ISSN 2395 -2113 (Print)

Indian Journal of Community & Family Medicine

Volume 3, Issue 1, Jan - Jun 2017

www.ijcfm.com
www.aiimsbhubaneswar.edu.in/otherpublication/ijcfm

Editorial Office

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

Submit your articles for consideration of publication to:
ijcfm2015@gmail.com

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

Indian Journal of Community & Family Medicine

Volume 3 Issue 1, Jan-Jun 2017

Editorial Team & Board Members

Dr Gitanjali Batmanabane
Patron, IJCFM

Dr Gitanjali Batmanabane is Director of AIIMS, Bhubaneswar since 30th Sept, 2016 and was holding the additional charge of AIIMS Patna. She was Professor & Head of Pharmacology at JIPMER, Puducherry. Dr Gitanjali has also worked as a technical officer at WHO, South East Asia for a period of two years and coordinated "The better medicines for children project" in India. She is the section Editor for Clinical Pharmacology & Pharmacotherapeutics. Her area of interests are Essential Medicine & Medical Education. She was Head, Department . of Medical Education at JIPMER and conducted many workshops on Biomedical Statistics & Scientific Writings and Medical Education. She is well known for her contribution towards National Teachers Training Centre (NTTC), in Puducherry. She is also member of WHO Expert committee on the selection of Essential Medicines. She has served as the Head of WHO collaborating centre for research and training in Essential Medicines and rationale use of medicine at JIPMER . Her immense contribution in research through teaching and training and publications in National & International journals is highly acclaimed.

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, Department . 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 30 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 92 publications, authoring and technical advisor of 7 books and contributing 7 chapters, publishing 36 project reports/document, he has made enormous contributions in academics & public health.

Dr Sonu H Subba
Editor, IJCFM

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.

Editorial Team & Board Members

Dr. Neeraj Agarwal
Deputy Editor, IJCFM
Professor & Head
Department of Community and Family Med
All India Institute of Medical Sciences Patna, Bihar

Dr. Pankaja Ravi Raghav
Deputy Editor, IJCFM
Professor & Head
Department of Community and Family Med
All India Institute of Medical Sciences-Jodhpur, Rajasthan

Dr. Abhiruchi Galhotra
Associate Editor, IJCFM
Additional Professor
Department of Community and Family Med
All India Institute of Medical Sciences-Raipur, Chhattisgarh

Dr. Binod Kumar Patro
Associate Editor, IJCFM
Associate Professor
Department of Community and Family Med
All India Institute of Medical Sciences-Bhubaneswar, Odisha

Dr. Surya Bali
Associate Editor, IJCFM
Associate Professor
Department of Community and Family Med
All India Institute of Medical Sciences-Bhopal, Madhya Pradesh.

Dr. Preetam B Mahajan
Assistant Editor
Assistant Professor
Department of Community and Family Med
All India Institute of Medical Sciences-Bhubaneswar, Odisha

Dr. Pankaj Bhardwaj
Assistant Editor
Associate Professor
Department of Community and Family Med
All India Institute of Medical Sciences, Jodhpur, Rajasthan

Dr. Swayam Pragyan Parida
Assistant Editor
Assistant Professor
Department of Community and Family Med
All India Institute of Medical Sciences, Bhubaneswar, Odisha

Dr. Surekha Kishore
Dean, AIIMS Rishikesh
Department of Community and Family Med
All India Institute of Medical Sciences, Rishikesh, Uttaranchal

Dr. Manisha Ruikar
Professor & Head
Department of Community and Family Med
All India Institute of Medical Sciences, Raipur, Chhattisgarh

Editorial Team & Board Members

Dr. Sanjay K. Rai
Professor
Centre for Community Medicine
All India Institute of Medical Sciences,
New Delhi.

Dr. Arun M Kokane
Additional Professor
Department of Community and Family Med
All India Institute of Medical Sciences-Bhopal, Madhya Pradesh

Dr. Amit Dias
Assistant Professor
Department of Preventive & Social Medicine
Goa Medical College, Goa

Dr. Sitanshu S Kar
Associate Professor
Department of Preventive & Social Medicine
JIPMER, Puducherry

Dr. Prashant R Mohapatra
Professor and Head
Department of Pulmonary Medicine
All India Institute of Medical Sciences-Bhubaneswar, Odisha

Dr. Swagata Tripathy
Associate Professor,
Department of Trauma & Emergency Med,
All India Institute of Medical Sciences, Bhubaneswar, Odisha

Dr. Subhashree Mahapatra
Research Scientist, Biotechnology
Paris, France

Dr. Parvathy Nair
Clinical fellow
Child and Adolescent Psychiatry Johns Hopkins Hospitals, Baltimore, Maryland, U.S.A

Dr. Shilpa Bhardwaj
Director, Preventive Medicine,
Clinical Assistant Professor of Internal Medicine.
Moses H Cone Memorial Hospital, Greensboro, North Carolina, USA.

Dr. Arvind Kumar Singh
Managing Editor, IJCFM
Assistant Professor
Department of Community and Family Med
All India Institute of Medical Sciences-Bhubaneswar, Odisha

Editorial Advisers

International

Dr. Hayato Uchida
Professor of Public Health, Growth and Aging,
School of Human Science and Environment,
University of Hyogo, Japan

Dr. Jaideep Sood
Consultant Respiratory Physician
Waitemata District Health Board (DHB)
Auckland, New Zealand

Dr. Derek Hellenberg
Associate Professor and Head
Division of Family Medicine,
University of Cape Town
South Africa

Dr. Raj Bhopal
Bruce and John Usher Professor of Public Health,
Edinburgh University,
Scotland, UK

Dr. Amit Arora
Consultant Physician and Geriatrician
University Hospital of North Staffordshire, U. K

Dr. Satish Kumar Gupta
Health Specialist,
UNICEF India Country Office,
New Delhi

Dr. Richard Cash
Visiting Professor (Public Health) and Advisor in Global Health,
PHFI, Delhi & Department of Global Health and Population,
Harvard School of Public Health, Boston, U.S.A

Eric B. Schneider
Assistant Professor, Surgery,
Johns Hopkins School of Medicine& Assistant Professor, Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, U.S.A

Dr. Klea D. Bertakis
Professor and Chair
Department of Community and Family Med
Founding Director, Center for Healthcare Policy and Research
University of California, Davis
Sacramento, CA, USA

Dr. Neena Raina
Regional Adviser, Child and Adolescent Health
World Health Organization - SEARO
New Delhi

Editorial Advisers

National

Mrs. Arti Ahuja
I.A.S
(Former)Principal Secretary
Health and Family Welfare,
Govt. of Odisha

Dr. Rakesh Sehgal
Professor & Head
Department of Parasitology
PGIMER,
Chandigarh

Dr. B S Chavan
Professor & Head,
Department Of Psychiatry,
GMCH,
Chandigarh

Dr. Chandrakant S Pandav
Former Professor & Head
Centre for Community Medicine
All India Institute of Medical Sciences
New Delhi

Dr. Sanjeev Kumar Rasania
Professor & Head
Department of Community Medicine,
VM Medical College & Safdarjung Hospital,
New Delhi

Dr. Sunil Gomber
Professor
Department of Paediatrics
UCMS & GTP
Delhi

Dr. Adarsh Kumar
Professor
Department of Forensic Medicine & Toxicology
All India Institute of Medical Sciences,
New Delhi

Dr. Praveen Vashist
Professor & Head
Department of Community Ophthalmology Rajendra Prasad Centre for Ophthalmic Sciences
All India Institute of Medical Sciences
New Delhi

Dr. J L Meena
State Quality Assurance Officer
Commissionarate of Health
Govt. of Gujarat
Ahmedabad, Gujarat

Dr. D V Bala Ramanamma
Professor & Head
Department of Community Medicine
Smt. NHL Municipal Medical College,
Ahmedabad, Gujarat

Editorial Advisers

National

Dr. Sunil Kumar
Director In-charge,
National Institute of Occupational Health,
Ahmedabad, Gujarat

Dr. Geeta Gathwala
Professor and Head Neonatal Services,
Department of Pediatrics,
Post Graduate Institute of Medical Sciences,
Rohtak, Haryana

Dr. S R Matza
Professor and Head
Department of Community Medicine,
Indira Gandhi Medical College,
Shimla, Himachal Pradesh

Dr. Prahalad Kumar
Director
National Tuberculosis Institute
Bangalore, Karnataka

Dr. G Gururaj
Professor and Head
Department of Epidemiology,
National Institute of Mental Health and Neuro Sciences,
Bangalore, Karnataka

Dr. Shakuntala Chhabbra
Director-Professor
Department of Obstetrics & Gynaecology,
MGIMS, Sewagram,
Wardha, Maharashtra

Dr. B S Garg
Director, Dr. Sushila Nayar School of Public Health &
Director- Professor of Community Medicine, Sevagram,
Former Dean, MGIMS
Wardha, Maharashtra

Dr. Th. Achouba Singh
Professor & Head
Department of Community Medicine
Regional Institute of Medical Science,
Manipur

Dr. Anil C Phukan
MS, Professor & Head
Department of Microbiology,
NEIGRIHMS,
Shillong, Meghalaya

Dr. Gautam Roy
Professor
Department of Preventive and Social Med,
JIPMER,
Puducherry

Editorial Advisers

National

Dr. Tejinder Singh
Professor of Pediatrics and Medical Education,
Vice Principal, Christian Medical College,
Ludhiana, Punjab.

Dr. A. Muruganathan
Adjunct Professor, the TN Dr MGR Medical university
President, Association of Physicians of India (2013-2014)
Chennai, Tamilnadu

Dr. Sanjay M. Mehendale
Director and Scientist G,
National Institute of Epidemiology,
Indian Council of Medical Research,
Chennai, Tamil Nadu

Dr. Kalpagam Polasa
Director In-charge,
National Institute of Nutrition,
Hyderabad, Telangana

Dr. V K Srivastava
Professor & Head
Department of Community Medicine
Hind Institute Medical Sciences
Barabanki, Uttarpradesh
Regional Councillor
International Epidemiological Association South East Asia Region

Dr. C M Pandey
Professor & Head,
Department of Biostatistics and Health Informatics,
SGPGI
Lucknow., Uttar Pradesh

Dr. I S Gambhir
Professor & Head
Department of Geriatrics
Institute of Medical Sciences,
Banaras Hindu University,
Uttar Pradesh

Dr. C P Mishra
Professor
Department of Community Medicine,
Institute of Medical Sciences,
Banaras Hindu University,
Varanasi, Uttar Pradesh

Dr. G K Pandey
Director
All India Institute of Hygiene & Public Health
Kolkata, West Bengal.

Dr. S M Kadri
Epidemiologist
Directorate of Health Services
Kashmir, India
Editor in chief, International Journal of Medicine & Public Health

IJCFM is now Indexed in

Index Medicus for South East Asia Region (WHO)

IMSEAR
Index Medicus for South-East Asia Region

J-Gate

J-Gate

International Scientific Indexing

INTERNATIONAL
Scientific Indexing

Scientific Indexing Services

SIS
Scientific Indexing Services

CNKI

CNKI中国知网
www.cnki.net
中国知识基础设施工程

Indian Science Abstracts

निस्केयर
NISCAIR

Indian Citation Index

KNOWLEDGE
Foundation

CONTENT

Submit your articles for consideration of publication to:

ijcfm2015@gmail.com

EDITORIAL

National Health Policy 2017: A Vision to Reach the Masses

Vikas Bhatia[1], Sarika Palepu[2]

[1]Dean, Prof & Head, [2]Senior Resident, Department of Community Medicine and Family Medicine, All India Institute of Medical Sciences, Bhubaneswar

The Union Cabinet has approved the National Health Policy, 2017 (NHP - 2017) on 15th March, 2017. National health policy 2017 is third in the context of health policies in the country, the first one being in the year 1983 and second in the year 2002. NHP 1983 had its main focus on preventive and promotive aspects of health care, treatment at health care facilities in a team based approach, strengthening alternative systems of medicine and imposing restrictions on private health care providers.[1] Focusing on the short comings of NHP 1983, decentralized health care delivery system for equitable health care distribution was made the primary agenda of NHP-2002. NHP-2002 also paved a way for increased private sector intrusion in health care delivery system.[2] However, biased health care delivery with failure of health care provision to the needy, less focus on the prevailing illnesses in the country, limited insight into generation of resources to ensure the sustainability led to the failure of the NHP-2002.

After a span of more than a decade, NHP 2017 has come into existence. An endeavour to look beyond the maternal and child health and to curtail high out-of-pocket expenditure stood as a rationale for NHP 2017.[3] The goal of NHP- 2017 is to attain highest possible level of health for all at all ages. Major policy shifts are assured comprehensive primary care, assured free drugs, availability of 2 beds per 1,000 population and access within the first hour after traumatic injury, output based strategic purchasing for secondary and tertiary care and targeted approaches for under-serviced areas. Other initiatives include provision of a family health card. This has given health care a dramatic shift from individual based to family centric approach. NHP – 2017 has rightly laid it's imperative focus on health care provision to all ages. These strategies, would be path-breaking approaches to achieve universal health care, if ensured meticulous implementation.

Private sector is given the ownership in health care delivery system as strategic partners. India is on a continuous rise for demand in health care delivery. However, accountability, both on the quality and cost of care should be taken care of. Regulatory bodies to govern the smooth functioning should be formed and onus of responsibility should lie within them. With privatisation of health care delivery, insurance provision would be the most essential need for universal health coverage. It enhances effective health care provision to the needy by curtailing high out-of-pocket expenditure.

Progressively incremental and assurance-based approach is planned for GDP increase to 2.5% from the current level of 1.3%. NHP 2017 promises health care provision to people of all ages in the light of increase in GDP. In view of the rising health care burden and in comparison to the share of GDP by other developing nations, GDP share as 2.5% is an effort in the right direction.

Strengthening of public health care delivery is given the much required attention in NHP-2017. It had been evident from the existent literature that utilisation of public health care facilities in India has been abysmally low.[5] To overcome these short-comings and promote public health care services utilisation, a well devised strategy with a clear road map of execution is essential. India, is a diverse nation with varied health care demands. NHP-2017 has provided a holistic approach to tackle with the health care needs of the nation. In view of the regional disparities, empowering health care provision with constant assistance from various concerned states would enhance the motive of NHP-2017. Placing health as the fundamental right would enable an individual to seek for justifiable health care and requires more focus.

Unregulated and unqualified health care providers, termed as "quacks" form the large portion of the health care system in India. About 1.25 million quacks practice in Indian health care system.[6] Individuals living in rural parts are more likely to use their services. These practitioners lack state accredited medical qualification and lack medical education. Regulatory approaches to curb their practices should be considered.

Address for Correspondence: *Dr Vikas Bhatia, Department of Community Medicine and Family Medicine, AIIMS, Bhubaneswar-751019, Odisha, India* **Email:***ijcfm2015@gmail.com*

Another newer approach in NHP-2017 is the provision of new cadre of health providers. With the existing gap in service of health care delivery, achieving benefits through establishment of new cadre will remain a gigantic task. The provision of new cadre invites many challenges in terms of periodic training and financial sustainability.

The policy had hit the right notes by focusing on the prevailing health care demands and challenges. However, generation of additional resources for this magnum policy is desired to achieve success. NHP-2017 reduced the health spent targets of 12th Planning commission by 15% further augmenting the financial constraint to achieve set goals. Translation of policy into action based approaches with sustainable financial support demands unified effort by the centre and state. NHP-2017 is a vision of nation's desire to provide universal health care. The policy throws a light of hope to achieve the long willing state of accessible health care by all.

References

1. National Health Policy. Government of India, Ministry of Health & Family Welfare, New Delhi, 1983. Available at https://www.nhp.gov.in/sites/default/files/pdf/nhp_1983.pdf. Last accessed on 24th April, 2017.
2. National Health Policy 2002 (India). Available at http://cghealth.nic.in/ehealth/Guidelines/National_Health_policy_2002.pdf. Last accessed on 24th April, 2017.
3. National Health Policy 2017. Ministry of Health and Family Welfare. Government of India. Available at http://cghealth.nic.in/ehealth/Guidelines/National_Health_policy_2002.pdf. Last accessed on 25th April, 2017.
4. Kumar C, Prakash R. Public-Private Dichotomy in Utilization of Health Care Services in India. Cons J Sustain Dev. 2011;5(1):25–52.
5. World Bank. 2004. India: Private Health Services for the Poor. Draft Policy Note. Available at http://www.sasnet.lu.se/EASASpapers/11IsmailRadwan.pdf. Last accessed on 10th May, 2017.

INTERVIEW

An Interview with Dr P Satish Chandra

Former Director and Vice-chancellor, NIMHANS, Bangalore

Prof. (Dr) P. Satish Chandra is former Director and Vice-Chancellor of NIMHANS, Bengaluru. He joined NIMHANS as a faculty member in Department of Neurology soon after obtaining his DM (Neurology) from NIMHANS in 1981. Dr Satish Chandra's work in the areas of epilepsy, neuro-epidemiology and neuro infections including neuro-AIDS is well recognised internationally. He has several prestigious fellowships, awards and publications to his credit, prominent among them being the 'Asia Oceanian Outstanding Achievement Award in Epilepsy' and the WHO-Fogarty-NIH sponsored 'International Neuro-Sciences Fellowship'. He is also the Chairman and member of various selection committees for faculty members of reputed institutes in the country.

Editor in Chief : As an expert for selection of faculty members, what are attributes or criteria do you think are must for being a faculty at premier institutes?

Dr P. Satish Chandra: Faculty in the central premier institutes must have commitment for academics apart from serving the needy patients. Without this commitment, they should not aspire to join such an institute. These institutes are meant for serving the needy patients in their region along with producing required manpower for the country and doing high impact basic/translational research.

The faculty should be able to work sincerely and hard with utmost responsibility to meet the vision and mission of their institute.

Editor in Chief: With respect to these attributes, what is your opinion about level of candidates who appear for faculty interview?

Dr P. Satish Chandra: Being selection committee member in these central institute, at times I am disappointed. However, in any interview anywhere in the country we have people of various gradations and all out efforts are done by the selection committee to get the best faculty. However, committee should not select any one unless they meet the required standards as per the laid out guidelines which are atleast the minimum. Higher than that is always expected.

I expect the faculty selected in these institutes should be from all over the country rather than only from that region. These are 'Institute of National Importance' and not 'Regional Institutes'.

Editor in Chief: Would you like to give some tips, thumb rules or do's and don'ts to the candidates for the preparation of interview and during interviews?

Dr P. Satish Chandra: Candidates appearing before the interview committee must prepare well and should not be casual. This certainly reflects the attitude of the candidate as a whole to the committee.

There are interesting article giving tips to the candidates appearing for interview. I suggest that they should read a relevant article written by Dr. Sunil Pandya in the 'National Medical Journal of India' published about 2-3 years ago. He has written beautifully after having had the experience as Chairman of Selection Committee. I fully endorse this.

Editor in Chief: Do you think there is a gap between the expectation of selection committee members and credentials which candidates have? If yes, how that gap can be filled?

Dr P. Satish Chandra: There is certainly gap between the selection committee aspiration and the candidate appearing for such interview. At times in certain subjects it is very disappointing and discouraging to the committee members.

Role of any selection committee is to get the best available talent for these institutes from the country as a whole truly reflecting the standards of Institute of National Importance and not to make this as a Regional Institutes.

Guidelines used for selection of candidates need to the periodically amended depending upon the requirement of these Institutes and available talent. This has to be dynamic not static.

Editor in Chief: With the current pattern of teaching and training existing in medical schools in India, what steps should we take to make our potential faculty members a good teacher for medical students?

Dr P. Satish Chandra: Medical teachers in these Institutes should adopt recent methods of 'teaching' practiced all over the world not merely "black board teaching". It needs to be 'teaching and learning not mere teaching'. More case based, vertical mode rather than horizontal mode eg. Anatomy, physiology, pathology followed by clinical features and management of any particular case vertically.

Intelligent students must be further identified and encouraged to take up research projects even during their student days allowing them to 'think'. Innovations should be encouraged at every level.

Editor in Chief : Any other suggestions or comments which you would like to give to readers of IJCFM?

Dr P. Satish Chandra: As technology is entering every aspect of medicine, faculty should have good knowledge of basics with strong foundation about further use of the needed technology to address the complexity involved.

However, we should not become 'slave' to the technology. Technology should be in addition to the true practice of the medicine.

Faculty should have to practice 'ethical medicine' looking at the need of the patients. Not to forget the 'patient needs' holistically.

Patient should be respected and their requirements to be analysed and the best that could be done has to be provided. Communication with the patient and carer need to be emphasized.

References

1. Pandya SK. Are you appearing for an interview for an academic position? Natl med J India 2015 May - Jun 28 (3): 147-8

PERSPECTIVE

Smart Cities in India Need Smart Health Care

Satyajit Pattnaik

Associate Professor, Department of Community Medicine, Meenakshi Medical College & Research Institute, Kancheepuram, Tamilnadu

Abstract

SMART city project is being implemented with an objective of developing IT enabled services for the people. With this there is a need to improve the health status of the city dwellers, especially the urban poor. This can be achieved by providing SMART (specific, mobile, affordable, referral linkage and timely) health care in the urban areas.

Background

The urban population in India has grown from 17.3% in 1951 to 31.2% in 2011.[1] Now almost one third of the population resides in an urban area.[1] Out of the total urban population, 17% lives in slums.[1] In this context the launch of SMART city project by the government of India is a welcome step.[2] Through this project the urban infrastructure will get a major facelift.[2]

Health is an integral part of socio economic development.[3] Good health is rather an accelerator of other social and economic development.[3] The health status of urban poor is much worse than those in remote rural areas.[4] Despite the supposed proximity to urban health facilities, the access to these health services is severely restricted for the urban poor.[4] This is particularly due to the inadequacy of urban public health care delivery system.[4] So SMART cities should have SMART (specific, mobile, affordable, referral and timely) health care, especially for the urban poor.

Specific

The health care system should address the specific health problems encountered in urban areas, besides providing general health services. Poor sanitation & environmental hygiene and related diseases should be targeted. One study in Tamilnadu reported higher prevalence of diabetes, hypertension, dyslipedaemia, physical inactivity and overweight in the urban area as compared to rural area.[5] The urban way of living leads to many social problems like alcoholism, drug addiction, broken homes, juvenile delinquency etc. A five-city study among adolescents between 15-19 years showed 62% reporting lifetime use of at least one substance. [6] There should be some provision for counseling and care, especially for the adolescents and young adults.

Mobile

Availability of health facilities in the urban areas does not make it more accessible to the urban poor due to many reasons like lack of information; social exclusion.[4] One way to tackle this is to provide for outreach services through mobile clinics. Mobile health clinics in urban areas play vital role in providing health care services, particularly to the marginalized sections of society. [7] In a study to assess the client satisfaction with mobile health clinics in an urban resettlement colony in the National Capital Territory of Delhi, it was found that two-thirds to three-fourths of the clients were satisfied with the mobile health care services.[8] These clinics can be organized in fixed day/area manner once a month or more frequently if needed. These clinics can be organized in a place close to the target population like a school, community centers. There should be prior information regarding the place, date and time of the clinics. Mobile clinics can be utilized to provide primary care including family welfare and maternal and child health services. Health education and counseling services can also be planned through these clinics.

Affordable

Mean household expenditure on health care averages 10% of the total household expenditure and 22% of the non subsistence spending.[9] Catastrophic health events drive many households to poverty.[9] Many people in urban area depend on private health care which is unregulated in terms of quality of care and charge exorbitant fees. Many unregistered practitioners also make money by use of irrational and unethical medical practice. Urban poor are unable to avail health care services in spite of availability of abundant government and private health facilities due to high cost, discrimination and perceived unfriendly environment at government hospitals, lack of information and assistance to access these health care facilities.[10]

Address for Correspondence: *Dr Satyajit Pattnaik, Department of Community Medicine, Meenakshi Medical College & Research Institute, Kancheepuram, Tamilnadu.* **E-mail:** *drsatyajitpattnaik@gmail.com*

Received : 01/09/2016 Accepted : 23/04/2017

The health care in urban areas should be made completely free for the people. This should include consultation, investigations, essential drugs as well as inpatient care, if needed. All kind of "user fee" should be avoided as it has been shown to be a deterrent for accessing services, especially for the poorer section of the population, who needs it the most.

Referral

Urban health care suffers from very weak or rather dysfunctional referral system.[11] Therefore people directly go to higher centers for minor health problems which can be adequately managed at lower levels. This leads to over congested secondary and tertiary care hospitals (like district hospital and medical college hospitals) and underutilized primary care facilities. Studies have shown that more than 50% morbidity could have been seen at the level of primary health care level and the serious ones could have been referred to the tertiary care hospitals. [12,13]

Neither any referral slips or communication about the referred case is provided to the next level nor there is any feedback about the case to the lower level. [14] Referral system should be streamlined. There is a need to have a two way communication between the referring and the referral centre. The referring doctor/paramedical worker should talk with the doctor/Chief Medical Officer, regarding the referral. This help in three ways, firstly the patient/relatives confidence in the system is increased, the doctor at the referral centre knows and is prepared to accept the patient and thirdly, the patient do not feel lost on reaching the higher centre which minimizes the time for intervention at the referral centre. Transportation facility like ambulance may be provided, if available or it can be arranged. At the higher centre, there should be a mechanism to receive referred patient. The patient referred from primary/secondary centre should be given priority. All referral should be tracked by the referring system till logical conclusion.

Timing

As most of the people belong to working class, the timing of the health clinics should be suitably adjusted to meet their demands. An earlier study in Dhaka suggest that street dwellers cannot access conventional health care services due to financial and time constraints linked to their livelihoods. [15]

People usually prefer evening time to go for consultation. Most of our government health centers function only at day time for outpatient care. That is why many people seek private care during evening hours. Evening clinics at least on selected days/selected places will enable common people to go for outpatient consultation at these centers. Basic laboratory services should also be made available in this hour. Evening clinics (from 4pm to 8pm) started by government in Mysuru city in Karnataka under NUHM is successfully providing extended hours of health care services to the urban population. [16]

Conclusion

Some of these measures are already planned and being implemented through the National Urban Health Mission. Implementing some others, as mentioned above, will go a long way in providing better health care in urban areas, especially to the urban poor.

