiences. Alka says she is very lucky to have a family which supports her work enthusiastically. Her son has become an Engineer and daughter is pursuing Masters in Social work. She is very happy about academic achievements of her children.

Alka has guided the Kishori girls and showed them a right path to walk on without fear. Kishori girls are pursuing higher education and stand different from their peers as they are more confident as Kishori Panchayat has brought a revolutionary change in their personality. Kishori girls wish that every Kishori girl of India should get an opportunity to be a part of the adolescent girl's platform as it will help in rearing a new generation of active and responsible citizens. She was recognized by conferring her with first Late Dr Anand Karkhanis Best Health Worker Award in 2006 .

The *Zilla Parishad, Wardha* and the district health system of Wardha has been so impressed with its impact on teenage girls in the district that they decided to constitute one group in each village of Wardha district.

Ensuring Two Sputum Samples for Diagnosis of Pulmonary Tuberculosis

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Background

Early identification of people with presumptive Tuberculosis (TB) is the most important step of the case finding strategy under Revised National Tuberculosis Control Programme (RNTCP) and sputum smear microscopy is the most commonly used diagnostic method.[1] As per the RNTCP guidelines, collection of two sputum samples from presumptive tuberculosis patients are mandatory for diagnosis of pulmonary tuberculosis.[1] In high TB burden countries like India, the diagnostic recommendation is not always possible to follow in practice for various reasons such as heavy workload of technicians and patient-based irregularities etc.[2] As per the published data of a record based study, the percentage of single sputum samples was 21.5%.[3] To overcome the hurdles/ barriers by the patient and the health care providers the following steps were taken.

Steps taken to ensure two sputum samples from presumptive TB cases

Use of tracking form by Laboratory Technician: A tracking form was prepared keeping in mind the high proportion of single sputum samples sent to the Designated Microscopic Centre (DMC) for microscopy. The tracking form includes variables like Laboratory number, name, age, address, department details from where they are referring the patient for the sputum microscopy examination and date of sputum sample collection for both the samples. (Table 1) A faculty from the Department of Community Medicine is nominated as co-ordinator for the follow-up of the single sputum sample cases. The laboratory technician updates the tracking form daily and report to the RNTCP Medical Officer (MO) posted at the Directly Observed Treatment Short Course (DOTS) centre. After receiving the weekly compiled report from the MO, the co-ordinator visits the respective departments (Inpatient wards) and discusses the matter with the nursing in-charge to ensure two sputum sample collection from each presumptive TB patient.

Reminder call by Laboratory Technician: Apart from the specific department visits by faculty co-ordinator, the laboratory technician make phone calls to the concerned departments for reminding of second sputum sample collection. Use of the interdepartmental communication system has reduced the proportion of single sputum sample cases significantly.

Regular RNTCP training of staff with inter-departmental coordination: As per the RNTCP guidelines, we planned to organize the RNTCP guidelines training for the staff involved in the implementation of RNTCP in our institute i.e. staff nurses, interns, post graduate students and medical officers every quarter. We ensured the involvement of the RNTCP Medical Officer and the Laboratory Technician in the training. The topics were allotted to respective

Table 1: Sputum sample tracking form to be completed/updated by laboratory technician

Sputum Sample Tracking Form								
Sl.no	**Lab. no**	**Patient name**	**Age/sex**	**Address**	**Referring unit/ OPD/ward**	**Sample 1 Date/Time**	**Sample 2 Date/Time**	**Remarks/ Mobile no**
1.								
2.								
...								

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faculty based on their field of expertise. The faculty from Community Nursing demonstrated the collection of sputum from a presumptive case of tuberculosis.

Regular faculty visit to inpatient wards: The faculty coordinator regularly visits the respective departments as per the weekly report received from the RNTCP medical officer. In addition to weekly visits, the co-ordinator visits different wards and discuss with the nursing staff in-charge, interns and post graduate students posted in the inpatient department having high single sputum sample cases. The co-ordinator compiles the data for a month and sends the report to the RNTCP core committee with a copy to the nursing superintendent.

RNTCP Core Committee Meetings: All issue related to tuberculosis are discussed in detail during quarterly RNTCP core committee meetings. The issues related to single sputum sample cases are particularly discussed with the concerned departments (with high number of single sputum samples) and with nursing superintendent to ensure early corrective actions.