References

1. Govt. of India (2012). Census 2011, Provisional Population Report, Office of the Registrar General and Census Commissioner India, Ministry of Home Affairs, March 31st 2011.
2. Govt. of India. Smart Cities: Mission statement and guidelines. Ministry of Urban Development. June 2015.
3. World Health Organization (1980).WHO Chr., 34(2) 80.
4. Govt. of India (2013). National Urban Health Mission. Framework for implementation. Ministry of Health & Family Welfare, May 2013.
5. Oommen AM, Abraham VJ, George K, Jose VJ. Prevalence of risk factors for non-communicable diseases in rural & urban Tamil Nadu. Indian J Med Res. 2016 Sep;144(3):460-471
6. Olumide AO, Robinson AC, Levy PA, Mashimbye L, Brahmbhatt H, Lian Q, Ojengbede O, Sonenstein FL, Blum RW. Predictors of substance use among vulnerable adolescents in five cities: findings from the well-being of adolescents in vulnerable environments study. J Adolesc Health. 2014 Dec;55(6 Suppl):S39-47
7. Jamir L, Nongkynrih B, Gupta SK. Mobile health clinics: meeting health needs of the urban underserved. Indian J Community Med. 2013 Jul;38(3):132-4.
8. Patro BK, Kumar R, Goswami A, Nongkynrih N, Pandav CS. UG Study Group. Community perception and client satisfaction about the primary health care services in an urban resettlement colony of New Delhi. India J Community Med. 2008;33:250–4.
9. Indian Institute of Population Sciences (2011). Study on global AGEing and adult health (SAGE-India)
10. Draft for Circulation; National Urban Health Mission (2008-2012) Meeting the health challenges of Urban population especially the Urban poor (With special focus on urban slums) Urban Health Division, Ministry of Health and Family Welfare. [Last accessed on 2017April19]. Available from:http://www.hssiitm.ac.in/rtppp/Urban%20Health/Reports/NUHM-Draft.pdf .
11. Pattnaik Satyajit & Sharma Dhananjaya. "Referral system in health care: Bottlenecks and solutions." International Journal of Contemporary Medicine 2015;3(2):14-16.
12. Potharaju HR, Kabra SG. Prescription audit of outpatient attendees of secondary level government hospitals in Maharashtra. Indian Journal of Pharmacology.2011: 43(2):150-156.
13. Sharma M, Agrawal D, Kumar D, Goel N. Morbidity Profile And Drug Distribution Pattern At A Newly Established Tertiary Care Hospital. The Internet Journal of Health. 2008;9(2):1-7.
14. Gupta M, Mavalankar D, Trivedi P. A study of referral system for EmOC in Gujarat. PhD thesis, IIM Ahemedabad. 2009. Available:http://www.iimahd.ernet.in/publications/data/2009-06-02Gupta.pdf. [Last accessed on 2017 April 19].
15. Uddin MJ. Street dwellers' preference for health care services in Dhaka, Bangladesh. Health Sci Bull. 2010;8(3):6–10.
16. Shankar Bennur. Evening clinics aid patients at 14 PHCs in Mysuru. The Hindu.2015 Nov3.

PERSPECTIVE

Does India Need National Child Mortality Surveillance Project to Reduce Child Mortality? An Opportunity from National Polio Surveillance Project (NPSP)

Brahmapurkar Kishor P

Associate Professor, Department of Community Medicine, L.B.R.K.M. Government Medical College, Jagdalpur, Bastar, Chhattisgarh, India.

Abstract

In 2015, India had 20 percent share of global under-five deaths (1.2 million), highest number of deaths in the world. In the era of Sustainable Development Goal (SDG), to accomplish goal 3, target 3.2 to reduce child mortality to 25 per 1,000 live births, India needs to accelerate to achieve the same. India was taken off from the list of polio endemic countries by World Health Organization in February 2012. In 1997 the National Polio Surveillance Project (NPSP) was established as a joint partnership between the World Health Organization and the Ministry of Health and Family Welfare (MoHFW), Government of India. As in Polio eradication program interaction between the health care providers and Surveillance Medical Officer (SMO), had provided the foundation for successful Acute Flaccid Paralysis (AFP) surveillance, same opportunity can be used for every child death. Each child death reported by reporting unit (RU) needs to be investigated in case investigation form (CIF) and the factors related to continuum of care for maternal, newborn and child health whichever responsible for child death needs to be identified for action. Another aim of this project will be to capture each and every child death occurring in the district and identifying the high risk blocks and accordingly training of health workers and private practitioner can be undertaken for capacity building. The feedback of factors identified for child death can be given to health officers of concerned district and same can be discussed in District Task Force meeting, so appropriate corrective action is initiated; also same can be reviewed at regional, state and national level meetings. National Child Mortality Surveillance Project can take the advantage of network of SMO already available with NPSP along with training modules and forms.

Keywords: Child Mortality, Surveillance Project, India

Background

India was taken off from the list of polio endemic countries by World Health Organization in February 2012.[1] In 1997 the NPSP was established as a joint partnership between the World Health Organization and the Ministry of Health and Family Welfare (MoHFW), Government of India.[2] NPSP with the network of Surveillance Medical Officer (SMO) had provided leadership, support, synchronization, scrutiny and data analysis of different activities related to surveillance of polio with chief responsibility for facilitating surveillance and immunization activities aimed at polio eradication.[2] It was hard-hitting job and credit goes to all health workers who have exerted with governments, non governmental organizations, civil society and international partners to achieve the same.[3]

Today in the era of Sustainable Development Goal (SDG), to accomplish goal 3, target 3.2 to reduce child mortality to 25 per 1,000 live births, India needs to accelerate in the area of child mortality reduction to achieve the same.[4, 5]

India had highest number of under-five deaths with 20 % of global under-five deaths (1.2 million under-five deaths out of total 6 million) and 137 under-five children are dying every day.[5] Globally, India was in top rank in total number of under-five deaths in 2015.[5]

Here author discuss about how national child mortality surveillance project will help in reducing child mortality in India. As more than 50 % of under-five deaths are avoidable by easy, sound methods like quality antenatal care, skilled attendant at birth, quality postnatal care to

Address for Correspondence: *Dr Brahmapurkar Kishor P, Department of Community Medicine, L.B.R.K.M. Government Medical College, Jagdalpur, Bastar, Chhattisgarh, India.* **Email:** *kishor_brahmapurkar@rediffmail.com*

Received- 07/11/2016, Accepted- 16/03/2017

newborn, starting of breastfeeding within hour of birth of newborn and immunization along with oral rehydration therapy for diarrhea and antibiotics for pneumonia and nutritional enhancements, there is an opportunity to use the network of SMO to reduce child mortality.[6]

Why India need National Child Mortality Surveillance Project?

India is committed for child survival.[5] Under the program Mission Indradhanush which was launched by MoHFW, Government of India, with focal point on involvements to improve full immunization coverage in India from 65% in 2014 to at least 90% children in the subsequent five years had identified High risk areas (HRAs) based on NPSP-WHO data of polio eradication.[7]

1. As in Polio eradication program interaction between the health care providers and Surveillance Medical Officer (SMO), have provided the foundation for successful Acute Flaccid Paralysis (AFP) surveillance, same opportunity can be used for every child death. Each AFP case was investigated by SMO as per the guidelines. Same can be applied for every child death to provide feedback based on data analysis for action at district level.[2]

2. Each child death reported by reporting unit (RU) [RU- may be Government health facility, private practitioner and informers which also includes quacks as identified by SMO] needs to be investigated in case investigation form (CIF) and the factors related to continuum of care for maternal, newborn and child health whichever responsible for child death needs to be identified.[2]

3. The feedback of factors identified for child death can be given to health officers of concerned district and same can be discussed in District Task Force meeting, so appropriate corrective action is initiated; also same can be reviewed at regional, state and national level meetings.[2]

4. Another aim of this project will be to capture each and every child death occurring in the district and identifying the high risk blocks and accordingly training of health workers and private practitioner can be undertaken for capacity building.[2]

5. SMO can find additional RU, which is likely to report child death based on the number of children brought for treatment purpose.[2]

6. Maps can be prepared to identify silent blocks/areas not reporting child death and accordingly corrective action can be taken after data analysis.[2]

7. Based on prioritization of RU as very high priority (VHP), high priority (HP) and low priority (LP), SMO will ensure weekly, fortnightly and monthly visit to these RU respectively. During her/his visit SMO will meet the nodal officer of concerned RU and will update her/him on current situation of child mortality in concerned area and will sensitize them along with capacity building of concerned staff on preventive aspect for child death.[2]

8. SMO will ensure that all RU's are submitting weekly report on child death timely and also importance of nil reporting. Also s/he will ensure line listing of all under-five deaths with unique epidemiological (EPID) number as done in NPSP.[2]

9. As SMO and her/his field monitors works closely with government and private health care provider, they can support the planning and implementation of the factors related to continuum of care for maternal, newborn and child health, at least 4 quality antenatal care (ANC) visits [with 8 interventions like tetanus toxoid (TT) injection ,measurement of blood pressure, iron folic acid tablets distribution, taking blood and urine sample, prevention from malaria by insecticide-treated bed-nets (in malaria endemic areas) and counseling on pregnancy complications and HIV , immunization and postnatal care (PNC) within 48 hours to newborn and mother.[2, 5]

10. SMO will ensure the availability of drugs and other equipment needed for newborn care and others like availability of medicines for mother and child along with immunizing agents.

11. Inter-sectoral coordination required for tackling issues of child marriages among women, poor education status of women which indirectly affects the child mortality can be addressed in District Task Force meetings.

Resources

National Child Mortality Surveillance Project can take the advantage of network of SMO already available with NPSP. [8] Also field visitors/field monitors already trained under the guidance of SMO of NPSP will be other resource personnel from the local community. Materials are available as training modules and various forms that were required in NPSP, which necessitates to be modified by Community Medicine experts in perspective of child mortality. Only requirement is political will for funding to ensure that the project comes in picture with objective to reduce the under-five mortality rate.

Conclusion

Experience gained from the implementation of Revised National TB Control Program (RNTCP) in phase wise manner can be used in the implementation of National Child Mortality Surveillance Project.[9] For surveillance projects it is important to select activities on priority basis, which can be used from Under-five mortality rate (U5MR) available along with the secondary data related to factors related to continuum of care for maternal, newborn and child health for the states available from National Family Health

Surveys-4, NFHS-4 (2015-2016).[10] States with higher child mortality, Uttar Pradesh with U5MR of 78/1000 live births, Madhya Pradesh with U5MR of 65/1000 live births will be priority states for the implementation of the project as compared to Kerala with U5MR of 07/1000 live births.[10]

References

1. WHO, Poliomyelitis. [Last accessed on 2016 August 16]. Available from: http://www.searo.who.int/india/topics/poliomyelitis/en/
2. Field Guide, Surveillance of Acute Flaccid Paralysis, Third Edition, September 2005. Child Health Division, Department of Family Welfare, Ministry of Health & Family Welfare, New Delhi. [Last accessed on 2016 June 28]. Available from: http://www.searo.who.int/india/topics/poliomyelitis/Field_guide_for_Surveillance_of_Acute_Flaccid_Paralysis_3rd_edition.pdf
3. WHO South-East Asia Region certified polio-free. [Last accessed on 2016 August 16]. Available from: http://www.searo.who.int/mediacentre/releases/2014/pr1569/en/
4. SDG Goals [Last accessed on 2016 August 16]. Available from: https://sustainabledevelopment.un.org/?menu=1300
5. UNICEF, Committing to Child Survival: A Promise Renewed Progress Report 2015. [Last accessed on 2016 April 29]. Available from: http://www.apromiserenewed.org/wp-content/uploads/2015/09/APR_2015_8_Sep_15.pdf
6. WHO, Children: reducing mortality Fact sheet. [Last accessed on 2016 April 20]. Available from: http://www.who.int/mediacentre/factsheets/fs178/en/
7. Mission Indradhanush, Operational Guidelines, 2015 http://upnrhm.gov.in/site-files/gogl/fy2015-16/Mission_Indradhanush_-_Operational_Guidelines.pdf
8. WHO, Surveillance Medical Officer (SMO) Network. [Last accessed on 2016 August 17]. Available from: http://www.searo.who.int/india/topics/poliomyelitis/smo_network/en/
9. TB India, RNTCP Status, 2006 [Last accessed on 2017 April 21]. Available from: http://tbcindia.nic.in/WriteReadData/l892s/5704399160Annual%20Report%20TB%202006.pdf
10. National Family Health Survey 2015-16 (NFHS-4), State Fact Sheets NFHS-4, 2015-2016. [Last accessed on 2017 April 21]. Available from: http://rchiips.org/NFHS/factsheet_NFHS-4.shtml

PERSPECTIVE

Vaccines, A Key Towards Health of Travellers

Swayam Pragyan Parida[1], Vikas Bhatia[2]

[1]Assistant Professor, [2]Professor, Department of Community Medicine and Family Medicine, All India India Institute of Medical Sciences, Sijua, Bhubaneswar

Abstract

Globally a surge in international travel has been seen. It has led to importation and establishment of disease causing organisms in a previously naive area resulting in onset of epidemics and increase in size of the endemic area. Vaccines are available for some diseases and are considered as one of the best method to prevent diseases. There are vaccines which are routinely recommended for all irrespective of travel and few vaccines e.g., Yellow fever, Meningococcal and OPV are mandatory for travellers as part of International Health Regulation. Vaccination of travellers provides benefit in two ways i.e. protection of individuals and thereby protecting the population of entire country.

Introduction

Every year the number of individuals travelling within and outside the country for the purpose of vacation, business, job, volunteerism and visit to friends & family, are increasing. Simultaneously the risk of contracting infection in destination countries and subsequent spread of disease to other areas is also enhanced.[1] Globally it has been observed that travel to developing countries poses a higher risk than developed nations because of poor sanitation, overcrowding, pollution, poor environmental condition and poor health care delivery system. Apart from area of travel, the risk of becoming ill also depends upon length of stay, activities while travelling, health status and vaccination history of a person. Immunization is invariably one of the best method for protecting health of travellers.[2,3]

Risk assessment for vaccination:

Before administration of vaccine every individual needs to be assessed on the basis of travel related health risks. Following factors are considered in assessing risk,

1. Risk of exposure to the disease
2. Health status, age, vaccination status of individual
3. History of reactions to previous dose, allergy to vaccine components
4. Risk of transmitting to others
5. Cost of vaccine
6. Season and duration of travel
7. Mode of travel, food, etc.[4]

Categories of travel vaccines:

Immunizations related to travel are divided into three categories (Table 1).[2,4] In an individual evidence of immunity towards specific disease causing agent includes,

8. Proper documentation of vaccination or health record, and / or
9. Laboratory evidence of positive serology, i.e., presence of disease specific Immunoglobulin G antibody[5]

Table 1: Classification of travel vaccines [2,6,7]

Category	Vaccines
Routine vaccines	Diphtheria, Pertussis & Tetanus; Measles, Mumps & Rubella, H. influenzae b, Rotavirus, Human Papilloma virus vaccine, Varicella, Polio, Pneumococcal, Influenza, Hepatitis B
Travel related vaccine	Hepatitis A, E; Cholera, Typhoid, Rabies, Tick Borne Encephalitis, Japanese Encephalitis, Meningococcal
Required vaccine	Polio, Yellow fever, Meningococcal

Routine vaccines

According to World Health Organizations (WHO), all travellers should be up to date with routine vaccinations available as per National Immunization schedule.[6] In India, adults do not have proper history of complete or booster vaccination. So a visit to physician for travel related queries

Address for Correspondence: *Dr Swayam Pragyan Parida, All India India Institute of Medical Sciences, Sijua, Bhubaneswar*
Email: *drswayampragyanparida@yahoo.in*

Received: 28/04/2017, Accepted: 29/05/2017

should be taken as an opportunity to complete the schedule of routine vaccines and update the person regarding other available vaccines.

Diphtheria, Pertussis & Tetanus: With increased coverage of these vaccines under Routine Immunization (RI), a gradual epidemiological shift has been observed and more number of adolescents and adults are suffering from these diseases. So a single shot with Tdap vaccine has been approved for immunization of adolescents and adults if more than 10 years have elapsed since last TT/ Td dose.[8,9,10]

Measles, Mumps & Rubella (MMR): Persons born before 1957 are considered immune to measles. So MMR is indicated for travellers who are involved in health care or humanitarian act in disaster affected areas or refugee camps. Many a times, MMR vaccine is required for students prior to enrolment in foreign universities for higher studies. WHO recommends two doses of Measles or Measles containing vaccine like MMR to all children and at least one dose to adolescents or adults vaccine before international travel. Vaccination with single antigen Measles & Mumps is also beneficial in absence of any evidence of immunity.[12,13]

Hepatitis B: Vaccination is indicated for all non immune travellers and particularly for health care workers, longer stay travellers, persons involved in adventurous sports and travellers with medical conditions requiring frequent contact with health services, who will be visiting high or moderate risk areas including India. Usually classical schedule (0, 1, 6 months) is followed. Sometimes accelerated schedule (0, 1, 2 months with booster after 1 year) is advised for rapid onset of protection. Emphasis must be given to complete first two doses before travel. [2,14]

Varicella: Disease severity from varicella increases with age. So two doses of Varicella vaccine (0, 1 month) is recommended with minimum interval of four weeks, if history of previous vaccination or infection is absent.[15]

Poliomyelitis: According to WHO guidelines vaccination for Polio is required in following conditions before travelling,

1. Persons residing in polio endemic countries (areas with active transmission of wild polio virus) and visitors to such countries who want to spend more than 4 weeks should have complete full course of polio vaccine.

2. Travellers coming from infected areas should receive an additional dose of OPV/IPV, 4weeks to 12months before travel to boost gut immunity and reduce wild polio virus shedding and consequent reintroduction to previously polio free areas.

3. For travellers who have received only IPV, should be provided with one dose OPV, 4 weeks before travel. In case of last minute travel and if a person has not received vaccine, then he should be provided one dose of OPV at least by the time of departure. All travellers are advised to carry a written vaccination record as a proof of polio vaccination.[16]

As per Ministry of Health & Family Welfare (MoHFW) guidelines India requires proof of vaccination with one dose OPV at least 4 weeks before travel, for travellers going to or coming from Pakistan, Afghanistan, Nigeria (Polio endemic countries), Kenya, Ethiopia, Syria & Somalia (circulation of polio virus after importation). A certificate of vaccination is required for entry visa into India. The validity of polio vaccination lasts for one year from the date of vaccination.[17]

Travel related vaccines

These vaccines are recommended for travellers to protect them from diseases in destination countries. The vaccination also prevents spread of diseases between geographic areas.[2]

Hepatitis A: Hepatitis A vaccine is indicated for all non-immune travellers aged one year and above visiting to countries with moderate to high risk of infection. Countries other than USA, Canada, Japan, Australia, New Zealand, Scandinavian Countries and developed nations in Europe are considered as having moderate to high risk of Hepatitis A transmission. Immuno-compromised and with chronic liver disease are strongly encouraged for vaccination. Although full course of vaccination (two doses) should be completed before travel, a single shot provides adequate immunity to individuals.

Adults in India are considered to have immunity through natural infection. In them immunity can be determined by presence of Anti Hepatitis A antibody and thereafter vaccination can be offered to non-immune persons. Travellers who do not intend to take vaccine can receive single dose Immunoglobulin (0.02 ml/ kg) which provides protection for 3 months. Combined vaccine for Hepatitis A & B are also available and it has distinct advantage with reduced number of pricks and is given in three doses at 0, 1 & 6 months.[18]

Hepatitis E: It is indicated for travellers involved in humanitarian or relief work during epidemics of Hepatitis E. One recombinant vaccine for Hepatitis E has been recently licensed and marketed in China. This live vaccine containing viral capsid protein is provided in three dose schedule over 6 months. Vaccine is effective for at least three years. Further follow up studies are required for long term protection.[19]

Cholera: Cholera vaccine is not routinely indicated for travellers. It is primarily advised for medical and aid workers staying or working in disaster areas and refugee camps. Oral cholera vaccine is recommended for visitors to mass gatherings like Kumbh Mela.[20]

Japanese Encephalitis vaccine: Japanese encephalitis is a disease of rural rice growing and pig farming areas and is endemic in countries of South-East Asian region. Vaccine is recommended for longer stay (more than I month) travellers, travel during JE outbreaks and for them who wish to participate in extensive outdoor activities like trekking, hiking & adventure sports.[21]

Influenza: Studies revealed that 1 % of travellers to South-East Asia develop influenza per month of stay. It occurs throughout the year in tropics. So vaccination is considered for all travellers particularly elderly, chronically ill with underlying medical conditions. Efficacy of vaccine depends on antigenic composition which has been updated by WHO. Influenza vaccination is also indicated for people who participate in mass gatherings like Kumbh Mela.[22]

Pneumococcal vaccines: Pneumococcal polysaccharide vaccine (23 valent) is indicated routinely irrespective of travel to elderly and persons with high risk (diseases of cardiac, pulmonary kidney disease, splenectomy, and sickle cell disease). Another type of vaccine such as pneumococcal conjugate vaccine (10 or 13 valent) vaccine is advised routinely for children between 6 weeks – 5 years and adults above 50 years. [23]

Meningococcal vaccine: Meningococcal vaccine is indicated for travellers to Africa's meningitis belt which spreads from Senegal to Ethiopia through Sub-Saharan Africa and if prolonged stay is required during December to June. For Hajj pilgrimage in Saudi Arabia, a proof of vaccination with quadrivalent vaccine in past three years is mandatory to obtain visas. Protection offered from vaccine is strictly serotype specific. [24,25]

Tick borne encephalitis: Endemic area for Tick borne encephalitis ranges from Germany to Siberia through Scandinavia & Baltic region. Risk of contracting disease is low unless extensive outdoor activities are planned. So immunization is advised for persons who want to go for adventurous sports, trekking, hiking, camping in forests of endemic countries between April to October. There are two types of inactivated vaccines available e.g., Western European & Russian. [26, 27]

Typhoid: Vaccination against typhoid is indicated for long term (> 1 month) visitors to endemic areas of central & South America, Asia, & Africa and particularly where antibiotic resistant strains of S. typhi are prevalent. Risk of infection is more if food or drink consumption happens in areas of poor sanitation. Vaccination however doesn't protect from infection caused by *S. paratyphi*. The oral vaccine based live attenuated mutant Ty 21 a is not available currently in India.[28, 29]

Rabies: The risk of Rabies among travellers due to animal bite amounts to 1 - 3.6 cases per 100 travellers per month in endemic areas. Countries with higher risk include India, Thailand, Vietnam and Sub-Saharan countries. Pre exposure vaccination is advised in following conditions

1. Travellers with extensive outdoor exposure

2. Children visiting endemic areas / areas at risk

3. Visit to isolated areas or where immediate access to medical care is absent

In case of animal bite in previously vaccinated individuals, only two doses of anti rabies vaccine on day 0 and day three are required. Further there is no need of administration of rabies immunoglobulin in vaccinated persons. Rabies vaccines can be administered intramuscularly or intradermally.[30]

Required vaccines

These vaccines are mandatory as certain countries need proof of vaccination before entry in to these countries.

Yellow fever vaccine: Vaccine for Yellow fever is required for all travellers to countries endemic for the disease (43 countries). These endemic countries lie in equatorial South America and 15^0 on either side of the equator in Africa. This is the only vaccine which falls under International Health Regulation (IHR). As per IHR 2005, vaccination should be provided at least 10 days before travel. One dose of live attenuated viral vaccine of 17 D strain provides lifelong immunity and boosters are not essential. In India the policy of revaccination every 10 years still holds valid to prevent possible importation of disease through travellers. Contraindications to yellow fever vaccine includes infants less than six months, history of allergy to egg or vaccine components, hypersensitivity to previous dose, thymus disorders, immunodeficiency from medication, symptomatic HIV infection etc.[31]

Apart from yellow fever Polio & meningococcal vaccines are considered as required vaccines for countries like India & Saudi Arabia, respectively. These vaccines are already described under routine & travel related vaccines.