Conclusion

The high proportion of single sputum sample cases may be due to lack of knowledge, insufficient guidance to the patients and improper follow-up mechanism. Keeping all the above points in mind, all the steps mentioned above are taken to increase the compliance at our institute and we have achieved a significant reduction in the proportion of single sputum samples.

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2. Davis JL, Cattamanchi A, Cuevas LE, Hopewell PC, Steingart KR. Diagnostic accuracy of same-day microscopy versus standard microscopy for pulmonary tuberculosis: A systematic review and meta-analysis. Lancet Infect Dis 2013;13:147-54
3. Chauhan RC, Purty AJ, Samuel A, Singh Z. Incremental yield of second sputum smear examination for diagnosis of tuberculosis patients at a tertiary care teaching hospital in Puducherry, India. Journal of Medical Society 2016:30(2):89-93

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

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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.

Abbreviations

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.

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Source of funding should be clearly mentioned

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Authorship

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.

Acknowledgement

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. 4th International Conference on epidemiology and Public Health is scheduled to be held at London, United Kingdom between October 3rd-5th 2016. Details is available at http://epidemiology.conferenceseries.com/

2. 5th International Conference on Climate change Adaption 2016 is scheduled to be held at Toronto, Canada between 15th -16th October 2016. Details of the conference is available from: http://www.globalclimate.info/

3. HIV Drug therapy 2016 is scheduled to be held at Glasgow, UK between 23rd – 26th October 2016. Details is available from: http://hivglasgow.org/

4. 21st WONCA World conference of family doctors is scheduled to be held at Rio de Janeiro, Brazil from 2nd-6th November, 2016. Details is available from: http://www.globalfamilydoctor.com/Conferences/worldconference2016.aspx

5. World Diabetes Congress, IDF is scheduled to be held at Abu Dhabi between 4th - 8th December 2016. Details of the conference can be accessed from: http://www.idf.org/congress/welcome

6. 2nd International Public Health Management Development program (IPHMDP) is scheduled to be held at PGIMER, Chandigarh from 16th - 20th December, 2016. Details is available from: http://pgimer.edu.in

7. Diabetes and Obesity Summit DOS is scheduled to be held at Hyatt Regency Waikiki Beach, United States of America on 12th January 2017. Organizer - cleveland Clinic Digestive Disease and Surgery Institute and Global Academy for Medical Education. Details of the conference can be accessed from: http://www.dos-cme.com/

8. 6th International Conference on "Medical, Medicine and Health Sciences" (MMHS- 2017 New Delhi) is scheduled to be held at New Delhi, India on January 13-14, 2017. Details of the conference can be accessed from: http://academicfora.com/mmhs-january-13-14-2017-new-delhi-india/

9. 5th Annual Essentials in Primary Care Winter Conference, is scheduled to be held at Hilton Marco Island Beach Resort and Spa, United States of America on 23rd January, 2017. Organizer - Continuing Education Company, Inc. Details of the conference can be accessed from: http://www.cmemeeting.org/marcoisland2017

10. International Conference on Lifestyle Management 2017, is scheduled to be held at Bhubaneswar, India on 4th -5th February, 2017. Details of the conference can be accessed from: http://www.health3000.org/lifestyle/

11. IPHA Annual National Conference 2017 is scheduled to be organized at AIIMS, Jodhpur between 24th -26th February 2017.

12. National Course on Public Health Approaches to Noncommunicable diseases is scheduled to be held from 2nd - 7th March, 2017 at PGIMER, Chandigarh. Details is available from: http://pgimer.edu.in

13. 4th International Conference on Food Security and Nutrition is scheduled to be held at Prague, Czech Republic on13th March, 2017. Organizer - ICFSN. Details of the conference can be accessed from: www.icfsn.org/

14. IAPSM Annual National Conference 2017 is scheduled to be held at Kolkata on March 2017.

15. 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.

16. International Disease, Health & society Conference is scheduled to be organized at New Delhi, India on 7th April, 2017. Details of the conference can be accessed from: http://yir.co.in/wp-content/uploads/2016/07/IDHSC.compressed.pdf

17. Cancer and Immunotherapy Vaccine Conference 2017 is scheduled to be held at USA on 10th April, 2017. Organiser- Terrapinn. Details of the conference can be accessed from: www.terrapinn.com/conference/...vaccine-congress.../Cancer-and- Immunotherapy.stm

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

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