Contraindications:

An anaphylactic reaction to previous dose is an absolute contraindication for further vaccination. Any immunization during acute illness should be avoided. Live vaccines are contraindicated in Immuno-compromised persons (with AIDS, cancer chemotherapy, prolonged treatment with steroid, thymus disorders, etc.).[4]

Vaccines required for travellers to India: WHO has advised that Govt. of India should take necessary precaution by seeking immunization for polio for incoming

Parida S P: Vaccines, A Key Towards Health of Travellers

travellers from seven affected countries at least 4 weeks prior to their arrival. Yellow fever vaccine is considered as mandatory for entry of individuals who are either residents or have recently passed through endemic area.[4]

According to Centre for Disease Control & Prevention (CDC) all travellers should be up to date with routine immunization. Thereafter risk assessment for contracting infection should be carried out. Vaccination for Hepatitis A, Typhoid should be offered to most of the visitors whereas Cholera, JE & Rabies immunizations are required for some, depending on risk involved.[32]

Co-administration of vaccines: Administrations of multiple injections require shots at different sites and via different routes. Inactivated vaccines do not interfere with others immunologically. In case of live vaccines, all the vaccines need to be administered on same day using different sites. Otherwise a gap of 4 weeks is maintained ideally between two live vaccines. Combination vaccines are convenient as number of shots get reduced.[4]

Conclusion

Vaccination is a highly effective method for prevention of many infectious diseases. Vaccines are usually very safe and serious adverse events following immunization are rare. But vaccines rarely provide 100% protection to all the recipients. It should not be misinterpreted that vaccinees have zero risk of acquiring disease after immunization. So all general precautions related to food, stay, lifestyle along with vaccine should together be considered as methods of protection from disease.[2]

List of vaccines depending upon the disease endemicity of destination country are provided by CDC. So individuals visiting any Physician, Hospital or specific clinic e.g., Yellow Fever Vaccination Centre for any health related advice or vaccination, should be counselled and provided a basket of travel related vaccines to be selected by the individuals.[32]

Table 2: schedule and administration of travel related vaccines

Vaccine	Type	Primary schedule	Booster	Time of vaccination	Efficacy	Contraindication	Adverse reactions	Method
Hepatitis A	Formaldehyde Inactivated (adult & Pediatric doses)	2 doses, 0 & 6 months, above 1 year age	Not necessary	Up to the day of departure	95%	Hypersensitivity to previous dose	Mild local & systemic reactions	1 ml, IM (0.5 ml - pediatric)
	Live attenuated	Single dose	Not necessary					0.5 ml, SC
Hepatitis B	Recombinant Hepatitis B surface antigen	3 doses 0, 1 & 6 months. Accelerated: 0,1,2 months	after 1 year of last dose in accelerated schedule	At least two doses prior to travel	>90%	Hypersensitivity to previous dose	Mild local reactions in 3-29%	1 ml , IM (0.5 ml - pediatric)
Yellow fever	Live attenuated 17 D strain	Single dose to persons above 9 months	Required every10 years for India	10 days prior to departure	>99%	Egg allergy, immuno-compromised	Mild local reactions common, rarely encephalitis	0.5 ml, SC
Cholera	Killed whole cell O1,O139 serotypes	2 doses, 0,14 days In 2 years & above	1 dose after 2 years	Two weeks before departure	66% for two years	Hypersensitivity & immuno-compromised	Mild gastrointestinal illness	1.5 ml, orally
Japanese Encephalitis	Inactivated – SA14-14-2	2 doses 0 & 28 days, persons above 6 months	After 1 year	Two weeks before departure	90%	Hypersensitivity to vaccine component	Minor local reactions	IM, 0.5 ml (0.25 ml < 3years)
	live attenuated SA 14-14-2	One dose to persons above 9 months	Recommended after 1 year	do	do	Hypersensitivity & immuno-compromised	do	0.5 ml, SC
	Live Chimeric vaccine (yellow fever 17 D as backbone)	One dose to persons above 9 months	do	do	do	do	do	0.5 ml, SC

Influenza	Inactivated whole or split Influenza A & B virus	Aged 6 months & above	Annually with circulating vaccine strain	At least 2 weeks before travel	50-70%	History of hypersensitivity, egg allergy	Local reactions in < 33% vaccine, occasional systemic reaction of fever & malaise lasting for 1-2 days	0.5 ml, IM
	Live attenuated trivalent vaccine	Healthy persons between 2- 49 years	Annual booster	do	do	Hypersensitivity & immuno-compromised	do	0.5 ml, intranasal spray
Pneumococcal	Polysaccharide 23 valent vaccine	Single dose above 2 years	One dose after 5 years for high risk persons	At least 2 weeks before travel	> 95%	Hypersensitivity to vaccine components	Mild local reaction in 50% persons, systemic reaction in < 1 %	0.5 ml SC/IM
Meningococcal	Polysaccharide vaccine, 4 serotypes A,C,Y,W135	Single dose	After five years	Two weeks	90%	Hypersensitivity to vaccine components	Transient local reaction 4-56%	0.5 ml, SC
	Conjugate vaccine, 4 serotypes	Single dose	Not necessary	do		do	do	0.5 ml, IM
Typhoid	Vi capsular polysaccharide	Persons above 2 hears	Every 3 years	Two weeks before travel	50 – 70%	Hypersensitivity to vaccine components	Local reactions in 7 %, fever in <1%	0.5 ml, IM
Rabies	Inactivated cell cultured	Pre exposure 3 doses 0, 7 & 21/28 days	2 doses (0,3 days) if repeat bite in immunized persons	Completed course before travel	90 – 100%	Hypersensitivity to vaccine components	Mild local reactions in 30-74%, Fever in 5% persons	0.5 –1 ml, IM
Tick borne encephalitis	Inactivated vaccine	3 doses, 0, 1-3 months & 10-12 months	Healthy < 50 years, booster every 3-5 years if risk continues	2nd dose 14 days before departure	>95%	Hypersensitivity	Mild local reactions < 45%, fever < 5%	0.5 ml IM

References

1. WHO, Health topics, travel & health. Available from http://www.who.int/topics/travel/en/[accessed on 03/04/2017]
2. WHO. Vaccine-preventable diseases and vaccines. Chapter 6. Available from http://www.who.int/ith/ITH_chapter_6.pdf[accessed on 03/04/2017]
3. CDC, Immunization for travellers. Available from https://www.cdc.gov/vaccines/pubs/downloads/f_imz_travelers.pdf [accessed on 03/04/2017]
4. Nambi PS, Ramasubramanian V Vaccines for travellers , immigrants and migrant: Indian guidelines. In:m Muruganathan A, Mathai D, Sharma SK, editors. Adult immunization 2014. Association of Physicians of India,2nd ed. Mumbai; Jaypee Brothers Medical Publishers,2015.p222-236.
5. WHO. Recommendations for travellers to preserve the Americas without Measles and Rubella. Available from http://www.who.int/ith/updates/paho_measles_042211.pdf?ua=1[accessed on 03/04/2017]
6. WHO. International travel and health. Traveller vaccination. Available from http://www.who.int/ith/updates/20110427/en/
7. WHO. International travel and health. Vaccines. Available from http://www.who.int/ith/vaccines/en/[accessed on 03/04/2017]
8. WHO, International Health, Diphtheria vaccine. Available from http://www.who.int/ith/vaccines/diphtheria/en/[accessed on 03/04/2017]
9. WHO, International Health, Tetanus vaccine. Available from http://www.who.int/ith/vaccines/tetanus/en/[accessed on 03/04/2017]
10. WHO, International Health, Pertussis vaccine. Available from http://www.who.int/ith/vaccines/pertussis/en/[accessed on 03/04/2017]
11. WHO. Emergencies preparedness and response. Measles outbreak in Europe. Available from http://www.who.int/csr/don/2011_04_21/en/[accessed on 03/04/2017]
12. WHO, International Health, Measles vaccine. Available from http://www.who.int/ith/vaccines/measles/en/[accessed on 03/04/2017]
13. WHO, International Health, Rubella vaccine. Available from http://www.who.int/ith/vaccines/rubella/en/[accessed on 03/04/2017]
14. WHO, International Health, Hepatitis B vaccine. Available from

http://www.who.int/ith/vaccines/hepatitisB/en/[accessed on 03/04/2017]
15. WHO, International Health, Varicella vaccine. Available from http://www.who.int/ith/vaccines/varicella/en/[accessed on 03/04/2017]
16. WHO, International Health, Polio vaccine. Available from http://www.who.int/ith/vaccines/polio/en/[accessed on 03/04/2017]
17. MoHFW, GoI. Requirements of polio vaccination for international travellers between Polio infected countries and India. Available from http://mohfw.nic.in/showfile.php?lid=2634[accessed on 03/04/2017]
18. WHO, International Health, Hepatitis A vaccine. Available from http://www.who.int/ith/vaccines/hepatitisA/en/[accessed on 03/04/2017]
19. WHO, International Health, Hepatitis E vaccine. Available from http://www.who.int/ith/vaccines/hepatitisE/en/[accessed on 03/04/2017]
20. WHO, International Health, Cholera vaccine. Available from http://www.who.int/ith/vaccines/cholera/en/ [accessed on 03/04/2017]
21. WHO, International Health, Japanese Encephalitis vaccine. Available from http://www.who.int/ith/vaccines/japanese_encephalitis/en/[accessed on 03/04/2017]
22. WHO, International Health, Influenza vaccine. Available from http://www.who.int/ith/vaccines/seasonal_influenza/en/[accessed on 03/04/2017]
23. WHO, International Health, Pneumococcal vaccine. Available from http://www.who.int/ith/vaccines/pneumococcal/en/[accessed on 03/04/2017]
24. WHO, International Health, Meningococcal vaccine. Available from http://www.who.int/ith/vaccines/meningococcal/en/[accessed on 03/04/2017]
25. WHO, Weekly Epidemiological Record. Epidemic meningitis control in countries of the African meningitis belt, 2016. Available from http://apps.who.int/iris/bitstream/10665/254901/1/WER9213.pdf?ua=1
26. WHO, International Health, Tick borne encephalitis vaccine. Available from http://www.who.int/ith/vaccines/tbev/en/[accessed on 03/04/2017]
27. CDC, Chapter 3, Infectious diseases related to travel. Tick borne encephalitis. Available from https://wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/tickborne-encephalitis[accessed on 03/04/2017]
28. WHO, International Health, Typhoid vaccine. Available from http://www.who.int/ith/vaccines/typhoidfever/en/[accessed on 03/04/2017]
29. Available from https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6411a4.htm [accessed on 03/04/2017] - typhoid vaccine
30. WHO, International Health, Rabies vaccine. Available from http://www.who.int/ith/vaccines/rabies/en/[accessed on 03/04/2017]
31. WHO, International Health, yellow fever vaccine. Available from http://www.who.int/ith/vaccines/yf/en/[accessed on 03/04/2017]
32. CDC. Health information for travellers to India. Available from https://wwwnc.cdc.gov/travel/destinations/traveler/none/india

WORLD HEALTH DAY
7TH APRIL 2017

REVIEW ARTICLE

Evaluation of Training Manuals for Health Workers in India in Context of Kangaroo Mother Care

Shailaja Daral[1], Timiresh Kumar Das[1], Deepti Dabar[2], Meenakshi Bhilwar[1], Ravi Prakash Upadhyay[1]

[1]*Senior Resident, Dept. of Community Medicine, VMMC and Safdarjung Hospital, New Delhi, Assistant Professor, Department of Community Medicine, ESIC Medical College, Faridabad*

Abstract

Background: Kangaroo mother care is an efficacious intervention in preventing mortality in low birth weight babies. With increasing focus on providing home based newborn care in India, it is pertinent to train the frontline healthcare workers in necessary skills for care of low birth weight babies.
Objective: The current review was undertaken to evaluate the content of training manuals of frontline health workers in context of care of low birth weight (LBW) babies and Kangaroo Mother Care (KMC).
Methods: A systematic extensive internet search was performed to identify training manuals available in public domain, and a targeted search was also done in the websites of Ministry of Health and Family Welfare, Government of India, National Institute of Health and Family Welfare, and National Health System Resource Centre. Manuals published in or after the year 2000 and those in the English language were included in the review. A quality assessment tool was devised and the manuals were finally classified as "poor", "fair", "good" quality.
Results: The initial search yielded 107 potentially eligible documents, however, a total of eight training manuals were finally found to be eligible for content evaluation. The mean average score for all the eight manuals was 17.0 (out of a total score of 48) and thus they were "fair" quality (aggregated per cent score of 35.4). Out of the eight training manuals, six had separate section on care of the LBW babies, though content on breastfeeding and skin-to-skin contact was variable. None of the manuals provided case studies/ scenarios or introduced challenges to effective initiation and continuation of KMC.
Conclusion: Current training manuals lack quality content on care of LBW babies and KMC and need to be upgraded with evidence-based information.

Keywords: Low birth weight, Kangaroo Mother Care, Content evaluation, Frontline health workers, India

Background

About 0.76 million neonates die every year in India. About 70% of infant deaths and more than half of under-five child deaths occur in the neonatal period, the first 4 weeks of life. The mortality rates are even higher in those born with low birth weight.[1] The World Health Organization (WHO) defines low birth weight (LBW) as weight less than 2500 grams at the time of birth.[2] It is estimated that nearly 20 million births, i.e. 15 – 20% of all births across the world, are LBW. Nearly 96% of all these LBW take place in developing countries. In India alone, there are approximately 8 million LBW every year.[3,4] The LBW may either be a small-for-date baby or a premature baby. In either case, there is increased risk of developing birth asphyxia, hypothermia, hypoglycaemia and infections. Approximately one-third of LBW babies die within the first 12 hours after delivery, mainly because they do not have the ability to control their body temperature.[5] Hypothermia leads to a cascade of poor feeding and infections in such babies. Hence, one of the most important measures to save life of such a baby is to prevent the development of hypothermia. Most developed countries depend on state-of-art incubator care for prevention of hypothermia in LBW babies. Unfortunately, in low-resource countries, availability of incubators is scarce, and when available, maintenance is largely poor.[6]

One of the efficacious interventions to save the life of a LBW baby and promote its growth and development is Kangaroo Mother Care (KMC). Kangaroo Mother Care (KMC) is defined by WHO as early, continuous, and prolonged skin-to-skin contact (STSC) and exclusive breast feeding (EBF). It is recommended to be initiated in the birth facilities and to be continued at home following discharge. While the

Address for Correspondence: *Dr Ravi Prakash Upadhyay, Department of Community Medicine, VMMC and Safdarjung Hospital, New Delhi – 110029,* **Email:** *ravi.p.upadhyay@gmail.com*

Received: 08/04/2017, Accepted:06/05/2017

WHO recommends that skin-to-skin contact (STSC) should be provided to all newborns beginning in the delivery room itself, KMC is meant for stable LBW baby only. It is sustained, prolonged skin-to-skin contact (PSTSC), with the period extending from 4 to more than 12 hours daily. The mother or any other family member can provide KMC to the LBW baby. Moreover, all stable LBW babies which are able to breastfeed should be put to the breast at the earliest and exclusively breastfed till six months of age, so as to improve their survival and promote growth and neural development.[6] KMC combines both these aspects and since its inception three decades ago, multiple trials have proven it effective in significantly reducing mortality and sepsis in LBW babies, mainly in the preterm LBW baby and low resource settings.[7-16] The same have been well-documented in a Cochrane meta-analysis.[17]

Globally as well as in India, uptake of KMC has been low. In India, there is currently a shift from home to institutional delivery.[18-20] However, the mother-child dyad is discharged from the hospital usually in around 2 days and consequently; the care at home largely influences neonatal morbidity and mortality.[21] Under the current health system in India, the responsibility to ensure that adequate and evidence based domiciliary neonatal care practiced is bestowed upon the frontline health workers such as Accredited Social Health Activist (ASHA), Auxiliary Nurse Midwife (ANM), Lady Health Visitor (LHV), and Anganwadi worker (AWW). In order to maximize the potential of these workers, they need to be trained in care of LBW babies (especially KMC) and supportive supervision needs to be provided.[22]

Well-constructed training manuals provide written training content; and enable a health staff to function in the absence of their supervisors, and aid as a ready-to-use tool in case of any perplexity. Training manuals for these ground level health staff should include comprehensive and updated materials related to newborn care, with special focus on KMC for LBW babies. With this background, systematic review of the training manuals for the peripheral health care workers was planned, with focus on care of LBW baby. The broad areas encompassed under the scope of evaluation were style of presentation, relevance and sufficiency, coverage of practical aspects, and appropriateness to the targeted audience.

Methodology

Search strategy

The search was done on the internet using Google search with keywords {*training manual OR reading manual OR training module OR reading module OR self-assessment material AND newborn care OR neonatal care OR young infant care OR care of low birth weight baby OR care of small for gestational age baby OR kangaroo mother care OR skin to skin contact OR care of premature baby OR home based newborn care OR breastfeeding AND ASHA (accredited social health activist) OR AWW (anganwadi worker) OR ANM (auxiliary nurse midwife) OR LHV (lady health visitor) OR SBA (skilled birth attendant) OR TBA (trained birth attendant) OR PHN (public health nurse) OR staff nurse OR nursing staff AND India}*, and was undertaken by two authors (SD, TKD). A targeted search was also done in the websites of the Ministry of Health and Family Welfare (MoHFW), Government of India of GOI, National Institute of Health and Family Welfare (NIHFW) and National Health System Resource Centre (NHSRC) to find relevant material. Community based primary health care is largely catered to by the Public sector in India. Hence, training of these frontline health workers is the mandate of the government organizations mentioned above. Thus, a targeted search of these government health portals/ websites was done.

Inclusion and exclusion criteria

For the current research, a training manual was defined as a book or document with instructions designed to enhance the knowledge, attitude and skills of the trainee so that the quality of the service delivered is improved.[23] Any document which could be used for training containing text or infographics was included as there is a variety of training manuals used for frontline health care workers in India. Flipcharts were also included in the definition as they provide important focused information with pictorial and/ or flow chart format and aid in understanding. All printed material meant for end users training, in this case frontline health workers were included if they fulfilled the inclusion criteria. The documents, i.e., training/ reading manual/ material on newborn care which were published in the year 2000 or later, and which were meant for use by field health workers in India were selected for initial evaluation. If the year of publication was not mentioned, the authors (SD and TKD) analyzed the source (ministry website, portal) of the document and mailed the relevant authority to gather this information. Training manual developed by Government of India (ministries or/and national health programme committees) alone, or in collaboration with international or national or international governmental or nongovernmental agencies were included in the review. This was done to exclude certain training manuals which were published by non-government agencies, hospitals or medical colleges and thus not necessarily routinely used in training of field health workers. If there was one or more revision of a training manual within the period from the year 2000, then the most recent version of the same was included in the present study. Further, only the training manuals which were in written/ text format were included. Training materials in form of either video or audio or both were excluded for the ease of evaluation and to maintain harmonization in evaluation by different evaluators. Only training manuals in English language were included. This was done to exclude training manuals in other regional language because it was not possible for the authors to comprehend and evaluate them as their language literacy was limited. This was expected not to undermine the importance of the present study, as most training manuals are prepared in two languages, English and regionally spoken language, by the agencies involved in training of field health workers.

There were certain training manuals for use by speciality doctors (paediatricians) and physicians (medical officers) as well as field health workers. Since there was no demarcation in the content for these two groups, it was decided to exclude these materials to avoid dilution of evaluation. In case the training manual didn't specify the target group of its intended use, the manual was excluded from further evaluation. (Figure 1)

Content evaluation format

A content evaluation format for review of training manuals was devised and modified by consensus among all six authors. The focus of the content evaluation format was to assess the training manuals based on completeness, correctness and comprehensiveness, and ease of understanding for practical application by the field health worker. The format included 16 parameters on four domains – style of presentation (7), relevance and sufficiency of content (4), coverage of practical aspects (4 points) and appropriateness to readers (1 point). The evaluation format was based on a score for each parameter, ranging from 0 to 3, based on generally accepted quality norms for research outputs, where 0 =completely inadequate, 1= somewhat inadequate/not meeting reasonable standard, 2 =adequate/ meeting reasonable standard, and 3 = excellent implying close to ideal.[24, 25] The criteria for assigning a score for each parameter were decided by discussion and consensus among the authors in order to achieve maximum objectivity in assessment of the training manuals. This has been elaborated in Table 1.

Table 1: Assessment criteria used for content evaluation of training manuals on KMC and LBW from India

Evaluation domains	Scoring scheme
A. ***Style of presentation***	
1. Is there a separate section on care of low birth weight babies?	0 – no mention 1 – mention but not in separate paragraph 2 – separate paragraph 3 – separate section/box
2. Is there a separate section on newborn thermal care?	0 – no mention 1 – mention but not in separate paragraph 2 – separate paragraph 3 – separate section/box
3. Is there a separate section on breastfeeding?	0 – no mention 1 – mention but not in separate paragraph 2 – separate paragraph 3 – separate section/box
4. Is the subject matter presented in a structured manner?	0 – no mention of KMC (i.e. no mention of care of LBW baby) 1 – mention of KMC with no structure (mention of care of LBW baby but no focus on STS and EBF) 2 – mention of KMC with some structure (mention of care of LBW baby with some focus on STS and EBF) 3 – mention of KMC with adequate structure (mention of care of LBW baby with adequate focus on STS and EBF)
5. Is the summary of important practice points related to the subject matter provided in the end?	0 – no summary of subject matter 1 – summary of subject matter with less than 3 important practice points 2 – summary of subject matter with 3-5 important practice points 3 – summary of subject matter with more than 5 practice points
	Practice points (total 9): STS duration in a day >= 4 hrs; who can do STS; for how long to continue STS; duration of EBF; pre-lacteals; demand feeding; why to do KMC; when to do KMC; in whom to do KMC
6. Are any illustrations provided to ease the understanding?	0 – no illustrations 1 – Illustrations about breastfeeding 2 – Illustration about sts contact 3 – Illustrations about both
7. Are the illustrations comprehensible?	0 – only illustrations 1 – Illustrations with only captions 2 – Illustrations with captions but need support of text for complete understanding 3 – Illustrations with captions and self-explanatory

B. Relevance and sufficiency of the content	
1. Is the content sufficient?	0 – kmc only mention with no details of components 1 – kmc components (lbw,ebf, and sts) defined and/or rationale as to why give kmc 2 – 1 plus explanation of procedure to give kmc 3 – 1 plus 2 plus illustrations also provided of sts and ebf component
2. Is breast feeding as a component of KMC has been sufficiently elaborated?	0 – mention about breastfeeding with no focus on exclusive bf 1 – mention and definition of exclusive breastfeeding with duration including definition of pre-lacteal feeds and its avoidance, and definition of early breast feeding 2 – details of effective breastfeeding (attachment+ positioning + suckling + duration of EBF) OR illustrations of Breastfeeding 3 – both effective breastfeeding components and illustrations present
3. Is skin-to skin (STS) contact as a component of KMC has been sufficiently elaborated?	0 – mention about who can provide STS such as mother or any other primary caregiver 1 – 0 plus mention about duration of STS in a 24 hour period 2 – 1 plus how to give STS which includes how to hold, position and wrap the baby 3 – 2 plus mention about how to monitor baby during kmc which includes airway clear, breathing regular, colour is pink and mother is trained to identify danger signs which are hypothermia, respiratory problems, feeding difficulty, change in colour during kmc and mention about effective kmc (which includes baby gained weight to 2500 gm and is wriggling out)
4. Are FAQs (frequently asked questions) and their answers provided	0 – no FAQs 1 – FAQ's present on sts or BF or lbw 2 – FAQ's present on any two aspects 3 – FAQ's present on all three aspects
C. Coverage of practical aspects	
1. Does the material provide examples or case stories?	0 – no case stories 1 – case stories present on sts or ebf or lbw 2 – case stories present on any two aspects 3 – case stories present on all three aspects
2. Does the material introduce the challenges and address the barriers that may exist to effective initiation of KMC?	0 – no mention 1 – mention of barriers without ways to resolve them 2 – mention of barriers with resolution which are not adequate 3 – mention of barriers with resolution which are adequate
3. Does the material introduce the challenges and address the barriers that may exist to effective continuation of KMC?	0 – no mention 1 – mention of barriers without ways to resolve them 2 – mention of barriers with resolution which are not adequate 3 – mention of barriers with resolution which are adequate
4. Does the manual provide a checklist that could be used while giving KMC counselling?	0 – no checklist 1 – checklist about BF or STS only 2 – checklist about BF and STS 3 – checklist about BF and STS and when to refer e.g. recognize danger signs
D. Appropriateness to readers	
1. Will the contents be easily comprehensible by the readers?	**To be scored subjectively as per your understanding** 0- The textual content and the illustrations perceived to be difficult to comprehend by HWs 1- The textual content perceived to be difficult to comprehend. However, the illustrations seemed self explanatory 2- The textual content perceived to be easily comprehended by the HWs but illustrations seemed difficult to comprehend 3- Both the textual content and the illustrations were perceived to be easily comprehended by the HWs

KMC – kangaroo mother care; LBW – low birth weight; STS – skin to skin; EBF – exclusive breastfeeding, BF-Breast Feeding

Evaluation process

Each of the study authors evaluated all the eight training manuals which were eventually selected,[26-33] and scored them individually, using the pre-defined assessment criteria in the content evaluation format. The scores were summed up and mean was calculated for each assessment domain and rounded off to the nearest whole number. In case of any discrepancy, all the authors discussed in-person

Table 2: List of training manuals included in the review and their specifications (n = 8)

S. No	Title of manual	Year of publication	Intended reader	Publishing agency	Who prepared the manual (any technical group/ body involved)
1.	Induction Training Module for ASHAs in Urban Areas[26]	2014*	ASHA	Under NHM of MOHFW, GOI	None specified
2.	Induction training manual for ASHA (A consolidated version of modules 1 to 5 for newly selected ASHAs)[27]	2013*	ASHA	Under NRHM of MOHFW, GOI	National ASHA mentoring group
3.	ASHA module 6. Skills that save lives[28]	2010*	ASHA	Under NRHM of MOHFW, GOI	None specified
4.	ASHA module 7. Skills that save lives[29]	2010*	ASHA	Under NRHM of MOHFW, GOI	None specified
5.	Guidelines for antenatal care and skilled attendance at birth by ANMs/LHVs/SNs[30]	2010	ANM/ LHV/SN	MOHFW. GOI	Maternal Health Division
6.	Community and home based postnatal care of newborn and mothers- A flip chart to assist the ASHAs for counselling the mother and family members[31]	2009*	ASHA	NRHM, Norway India Partnership Initiative (NIPI)	NRHM, NIHFW, AIIMS, NIPI
7.	Reading material for ASHA, Book No-2, maternal and child health[32]	2006	ASHA	Under NRHM of MOHFW, GOI	NIHFW, UNFPA
8.	Reading material for ASHA, Book No-1, maternal and child health[33]	2005*	ASHA	Under NRHM of MOHFW, GOI	UNFPA

* Information on the year of publication was collected through analysing the source (ministry website, portal/URL) of the document and mailing the relevant authority; NHM- National Health Mission; NRHM- National Rural Health Mission; MOHFW- Ministry of Health and Family Welfare; GOI- Government of India; ASHA- Accredited Social Health Activist; ANM- Auxiliary Nurse Midwife; LHV- Lady Health Visitor; SN- Staff Nurse; NIHFW- National Institute of Health and Family Welfare; AIIMS- All India Institute of Medical Sciences; UNFPA- United Nations Population Fund, India.

Table 3: Evaluation of the training manuals based on the content provided regarding Kangaroo Mother Care for low birth weight babies (n = 8)

Evaluation Domains	Individual Parameters	Number of manuals mentioning the parameter	Quality assessment by authors*
A. Style of presentation	1. Is there a separate section on care of low birth weight babies?	6	Inadequate – 1 Adequate – 1 Excellent – 4
	2. Is there a separate section on newborn thermal care?	7	Inadequate – 1 Adequate – 3 Excellent – 3
	3. Is there a separate section on breastfeeding?	8	Excellent – 8
	4. Is the subject matter presented in a structured manner?	6	Inadequate – 1 Adequate – 5
	5. Is the summary of important practice points related to the subject matter provided in the end?	2	Adequate – 2
	6. Are any illustrations provided to ease the understanding?	8	Inadequate – 5 Excellent – 3
	7. Are the illustrations comprehensible?	8	Completely inadequate – 3 Inadequate – 3 Adequate – 2
B. Relevance and sufficiency of the content	1. Is the content sufficient?	6	Inadequate – 5
	2. Is breast feeding as a component of KMC has been sufficiently elaborated?	6	Completely inadequate – 2 Inadequate – 1 Excellent – 3
	3. Is skin-to skin contact as a component of KMC has been sufficiently elaborated?	6	Completely inadequate – 3 Adequate – 3
	4. Are FAQs (frequently asked questions) and their answers provided?	2	Inadequate – 1 Adequate – 1

C. Coverage of practical aspects	1. Does the material provide examples or case stories?	0	NA
	2. Does the material introduce the challenges and address the barriers that may exist to effective initiation of KMC?	0	NA
	3. Does the material introduce the challenges and address the barriers that may exist to effective continuation of KMC?	0	NA
	4. Does the manual provide a checklist that could be used while giving KMC or its components' counselling?	1	Excellent – 1
D. Appropriateness to readers	1. Will the contents be easily comprehensible by the readers?	8	Adequate – 8

* Average score of the six authors rounded off to nearest whole number; NA- not applicable

Table 4: Evaluation score and grade of the training manuals in context to content on Kangaroo Mother Care for low birth weight babies (n = 8)

Manual No.	Title of the manual	Content on KMC present (YES/NO)	Content evaluation score (%), Grade
1.	Induction Training Module for ASHAs in Urban Areas[26]	YES	21 (43.7%), FAIR
2.	Induction Training Module for ASHAs (A consolidated version of Modules 1 to 5 for newly selected ASHAs)[27]	YES	21 (43.7%), FAIR
3.	ASHA Module 6. Skills that save lives[28]	YES	24 (50%), FAIR
4.	ASHA Module 7. Skills that save lives[29]	YES	15 (31.2%), POOR
5.	Guidelines for Antenatal Care and Skilled Attendance at Birth by ANMs/ LHVs/SNs[30]	YES	20 (41.6%), FAIR
6.	Community and Home Based Postnatal Care of New-born and Mothers. A Flip Chart to assist the ASHAs for counselling the mother and family members[31]	YES	20 (41.6%), FAIR
7.	Reading Material for ASHA, Book No-2. Maternal & Child Health[32]	NO	8 (16.7%), POOR
8.	Reading Material for ASHA, Book No-1. Maternal & Child Health[33]	NO	7 (14.6%), POOR

* The minimum possible score of content evaluation for a training manual was zero while the maximum was 48. The average aggregated score for each evaluation was converted into a percent score. Evaluations that scored 33% or less were considered "poor"; those with a score of 34%–66% were considered "fair"; and those with a score of 67% or more were considered "good quality".

and arrived at a consensus.

The minimum possible score of content evaluation for a training manual was zero while the maximum was 48. The average aggregated score for each evaluation was converted into a percent score. Evaluations that scored 33% or less were considered "poor"; those with a score of 34%–66% were considered "fair"; and those with a score of 67% or more were considered "good quality".[24, 25]

Results

The initial search yielded 107 potentially eligible documents to be included in the study, however, a total of eight training manuals were finally found to be eligible for content evaluation. The reasons for exclusion have been provided in Figure 1.

Out of these eight training manuals evaluated, six were intended for use in training of ASHAs, two for training of ANM/LHV. Seven of the manuals were developed by the Ministry of Health and Family Welfare (MoHFW), Government of India (GOI) while one was developed by Norway India Partnership Initiative (NIPI) in collaboration with the MOHFW, GOI (Table 2).

Out of these eight training manuals, six had separate section on care of the LBW babies. All the documents had section on breastfeeding while seven had section on thermal care of theLBW babies. These two are the essential components of KMC for LBW babies. While breastfeeding as a separate section was found in all the manuals, it was discussed as an essential component of KMC in only 6 manuals. Further, in these 6 manuals where breastfeeding was discussed as a component of KMC, the content was 'completely inadequate' in two, 'inadequate' in one and "excellent" in three manuals. Also, while STSC was discussed in seven manuals, but as a component of KMC it was discussed in only six of the manuals. In these 6 manuals where STSC was discussed as a component of KMC, it was found to be "completely inadequate" in 3 and "adequate" in 3 manuals. None of the manuals provided any case studies/scenarios nor introduced challenges to effective initiation and continuation of KMC. Only one manual provided checklist that could be used while giving KMC. (Table 3)

The content was "poor" and "fair" quality for three and five training manuals respectively. The mean average score for all the eight manuals was 17.0 (out of a total score of 48) and thus they were "fair" quality (aggregated percent score of 35.4). The highest average aggregated score was 24 (50%) and the lowest average aggregated score was 7 (14.6%). (Table 4)

There were five manuals/training documents published from 2010 – 14 and three from 2005 – 09 respectively. The mean score for the manuals published from 2010 – 14 was 20.2 and fell under "Fair" quality (20.2/48; 42.1%) whereas the average score for those published between 2005 – 09 was 11.6 and fell under "Poor" quality (11.6/48; 24.3%).

Discussion

Kangaroo mother care has been demonstrated to promote physiologic stability, facilitate earlybreastfeeding, provide a thermally supportive environment, reduce the risk of serious infections, and reduce the mortality of hospitalized, stable preterm and low birth weight infants. This practice also promotes bonding between infants and their mothers during the first hours and days of life.[7-17] Since the inception of KMC 30 years ago, coverage has remained low and implementation has largely been limited to specialized hospitals. As a result, only a small fraction of the low birth weight newborns that could benefit from KMC, actually receive it.

A number of barriers have prevented KMC from achieving effective coverage across the globe. These can broadly be identified as lack of awareness, socio-cultural beliefs and practices, organizational and resource constraints, negative staff attitudes and impressions, and experiential barriers.[34] Thus, to ensure that an eligible LBW baby receives KMC, a multipronged approach is required. At the community level, role of frontline health workers is pivotal to ensure that KMC is adopted and practiced by the mothers at home. Training and orientation of these health workers in this regard is important and could aid in community adoption of KMC. The current review of the training manuals of these frontline health workers was undertaken to document the quality of information provided with respect to care of LBW babies, in context of KMC.

Only in six out of eight training manuals there was a separate section on care of LBW babies. This means that in nearly 25% of the manuals, this important component was missing and underscores the fact that care of LBW babies is still not the prime focus of those who develop training manuals for frontline health workers. An estimation of the term and preterm babies born small for gestational age (SGA) in 138 low- and middle-income countries in 2010 found that India topped the list with the SGA prevalence of 46.9%.[35] With such a high prevalence at the backdrop, it is imperative that content on care of the LBW babies should find its place in all the training manuals.

Further, in only 6 training manuals, breastfeeding and skin to skin contact (STSC) were discussed as integral to KMC, and even in half of these manuals the content was inadequate. Exclusive breastfeeding and STSC form an integral component of KMC and should have been discussed in detail. With a lack of adequate information in training manuals, it would be unreasonable to expect the frontline health workers to be well equipped with knowledge and skills to promote the communities and family members to adopt KMC for their LBW baby. None of the manuals provided any case studies/scenarios nor introduced challenges to effective initiation and continuation of KMC. These are important not only in helping the health workers foresee and be aware of the possible problems and barriers they might face while promoting KMC, but also in their efforts to catalyze uptake of KMC by the family members.

In general, the overall quality of five training manuals was 'fair' and of three training manuals was "poor". None of the manuals were of "good" quality. This calls for updating the manuals with more relevant, appropriate, adequate, and evidence-based content on care of newborn, especially LBW baby and KMC.

This study is probably the first kind of review which evaluated the contents of the training manuals for frontline health workers in context to care of LBW babies and KMC. Manuals from the year 2000 onwards were included so as to evaluate the recent manuals. Our analysis has several limitations. First, this analysis is based on training manuals available through internet searches and there is a possibility that those that were not available on internet might have been missed in the review. The findings of this study should be interpreted keeping this possibility in mind. Second, though sincere effort was made to make a very objective content evaluation format, our quality scoring system could have been biased by the authors' perceptions of what constitutes good quality in training manuals. However, the authors believe that even with these limitations, the analysis of the currently available manuals provides an initial overview of the quality of training manuals (in context of KMC for LBW babies) over most of the past decade. Third, we did not evaluate manuals in regional language and so we cannot comment on their quality. There is a possibility that these manuals were ofgood quality and were used by frontline health workers in their respective states. Fourth, there were two manuals which were meant to be used by specialists/ medical officers as well as frontline health workers and there was no clear demarcation in the specific content for the two and thus these two manuals were excluded from the review. Fifth, a more important limitation was that manuals prepared by non-government organizations (NGOs) and medical colleges (MCs) were not evaluated. While this was done with the understanding that only those manuals which were developed and approved by government agencies alone or in collaboration with other

agencies would actually be in circulation for use by the health workers, there is possibility that manuals by NGOs and MCs were of better quality and in use for training of atleast the frontline health workers in their areas of work. Six, the training manual is only a part of the overall training of the frontline health worker. Induction training, hands-on training through skill development workshops, and refresher courses are equally important, but the domain of the current review was restricted to only content evaluation of training manuals. Nonetheless, the first and foremost requirement for any training is complete, comprehensive and good quality training manual.

Conclusion

In summary, the present review underscores the point that the currently available training manuals on newborn care lack in quality with respect to content on care of LBW babies and KMC. This call for revisiting the overall content and presentation outlay of the manuals and continuously upgrading it with evidence-based information in order to make them more relevant and effective in the frontline health worker's practice of advocating, promoting and supporting KMC in the families with LBW babies. Further, case scenarios (based on already published findings from formative research) and simulations of barriers and enablers of KMC should be introduced in order to better equip the health workers for managing resistance to its adoption at the family and community level. Involvement of multiple collaborative partners, i.e., paediatric associations, medical colleges, non-government organizations and governmentagencies in developing the training manuals seem logical to improve their quality.

References

1. www.newbornwhocc.org [Internet]. [cited 2015 Dec 23]. Available from: http://www.newbornwhocc.org/SOIN_PRINTED%2014-9-2014.pdf
2. World Health Organization, International statistical classification of diseases and related health problems. ICD10Volume2_en_2010.pdf [Internet]. 2010th ed. World Health Organization; 2010 [cited 2015 Dec 23]. 201 p. Available from: http://www.who.int/classifications/icd/ICD10Volume2_en_2010.pdf
3. World Health Organization. global targets_lowbirthweight_policybrief.pdf [Internet]. World Health Organization; [cited 2015 Dec 23]. Available from: http://www.who.int/nutrition/topics/globaltargets_lowbirthweight_policybrief.pdf
4. United Nations Children's Fund and World Health Organization, Low Birthweight: Country, regional and global estimates. [Internet]. UNICEF, New York; 2004 [cited 2015 Dec 23]. Available from: http://www.unicef.org/publications/files/low_birthweight_from_EY.pdf
5. World Health Organization. Essential newborn care, Report of a technical working group. [Internet]. Geneva: WHO; 1996 [cited 2015 Dec 23] p. 23. Available from: http://apps.who.int/iris/bitstream/10665/63076/1/WHO_FRH_MSM_96.13.pdf
6. Department of Reproductive Health and Research. Kangaroo mother care: a practical guide. [Internet]. World Health Organization, Geneva; 2003 [cited 2015 Dec 23]. Available from: http://apps.who.int/iris/bitstream/10665/42587/1/9241590351.pdf
7. Maternal and Newborn Health Safe Motherhood Unit. Thermal control of the newborn: A practical guide. Maternal Health and Safe Motherhood Programme [Internet]. World Health Organization; 1997 [cited 2015 Dec 23]. Available from: http://apps.who.int/iris/bitstream/10665/63986/1/WHO_RHT_MSM_97.2.pdf
8. Shiau SH, Anderson GC. Randomized controlled trial of kangaroo care with fullterm infants: effects on maternal anxiety, breastmilk maturation, breast engorgement and breast-feeding status. Paper presented at the International Breastfeeding Conference, Australia's Breastfeeding Association, Sydney, October 23-25, 1997 [Internet]. [cited 2015 Dec 23]. Available from: https://www.free-ebooks.net/ebook/Kangaroo-Mothering/html/81.
9. Cattaneo A, Davanzo R, Uxa F, Tamburlini G. Recommendations for the implementation of Kangaroo Mother Care for low birthweight infants. International Network on Kangaroo Mother Care. Acta Paediatr. 1998 Apr;87(4):440–5.
10. Cattaneo A, Davanzo R, Bergman N, Charpak N. Kangaroo mother care in low-income countries. International Network in Kangaroo Mother Care. J Trop Pediatr. 1998 Oct;44(5):279–82.
11. Charpak N, Ruiz-Peláez JG, Figueroa de Calume Z. Current knowledge of Kangaroo Mother Intervention. CurrOpinPediatr. 1996 Apr;8(2):108–12.
12. Anderson GC. Current knowledge about skin-to-skin (kangaroo) care for preterm infants. J Perinatol. 1991 Sep;11(3):216–26.
13. Ludington-Hoe SM, Swinth JY. Developmental aspects of kangaroo care. J ObstetGynecol Neonatal Nurs. 1996 Oct;25(8):691–703.
14. Sloan NL, Camacho LW, Rojas EP, Stern C. Kangaroo mother method: randomized controlled trial of an alternative method of care for stabilised low-birthweight infants. Maternidad Isidro Ayora Study Team. Lancet. 1994 Sep 17;344(8925):782–5.
15. Charpak N, Ruiz-Peláez JG, Figueroa de C Z, Charpak Y. Kangaroo mother versus traditional care for newborn infants </=2000 grams: a randomized, controlled trial. Pediatrics. 1997 Oct;100(4):682–8.
16. Cattaneo A, Davanzo R, Worku B, Surjono A, Echeverria M, Bedri A, et al. Kangaroo mother care for low birthweight infants: a randomized controlled trial in different settings. Acta Paediatr. 1998 Sep;87(9):976–85.
17. Conde-Agudelo A, Díaz-Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database Syst Rev. 2014;4:CD002771.
18. International Institute for Population Sciences, 2007. National Family Health Survey (NFHS - 3) 2005-06: India, IIPS, Mumbai.
19. Lim SS, Dandona L, Hoisington JA, James SL, Hogan MC, Gakidou E. India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. Lancet. 2010 Jun 5;375(9730):2009–23.
20. Registrar General and Census Commissioner, 2011. Annual Health Survey 2010-11, Ministry of Home Affairs, Government of India, New Delhi. Available at: http://www.censusindia.gov.in/vital_statistics/AHSBulletins/AHS_Baseline_Factsheets/ Assam.pdf.
21. Gupta P, Bisht HJ. Early discharge of normal term neonates: continued dilemma. Indian Pediatr. 2001 Dec;38(12):1374–81.
22. Gogia S, Ramji S, Gupta P, Gera T, Shah D, Mathew JL, et al. Community based newborn care: a systematic review and meta-analysis of evidence: UNICEF-PHFI series on newborn and child health, India. Indian Pediatr. 2011 Jul;48(7):537–46.
23. Training manual. In: Wikipedia, the free encyclopedia [Internet]. 2014 [cited 2015 Dec 23]. Available from: https://en.wikipedia.org/w/index.php?title=Training_manual&oldid=609612525
24. Dandona L, Raban MZ, Guggilla RK, Bhatnagar A, Dandona R. Trends of public health research output from India during 2001-2008. BMC Medicine 2009; 7: 59.
25. Dandona L, Raban MZ, Dandona R. Analysis of evaluations of health system/policy interventions in India. Natl Med J India 2011;24:263–8.
26. National Health Mission. Induction Training Module for ASHAs in urban areas. [Internet]. [cited 2015 Dec 23]. Available from: http://dshm.delhi.gov.in/pdf%5CASHA_Material%5CTrainingMaterialforTrainers%5CInduction_Training_Module_for_ASHAs%20(English).pdf
27. National Rural Health Mission. Induction Training Module for ASHAs (A consolidated version of Modules 1 to 5 for newly selected ASHAs). [Internet]. Ministry of Health and Family Welfare, Government of India 2013 [cited 2015 Dec 23]. Available from: https://nrhm.gujarat.gov.in/images/pdf/ASHA-Induction-Module-14-6-13.pdf
28. National Health Systems Resource Center, 2010. ASHA Module 6 – Skills that save lives: Focus on Maternal and Newborn Health. [Cited 2015 Dec 23]. Available from: http://nhrscindia.org/pdf_files/resources_thematic/Community_Participation/NHSRC_Contribution/asha%20module%206_english.pdf
29. National Health Systems Resource Center, 2010. ASHA Module 7 – Skills that save lives: Focus on Child Health and Nutrition. [Cited 2015 Dec 23]. Available from: http://nhrscindia.org/pdf_files/resources_thematic/Community_Participation/NHSRC_Contribution/asha%20module%207_english.pdf
30. Maternal and Health Division. Guidelines for Antenatal care and skill attendance at birth by ANMs,/LHVs/ SNs. Maternal and Health division Ministry of Health and Family Welfare, Government of India April 2010. [Internet]. [cited 2015 Dec 23]. Available from: http://www.nhp.gov.in/sites/default/files/anm_guidelines.pdf
31. Community and Home Based Postnatal Care of Newborn and Mothers, A Flip Chart to assist the ASHAs for counselling the mother and family members 2009. [Internet]. Available from: http://www.nihfw.org/Doc/Flipchart%20for%20ASHA.pdf
32. Maternal and Child Health. Reading Material for ASHA. Book Number-2. New Delhi: Ministry of Health and Family Welfare, Government of India 2006. [Internet]. [cited 2015 Dec 23]. Available from: http://nrhm.gov.in/images/pdf/communitisation/asha/book-no-2.pdf
33. Maternal and child health. Reading Material for ASHA. Book Number-1. New Delhi: Ministry of Health and Family Welfare, Government of India 2005. [Internet]. [cited 2015 Dec 23]. Available from: http://nrhm.gov.in/images/pdf/communitisation/asha/book-no-1.pdf
34. Seidman G, Unnikrishnan S, Kenny E, MyslinskiS, Cairns-Smith S, Mulligan B, Engmann C. Barriers and Enablers of Kangaroo Mother Care Practice: A Systematic Review. PLoS ONE 2015; 10(5): e0125643. Available from: http://doi.org/10.1371/journal.pone.0125643.
35. Lee AC, Katz J, Blencowe H, Cousens S, Kozuki N, Vogel JP et al; CHERG SGA-Preterm Birth Working Group. National and regional estimates of term and pretermbabies born small for gestational age in 138 low-income and middle-income countries in2010. Lancet Glob Health. 2013 Jul;1(1):e26-36. doi: 10.1016/S2214-109X(13)70006-8.

REVIEW ARTICLE

Chief Minister's Comprehensive Health Insurance Scheme Tamil Nadu (CMCHISTN)Tool Towards Universal Health Coverage (UHC)in Tamil Nadu, India

T S Selvavinayagam

Director, Institute of Community Medicine, Madras Medical College, Chennai

Abstract

Background: The state of Tamil Nadu in India is one of the states with better health indicators in the country. With an ambition to provide still better health care to the residents of the state, the possibilities of the journey towards UHC are analyzed.
Objectives: To explore the possibilities of using the existing Chief Minister's Comprehensive Health Insurance Scheme (CMCHISTN) as base to reach Universal Health Coverage (UHC) in Tamil Nadu.
Methods: The various dimensions of UHC namely people, benefit, and financial protection are analyzed considering the present status in the state particularly the Chief Minister's Comprehensive Health Insurance Scheme and matched with future needs to reach UHC in Tamil Nadu. This provides the vital indications in success towards UHC.
Results and conclusion: The gap between the existing modalities under CMCHSITN and requirements for UHC are within the reachable level. With additional resources and effort, it is possible to reach UHC in Tamil Nadu in the near future. CMCHISTN is one of the best available options for reaching UHC in Tamil Nadu.

Keywords: Universal Health Coverage (UHC), The Chief Minister's Comprehensive Health Insurance Scheme (CMCHISTN), population coverage, enrollment of beneficiaries, essential benefits package, the role of private providers, payments mechanism, and copayment.

Introduction

The state of Tamil Nadu is one of the high performing states in India with the good health profile as indicated in the policy note of Government of Tamil Nadu and listed in Table 1.[1] The Chief Ministers' Comprehensive Health Insurance, by the Government of Tamil Nadu shortly known as CMCHISTN, is in place since 11.01.2012. It was created with the goal of comprehensive health care to residents of the state. The program is being implemented successfully for the past four years. The scheme details are available at "cmchistn.com".[2] And the brief about the scheme is listed in Table 2. This article is assessing whether CMCHSITN can be used as a tool for reaching UHC in Tamil Nadu, India

Universal health care simply UHC correspond roughly to the three dimensions of the "UHC cube" as indicated in the World Health Report 2010 (WHO 2010). i.e., people, benefits, and money. The journey towards these three dimensions of coverage—the population (who is covered?), services (which are covered?), and cost sharing (what proportion of costs are covered?) is a journey towards achieving UHC. Different countries may be at different levels of provision in three dimensions and making progress along each of these dimensions to help "fill" the UHC cube.

Table-1: Health profile of Tamil Nadu in comparison with rest of India

S.No	Indicator	Tamil Nadu	India
1	Population 2011 Census (millions)	72.1	1210.6
2	Decennial Growth Rate (2001-2011) (%)	15.6	17.7
3	Sex Ratio (females per 1000 males) (2011)	996	943
4	Crude Birth Rate (2013)	15.6	21.4
5	Crude Death Rate (2013)	7.3	7.0
6	Infant Mortality Rate (2013)	21	40
7	Maternal Mortality Ratio (2011-13)	68	167
8	Total Fertility Rate (2013)	1.7	2.4
9	Literacy Rate- Male (2011 census)	86.8	80.9
10	Literacy Rate- Female (2011 census)	73.4	64.6

Address for correspondence- *Dr T S Selvavinayagam, Institute of Community Medicine, Madras Medical College, Chennai.*
Email: *drsvinayagam@gmail.com*

Received: 17/11/2016, Accepted: 16/04/2017

Table -2: Chief Minister's Comprehensive Health Insurance Scheme Fact Sheet - From 11.01.2012 to 10.1.2017

Eligibility: All families with annual income below Rs.72,000		
Sum assured: Rs.1 lakh per year covering 1016 procedures and Rs.1.5 lakhs per year for 77 specialized procedures		
1	Premium paid per family per year in Rupees	497
2	Procedures covered	1016
3	Specialized procedures costing 1.5 lakhs	77
4	Diagnostic procedures	23
5	Follow-up procedures	113
6	Smart card distributed, i.e. families covered	15.8 million
7	Total percent of population covered under scheme	65%
8	Total No. of Network Hospitals	751
9	Government hospitals	159
10	Private hospitals	592
11	Total number of beneficiaries as on 10.01.2017	1.7 million
12	Total claims paid as on 10.01.2017 in Rs	36,218 million
13	Treated in public hospitals (% to total above)	0.7 million (40%)
14	Claims earned by Government hospitals as on 10.01.2017 in Rs	12,893 million (35%)

Materials and Methods

According to Going Universal: How 24 countries are implementing universal health coverage reforms from the bottom up[5], many countries use the existing programs as a starting point and then expand them in a different direction according to the need. Hence, we have logic in trying to start our travel towards UHC using existing CMCHSINT as a tool. Further, UHC is essentially an aspiration with far off destination and it is right time that we start our journey towards UHC.

We focused on two aspects,

1. First part elaborates the opportunities in TN health system in moving towards UHC.

2. Second part specifically explores present features under CMCHISTN which may be expanded to meet the future requirements towards UHC.

Table-3: Government Medical and Health Facilities in Tamil Nadu

S.No	Description	No.
1	Medical Colleges	20
2	Hospitals attached to the Medical colleges	43
3	Tamil Nadu Government Multi Super Specialty Hospital	1
4	Dental College and Hospital	1
5	District Headquarters Hospitals	31
6	Taluk and NonTaluk Hospitals	239
7	Primary Health Centers (PHCs)	1,750
8	Health Sub Centers (HSCs)	8,706
9	Urban Primary Health Centers (UPHCs)	134
10	ESI Hospitals	8
11	ESI Dispensaries	195
12	Indian System of Medicine Hospitals	4
13	Indian System of Medicine Dispensaries	1,375

Brief detail of existing public health system in Tamil Nadu is shown in Table 3 and the entire details are available at http://www.tnhealth.org/.[6] And in addition, the Government of India supported National Health Mission (NHM)[7] and World Bank supported Tamil Nadu Health System Project (TNHSP)[8] continued to support the public hospitals including primary health care.

Considering our budget provision for health that keeps on increasing year to year, which is presently around Rs 10158 crores (1600 million US $) for the financial year 2017-18, UHC in TN is financially possible.[9]

We are in the process of improving the quality of care through implementing Indian Public Health Standards

Tamil Nadu said to have good public health system but there is scope for improvements as indicated by Pia Malaney and Muralidharan.[3,4] Further UHC offers very high benefit-to-cost ratio for governments. Hence, under this background of strong public health system along with robust state health insurance scheme (CMCHISTN), we are exploring the possibilities in moving towards UHC using CMCHISTN as a base.

(IPHS) and National Accreditation board for hospitals and health care providers (NABH). Around 48 Governments Primary health centers are already certified under ISO10, Government hospitals accredited under NABH long back and some more institutions are on the way for certification.[12]

In terms of utilization we are aware that according to NSSO 71st round report, 65.3% of outpatient care and 65.4% of inpatient care are being provided by the private sector in Tamilnadu. The out-of-pocket expenditure incurred by the public during the utilization of health care is mainly due to drugs and diagnostics. The availability of essential generic drugs / common diagnostic tests across the state on a 24X7 basis is the only way to reduce this expenditure. Through Tamil Nadu Medical Services Corporation (TNMSC) drugs are already provided free of cost in all public hospitals.[11] TNMSC also runs CT and MRI centers in 68 locations to provide radiological services at concessional rates. Further expansion of this along with the availability of generic drugs even for private prescriptions will bring down out of pocket expenditure.

The Government of India supports vaccines through GAVI and performance of TN is appreciated in many forums including the regional SEARO conferences Hence, it may not be an issue in the future.[12, 13]

The emergence of non-communicable diseases like cardiovascular disease, Hypertension, diabetes and mental disorders, etc. needs lifelong management. The Government of Tamil Nadu is already having World Bank supported NCD control program through TNHSP and it is in the process of completely merging with NPCDCS of GOI.[14,15]

According to WHO norms, at least 23 health workers are needed for every 10,000 population (doctors, nurses, and midwives etc.). This translates roughly into 1.6 lakh health workers for TN in the public sector under current utilization pattern. According to latest performance budget 1,21,514 regular health workers including doctors working in the government sector along with estimated 50,000 officials working indirectly through various agencies who provide outsourced services to Government. With an availability of efficient recruiting agencies like Tamil Nadu Public Services Commission and Medical Recruitment Board, this component is easily achievable.[16,17] In addition, the private hospital's network is already equipped to handle the situation including additional load. In fact, private sector contributes the maximum to the medical tourism in Tamil Nadu. The existing road infrastructure, good terrain, and 108 ambulance services ensure that patient reaches the facility in time.[18] Further in addition to allopathic medical services, traditional AYUSH (Ayurveda, Yoga, and Naturopathy, Unani, Siddha, and Homoeopathy,) services are also provided by co-location of services.[19] The prevailing village health nutrition and sanitation committees under NHM will be suitably expanded for effective community participation.

The present facilities available under CMCHISTN through the call center (1800 425 3993) and 104 services may be used to address the grievances of the public and service providers while utilizing/delivering the services.

The current disease control programs like Integrated Disease Surveillance Programme (IDSP) offers scope for monitoring epidemics and outbreaks. The HIMS/MIS20 will be the excellent IT platform may be suitably modified for monitoring the progress towards UHC. From the above facilities available in the state, it is clear that the situation is favorable to implement UHC in Tamil Nadu.

After understanding the existing opportunity in TN, the requirements of UHC under three dimensions similar to UHC cube namely,

1. Dimension of people identification and enrollment,

2. Dimension of Benefit package and Provision of Services,

3. The dimension of Financial protection including payment mechanism is studied particularly with reference to CMCHISTN along with components constituting it.

The first dimension of people identification and enrollment talks about who is the beneficiary, how to identify them, the issue of an identification card, how to expand this to cover other groups, need for enrollment fees, grievances redressal mechanism etc.

The dimension of Benefit package and Provision of Services briefs on Present essential benefits package (EBF), how to expand/rationalize these services, how to bring quality and cost-effectiveness, implementation of standard operating guidelines, the role of private and public providers etc.

Finally, a dimension of Financial protection including payment mechanism takes care of financial model, payment mechanism, copayments, financial sanctions, issues on implementation of cashless service and monitoring, etc.

Results and Discussion

For easy understanding, it is being discussed under basic three dimensions.

Issues related People identification and enrollment

As of now people with annual family income less than Rs 72000 are covered (Roughly 1000 USD). CMCHISTN Scheme is entirely tax financed. Government employees and pensioners from Government are covered under the similar scheme. Central Government Health Scheme (CGHS) and Employees State Insurance (ESI) cover a small group of the population. At present, the scheme covers 65% of the entire state population.

Enrollment and issue of identification card establish a formal contract between the program and the enrollee, and it empowers users to demand their right to health care and actively participate in the scheme. As of now beneficiaries on enrollment issued 56 KB family smart card, which they are using it at the hospitals for getting treatment. There is need to issue an individual card with unique identification like Aadhar with a link to simple EHR in future.

In future for UHC is not enough to make the poor "eligible" for enrollment. Financial incentives may be used to encourage agencies or jurisdictions to enroll priority populations. Monitoring the enrollment in quintiles is the best option available for reaching everyone under UHC. At this stage, there is need to expand the coverage to cover, non-poor informal sector and private formal sector, particularly middle-income families. For economically strong groups, the option of joining the scheme by paying towards premium either totally or subsidized rates are to be considered. Exclusion of Income Tax assesses from Government subsidy beyond a certain level to be implemented to make the CMCHISTN scheme financially sustainable.

Now public grievances redressal mechanism is done using our call centers at 1800 425 3993 and there is need to strengthen awareness on redressal/ complaint mechanisms, public rights etc. Tracking of grievances redressal to be in the public domain in the years to come.

Issues related to Benefit package and Provision of Services

The CMCHISTN at present focus only on tertiary care packages in empanelled hospitals covering both private and government hospitals. We need to expand this to few essential primary and secondary care procedures too. Expansion of the benefits should be based on epidemiological, demographic, political and economy considerations. Agencies similar to Health Intervention and Technology Assessment Program (HITAP) or National Institute for Clinical Excellence (NICE), may be organized to support the entire state in identifying, prioritizing, expanding and rationalizing the benefits package, "positive benefits list," is better than negative list. Explicit packages, even if it politically not correct, can help in identifying the resources to deliver the services. Clearly defining a benefits package can improve accountability and transparency and also empower pressure groups that want the package expanded/improved etc. The Package of services for UHC should include the entire spectrum of requirements for drugs, diagnostics, and treatment etc. that will bring down out of pocket expenses for health care. For UHC alignment of the benefit packages towards GBD and SDGs is essential. An important task in UHC is to monitor and reduce the gap between the package promised and actually available.

Though Annual Wellness check up program is in place in public hospitals for selected 25 parameters, there is a need to mandate to every family (at least 2 adults) through a public system with separate payment/incentive mechanism. Similar protocols to be enforced in the private sector and it should be part of the contractor license or empanelment.

In Tamil Nadu, TNMSC with robust, cost effective purchase mechanism provides required generic drugs and equipment for all public institutions across the state and this may be shared/sold to willing private sector through TNMSC, to bring down the overall health cost

Package rates for various tertiary care procedures available across various grades of hospitals without component wise costing. Creating a range of price package component wise and making it as the benchmark and enforcing it transparently with provider active participation will bring down cost.

Standard operating protocols are in place for most of the 1016 procedures under CMCHSITN and linking the protocols to payment will ensure enforceability. Enforcement of Clinical Establishment Act to regulate the provider including implementation of STGs is the need of the hour. For UHC there is need to create SOP for all benefit packages using technical experts in the similar lines.

Although referral mechanisms are in place, there is no positive and negative incentive if it is implemented or failed. Hence there is a need under UHC for gatekeeping and referral mechanisms, which are complex and need to strengthen it using co-payments and patient tracking

Accreditation should focus on achieving optimal quality standards, unlike licensing, which focuses on compliance with minimal standards, intended to ensure public safety. Entry-level NABH/GOI quality standards should be introduced as minimum requirements to participate in the UHC. While accreditation is voluntary, the incentive may be included to ensure compliance.

Around 592 Private providers are already being part of the CMCHISTN in the delivery of secondary and territory care services. With that experience now private sector can also be leveraged to augment services in primary, rehabilitative and palliative care etc., according to the need and gap analysis with forward and backward referral.

There is also a need to create an official mechanism to engage and communicate with the private sector. For UHC services provision mapping of providers with services and facilities available should be done for both private and public sector. It should be available in the public domain for planning and public utilization purpose. Choice of public and private providers can also be a tool for improved accountability on both sides.

Now 56 out of 1016 procedures in CMCHISTN is reserved for public hospitals only. In the similar way for UHC, reservation of certain procedures may be considered to minimize the misuse or strengthen the public hospitals. Performance-based incentives (15% of claims) for public facilities are available and local committee is authorized to use the funds. This may be further improved in UHC where Public hospitals' doctors and HWs should be offered non-monetary incentives, such as better working conditions, conferences and training support etc. Autonomy for public provider in utilizing the claims according to the local needs should be expanded further into hiring health workers, and also into managing public clinics and hospitals.

There is a need for separation between provision and accreditation/regulation of care similar to National Health Security Office (NHSO) of Thailand

Issues related to Financing and payment

Existing financing option in the health department is predominantly on supply-side except for CMCHISTN. There is a need to have a mixture of services, which are complementing each other instead of competing with each other. The present system has both advantages and disadvantages. Presently supply side financing may not motivate the provider for better services. The other closed-ended payment systems, such as capitation and case-based payments create incentives for efficiency and reduce inputs. But they may also result in shifting of patients to other levels of care, under the spectrum of provision of services, delay, denial of services and substitute with less effective methods. On the other hand open-ended fee-for-service (FFS) increases the number of services provided, including unnecessary hospitalization; reduced inputs per case; the incentive to improve the efficiency of the input mix; reduce the length of stay; and shift rehabilitation care to the outpatient setting. Another type of payment based on Per Diem increase number of days (admission and length of stay); reduce inputs per hospital days; increase bed capacity. Which one is better is a true dilemma?

In addition to the financing mechanism, we need to create suitable payment methods, which are increasingly blended according to the need. In fact, the coexistence of supply-side historical budgets for inputs and demand-side payments linked to outputs are ideal for the country in the long run. How well it is being combined at local and facility level is an area of concern/future research.

Output-based payment mechanisms often proposed to improve accountability, signals that patients are their core responsibility and they are paid based on the services provided to them. Rather, it is better to call insurance based payments as output-based payments.

The median annual UHC program expenditure per beneficiary in 2011 across the 26 UNICO programs was US$39. If the expenditure from private/individuals is regulated/pooled it is within the financial capacity to reach UHC in TN, where Government is already spending around Rs 10,000 crores (1600 million USD) per annum on health. Further health financing, is not just about resource adequacy, it is also about the efficiency, equity, and effectiveness of the ways in which resources are raised, pooled, allocated, and used to achieve desired health system outcomes, such as those for UHC. Finally, there is a need to align the payments in such a way that it is cost effective and quality oriented and focus/priority should be on the requirements as per GBD.

As of now, there is no co-payment in the scheme but about half the UHC programs across the globe have reported requirement of some cost sharing by beneficiaries at the point of service. This may be tried in TN and started with high-end surgeries or outpatient care for high-income groups. Copayments may be retained by facilities for local needs. Direct payments at the point of service are justified from a moral hazard perspective and to limit unnecessary use of high-end services. Still, any negative impact on equity of access to health care needs to be monitored.

Financial sanctions for bypassing the lower facilities is not existing at present. System of PHC/ District hospitals act as the gatekeepers, and should be implemented that patients cannot go directly to higher centers without a referral, except in emergencies. We may impose financial sanctions for bypassing the lower facilities. Beneficiaries in Vietnam were penalized by higher co-payments for bypassing lower facilities without a referral: 70 percent at central, 50 percent at provincial, and 30 percent at district health facilities. Another issue that needs attention is the need to monitor the informal payments across UHC programs and penalize the violators.

At present only program and performance-based monitoring are done including financial utilization under CMCHISTN and there is need to implement UHC monitoring framework that includes an overarching goal, targets, and indicators for service coverage and financial protection, and allocate our resources according to the need and availability. When the OOPE share of total health expenditures is 20 percent or less, the incidence of catastrophic health expenditures and health spending- related impoverishment usually becomes negligible and this should be the goal. The richest segment of the population is usually much closer to having full coverage than the poor, the task is to narrow the current inequalities in health systems.

Conclusion

To conclude, implementation of UHC is technically feasible and possible in Tamil Nadu using CMCHISTN as a tool along with existing public health system with strong leadership, political commitment, and adequate resources. Hence instead of waiting for the right situation to happen, it is advisable to start taking steps towards reaching the goal of UHC in Tamil Nadu immediately.

Acknowledgement

I acknowledge my sincere thanks to our Principal Secretary, H&FW Department, Project Director, TNHSP and Director of Public health for giving me permission and encouragement to do this analysis.

References

1. The government of Tamil Nadu. Policy note of Government of Tamil Nadu [Internet]. Available from: http://www.tn.gov.in/documents/Department /11. last accessed on 01st May 2017.
2. The Chief Minister's Comprehensive Health Insurance Scheme. CMCHISTN. The government of Tamil Nadu, available from http://www.cmchistn.com. last accessed on 01st May 2017.
3. Pia Malaney. Health Sector Reform in Tamil Nadu: Understanding the Role of the Public Sector, Center fro International Development, Harvard University, January 2000. Available from: http://www.cid.harvard.edu/archive/india/pdfs/healthsector_malaney0100.pdf, last accessed on 01st May 2017.
4. Peter Piot, Prof Muralidharan, and others. Good Health at Low Cost. Tamil Nadu 1989-2005, Success story in India, Chapter 6, London School of Hygiene & Tropical Medicine. Available from: http://ghlc.lshtm.ac.uk/files/2011/10/GHLC-book_Chapter-6.pdf. last accessed on 01st May 2017.
5. Cotlear, Daniel; Nagpal, Somil; Smith, Owen K.; Tandon, Ajay; Cortez, Rafael A.. 2015. Going universal: how 24 developing countries are implementing universal health coverage reforms from the bottom up. Washington, D.C.: World Bank Group. Available at: http://documents.worldbank.org/curated/en/936881467992465464/Going-universal-how-24-developing-countries-are-implementing-universal-health-coverage-reforms-from-the-bottom-up. last accessed on 01st May 2017.
6. The government of Tamil Nadu. Public Health system of Tamilnadu. Available from: http://www.tnhealth.org/, last accessed on 01st May 2017.
7. The government of Tamil Nadu. National health mission. Available from: http://www.nrhmtn.gov.in/. last accessed on 01st May 2017.
8. The government of Tamil Nadu. Tamil Nadu health system project. Available from: http://www.tnhsp.org/. last accessed on 01st May 2017.
9. The government of Tamil Nadu. Budget highlights of 2017-18. Available from http://www.tnbudget.tn.gov.in/tnweb_files/budget%20highlights/2017-18_Budget%20Highlights-English.pdf. last accessed on 01st May 2017.
10. The Hindu. Newspaper. Certification of PHC under Indian Public Health Standards in Tamil Nadu. Available from http://www.thehindu.com/todays-paper/tp-national/tp-tamilnadu/iso-certification-for-48-phcs/article1560336.ece, last accessed on 01st May 2017.
11. The government of Tamil Nadu. Tamil Nadu Medical Services Corporation. Available from http://www.tnmsc.com/tnmsc/new/index.php. last accessed on 01st May 2017.
12. Global Alliance for Vaccine and Immunologicals. India reports. Available from http://www.gavi.org/country/india/, last accessed on 01st May 2017.
13. WHO. Regional Meeting of EPI Programme Managers and Immunization Partners, Hotel Hyatt Regency, Kathmandu, Nepal, 20 - 22 August 2008.Available from http://www.searo.who.int/entity/immunization/documents/regional_epi_managers_meeting_2008.pdf in page 5 and 6, last accessed on 01st May 2017.
14. World Bank.Org Tamil Nadu Health System Project. Non-Communicable Diseases prevention and control program. Available from http://www.worldbank.org/en/news/feature/2014/07/21/tamil-nadu-health-system-project, last accessed on 01st May 2017.
15. The government of Tamil Nadu. National Health Mission, NPCDCS. Available from: http://www.nrhmtn.gov.in/npcdcs.html, last accessed on 01st May 2017.
16. The government of Tamil Nadu. Tamil Nadu Public Service commission. Available from: http://www.tnpsc.gov.in/, last accessed on 01st May 2017.
17. The government of Tamil Nadu Medical Recruitment Board. Available from: http://www.mrb.tn.gov.in/, last accessed on 01st May 2017.
18. The government of Tamil Nadu.State Ambulance services 108. Available from: http://www.nrhmtn.gov.in/emriperf.html, last accessed on 01st May 2017.
19. The government of Tamil Nadu. AYUSH services. Available from: http://www.nrhmtn.gov.in/newint.html#NewIn_3, last accessed on 01st May 2017.
20. The government of Tamil Nadu [Internet]. 2016 Available from http://www.hmis-mis.tn.gov.in/mis/, last accessed on 01st May 2017.

CME

Iron Deficiency Anemia: An Insight into New Screening Parameters

Gaurav Chhabra[1], Samanyoya Gochhait[2]

[1]Assistant Professor, [2]Senior Resident, Department of Pathology & Laboratory Medicine, All India Institute of Medical Sciences, Bhubaneswar

Abstract:

Iron deficiency anemia is the most prevalent nutritional deficiency disorder in India. Diagnosis of iron deficiency can sometime be quite tricky due to discordant biochemical results obtained in presence of other chronic disorders or due to biological variations. There is certainly a need of newer markers which could help in the early identification of iron deficient states particularly in resource limited set up. Technological advancements have made it possible with the availability of new red cell parameters along with the traditional CBC parameters, which when fully utilized can aid in the screening & diagnosis of iron deficiency anemia.

Key Words: Iron deficiency anemia, Reticulocyte hemoglobin content, % hypochromic cells, new red cell parameters, automated hematology analysers

Globally, approximately two billion people are having anemia and of these nutritional deficiency anemias, particularly iron deficiency anemia is the most prevalent.[1] The prevalence of iron deficiency anemia is more in developing countries of southeast Asia and Africa. In India, iron deficiency anemia is the most common nutritional deficiency disorder, particularly among children, adolescents, and pregnant females.[2,3]

Iron deficiency is a state of low total body iron content. Iron deficiency anemia is usually a consequence of long term negative iron balance, resulting in depletion of total body iron stores. The level of total circulating iron is reduced and there is a reduced amount of iron available for erythropoiesis.

Traditionally iron deficiency anemia has been diagnosed using hematological parameters such as hemoglobin, haematocrit, MCV, MCH and MCHC and a typical microcytic hypochromic picture on peripheral smear examination along with biochemical parameters such as serum ferritin, serum iron and total iron binding capacity, etc. These assays may sometimes provide insufficient information in assessing iron deficiency as they can display discordant results attributable to the presence of other infectious, inflammatory, malignant disorders or sometimes due to biological variations.[4,5] Peripheral smear examination gives important clues to the diagnosis, particularly in clear cut cases of iron deficiency anemias, but it needs the expertise of a pathologist and is also affected by high subjective variations. Many new biochemical parameters such as hepcidin, zinc protoporphyrin etc., have been added to aid in the confirmatory diagnosis of iron deficiency anemia. But their availability is limited owing to lack of standardization and high costs involved.

The assessment of haemogram, now a days, is predominantly being done on automated hematology analyzers, capable of reporting many additional parameters which are currently underutilized by laboratory physicians and clinicians. Some of these new parameters may definitely help in identifying and early screening of patients at risk of developing iron deficiency anemia particularly in a resource limited setup. These new parameters include erythroid cell parameters such as percentage of hypochromic cells (% hypo), percentage of microcytic cells (% micro), red cell hemoglobin equivalent (RBC He), Microcytic anemia factor (MAF), low hemoglobin density (LHD) and reticulocyte parameters such as reticulocyte hemoglobin equivalent (Ret He), reticulocyte hemoglobin content (Cr), immature reticulocyte fraction (IRF) mean reticulocyte volume (MRV) and other factors such as delta hemoglobin and red cell size factor. These various parameters are offered by all the manufacturers

Address for Correspondence: *Dr Gaurav Chhabra, Department of Pathology & Laboratory Medicine, All India Institute of Medical Sciences, Bhubaneswar,* **E-mail:** *gauravchhabra2001@gmail.com*

Received: 23/04/2017, Accepted: 19/05/2017

on different platforms of automated hematology analyzers using different technology but almost majority of these analyzers provide equivalent information with a different parameter name. These parameters, however are not fully utilized for their role in aiding the identification of anemia particularly in iron deficiency anemia. This article will review two of these newer parameters available on various platforms of automated hematology analyzers.

Reticulocyte hemoglobin content (CHr/MCHr/RHCc) or Reticulocyte hemoglobin equivalent (Ret He/RHE): Reticulocytes are young red cells that contain RNA remnants and release from the bone marrow into the peripheral blood. They circulate for 1-2 days in the peripheral blood before maturing into mature red cells. Reticulocyte count has been traditionally used as a marker of erythropoiesis. The reticulocyte count can be done both manually or using automated hematology analyzers. The modern day automated hematology analyzers not only provides automated reticulocyte count, which is both precise and accurate, but also provides a variety of other reticulocyte parameters such as reticulocyte hemoglobin content, absolute reticulocyte count, mean reticulocyte volume and immature reticulocyte fraction.[6] Of these parameters, reticulocyte hemoglobin content or reticulocyte hemoglobin equivalent (CHr or Ret He/RHE) appears to be quite promising. Reticulocyte hemoglobin content is a measure of total hemoglobin content in a reticulocyte which is expressed in pg and reflects the amount of haemoglobinization in the maturing erythroid precursors.

The CHr or Ret He provides a measure of functional iron available for erythropoiesis over the previous 3–4 days and is a direct measure of haemoglobinization of the developing reticulocyte in contrast to other available tests which provides an indirect assessment using biochemical assays.[7] Several studies are now available which have assessed the utility of CHr in the diagnosis of iron deficient erythropoiesis. Measurement of CHr, obtained on automated hematology analyzers has proven to be a sensitive indicator of early iron deficient erythropoiesis because of the 4-day life span of a reticulocyte.[7,8] The measurement values less than 27 pg are highly suggestive of iron deficiency. The other advantage of CHr/RetHe, is that, it is not an acute phase reactant and is not at all affected by the inflammatory responses.

The diagnostic utility of CHr/Ret He, however is compromised in the presence of alpha and beta thalassemias and megaloblastic anemias,[6] therefore, the results must be carefully interpreted in the presence of the above mentioned conditions. Reticulocyte hemoglobin content is also proven to be helpful in monitoring of response to the iron therapy. Reticulocyte hemoglobin content is an early marker of the efficacy of intravenous iron administration. The response can be demonstrated as early as on the second day of treatment because of the increase of CHr and reticulocyte volume, which precede changes in the reticulocyte number.[6]

Hypochromic red cells (%hypo or %HPO or Hypo He or LHD): Iron deficiency in the body is characterized by reduced stores, resulting in iron deficient erythropoiesis with production of red cells with reduced hemoglobin concentration, identified by reduced mean corpuscular hemoglobin concentration (MCHC) on a haemogram analysis. Since the average life span of RBC ranges from 100-120 days, the peripheral blood contains both the normochromic and increasingly hypochromic red cells. MCH is calculated from red blood cell count and Hb and represents the average. The percentage of varying hypochromic and normochromic RBC subsets can provide additional information. In iron deficient states, the majority of the red cells in the peripheral blood will have reduced hemoglobin concentration. The measurement of %Hypo (defined as the percentage of red blood cells with Hb concentration less than 28 g/dl (Siemens & Advia series analyzers) and Hb concentration less than 17pg (Sysmex analysers) is a sensitive method for quantifying the hemoglobinization of mature red cells[9].Since the life span of the circulating red cells is quite long, the % hypo parameter can be related to the iron status over last 2-3 months. The reference range of % hypochromic cell is considered normal and the % hypo of > 10% is suggestive of iron deficiency.[9,10]

Conclusion

The complete haemogram is one of the most frequently ordered tests by the physician. With the advent of the newer automated systems in hematology over the last two decades a variety of newer parameters other than the traditional CBC parameters have come up. There is a need of propagation of useful information derived from these parameters both to the clinician and laboratory physicians, which may ultimately help in the screening of anemia, particularly in a resource limited settings

Two such parameters Reticulocyte hemoglobin content (CHr) and % of hypochromic cells (% hypo) appears to be more sensitive than the biochemical parameters such as ferritin & iron levels and are able to differentiate true state of iron deficiency anemia with other types of anemia and also provide real time information about the functional state of bone marrow.

References

1. Benoist B de, McLean E, Egll I, Cogswell M, . Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia.. http://apps.who.int/iris/bitstream/10665/43894/1/9789241596657_eng.pdf (accessed 20March 2017)
2. Chellan R, Paul L. Prevalence of Iron-Deficiency Anemia in India: Results from a large nationwide survey. Journal of Population and Social studies 2010;19(1):59-80.
3. Anand T, Rahi M, Sharma P, Ingle GK. Issues in prevention of iron deficiency anemia in India. Nutrition 2014 ; 30(7-8)
4. Karagülle M, Gündüz E, Mutlu FS, Akay MO Clinical Significance of Reticulocyte Hemoglobin Content in the Diagnosis of Iron Deficiency Anemia. Turk J Haematol 2013 June; 30(2):153-56
5. Fishbane S, Galgano C, Langley RC Jr, Canfield W, Maesaka JK. Reticulocyte hemoglobin content in the evaluation of iron status of hemodialysis patients. kidney international 1997; 52(1):217-22
6. Elisa Piva, Carlo Brugnara, Federica Spolaore,Mario Plebani. Clinical Utility of Reticulocyte Parameters. Clinics in laboratory medicine March 2015; 35(1)
7. Mast AE,Blinder MA, Dietzen DJ. . Reticulocyte hemoglobin content. American Journal of Hematology 2008; 83(4):307-10
8. Brugnara C, Zurakowski D, DiCanzio J, Boyd T, Platt O. Reticulocyte hemoglobin content to diagnose iron deficiency in children. JAMA 1999; 281(23):2225-30
9. Urrechaga E, Borque L, Escanero JF. Biomarkers of Hypochromia: The Contemporary Assessment of Iron Status and Erythropoiesis. BioMed Research International 2013; 2013():
10. Locatelli, F., Aljama, P., Barany, P. et al, Revised European best practice guidelines for the management of anaemia in patients with chronic renal failure. Nephrol Dial Transplant. 2004;19:ii1–i47

MEDICAL EDUCATION

Community Based Medical Education (CBME): A Collateral Benefit to The Society!

Gunjan Kumar[1], Mahalakshmy T[2], Sitanshu Sekhar Kar[3]

[1]Senior Resident, [2]Assistant Professor, [3]Additional Professor, Department of Preventive & Social Medicine, JIPMER, Puducherry

Abstract

Community based medical education (CBME) is described as education that focuses on both population groups and individual persons and take into account the health needs of the community concerned. Now a days health professionals need to be more responsive to needs of the populations they serve, rather than the hospitals they serve, which requires medical students and doctors to imbibe abilities and perspectives consistent with the updated medical knowledge and capacity to promote health.

In Community Based Medical Education, the majority of the clinical training of the students happens in the community setting in contrast to campus based teaching hospital in traditional teaching. CBME is a broad concept, providing students with opportunities to interact with people from a wide range of social, cultural, economic and ethnic backgrounds. It is often directed towards priority health needs of specific populations, and requires an amalgamation of clinical skills, command on subject, capabilities and inclination towards the community.

Health is highly influenced by social and cultural factors such as socioeconomic status, race, gender roles, migration, poverty, social support, and environment. Community based education will make the graduates familiar how these factors influence health and give them the ability to act appropriately.

CBME will go a long way to address the increasing demand on health care, as well as making the medical graduates more empathic, flexible and passionate for providing health to all.

Key words: Community Based Medical Education, Society

Introduction

The modern "Medical School" today is seen as a place for producing a doctor who is capable of facing all kinds of today's insurmountable problems. Today's society needs to embrace the ideal of attaining and maintaining community-based relationships. Simple ideas like caring about the quality of health and striving for the betterment of the health system must be manifested.

As per World Health Organization 1979, a MBBS graduate should learn in an environment closely resembling that in which they should work after graduation. They should be more than passive receivers of information provided by teachers in lecture halls, as their future work will not be limited to the knowledge gained in the lecture halls or tertiary medical centres. Regrettably, the current curricula requires most students in health and health related fields to spend most of the time in such settings.[1]

Definition

There is no standard definition of the concept called "community-based education". At the first meeting of the Network of Community –oriented Educational Institutions for Health Sciences, held in 1979, community oriented education was described as education that focuses on both population groups and individual persons taking into account the health needs of the community concerned.[2] In Community Based Medical Education (CBME), the majority of the clinical training of the students happens in the community in contrast to campus based teaching hospital in traditional teaching.[6] Thereby providing the student with opportunities to interact with people from a wide range of social, cultural, economic and ethnic backgrounds. Hence, CBME goes beyond cognitive capacities and encompasses the social and emotional aspects of learning.[3]

An educational programme can be called community based

Address for correspondence- *Dr Sitanshu Sekhar Kar, Department of Preventive & Social Medicine, JIPMER, Puducherry, 605006*
Email: *drsitanshukar@gmail.com*

Received: 24/04/2017, Accepted: 19/05/2017

if, for its entire duration, consists of an appropriate number of learning activities in a balanced variety of educational settings. This includes community setting and a diversity of health care setting at all levels, including tertiary care hospital.

CBE activity includes,

a. following a family for period of time to note the changes in health

b. participating in a community diagnosis along with action plan including health education of public and special groups to bring about positive health behaviour

c. working in an urban, suburban, or rural community which facilitates understanding the relationship of health sector to other sectors engaged in community development

d. supervised work at primary health care facility, such as sub-centre, primary health centres, community health centres, sub-district hospitals as well as tertiary hospitals

The common misconception about CBME is providing health care or medicine for poor underserved communities. It should be clearly understood that CBME is not about saving money or serving the poor and uneducated, it is about engaging the stakeholders of health in such a way so as to discern the real health needs, while at the same time learning essential skills that can be applied to both hospital as well as community settings.

Benefits of Community Based Medical Education

1. **Holistic understanding of determinants of health**

Health and disease is not only influenced by rules in biology but also greatly influenced by the social, political, economic and psychological factors. These determinants of health can be best understood in community based education approach. In hospitals, there is a tendency to fragment health care and thereby medicine loses the sight of patient as a human being. By reducing health to mechanical functioning, it is no longer able to deal with the phenomenon of healing.[4] CBME also helps deepen understanding of the whole spectrum of health and illness together with the provision of health and social services. In addition, it may help to know the contribution of social and environmental factors to the causation and prevention of illness.

Peer review of community based medical education program at University of Zimbabwe College of health sciences has come out with various experiences from the students and recommendations from the faculty. The students who have got community based medical education were better able to understand the factors that have a bounding health, and were more passionate about providing health to underserved and needy population. Students also reported that they enjoyed the learning experiences and felt that everybody has a right to health regardless of the location they live in.[5]

2. **Better understanding of the needs of people**

In CBME, learning happens through active participation of student/ learner, teachers, paramedical staff, members of the community and officials from other sectors. Learners receive training in the community especially in the areas where workforce is needed such as rural area and urban slum. It requires physicians to be fully proficient in the treatment of the complexities of chronic disease, older patients and the continuously evolving knowledge and technology of modern medicine. This will direct the students learning towards priority health needs of specific populations. It also facilitates amalgamation of clinical skills, command on subject, and develops positive attitude towards the community. This will result in an Indian medical graduate (IMG) who is responsive to needs of the populations they serve. Community based medical education can act as a stepping stone towards this.

3. **Service to the underserved**

In traditional teaching, mostly clinical competence happens from eliciting history, examining, diagnosing and managing patients admitted in the ward. Only a tip of the iceberg seeks care from the hospital and only a lesser percentage is admitted in wards. Hence, it limits the learning of undergraduate student to mostly inpatients and to lesser extent outpatients and emergencies. This will not provide training of a holistic doctor. Medical graduate should have balanced training at primary, secondary and tertiary health care facilities.[6]

4. **Better learning**

Kolb defines 'learning as the process whereby knowledge is created through the transformation of experience.' Students are exposed to continuum of care starting from presentation, investigation, treatment, convalescence and prevention for other family/community members. It enables the students to relate theoretical knowledge to practical training and make them better prepared for life and their future integration into the working environment. Therefore makes the learning relevant.[6] Being adult learners undergraduate learn better when they relate their learning to immediate real life problems identified during the community interaction.[7] This also inculcates a sense of social responsibility by understanding the community better. Additionally, CBME helps to keep educational process up-to-date by continuously confronting the students with reality and promote the concept of lifelong learning. This also facilitates students to acquire competency in relevant areas and ultimately influencing the quality of care offered to the community.[8]

5. **Development of multiple skills**

Today's "Five star doctor" is proposed to meet the health care requirements at Primary, Secondary and Tertiary health care setting with relevance, quality, cost-effectiveness and equity. The five attributes of a five star doctor are care provider, decision maker, communicator, community leader, manager. The attribute of community leader focuses on appreciating health need of the bigger community, understanding the influence of social/physical environment on health and participating in community health activities.[9] This attribute can be best developed with thorough community based teaching.

Canada's newest medical school, the Northern Ontario School of Medicine, places students in rural communities for their third year of 'clinical clerkship'. To date, their outcomes have been positive. Students gain strong communication skills and excellent clinical reasoning and management skills. Hence, they are more likely to subsequently apply the skills to primary care and rural training programs.[10]

6. **Breaking the barriers**

Community based education helps to break down barriers between trained sophisticated professionals and so called ignorant, lay public. Students feedback on comparison between community based training and other clerkships revealed that community based training contributed most in acquisition of communication skills, awareness on cost effective treatment options and psychosocial problems.[7]

Community based medical education is, therefore, not an end in itself but a means of ensuring that health professionals are responsive to the health needs of people and improving health care systems through education. It is a comprehensive approach for ensuring that health professional can competently perform the tasks relevant to the health needs of population.

Challenges

Designing a community based education programme requires change at multiple levels such as medical facilitators, administrators, students and community. Planning is key to success of the programme.

1. Faculty of various departments often may not be willing to give up part of curriculum time devoted to their discipline. The CBME is faculty intensive and strains faculty resources which is the major challenge in reorienting the educational program.

2. A lot of collaborative activity should be carried out between educational institutions and community members. Careful planning of each and every activity in community should be done to achieve the desired objective.

3. In CBME, horizontal and vertical system of integration, breaking the boundary of the traditional discipline based curriculum is needed. Funding and logistic constraints should be addressed with an open mind.

4. Addressing issues pertaining to assessment is yet another challenge. Currently, the major thrust regarding assessment is laid on clinical case taking, presenting the history, diagnosis and case management. Understanding the determinants of health at community level has not been given the much needed importance.

5. Another challenge is to address the issue of engaging the students trained in the CBME and traditional education system at the postgraduate level.

6. In the prevailing scenario, the community health care workers or the doctors working in the community see the students coming in field just as a temporary additional responsibility, or even as intruders in their workplace. This in turn limits the learning interest of the students and changes there focus towards the regular clinic based teaching.

The CBME would be effective with the above mentioned benefits and challenges by following the below guiding principles;

a. students activities should relate to the overall educational goals and objectives

b. students should be well communicated about the value of the programme

c. the activities mentioned above should be introduced early in the curriculum

d. these activities should also continue throughout the educational programme

e. they mustn't be viewed as peripheral experience or posting

f. the programme should be designed in such a way that both the community and students will be benefited

g. all stakeholders of health, including medical (different clinical specialties), paramedical, health workers, community should be involved so that each can gain maximum benefit

Future

CBME will help to grow the physician workforce in ways that are cost-effective and sustainable, provide clinical training more appropriate to common community needs, and balance the distribution of newly trained physicians toward areas both clinically and geographically underserved.

Conclusion

Health is highly influenced by social and cultural factors such as socioeconomic status, race, gender roles, migration, poverty, social support, and environment. Community based medical education will make the graduate familiar about factors influencing health and give them the ability to act appropriately. CBME will go a long way to address the increasing demand on health care, as well as making the medical graduates more empathic, flexible and passionate for providing health to all.

References

1. WHO TRS 1979 Community based education - Google Search [Internet]. [cited 2016 Apr 11]. Available from: https://www.google.co.in/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=WHO+TRS+1979+Community+based+education
2. World Health Organization. A network of community oriented educational institutions for health sciences, Report of the Inaugural meeting. WHO, Geneva; 1979.
3. Kaye DK, Muhwezi WW, Kasozi AN, Kijjambu S, Mbalinda SN, Okullo I, Nabirye RC, Oria H, Atuyambe L, Groves S, Burnham G, Mwanika A. Lessons learnt from comprehensive evaluation of community-based education in Uganda: a proposal for an ideal model community-based education for health professional training institutions.BMC Med Educ. 2011; 11: 7
4. Mennin S, Petroni-Mennin R. Community based medical education. The clinical teacher. 2006;3:90-6.
5. 5. Michaels D, Couper I. Peer Review of the Community-Based Medical Education Program at the University of Zimbabwe College of Health Sciences. USAID. August 2015.
6. Hunt JB, Bonham C, Jones L. Understanding the Goals of Service Learning and Community-Based Medical Education: A Systematic Review: Acad Med. 2011 Feb;86(2):246–51.
7. Kaufman DM. Applying educational theory in practice. BMJ. 2003 Jan 25;326(7382):213–6.
8. Ferenchick GS, Chamberlain J, Alguire P. Community-based teaching: defining the added value for student and preceptors [Internet]. [cited 2016 Mar 14]. Available from: http://www2.paeaonline.org/index.php?ht=a/GetDocumentAction/id/110000
9. Medical Council of India, Vision 2015 - Google Search [Internet]. 2011 [cited 2016 Apr 11]. Available from: https://www.google.co.in/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=MCI+vision+2015
10. Boelen C. The five-star doctor: an asset to health care reform? [Internet]. [cited 2016 Mar 14]. Available from: http://www.who.int/hrh/en/HRDJ_1_1_02.pdf.
11. Walters L, Greenhill J, Richards J, Ward H, Campbell N, Ash J, et al. Outcomes of longitudinal integrated clinical placments for students, clinicians and society. Med Educ2012;46:1028-41.

ORIGINAL ARTICLE

Availability and Usage of Latrine in Selected Coastal Villages of South India: A Community Based Cross Sectional Study

Karthik Balajee Laksham[1], Palanivel Chinnakali[2], Sitanshu S Kar[2], Gautam Roy[3], MPH study group

[1]Assistant Professor, [2]Associate Professor, [3]Additional Professor, [4]Professor, Department of Preventive and Social Medicine, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, India

Abstract

Background: Open field defecation is a major public health problem. In India, majority of rural population defecate in the open due to absence of proper sanitation facilities. Studies on latrine coverage and its usage in coastal regions of India is limited.
Objectives: To estimate the proportion of households with latrine, proportion of people using latrine and to identify the factors related to non-usage of latrine
Methods: A community based cross sectional study by house-to-house survey was conducted in the three coastal villages of Tamil Nadu. Data on availability and usage of latrine was collected. Proportion of hosueholds having and using latrine were calculated. We also calculated prevalence ratios to identify socio-demographic characteristics associated with usage of latrine.
Results: Of 593 houses surveyed, 444 houses (75%) had latrine. The most common reason for not having latrine was the lack of money. Of 2480 individuals residing in 593 surveyed houses, 1032 (41.5 %) resorted to open-air defecation at least once in last 12 months. The most common reason was that they are habituated to open field defecation. Among the 1861 people who had latrine in their houses, only 1448 (78 %) were using it.
Conclusions: One-fourth of the households didn't have a latrine facility and only three-fourths of the households having latrines are using it. Efforts in the form of Health education are needed to improve the availability and better usage of latrine facilities.

Key Words: Sanitation, Open field defecation, Tamil Nadu, coastal village

Introduction

Sanitation is a key component of primary prevention for better health. Lack of sanitation is a serious health risk, as open field defecation leads to soil pollution, water pollution, and contamination of foods and propagation of flies. This increases the risk of transmitting diseases like cholera, dysentery, typhoid, hepatitis and worm infestation. The practice of open defecation is one of major causes of the worldwide burden of diarrhoea and enteric parasite infection among under-five children.[1] The Millennium Development Goal 7 (MDG-7) targeted at reducing by half the proportion of people without access to basic sanitation between 1990 and 2015.[2] Nearly 2 billion additional people gained access to an improved sanitation facility between 1990 and 2012. Despite the large increase in sanitation coverage, from 49 per cent in 1990 to 64 per cent in 2012, it seems unlikely that the MDG target of 75 per cent coverage will be met by the end of 2015.[3] Globally, one billion people (15% of the world population) still practice open defecation. Majority (82 %) of people practicing open defecation live in middle-income countries, like India and Nigeria and majority (71%) of them live in rural areas.[3,4]

In India, various programs were launched to improve the sanitation especially in rural areas. The National Water Supply and Sanitation program was initiated in 1954 with the objective of providing safe water supply and adequate drainage facilities to the entire country. [5] The Central Rural Sanitation Programme (CRSP) launched in 1986 was later restructured as Total Sanitation Campaign (TSC) in 1999 with the aim of achieving 100 percent sanitation coverage

Address for correspondence: *Dr Karthik Balajee Laksham, Department of Preventive and Social Medicine, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, India*
Email: dr.balajeelaksham@gmail.com
Received: 26/12/2016, Accepted : 12/04/2017

through Information, Education and Communication (IEC) and social marketing.[6] But only two of the 509 districts in India showed increased latrine coverage by more than 50% from the year 2001 to 2011.[7] In rural Karnataka the coverage is 30 % and in rural Andhra Pradesh it is 56 %.[8,9] According to Census 2011, the latrine coverage in India is only 46.9% and in Tamil Nadu it is 48.3 %.[10] These figures show that the various programs on sanitation were not successful in improving the latrine coverage in the country.

In rural Orissa, although the mean latrine coverage increased three years following the implementation of Total Sanitation Campaign, more than one third of members of households with latrines practiced open field defecation.[11] Similarly, in rural Madhya Pradesh increased latrine coverage did not improve child health in terms of diarrhea and helminthic infections.[12] In Urban slums of Gujarat 44 % households practiced open field defecation.[13] These figures show that the mere increase in latrine coverage does not decrease the practice of open field defecation.

In Tamil Nadu over 73% of rural population defecate in the open.[10] The reasons for the practice of open field defecation is not studied adequately. Moreover, in the coastal villages of India studies on the coverage of latrine and its usage are not available. Therefore we aimed to assess the availability and usage of latrine in selected coastal villages of Tamil Nadu. Specific objectives were i) to estimate the proportion of households with latrine, ii) to estimate the proportion of people using latrine and iii) to identify the factors associated with usage of latrine.

Methods

A community based cross sectional study was conducted among three villages under Kottakupppam Panchayat of Villupuram district in the coastal Tamil Nadu, India. The literacy rate in this study area is 71 % as per Census 2011.[14] Fishing is the main occupation. There is no community latrine facility in these three villages. The study was conducted in the month of April, 2014 . All adult members in the houses (age more than 18 years) were included in the study. Children less than 18 year and bedridden people were excluded. Participants were interviewed after obtaining informed verbal consent. If more than one adult member was present, one willing person was interviewed. Information on presence of latrine in the house, usage of latrine and the reasons for not having latrine and non usage were obtained through a structured questionnaire. Based on latrine usage of 47% from previous studies and assuming 5% absolute precision, the estimated sample size was 399.[11] Assuming a non-response rate of 10%, the final sample size was estimated at 440 households. However all the households from these three villages were covered.

Functional latrine was defined as a latrine with septic tank and adequate privacy. Non-functional latrine was a latrine without superstructure (septic tank) and lack of privacy during defecation. Open field defecation refers to people defecating in fields, forests, bushes, and open bodies of water, beaches, and other open spaces.[4] If a person had practiced open defecation in the last one-year it was considered as open–air defecation.

The questionnaire was pre-tested among 20 families in the same area and modified accordingly. Data was collected from all houses in the three villages by house-to-house survey.

Table 1: Factors associated with the presence of latrine in selected coastal villages of south India (n= 2480)

Characteristic of Individual	Number	Having latrine in House# N=1861(%)	Not having Latrine in House N=619 (%)	Chi Square test	p value
Age (years)					
1-18	752	568 (75.5)	184 (24.5)		
19-60	1583	1188 (75)	395 (25)	0.63	0.72
>60	145	105 (72.4)	40 (27.6)		
Gender					
Male	1224	919 (75)	305 (24.9)	0.002	0.96
Female	1256	942 (75)	314 (25)		
Education*					
Illiterate	459	289 (63)	170 (37)		
Primary education	281	202 (71.9)	79 (28.1)		
Middle school	452	340 (75.2)	112 (24.8)		
High school	532	412 (77.4)	120 (22.6)	70.48	< 0.001
Higher secondary	223	184 (82.5)	39 (17.5)		
Graduation & PG	268	236 (88)	32 (12)		
Religion					
Hindu	2417	1813 (75)	604 (25)		
Christian	59	44 (74)	15 (25.4)	1.338	0.512
Muslim	4	4 (100)	0 (0)		

1861 out of 2480 (75%) houses have latrines
* The educational status was asked for 2215 individuals who were above 7 years of age

Table 2: Factors associated with usage of latrine among individuals having latrine in their house (n= 1861).

Characteristic of the individuals	Total	Using latrine N=1448 (%)	Not using Latrine N=413 (%)	Chi - Square	p value
Age (Years)					
1-18	568	436 (76.8)	132 (23.2)		
19-60	1188	923 (77.7)	265 (22.3)	3.31	0.19
>60	105	89 (84.8)	16 (15.2)		
Gender					
Male	919	678 (73.8)	241 (26.2)	17.09	< 0.001
Female	942	770 (81.7)	172 (18.3)		
Religion					
Hindu	1813	1422 (78.4)	391 (21.6)		
Christian	44	22 (50.0)	37 (50.0)	21.25	< 0.001
Muslim	4	4 (100.0)	0 (0.0)		
Education*					
Illiterate	289	202 (69.9)	87 (30.1)		
Primary & Middle	542	384 (70.8)	158 (29.2)	58.53	< 0.001
High school and above	832	705 (84.7)	127 (15.3)		

1448 out of 1861 (77%) individuals having latrine in their house are using it
* The educational status was asked for 1663 individuals who were above 7 years of age

We used EpiData software for data entry and analysis (version 3.1 for entry and version 2.2.2.183 for analysis, EpiData Association, Odense, Denmark). Continuous variable like age was summarized as mean and standard deviation (SD). Categorical variables like education, gender, availability of latrine and its usage; reasons for not using latrine were summarized as proportions. We calculated prevalence ratios (PR) with 95% confidence interval to identify socio-demographic characteristics associated with usage of latrine. A p value of less than 0.05 was considered as statistically significant.

Results

A total of 593 houses were included in the study and information on latrine usage was collected on 2480 individuals residing in these houses. The median age of the study population was 29 (IQR: 16-42) years. About 80% of the study population had formal education, of which more than 50 percent had at least high school education. The median family size was 4 (IQR: 3-5). Of 2480 individuals, 2151 (86%) were living in own houses and the rest 13 % lived in rented house.

Of 593 houses, 444 houses (75%) had latrine i.e. among the 2480 individuals, 1861 (75%) had access to latrine (Table 1). Reasons for not having latrine was asked in 149 households and 170 responses were obtained. Financial constraint was the most common reason (61%) reported for not having latrine, followed by lack of space to construct the latrine in the house (22%), staying in a rented house (9%), lack of water supply (2%) and other reasons (6%).

Among the 1861 indviduals, who had latrine in their houses, 1448 (78 %) were using it and the remaining (22%) practiced open field defecation. The reasons for not using latrine was asked from 149 households having latrine and 173 responses were obtained. Habituation to open field defecation was the most common reason (59%) for not using latrine, followed by the difficulty to clean septic tank (11%), religious beliefs (5%), behaviour of friends(5%) and the smell arising from the latrines (4%) and other reasons (16%). Of total 2480 individuals, 1032 individuals (41.5 %) resorted to open-air defecation at least once in last 12 months.

Factors associated with usage of latrine is shown in table-2. Female gender, belonging to Hindu religion and high school education and above were associated with usage of latrine.

Discussion

The study found that 75 percent of the households in these three villages had latrine. The most common reason for not constructing a latrine was lack of money. When there is minimal income, people tend to prioritize other needs in place of sanitation. Space was a constraint in constructing the latrine in one fifth of the households. The latrine coverage in this study is much higher than the Census data (49%) 2011 for rural Tamil Nadu. This may be due to the fact that following Tsunami, as a part of rehabilitation process, the Government of Tamil Nadu had built houses for those who lost their homes and all such newly constructed houses had latrines. But the mere presence of a latrine in the house did not indicate that all the family members were using it. Among those with latrine access, only three-fourths were using it. This is much lower than the 80 % usage in rural Karnataka and 97% usage in rural Andhra Pradesh.[9,15] The most common response for not using the household latrine was the habit of the people. This finding is consistent with other studies of India where improved latrine coverage did not end the practice of open field defecation.[16,17] Open field defecation is a traditional practice and there is no stigma

associated as the majority of them practice it.[18] Emptying the septic tank is the second major barrier for latrine use. There is a significant association between gender and latrine usage. Females in greater proportion were using the household latrine compared to males which is similar to the situation in urban slums of New Delhi where greater proportion of females were using community latrines.[19] This may be due to the fact that women seek more privacy and feel secure in using latrine at home.

There is a positive association between education and latrine usage. The usage was higher among those who had high school education and above compared to other groups. But there was no difference in latrine usage between the illiterates and those educated up to middle school. Individuals older than 60 years of age were found to be resorting to open field defecation more than all other age groups.

Strategies to achieve success in sanitation is a complex topic. Although the Total Sanitation Campaign provided incentives to construct latrines, most villages do not qualify for this scheme. Moreover, households above the poverty line do not qualify for subsidies and they must build their own latrines.[20] To overcome this, Nirmal Bharat Abhiyan (NBA) was launched in 2012 under the 12th Five year plan. Incentives for construction of Individual Household Latrines (IHHL) were increased and extended to all Below Poverty Line (BPL) households and to Above Poverty Line households (APL) restricted to Schedule Castes/Schedule Tribes, small and marginal farmers, landless labourers, differently abled and women Headed households.[21]

Another major constraint in rural sanitation is to overcome the resistance of village people and induce them to use sanitary latrine. This involves drastic change in behaviour chnages in them. In Community-Led Total Sanitation (CLTS) programme of Bangladesh, participatory approach was adopted wherein volunteers raised the community awareness about the hazards of open field defecation . This programme succeeded in achieving ''open defecation–free'' status for the whole community rather than helping individual households to acquire toilets.[22] In Zimbabwe, villagers were invited to weekly sessions where one health topic was debated and action plans formulated. These Community Health Clubs changed the sanitation and hygiene attitudes and behaviour of the villagers.[23] CLTS and Community Health Clubs are some of the successful approaches in sanitation which highlights the importance of health education and community participation. To ensure adequate sanitation adoption and its maintenance, community-based promotion alone is insufficient. A ''carrot and stick approach'' where a combination of promotion along with the legislation that every house must have a toilet, may be useful in increasing the sanitation coverage.[24]

Recently, on 2nd October 2014, Prime Minister Narendra Modi launched "Swachh Bharat Abhiyan" (SBA), India's biggest cleanliness drive. SBA has a vision of clean India by 2019 through promotion of cleanliness, hygiene and eliminating open defecation. Communities and Panchayati Raj Institutions will be motivated to adopt sanitation practices and facilities through awareness creation and health education.[25] With this scheme it is hoped that the sanitation situation in this country will improve both in terms of coverage of latrine and its usage.

Our study brings out the various reasons for not having latrine in households and the factors associated with the usage of latrine. But there are few limitations in this study. The information about the latrine usage of the members of the family was collected from a single respondent in that family. The presence of latrine and its functionality was assessed from the verbal response of the participants rather than observation by the interviewer.

Conclusion

One-fourth of the households in the study area didn't have a latrine facility and only three-fourths of the households having latrines were using it. Open field defecation is a common practice in this study setting. Sustained efforts in the form of health education are needed to improve the availability and better usage of latrine facilities.

MPH Study Group: Sreenidhi, Gandhimathi, James, Manoj, Parvathy, Perumal, Rajalatchumi, Rajesh, Reshma, Sandhya, Sumesh were involved in data collection and data entry.

References

1. Mara D, Lane J, Scott B, Trouba D. Sanitation and health. PLoS Med [Internet] 2010;7(11):e1000363. Available from: http://dx.plos.org/10.1371/journal.pmed.1000363
2. United Nations. United Nations.Official list of MDG indicators. Department of Economics and Social Affairs. 2008;(January 2008):1–2. Available from: http://mdgs.un.org/unsd/mdg/Host.aspx?Content=indicators/officiallist.htm
3. United Nations. The Millennium Development Goals Report [Internet]. 2014. Available from: http://www.undp.org/content/dam/undp/library/MDG/english/UNDP_MDGReport_EN_2014Final1.pdf
4. World Health Organisation. Progress on Sanitation and Drinking Water. Fast Facts [Internet]. 2013. Available from: http://www.who.int/water_sanitation_health/publications/2013/jmp_fast_facts.pdf
5. Atkins CH. Development of the National Water Supply and Sanitation Program in India. Am J Public Health Nations Health 1957;47(10):1257–64.
6. Ministry of Rural Development. Frequently Asked Questions (FAQs) [Internet]. Gov. India1999;1–6. Available from: http://rural.nic.in/sites/TSC.asp
7. Ghosh A, Cairncross S. The uneven progress of sanitation in India. J Water, Sanit Hyg Dev [Internet] 2014;4(1):15. Available from: http://www.iwaponline.com/washdev/004/washdev0040015.htm
8. Shakya HB, Christakis NA, Fowler JH. Social network predictors of latrine ownership. Soc. Sci. Med.2014;
9. Banerjee AB, Pasha M a M, Fatima a, Isaac E. A study of open air defecation practice in rural nandivargam village. 2013;
10. Office of the Registrar General. Ministry of Home Affairs. Government of India. Census of India 2011. Availability and Type of Latrine facility 2001-2011. 2011;
11. Barnard S, Routray P, Majorin F, Peletz R, Boisson S, Sinha A, et al. Impact of Indian Total Sanitation Campaign on Latrine Coverage and Use: A Cross-Sectional Study in Orissa Three Years following Programme Implementation. PLoS One 2013;8(8).
12. Patil SR, Arnold BF, Salvatore AL, Briceno B, Ganguly S, Colford JM, et al. The effect of India's total sanitation campaign on defecation behaviors and child health in rural Madhya Pradesh: a cluster randomized controlled trial. PLoS Med [Internet] 2014 [cited 2014 Nov 26];11(8):e1001709. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4144850&tool=pmcentrez&rendertype=abstract
13. Shobha M, Bithika D, Bhavesh S. The prevalence of intestinal parasitic infections in the urban slums of a city in Western India. J Infect Public Health 2013;6(2):142–9.
14. Office of the Registrar General Ministry of Home Affairs Government of India. Census 2011: Provisional Population Totals at a Glance. Tamil Nadu. Census [Internet] 2011;1–63. Available from: http://censusindia.gov.in/2011-prov-results/data_files/tamilnadu/2-FIGURES AT A GLANCE-tn.pdf\nhttp://censusindia.gov.in/2011-prov-results/data_files/tamilnadu/3.Tamil Nadu_PPT_2011-BOOK FINAL.pdf
15. Deepthi R, Sandeep SR, Rajini M, Rajeshwari H, Shetty A. Cholera outbreak in a village in south India - Timely action saved lives. J Infect Public Health 2013;6(1):35–40.
16. Chakma T, Godfrey S, Bhatt J, Rao P V., Meshram P, Singh SB. Cross-sectional health indicator study of open defecation-free villages in Madhya Pradesh, India. Waterlines 2008;27(3):236–47.
17. Biran A, Jenkins MW, Dabrase P, Bhagwat I. Patterns and determinants of communal latrine usage in urban poverty pockets in Bhopal, India. Trop Med Int Health [Internet] 2011 [cited 2015 Jan 5];16(7):854–62. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21414114
18. Banda K, Sarkar R, Gopal S, Govindarajan J, Harijan BB, Jeyakumar MB, et al. Water handling, sanitation and defecation practices in rural southern India: a knowledge, attitudes and practices study. Trans R Soc Trop Med Hyg [Internet] 2007 [cited 2015 Jun 19];101(11):1124–30. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17765275
19. Murthy G V, Goswami A, Narayanan S, Amar S. Effect of educational intervention on defaecation habits in an Indian urban slum. J Trop Med Hyg 1990;93(3):189–93.
20. Clasen T, Boisson S, Routray P, Torondel B, Bell M, Cumming O, et al. Effectiveness of a rural sanitation programme on diarrhoea , soil-transmitted helminth infection , and child malnutrition in Odisha , India : a cluster-randomised trial. Lancet Glob Heal [Internet] 2014;2(11):e645–53. Available from: http://dx.doi.org/10.1016/S2214-109X(14)70307-9
21. Government of India.Nirmal Bharat Abhiyan.Ministry of Drinking Water and Sanitation. [Internet]. 2012. Available from: http://www.dfponline.nic.in/writereaddata/CircularOrder/1084372272.pdf
22. Ahmed R, Yesmin K. Beyond construction: Use by all, A collection of case studies from sanitation and hygiene promotion practitioners in South Asia. [Internet]. 2008. Available from: http://www.protos.be/sites/default/files/library_assets/W_SAN_E41_Beyond_construction.pdf#page=157
23. Waterkeyn J, Cairncross S. Creating demand for sanitation and hygiene through Community Health Clubs: A cost-effective intervention in two districts in Zimbabwe. Soc Sci Med 2005;61(9):1958–70.
24. Rothschild M. Carrot sticks and promises: a conceptual framework for the management of public health and social issue behaviors. J Mark 1999;63(4):24–37.
25. Government of India.Guidelines for Swachh Bharat Mission. Ministry of Drinking Water and Sanitation [Internet]. 2014. Available from: http://tsc.gov.in/TSC/NBA/AboutSBM.aspx?id=NBA

ORIGINAL ARTICLE

Development of a Short Questionnaire to Assess Physical Activity among Adolescents

Kannan Aishwarya[1], Vetri Selvakumar[1], Anushya Selvakumari[1], Gopichandran Vijayaprasad[2]

[1]MBBS Students, [2] Assistant Professor, Department of Community Medicine, ESIC Medical College & PGIMSR, KK Nagar, Chennai

Abstract:

Background: Sedentary life style is a major risk factor for non-communicable diseases. There has been increasing reports of reduced physical activity among adolescents in recent times. There is a need to clinically assess levels of physical activity among adolescents.
Objective: To develop a short three item scale for measuring physical activity among adolescents and check its validity and reliability.
Methods: A cross sectional study was conducted on a sample of 200 students aged 13-16 years, selected from a school in Chennai using a random sampling method stratified by sex and class of study. A short three item questionnaire covering the domains of transportation to school, physically active playing during leisure time and time spent in sleep was developed with a Likert type response format based on frequency of the activity. The short physical activity questionnaire and the General Physical Activity Questionnaire (GPAQ) were administered to the adolescents. The same questionnaires were administered to the adolescents after 2 weeks. Intra class Correlation was assessed to check reliability of the measure and Pearson's Correlation to check for validity of the short physical activity scale compared to GPAQ.
Results: The students had a mean score of 9.57 (SD 2.39) out of a maximum score of 15 in the short physical activity scale. The short physical activity score showed good reliability with intra class correlation of 0.770 (95% CI 0.686 – 0.831). There was a statistically significant correlation between the short physical activity scale score and the METS calculated from the GPAQ with a Pearson's correlation of 0.232 (p = 0.002).
Conclusions: The short physical activity scale has an acceptable validity and good reliability in measuring physical activity level among adolescent students.

Key words: adolescent, physical activity, scale, validity, reliability

Introduction

Sedentary life style and lack of physical activity have been shown to be one of the biggest contributors to non-communicable diseases such as diabetes, hypertension, cardiovascular diseases and stroke.[1] It is also reported that the rates of non-communicable disease risk factors are drastically increasing among school goers and adolescents.[2] The incidence of obesity, metabolic syndrome and other cardiovascular risk factors are increasing among adolescents.[3] Indian studies have also shown that physical activity levels are low and therefore obesity high in children and adolescents.[4-6] In this context it is important to assess and address the problem of physical inactivity among adolescents.

There are several physical activity questionnaires available for use in the research setting. Despite several years of their use, their validity and reliability is questionable. Physical activity has certain important attributes such as intensity, duration, frequency, aerobic or anaerobic and environmental conditions in which the activity is done. All these attributes are important in determining the nature of physical activity. One of the most popularly used questionnaires to assess the level of physical activity is the Global Physical Activity Questionnaire (GPAQ).[7] This questionnaire has 16 items which cover the various dimensions of physical activity at work, during commute between home and work place, physical activity at leisure time. It converts the physical activity measured by the questionnaire into Metabolic Equivalents (METS). There is also the International Physical Activity Questionnaire

Address for correspondence- *Dr Gopichandran Vijayaprasad, Department of Community Medicine, ESIC Medical College & PGIMSR, KK Nagar, Chennai,* **Email:** *vijay.gopichandran@gmail.com*

Received: 15/10/2016, Accepted: 12/04/2017

(IPAQ) which has been validated in 12 different countries.[8] It has comparable validity and reliability. The down side of these scales is that the GPAQ has 16 items and the IPAQ 27 items. They are time consuming and difficult to use. Moreover, the IPAQ is validated for adolescents and young adults whereas the GPAQ is more for adults.

Since these physical activity questionnaires are primarily developed in the western context and do not reflect the cultural and habitual physical activities unique to an Indian context, several indigenous physical activity scales have been developed.[9,10] Though these scales have the advantage of being locally relevant, they are lengthy and cumbersome to use in the clinical setting.

There is a need for short and crisp physical activity questionnaires which can be locally relevant and usable in the clinical setting to assess and appropriately intervene regarding physical activity among adolescents. This study was done to develop and validate a short physical activity questionnaire among adolescents for easy use in the clinical setting.

Methods

A cross sectional design was utilized to develop and validate the short physical activity questionnaire. In order to assess the validity and reliability of the short physical activity scale, the required sample size is based on subject to item ratio. For each item of the scale, a minimum of 10 subjects should be included in the sample.[11] There are a total of 16 items in the GPAQ and 3 items in the short physical activity scale. Thus the required sample size is 190. This was rounded off to 200. All the 200 students were sampled from a school in periurban Chennai. Stratified random sampling method was used for sampling. Stratification was done based on the class in which they studied (9th standard and 11th standard) as well as their sex. The students were identified from the name list and selected to participate in the study. All students were eligible to participate in the study, however those students with physical disabilities could not be included as the questionnaires were not appropriate for their physical activity levels.

A short physical activity scale was developed after brainstorming and discussions. The main habitual physical activities of the adolescents were identified. These were:

- Transportation to school – especially the adolescents who either walked or cycled to school, had significant proportion of physical activity due to transportation.
- Leisure time physical activity – adolescents who spent time playing outdoor games during leisure time had good amount of physical activity.
- Sleep duration – adolescents who slept long hours had lesser time for physical activity. Some went to bed late and got up late because of sedentary behaviours

These items were then converted into statements and the response format was a Likert type response ranging between "Often – Mostly – Sometimes – Rarely – Never".

The General Physical Activity Questionnaire (GPAQ) was used concurrently with the short physical activity scale. The GPAQ contains a total of 16 items. These items capture the levels of vigorous and moderate physical activity during school hours, moderate physical activity during transportation to school, vigorous and moderate physical activity during leisure time and finally sedentary hours. Examples of vigorous physical activity during school hours include involvement in active outdoor sports during physical education class. Moderate physical activity during school hours include climbing stairs to reach classroom, walking briskly to and from classes and canteen etc. Vigorous and moderate physical activity during leisure time included outdoor sports and other physical work after school hours. The time spent for each type of physical activity in minutes is captured per week. For each minute of moderate physical activity 4 metabolic equivalents (METS) are included and for each vigorous physical activity 8 METS are included. The total MET-minutes are calculated for a week. This is an indication of physical activity levels.[7]

The details of the study were explained to the school authorities and permission sought to conduct the study. The study details were explained to the participating adolescents. The informed consent form was distributed to the students and they read, understood the details and signed the consent forms. The school teacher and principal also consented for the study as their guardians. All sampled students were given both the GPAQ as well as the short physical activity scale for self-administration. The completed forms were collected by the researchers. After 2 weeks, the same questionnaires were distributed to the

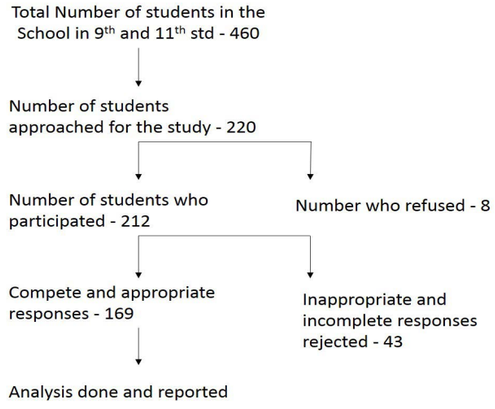


Figure 1: This figure shows the sampling flowchart in this study. Out of a total 460 eligible students in the school, final analysis was done on 169 samples.

students and they were requested to fill the forms again.

The collected data was entered in MS Excel spreadsheet. The data validity was verified as both the researchers entered the data. The data was imported to IBM SPSS Statistical Package version 21 for further analysis. Descriptive statistics was performed to study the characteristics of the study participants. The median and interquartile range of the METS obtained from GPAQ under the various domains were analyzed and reported. Intra Class Correlation (ICC) was assessed for the METS obtained using GPAQ in the first measurement and retest after 2 weeks. Reliability was also tested by ICC for the short physical activity scale scores. Pearson's Correlation Coefficient was calculated for assessing the agreement between the GPAQ METS and the short physical activity scale score. Multiple linear regression analysis was performed to assess the contribution of each item of the scale to the overall validity. p value of lesser than 0.05 was considered as statistically significant.

The study was reviewed by the Institutional Ethics Committee of Medical College by an expedited review process and approved.

Results

A total of 212 study participants completed the study. Out of them, 43 participants had either answered inaccurately (inappropriate response such as 20 hours of playing games or sleep) or incompletely and so could not be included for analysis. The remaining 169 data were used for analysis. The 43 participants whose data was excluded from analysis were similar in characteristics to those whose data was used. Table 1 shows the characteristics of the study participants. Of these 169 participants, there were almost equal proportion of students below 15 years of age and 15 years and above. There were marginally more girls than boys (52.1% versus 47.3%). About 54.4% were members of some sports team in school. A majority (65.1%) reported that they were physically active. Most students (68.6%) perceived that it is very important to be physically active.

Table 1: Characteristics of the study participants

S.No	Characteristic	Categories	Number (%)
1	Age	12-13 years	47 (27.8%)
		14 years	33 (19.5%)
		15 years	54 (32%)
		16 years	35 (20.7%)
2	Gender	Male	81 (47.9%)
		Female	88 (52.1%)
3	Standard of study	9th standard	80 (47.3%)
		11th standard	89 (52.7%)
4	Whether member of sports team in school?	Yes	92 (54.4%)
5	How physically active do you consider yourself to be?	Not physically active	0
		Mildly	49 (29%)
		Moderately	110 (65.1%)
		Vigorously	10 (5.9%)
6	How important is being physically active?	Not important	1 (0.6%)
		Important	52 (30.8%)
		Very important	116 (68.6%)

Table 2: Metabolic Equivalents for various activities in the week

S. No	Type of Activity	Median METS minutes per week*	Inter Quartile Range
1	School work related vigorous activities	0	0 – 280
2	School work related moderate activities	0	0 – 450
3	Transport to school	720	300 – 1200
4	Recreation related vigorous activities	960	0 – 2880
5	Recreation related moderate activities	720	140 - 1200
6	Total METS for all activities	3400	1800 - 6080

*GPAQ - 8 METS per minute of vigorous activity and 4 METS per minute of moderate activity

Table 3: Responses to the Short Physical Activity Questionnaire

S. No	Statement relating to Physical Activity	Response categories	Score	Numbers (%)
1	I go to school by a motor vehicle	Always	1	62 (36.7%)
		Mostly	2	11 (6.5%)
		Sometimes	3	13 (7.7%)
		Rarely	4	22 (13%)
		Never	5	61 (36.1%)
2	My leisure time activity makes me feel warm, sweaty, fast heart beats, and breathless.	Always	5	36 (21.3%)
		Mostly	4	34 (20.1%)
		Sometimes	3	71 (42%)
		Rarely	2	17 (10.1%)
		Never	1	11 (6.5%)
3	I sleep 8-10 hours at night.	Always	5	32 (18.9%)
		Mostly	4	36 (21.3%)
		Sometimes	3	41 (24.3%)
		Rarely	2	41 (24.3%)
		Never	1	19 (11.2%)

Table 4: Assessment of weightage of individual items of the short physical activity scale

S. No	Dependent Variable - reference for validation	Independent Variable – Items of the Short Physical Activity Scale	Beta Coefficient	95% CI	p value
1	METS obtained from GPAQ Scale	Transport to school	343.596*	79.681 – 607.510	0.011*
2		Leisure time physical activity	483.511*	69.767 – 897.256	0.022*
3		Sleep duration (8-10 hours)	68.799	-293.457 – 431.054	0.708

The levels of physical activity of the study participants as measured by the GPAQ METS is shown in Table 2. It is noticeable that there is almost no, moderate or vigorous activity in school, majority of physical activity being contributed by transportation to school (720 METS) and playing outdoors (vigorous – 960 METS and moderate – 720 METS).

The participants' responses to the short physical activity scale questions are depicted in Table 3. It is observed that almost half of the adolescents commute through walk or cycle, thus increasing the chance of physical activity during transport. Only about 40% of the adolescents had frequent physical activity which increased their heart rate, made them sweat and feel warm. About 40% of the adolescents had good 8-10 hours of sleep, with about 60% having either too much or too little sleep.

Figure 2 shows the distribution of the short physical activity scale scores in the population. It is observed that the score on the short physical activity questionnaire is normally distributed. It is seen that the mean score is 9.57 with a standard deviation of 2.39. The mean score of the adolescents is greater than the mid level of the score. This means that the sample of adolescents who were studied have a physical activity level greater than the average level.

In the Figure 3 the METS of the adolescent students at the first point of collecting data and the METS of the same students collected 2 weeks later are plotted in a scatter plot. It is seen that there is a strong positive correlation between these two. The ICC shows a value of 0.735. This means that the METS measurement is reliable.

In Figure 4, it is seen that the short physical activity scale scores on first administration and re-administration after 2 weeks have a strong positive correlation. The ICC of 0.770 shows that there is strong agreement between the first and repeat measurement of the short physical activity scale. This also indicates good reliability of the scale.

The score obtained by the short physical activity questionnaire was validated against the METS obtained using the GPAQ. The hypothesis was that, as the short physical activity score increases, it should reflect an increase in the METS. This hypothesis was tested using the correlation analysis. In Figure 4, the METS calculated using GPAQ scale and the total score obtained from the short physical activity scale are plotted on a scatter plot. It is seen that there is a statistically significant positive correlation between the two indicating that as the short physical activity scale score increased, the METS also increased. This positive correlation between the short physical activity scale score and the METS indicated validity of the scale.

In order to assess the contribution of the individual items of the short physical activity scale to the overall validity of the scale, a multiple linear regression analysis was conducted.

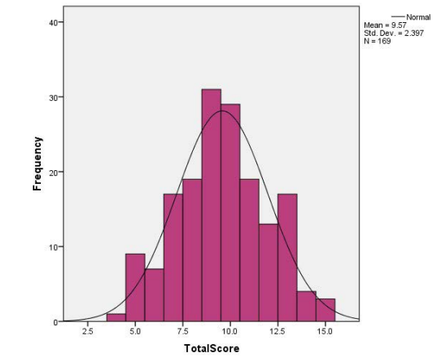


Figure 2: This figure shows the distribution of the short physical activity scores in the sample of adolescents. The scores are normally distributed. The mean score is 9.57 (SD 2.397)

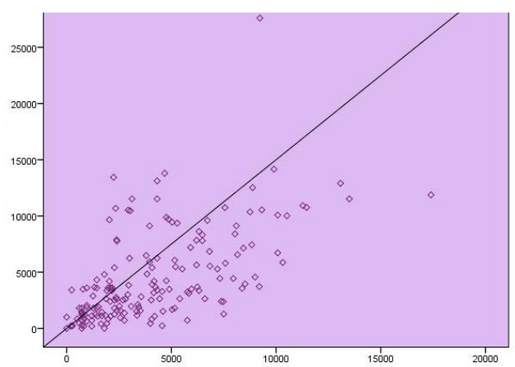


Figure 3: This figure shows the test-retest reliability of the METS obtained by GPAQ scale. The intraclass correlation coefficient is 0.735 (95% CI 0.641 to 0.804); p<0.001

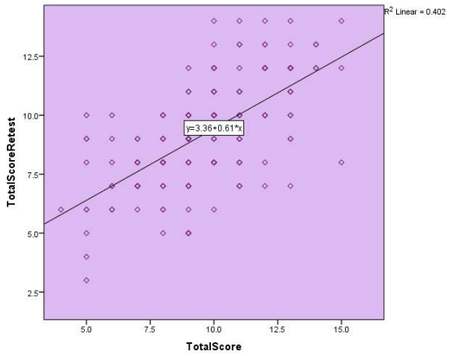


Figure 4: This figure shows the test-retest reliability of the short physical activity scale scores. The intraclass correlation coefficient is 0.770 (95% CI 0.686 to 0.831), p<0.001

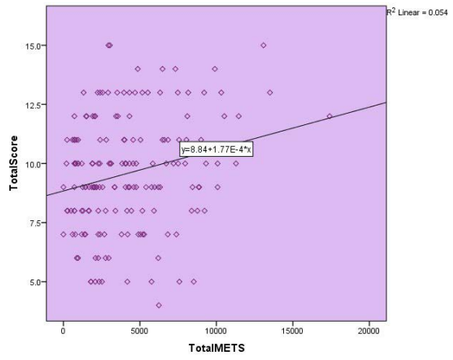


Figure 5: This figure shows the correlation between METS obtained from GPAQ and the short physical activity scale score. The Pearson's correlation coefficient is 0.232, p=0.002

It is seen in Table 4, that the two items on transportation to school and leisure time physical activity in the short physical activity scale contributed significantly (p<0.05) to the overall scale score when validated against the METS obtained by GPAQ scale. However, the sleep item was not contributing significantly.

Discussion

Physical activity measurements have been in existence for several decades now. However most of the measures have their limitations.[12] The popularly used ones like the GPAQ and IPAQ are developed in the western context and do not reflect some important physical activity domains that are unique to the Indian situation. Apart from indicating population level risks for non-communicable diseases, these measures are also clinically relevant. Clinically relevant measures of physical activity should be short, easy to use and relevant to the local context.

A study in the USA showed that single and two item screening tools for measuring moderate and vigorous physical activity had good test-retest reliability as well as validity.[13] It was recommended for clinical use among adolescents. However, this Moderate Vigorous Physical Activity scale (MVPA) was highly contextual for the American adolescent as it required an understanding of physical activity levels.

With increasing reports of prevalence of physical inactivity in the Indian context, there is a need for relevant scales to measure physical activity as a risk factor.[4,14] This clinical tool has to be short, easy to understand and easy to apply. It should not be dependent on the adolescent's level of understanding or knowledge of physical activity level. With this objective in mind, the short physical activity scale was developed in this study.

It is seen that the short physical activity scale has a good reliability (ICC 0.770) and a good validity with the METS obtained by GPAQ (r = 0.232, p=0.002). This scale can be used as an easy to use clinical tool to assess physical activity levels. Though there is a statistically significant correlation between the short physical activity scale score and the GPAQ METS, the correlation is rather weak. On analysis of the individual items using multiple linear regression to predict the METS estimated by the GPAQ, it was seen that only the transport and leisure time physical activity questions contributed significantly. The sleep item was not a significant contributor to the scale.

One of the issues with the scale is the extent to which the item "physical activity that increases the heart rate and leads to sweating" can capture the intensity of physical activity accurately. The increase in heart rate and sweating does not necessarily indicate the intensity of physical activity. However, in a healthy adolescent it does indicate some degree of physical activity more than a sedentary activity. Moreover, in such psychometric measurements accurate quantification of physical activity levels are not possible to achieve. The main objective of this short scale is to screen for physical activity levels at the clinic. Adolescents identified with low physical activity levels at screening may be advised further rigorous assessment.

The strength of this study is its systematic approach to scale development and validation. There are several limitations. Firstly, the study was done in a single school on a relatively small number of adolescents. The questionnaire was given for self-administration and it was in English language. There could have been some students who did not understand the items despite several attempts of explaining the questions and method of filling the questionnaire. This limitation was evident by the number of erroneous responses and incomplete responses which was seen in about 20% of the respondents.

Further refinement of the scale should focus on larger sample size and analytical techniques to assign weights to the individual items. Since the sleep item seems to be a poor contributor to the scale, it should be removed in further research. Further validation of the scale against other existing physical activity scales should be performed. The IPAQ is previously validated among adolescents. Therefore, future studies should focus on validating the short scale against the IPAQ. It should also be validated against more objective measures such as pedometers and accelerometers. Such objective validation will remove the self-report bias that is inherent in questionnaire based assessment. The findings of this study suggest future directions for taking the development and further validation of the short physical activity scale.

Conclusions

The short physical activity scale that has been developed in this study is a valid and reliable measure of physical activity. The weak correlation of the short scale score to the GPAQ METS is probably because of the poor contribution of the sleep item to the scale. Therefore, the two item scale with the transportation to school and leisure time physical activity can be used for practical clinical applications.

Acknowledgement

The authors would like to thank the Principal, staff and students of Prince Matriculation Higher Secondary School, Madipakkam, Chennai for cooperating and actively participating in the study. This research was supported by a grant from the Non Communicable Disease Cell of Tamil Nadu Health System Project.

References

1. Lee I-M, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. Lancet. 2012;380(9838):219–29.
2. Singh AK, Maheshwari A, Sharma N, Anand K. Lifestyle associated risk factors in adolescents. Indian J Pediatr. 2006;73(10):901–6.
3. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. JAMA. 2012;307(5):483–90.
4. Ramachandran A, Snehalatha C, Vinitha R, Thayyil M, Kumar CKS, Sheeba L, et al. Prevalence of overweight in urban Indian adolescent school children. Diabetes Res Clin Pract. 2002;57(3):185–90.
5. Goyal RK, Shah VN, Saboo BD, Phatak SR, Shah NN, Gohel MC, et al. Prevalence of overweight and obesity in Indian adolescent school going children: its relationship with socioeconomic status and associated lifestyle factors. J Assoc Physicians India. 2010;58:151–8.
6. Kotian MS, Kumar SG, Kotian SS. Prevalence and determinants of overweight and obesity among adolescent school children of South Karnataka, India. Indian J Community Med. 2010;35(1):176.
7. Bull FC, Maslin TS, Armstrong T. Global physical activity questionnaire (GPAQ): nine country reliability and validity study. J Phys Act Health. 2009;6(6):790.
8. Hagströmer M, Oja P, Sjöström M. The International Physical Activity Questionnaire (IPAQ): a study of concurrent and construct validity. Public Health Nutr. 2006;9(6):755–62.
9. Anjana RM, Sudha V, Lakshmipriya N, Subhashini S, Pradeepa R, Geetha L, et al. Reliability and validity of a new physical activity questionnaire for India. Int J Behav Nutr Phys Act. 2015;12(1):1.
10. Sullivan R, Kinra S, Ekelund U, Bharathi A V, Vaz M, Kurpad A, et al. Evaluation of the Indian migration study physical activity questionnaire (IMS-PAQ): a cross-sectional study. Int J Behav Nutr Phys Act. 2012;9(1):1.
11. Anthoine E, Moret L, Regnault A, Sébille V, Hardouin J-B. Sample size used to validate a scale: a review of publications on newly-developed patient reported outcomes measures. Health Qual Life Outcomes 2014;12:176.
12. Shephard RJ. Limits to the measurement of habitual physical activity by questionnaires. Br J Sports Med. 2003;37(3):197–206.
13. Prochaska JJ, Sallis JF, Long B. A physical activity screening measure for use with adolescents in primary care. Arch Pediatr Adolesc Med. 2001;155(5):554–9.
14. Laxmaiah A, Nagalla B, Vijayaraghavan K, Nair M. Factors Affecting Prevalence of Overweight Among 12-to 17-year-old Urban Adolescents in Hyderabad, India. Obesity. 2007;15(6):1384–90.

ORIGINAL ARTICLE

Healthcare Utilization and Out of Pocket Expenditure of Urban Slum Population in Sonipat District of Haryana; A Cross Sectional Study.

Mahender Singh[1], Prashant Jarhyan[2], Binod Kumar Behera[3], Manish Goel[4], JS Punia[5]

[1]Civil Surgeon retd, [2]Project Coordinator, Uday PHFI, New Delhi [3]Assistant Professor, AIIMS Bhubaneswar [4]Associate Professor, LHMC, New Delhi, [5]Civil Surgeon, Sonipat

Abstract

Background: Nearly one-third (31%) of the Indian population live in urban areas. It is estimated that about 40% of the total Indian population will be urbanized by 2030. Urban population and the urban poor are far from being homogenous and comprise of several sub-groups that differ socially, economically, and geographically. NHM seeks to improve the health status of the urban population particularly slum dwellers and other vulnerable sections by facilitating their access to quality health care. The health care utilization and health care spending among urban poor is drastically different from other section and needs to be addressed.
Methods: A cross-sectional study was conducted in health camps from April to August 2015. Exit interview of patients attending all Health Camps under Urban Health Mission was conducted during this period .
Results: Majority of the patients (55.8%) attending the health camp reported that they go to public health facilities for their routine illness followed by private health facilities (27.6%) or both 8.3%. Few patients reported going to others (unqualified practitioners, drug stores) for their routine illness. Among patients (73%) who reported any illness in the past 3 months, 64.1% had utilized public health facilities for seeking health care, 25.6% reported private and 10.2% reported seeking health care from unqualified practitioners/ drug stores.
Conclusion: This study highlights that health camps are usually attended by people belonging to low- income or lower middle-income groups and most of them prefer to use public health care facilities for their routine health care issues.

Introduction

Nearly one-third (31%) of the Indian population live in urban areas.[1] It is estimated that about 40% of the total Indian population will be urbanized by 2030.[2] In India in 2011-2012, approximately 13.7% of urban population lived below the poverty line.[3] Increased urbanization has resulted in the growth of unplanned urban clusters in the form of slums, squatters or peri-urban areas with poor access to quality health care.[4] This has led to the differential health status of urban poor who suffer from poor health status in terms of suboptimal reproductive health care utilization, higher under-5 mortality and prevalence of underweight children, poor immunization status and are more vulnerable to asthma, tuberculosis and vector borne diseases.[5,6] The poor health status of urban poor has been ascribed to challenges in terms of poor access to health care, low awareness/knowledge, poor family support and inadequate access to sanitation and safe water supply.[4] Urban poor have additional vulnerabilities i.e., their access is severely restricted due to the lack of an organized primary health system and the absence of well-functional referral mechanisms. Most health centres have morning timings, which exclude all domestic workers and daily wage workers, even self-employed impoverished workers, indeed most of the urban poor populations. To address this gap National Urban Health Mission (NUHM) was launched in 2013 aims to improve the health status of the urban population especially among the urban poor and disadvantaged sections by providing equitable access to quality health care.[4] Special outreach sessions were organized involving periodic provision of services by other health professionals and specialists. There is a strong need to identify, reach and capture their problems regarding their health care needs along with the social relationships and issues of access to health care. As health camps were organized by the District health authorities for urban poor, we utilized this opportunity to know the pattern of health care utilization and out of pocket expenditure of urban slum population.

Address for correspondence- *Dr Mahender Singh, H. No. 635, Sector- 12 (Behind OSRAM Factory) Haryana, India*
Email: *dr.msgothwal@gmail.com*

Received: 16/11/2016 , Accepted: 01/05/2017

Methods

Under NUHM, health department of Sonipat conducted six health camps in urban areas of Sonipat district to increase the awareness about health care services provided through urban primary health centres in the district. A cross-sectional study was conducted during these camps from April to August 2015. Exit interviews of patients attending all the "Health Camps" organized under Urban Health Mission were conducted during this period. A semi-structured questionnaire was designed and pretested during the first health camp to take the socio-demographic information, health care utilization pattern and out of pocket health expenditure. Health-staff were trained to administer the questionnaire. Exit interviews of individuals attending the last five health camps were conducted. Approximately one-fifth of the attendees of the health camps were enrolled for exit interviews. Individuals were selected by judgemental sampling. Verbal informed consent was obtained from all the participants. In case of pediatric patients (age <14 years), information was collected from the patients/attendants (mostly parents). Confidentiality of the participants was ensured. Data collected was analyzed using percentages and proportions. Some working definitions were used for the study.

Out of pocket expenditure: was defined as any payments made by households at the point they receive health services and this include doctor's consultation fees, purchases of medication and hospital bills.[7]

Catastrophic health expenditure: was defined as the out of pocket expenditure on health more than 10% of the average monthly family income.

Results

Out of total 2500 participants who attended health camps, 422 participants were interviewed. Out of 422 participants, 114 (27%) were male and 308 (73%) were female. Median age of participants was 29.5 years (minimum age; 1 month, maximum age; 85 years). Majority of the participants were illiterate (48.8%) and only 6% were graduate or had higher education. Most of the female participants were housewives and males were engaged in skilled/unskilled occupations. The median household income of participants was Rs.5000 and mean income was Rs.6780 (maximum; 81000, minimum; 100). Most of the participants (81%) had their monthly household income <10000 rupees per month.

Most of the participants had come to the health camps for minor illness/ general health checkup. Majority of the patients (55.8%) attending the health camp reported that they go to public health facilities for their routine illnesses followed by private health facilities (27.6%) or both 8.3%. Few patients reported going to others

Table 1: Socio- demographic characteristic of patients attending health camps.

Variable	Total Numbers	Percentage
Age groups		
Up to 5 Yrs.	51	12.1
6 to 18 Yrs.	106	25.1
19 to 45 Yrs.	164	38.9
46 to 65 Yrs.	83	19.7
>65 Yrs	18	04.3
Gender		
Male	114	27.0
Female	308	73.0
Education (n=379)		
Illiterate	185	48.8
Primary	55	14.5
Middle	37	09.7
Matriculate	52	13.7
Higher Secondary	27	7.1
Graduate & Above	23	6.1
Income (in Rupees)(n=402)		
<3000	63	15.7
3000-9999	262	65.2
10000-19999	57	14.2
20000-49999	18	4.5
≥50000	2	0.5

Table 2: Health care utilization pattern of patients attending health camps.

	Numbers (N)	Percentage
Health Facility Visit in last 12 months		
Yes	366	86.7
No	56	13.3
Type of health facility visited routinely (N=421)		
Only public	235	55.8
Only private	116	27.6
Both public & private	35	8.3
Others (unqualified, self, drug stores)	35	8.3
Illness in last 3 Month		
Yes	312	73.9
No	110	26.1
Last illness Facility (N=322)		
Public	200	62.1
Private	80	24.8
Other	32	09.3
Don't remember	10	03.1
Out of pocket expenditure in last 12 months		
Yes	184	43.6
No	238	56.4
Catastrophic health expenditure	37	8.8

(unqualified practitioners, drug stores) for their routine illness. Among patients (73%) who reported any illness in the past 3 months, 64.1% had utilized public health facilities for seeking health care, 25.6% reported private and 10.2% reported seeking health care from unqualified practitioners/ drug stores. Nearly half of the patients attending camps reported that they had spent money from their own pockets to avail health care in the past 12 months. Of those reporting out of pocket expenditure for availing health care 20.1% had spent more than 10% of their average monthly income on health expenditure (catastrophic health expenditure). Majority of the patients (73%) who had catastrophic health expenditure reported attending private health facilities or others (unqualified practitioners) for their routine illnesses.

Discussion

According to census, 2011 slum population constitute about one-third of the total population of Sonipat.[8] Our study highlights the socio- demographic characteristics and health care utilization pattern of people attending health camps in urban poor areas of Sonipat district. Women constituted major proportion of our participants. This could have been because the main purpose of these camps was to provide reproductive health services. Majority of the participants reported utilizing public health facilities for their routine illness. Khokhar et al in their study conducted in urban slums of Delhi also reported that the higher utilization of public health facilities for availing treatment for RTIs/STIs was due to low cost of the services provided.[9] The higher utilization of public health care facilities in our study might also be due to better health care provision or the recently started urban primary health centres under National Urban Health Mission, which provide free basic health care facilities to people at their doorsteps in slum areas. In our study, nearly half of the participants had spent out of pocket for their illness in the past 12 months and 8.8% of the respondents had suffered catastrophic health expenditure by spending more than 10% of household income on health care. Bhojani et al reported that 69.6% (95%CI, 68.0-71.2) of households in Bangalore slums had spent out-of-pocket money for availing outpatient care out of which 16% (95%CI=14.8-17.3) of households had suffered financial catastrophe by spending more than 10% of household income.[10]

Limitations- Our study had few limitations also. The study sampling was opportunistic sampling and thus study results cannot be generalized to the whole population. However, we targeted specific people to take part in our study and almost all participants who were approached consented for the exit interview and participated in the study.

References

1. Census of India 2011. Rural urban distribution of population (Provisional population totals). Registrar General & Census Commissioner, India. Ministry of Home Affairs. New Delhi 2011.
2. Rao KD, Peters DH. Urban health in India: many challenges, few solutions. The lancet global health. 2015;3(12): e729–e730
3. Poverty estimates for 2011-12. Government of India, Press Information Bureau. 2013
4. Agarwal S, Srivastava K. Urban health - the emerging social imperative for India in the new millennium. Journal of Mahatma Gandhi Institute of Medical Sciences. 2010 sept; 15(2): 1-8
5. National urban health mission. Framework for implementation. Ministry of Health and Family Welfare, Government of India. May 2013
6. Hazarika I. Women's reproductive health in slum populations in India: evidence from NFHS-3. J Urban Health. 2010;87(2):264–77.
7. Xu K. Distribution of health payments and catastrophic expenditures Methodology. W.H.O. HSF & EIP 2005; 2:2
8. Registrar General of India. Census of India 2011. (Accessed on 14 October, 2016) URL: http://www.census2011.co.in/census/city/38-sonipat.html
9. Khokhar A, Garg S, and Singh MMC. Health care service utilization for KUsISUs and diarrhoeal diseases: a study amongst slum dwellers in Delhi. Health and Population Perspectives and Issues. 2003: 26 (2): 59-66
10. Bhojani U, Thriveni BS, Devadasan R, Munegowda CM, Devadasan N, Kolsteren P et al. Out-of-pocket healthcare payments on chronic conditions impoverish urban poor in Bangalore, India. BMC Public Health 2012, 12:990

ORIGINAL ARTICLE

Single Point Approach for a Successful and Satisfactory Patient Care

Deepika Agrawal[1], Manish Chaturvedi[2], Neha Tyagi[3], Shveta Lukhmana[4]

[1]Associate Professor, [2]Professor, [3]Assistant Professor, Department of Community Medicine, School of Medical Science and Research, Sharda University, [4]Assistant Professor, Department of Community Medicine, ESI Medical College, Faridabad

Abstract

Background: Vacant posts of medical officers at primary health care level leads to overburdening at secondary and tertiary care levels, compromising the quality of health care delivered.
Objective: The following study aims to find out whether a single point approach for patients at secondary and tertiary care levels will be successful in treating as well as satisfying the patients.
Methods: All patients registered at general OPD of the hospital between 10am-11am were included in the study based on the inclusion and exclusion criteria. They were treated by the junior residents posted in the department of community medicine under supervision of a faculty member which involved examination, investigation and treatment of the patient by the junior resident himself after requisite training. Patient feedback was taken at different points and the total time involved per patient was noted and analysed. Results were analysed based on patients' feedback, time involved in treating, number of patients returning for follow-up and their willingness to return to the same hospital for future health problems.
Results: 2531 patients were seen in the general OPD. 69.7% returned for follow-up and of these, 69.9% were successfully treated by the junior residents. Referrals were required in only 30.1% of the patients. 67.6% of the total patients expressed satisfaction with the health care services given by the junior residents.
Conclusion: Provision of single point health care by junior residents is a successful and satisfactory approach for community health services.

Key words: patient satisfaction, successful treatment, single point, tertiary care hospital, general OPD

Introduction

The health manpower resources in India have not been adequately and optimally utilized. There is a major disparity in the distribution of health care providers, with a definite skewing towards urban areas.[1] Though the public health infrastructure in India has mandated provision of primary health centres for every 20,000 to 30,000 population, the population norms are violated in many rural areas due to various reasons.[2] Furthermore, the posts of medical officers at these PHCs remains vacant many a times due to the personal preferences of the appointed doctors.[1,3,4,5] As a result, the burden of provision of health services is borne majorly by the secondary and tertiary care hospitals. This leads to an overburden on the specialist doctors who in turn are forced to compromise quality over quantity due to fixed resources. This is especially true for the specialists in our public health care system.

The provision of health services in secondary and tertiary care hospitals is divided at various levels. As a consequence of this division of work, considerable time is lost as part of waiting period involved at every step eg. consultation is provided by a doctor who writes the prescription- first point where patient has to wait; for even simple and most basic laboratory investigations advised to the patient which do not require much time, the patient has to go to some other part of the hospital to seek the lab services- again a waiting period is involved; come back to collect his reports on some other day and go to the physician for a review after the report is obtained (again waiting for his turn).[6] In this whole process, the patient who is already weak due to his compromised health status, feels harassed and dissatisfied with the system, leading to a loss of follow up resulting in incomplete treatment. Some innovative approaches are required at this juncture to reduce patient inconvenience and inculcate practices for satisfactory

Address for correspondence- *Dr Deepika Agrawal, Department of Community Medicine, School of Medical Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh.* **Email:** *deepikasudhanshu@gmail.com*

Received: 31/10/2016 , Accepted:14/05/2017

health care services to the patients which can be rendered at a single point of contact.

The present study is an attempt to assess whether involvement of junior residents at the first point of contact for patients in the medical college hospitals can be successful in providing satisfaction to the patients in terms of doctor patient interaction and simultaneously encouraging positivity for our health care system, in the community.

Objectives

The present study was planned -

1. To create a single window approach for patients attending the hospital

2. To find out its effectiveness in satisfying the patients.

Methods

The study was conducted as a pilot study in a tertiary care hospital in Greater Noida, of the National Capital Region (NCR), for a period of 1 month. A total of 2531 patients (907 males and 1624 females) from nearby villages, attending the general OPD of the hospital were screened and treated as required, on a daily basis. All the patients registered in a day were first examined by the junior doctors(JRs) posted in the department of community medicine under supervision of one faculty member. These patients were then advised accordingly and if required, simple investigations were also undertaken by the JRs under the guidance of a trained lab technician. The parameters recorded were -name, age, sex, weight, height, blood pressure, simple lab investigations, diagnosis, treatment & referral to any department, if needed. The criteria used for Hypertension was the same as given by WHO.[7] These patients were then called for a follow up visit after three days. Those patients who showed improvement or were cured, were taken as successfully treated while those who did not show any improvement or the diagnosis could not be made by the JRs or the symptoms worsened on followup, were referred to specialists.

At the end of the study, the outcome was measured in the form of patient satisfaction treated by JRs, number of referrals required and number of patients returning for follow up in the screening OPD. The satisfaction of the patient with the medical care was judged by three indicators- satisfied with the time given by the doctor in consultation with the patient, the waiting period for the patient before consultation (<30 minutes, 30-45 minutes and >45 minutes) and willingness of the patient to return to the same facility in future. A waiting period of less than 30 minutes before consultation was regarded as satisfactory by the patient and therefore taken as a positive response for satisfaction. Positive responses for any of the two indicators was taken as patient satisfaction with the medical care.

Inclusion criteria:

- All new patients registered between 10 am to 11am everyday in the duration of the study,
- who were not seriously ill,
- all age groups,
- both sexes.

Exclusion criteria:

- Patients requiring emergency treatment
- medically serious patients
- children coming for immunization
- registered pregnant ladies
- patients registered before the start of the study coming for follow up.

The practice of correctly prescribing the drugs by Junior residents was assessed by the faculty incharge and common laboratory tests by the Junior residents, was randomly assessed by the lab technician before starting the study. If any corrections were needed, the respective assessor taught the Junior resident the correct method on the first day of his posting. This was verified the next day by reassessing the resident again by the same assessor.

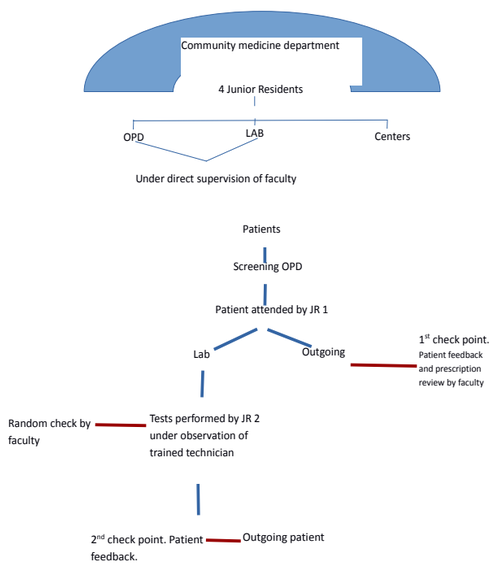


Table 1. Age-sex composition of patients attending general OPD of a Tertiary Hospital, Greater Noida

Age in years	No. of Males n (%)	No. of Females n (%)	Total n (%)
0-14	177 (19.5)	178 (11)	355 (14)
15-19	185 (20.4)	202 (12.4)	387 (15.3)
20-29	128 (14.1)	281 (17.3)	409 (16.2)
30-39	123 (13.6)	365 (22.4)	488 (19.3)
40-49	87 (9.6)	235 (14.5)	322 (12.7)
50-59	67 (7.4)	154 (9.5)	221 (8.7)
>=60	140 (15.4)	209 (12.9)	349 (13.8)
Total	**907 (100)**	**1624 (100)**	**2521 (100)**

* percentages are from the respective totals.

Results

During the period of study, a total of 2531 patients came to the general OPD of the hospital. More number of females (1624) attended the OPD as compared to males (907). (Table 1) In males, respiratory problems were maximum (26.5%) followed by hypertension(13.5%) while in females hypertension(20.8%) was most common health problem followed by general debility or low back ache (18.3%). 8.7% of the females suffered from PID. Anemia and acid peptic disease were more common in females (3.2% & 13.6% respectively) as compared to males (0.4% & 7% respectively). (Table 2)

More than two-third of patients returned for follow up (69.7%). Rest of the patients did not come back and were therefore excluded from further analysis. Compliance for follow up visits was seen more in males (77.8%) than females (65.1%), as seen in Table 3.

Table 2. Distribution of observed morbidities among patients attending general OPD of a Tertiary Hospital, Greater Noida.*

Type of Morbidity	No. of Males n (%)	No. of Females n (%)	Total n (%)
Hypertension	122 (13.5)	338 (20.8)	460 (18.2)
Respiratory Problems (URTI, LRTI, Asthma)	240 (26.5)	223 (13.7)	463 (18.3)
Parasitic Infections	63 (7.0)	71 (4.4)	134 (5.3)
Acid Peptic Disease	64 (7.0)	221 (13.6)	285 (11.3)
Scabies	34 (3.7)	36 (2.2)	70 (2.8)
Malaria	24 (2.6)	24 (1.5)	48 (1.9)
General Debility/Low Back Ache	82 (9.0)	297 (18.3)	379 (15.0)
Anaemia	4 (0.4)	52 (3.2)	56 (2.2)
Others	301 (33.2)	650** (40.0)	951 (37.6)
No diagnosis	91 (10.0)	141 (8.7)	232 (9.2)
Total	**907 (100)**	**1624 (100)**	**2521 (100)**

*Multiple diagnosis was made for some participants

Table 3. Response of Patients for follow up visits in the general OPD of a Tertiary Hospital, Greater Noida.

	Number of male patients (percentages)	Number of female patients (percentages)	Total (percentages)
Returned for follow up	706 (77.8)	1057 (65.1)	1763 (69.7)
Lost to follow up	201 (22.2)	567 (34.9)	768 (30.3)
Total	907 (100.0)	1624 (100.0)	2531(100.0)

Table 4 shows that the rate of successful treatment by Junior residents as observed in the study was 69.9% (calculated out of those who returned for follow up). More number of females had to be referred to other departments (31.6% females vs 27.9% males) while more number of males were successfully treated (77.8% males vs 68.4%) by the Junior residents.

Table 4. Outcome of follow-up visit of patients treated from the General OPD of a Tertiary Hospital of Greater Noida.

Outcome of follow-up visit	No. of males (n=706)	No. of Females (n=1057)	Total patients returning for follow up (n=1763)
Successfully treated by Junior Residents	509 (72.1)	723(68.4)	1232 (69.9)
Referred to other departments	197(27.9)	334(31.6)	531 (30.1)

Figures in brackets are column-wise percentages from respective totals

More than two-thirds of the patients included in the study were satisfied with the screening OPD as depicted by their responses in Table 5. The table also shows that the waiting period for majority of patients was <30 minutes and most patients were willing to return to the same health facility in future.

Discussion

The age distribution of the patients attending the screening OPD of the tertiary care hospital was similar to that observed for the state in the Census 2011.[8,9] More females turned up for the OPD during the period of the study as compared to males. This is similar to the proportion

Table 5. Satisfaction among patients attending the general OPD managed by the Junior Residents in a Tertiary care hospital.

Factors	Overall satisfied with the services (n=1712)	Overall not satisfied with the services (n=819)	Total (N=2531)	Chi square and P value
Satisfied with time devoted by doctor	1700 (99.3)*	197 (24.1)	1897 (75)	1666.63
Not satisfied with time devoted by doctor	12 (0.7)	622 (75.9)	634 (25)	P<0.001
<=30 min waiting time for consultation	1492 (87.2)	24 (2.9)	1516 (59.9)	1632.32
>30 min Waiting time for consultation	220 (12.8)	795 (97.1)	1015 (40.1)	P<0.001
Willing to return in future	1705 (99.6)	18 (2.2)	1723 (68.1)	2413.44
Not willing to return in future	7 (0.4)	801(97.8)	808 (31.9)	P<0.001

* denotes column-wise percentages from respective totals (n/N).

observed by N Bilkish Patavegar et al (61% females) in his study in a general hospital OPD of Pune, Maharashtra and Madhavi Mankar et al (55.1% females) in the OPD of a tertiary care hospital in Navi Mumbai.[10,11] Same findings were observed in the studies of Ranjeeta Kumari et al (60.4%) and Vikas Yadav et al.[12,13] However, in a study conducted at rural primary health centre in Puducherry by Arti Gupta et al, 51% patients were males and the rest were females.[14]

Among males, almost one fourth suffered from respiratory problems (26.5%) followed by hypertension(13.5%) while hypertension was the main health problem encountered in females (20.8%) followed by general debility (18.3%). In a study done by Ranjeeta Kumari et al at a Primary Health Centre in Kanpur, respiratory problems ranged between 22% to 37.5% among males and females.[12] Vikas Yadav et al in their study at an Urban Health and Training Center, Pune, revealed that URTI was the most common infection among communicable diseases (67.0%) followed by acute gastro-enteritis (12.5%) and among the non communicable diseases, musculoskeletal pains (26.5%) and hypertension (15.5%) were most common.[13] All the diseases were more common in females as compared to males. In another study reported by Arti Gupta et al in Puducherry, respiratory disorders were most common followed by musculoskeletal disorders (26.2% and 26% respectively).[14] Findings of all the above studies, are in concurrence with our findings.

Among the total patients who attended the screening OPD by the Junior residents, 69.7% returned for follow up, indirectly indicating that they were satisfied with the attention they got in the OPD. Less than one third of the patients did not return, which might be due to various reasons like poorly satisfied, recovered, found the hospital difficult to approach etc. The exact reasons for the loss to follow up were not explored due to lack of resources. The follow up compliance was observed more in males than females (77.8% vs 65.1%) as males are more mobile as compared to females. In a study done at AIIMS by RK Pathni et al, 56% patients returned for follow up during a particular period.[15] In another study on patients attending psychiatric OPD at CMC, Ludhiana by Mamta Singla etal, 46.9% of patients returned for follow up.[16] The response was better in our study as compared to the above mentioned studies which might be due to unavailability of any other well equipped secondary or tertiary health care centre in the neighbouring areas.

The rate of successful treatment was calculated from those who returned for follow up and was found to be 69.9%. This shows that the initiative was successful in achieving its objective of providing a single window approach to the patients and at the same time also proving that most of the common illnesses can be satisfactorily treated by the medical graduates. Only 30.1% patients had to be referred. A larger proportion of the referred patients were females having problems related to reproductive tract infections and were therefore hesitant towards examination by male residents.

In this study, the satisfaction of the patient with the medical care was judged by three indicators- satisfied with the time given by the doctor in consultation with the patient, the waiting period for the patient before consultation (<=30 minutes, >30 minutes) and willingness of the patients to return to the same facility in future (as described in methodology). KS Prasanna et al in his study at a private medical college at Mangalore found that only 20% of the patients had a consultation waiting time of less than 30 min which is much less than our finding (59.9%).[6] In a study done by Patavegar Bilkish N et al in a tertiary care hospital in Pune, patient satisfaction was found to be 50.89%.[10] In another study conducted on the health facilities of Lucknow by Ranjeeta Kumari et al, patient satisfaction was found to be more than 60%.[17] SB Gupta etal in their study at a rural health training centre, Bareilly, found that 61.9% of the patients were satisfied with the services of the doctor.[18] Our study has revealed a better satisfaction level among the patients (67.6%) again denoting that the medical graduates can satisfy the needs of a large proportion of patients.

Conclusion

This study has explored the feasibility of a single window approach by the medical graduates in medical centres and the extent to which such an approach can satisfy the patients. The results have revealed that such an approach can fulfill the needs of majority of patients as well as satisfy them in terms of doctor patient interactions. The same model can be replicated by involving the interns posted in the community medicine department at various medical education institutes. However, more such studies are needed to explore the hidden intricacies as we could not find sufficient literature on the same subject.

References

1. Hazarika I. Health workforce in India: assessment of availability, production and distribution. WHO South-East Asia J Public Health 2013;2:106-12.
2. National Health Profile 2015, Central Bureau of Health Intelligence. Ministry of Health and Family Welfare, New Delhi.
3. Bulletin on Rural Health Statistics in India, 2015. Ministry of Health and Family Welfare, New Delhi.
4. Deoki Nandan, KS Nair, U Dutta. Human Resources for public health in India- Issues and challenges. Health and Population-Perspectives and Issues 2007;30:230-42.
5. World Bank Report accessed from http://data.worldbank.org/indicator/SH.MED.PHYS.ZS
6. KS Prasanna, MA Bashith, S Sucharitha. Consumer satisfaction about hospital services: A study from the outpatient department of a private medical college hospital at Mangalore. Indian Journal of Community Medicine 2009;34:156-9.
7. World Health Organization, International Society of Hypertension Writing Group. 2003 World Health Organization/ International Society of Hypertension Statement on management of Hypertension. Journal of Hypertension 2003;21:1983-92. http://www.who.int/cardiovascular_diseases/guidelines/hypertension_guidelines.pdf?ua=1
8. Census of India 2011. Uttar Pradesh. Series 10, Part XII-B, District Census Handbook. Gautam Budh Nagar. Village and Town-wise Primary Census Abstract, Directorate of Census Operations, Uttar Pradesh.
9. Annual Health Survey Factsheet 2012-13, Uttar Pradesh. Vital Statistics Division, Office of the Registrar General and Census Commissioner, India. Ministry of Home Affairs, Government of India.
10. Patavegar Bilkish N, Shelke Sangita C, Adhav Prakash, Kamble Manjunath S. A cross-sectional study of patient's satisfaction towards services received at tertiary care hospital on OPD basis. National Journal of Community Medicine 2012;3:232-7.
11. Madhavi Mankar, Deepa Velankar, Sumedha Joshi, Aasawari Nalgundwar. A study of patient satisfaction towards out-patient department services (OPD) of a hospital and research center using exit interview. Indian J Prev. Soc. Med. 2013;44:37-41.
12. Ranjeeta Kumari, Bhola Nath, Tanu Midha, Narain D Vaswani, Seema Lekhwani, Bhupendra Singh. Morbidity profile and seasonal variation of diseases in a primary health center in Kanpur district: A tool for health planners. J Family Med Prim Care 2012;1:86-91.
13. Vikas Yadav, Manjunath SR, S Mukherji, TS Ramakrishnan. Morbidity profile of OPD patients of an Urban Health and Training Center: A tool for the health planners. National Journal of Community Medicine 2015;6:179-83.
14. Arti Gupta, Vinoth Chellaiyan, Ayush Lohiya, Rizwan SA, Ravi P Upadhyay, Palanivel C. Morbidity profile of outpatients attending a primary health center in rural Puducherry, South India. National Journal of Community Medicine 2014;5:424-7.
15. Pathni RK, Satpathy S, Kailash S. Need for tele follow-up – a study at a public sector quarternary referral hospital in India. J Telemed Telecare 2009;15:255-9.
16. Mamta Singla, Sandeep Kumar Goyal, Arun Sood, Arjin Philips, Sharad Philips. Profile and pattern of follow-ups of psychiatry out-patients at Christian Medical College, Ludhiana. Journal of Mental Health and Human Behaviour 2015;20:76-9.
17. Ranjeeta Kumari, MZ Idris, Vidya Bhushan, Anish Khanna, Monika Agarwal, SK Singh. Study on patient satisfaction in the government allopathic health facilities of Lucknow district, India. Indian Journal of Community Medicine 2009;34:35-42.
18. S.B. Gupta, J.P. Singh. Measuring patient satisfaction: A cross-sectional study to improve quality of care at a rural health training centre, Bareilly (U.P). International Journal of Current Medical and Applied Sciences 2014;4:18-24.

ORIGINAL ARTICLE

A Study of Compliance of Breast Self-Examination among Women of Rural Maharashtra

Rashmi Gode[1], Chetna Maliye[2], AM Mehendale[3], BS Garg[4]

[1]Junior Resident, [2]Professor, [3]Director Professor(HOD), [4]Director Sushila Nayar School of Public Health, Department of Community Medicine, Mahatma Gandhi Institute of Medical Science, Sevagram, Wardha, Maharashtra, India

Abstract

Introduction: According to GLOBOCAN 2012, breast cancer is the second most prevalent cancer in world and the most frequent among women. In India, around 80,000 cases are estimated to occur annually. Survival from breast cancer depends on two main factors, early detection and optimal treatment. There are virtually no population-based breast cancer screening programs in developing countries. This community based study was carried out for creating awareness about Breast Self-Examination (BSE), the easiest method for early diagnosis and to assess the impact of interventional measures on acceptance of BSE.
Objectives: To assess the awareness about breast cancer and BSE among 20 – 49 years women and to create awareness about breast cancer and BSE among 20 – 49 years women.
Methods: It was an interventional study, conducted in the field practice area of a Medical College. Total of 310 women were assessed on Self-administered questionnaire filled by women in pre and post intervention for awareness of Breast cancer and BSE.
Results: 3% women were aware of BSE at baseline which increased to 89.68% at end line. (p=0.001, p<0.05).There was statistically significant difference in attitude towards BSE (p=0.0001, p<0.05) at end-line and 92.90% women started performing BSE on regular basis.
Conclusion: From selective review on practice and effectiveness of BSE, only 0% to 52% of women practice Breast Self-Examination on regular basis and there is no evidence of performing the procedure correctly. It is evident that BSE functions as an effective preventive health action.

Key words: Breast cancer, Breast Self-Examination (BSE), community based.

Introduction

Breast cancer is the most common malignancy in women in both developed and less developed countries, although in terms of mortality it may be overtaken by lung cancer in the near future as more women are smoking. In the historic literature, the disease and its treatment were discussed and described as cancer by the most famous medical authorities of ancient times, including Hippocrates, and by several prominent old-fashioned authors, including Avicenna and Rolando da Parma.[1] Breast cancer is the second common cancer in women Worldwide and a leading cause of death among women internationally.[2] According to GLOBOCAN 2012 breast cancer comprised of 25% (1.67 million new cases) of all cancers.[3]

Breast cancer is most prevalent in India. Around 80,000 cases are estimated to occur annually. The mortality is still higher than cervical cancer. [4] It is expected that the number of new cases of cancer would increase from 10 million per year in 2000 to 15 in 2020.[7] In India almost 80% patients are in advanced stages when they come to hospitals.[4] Latest published consolidated report of the 7 hospitals in the network of The National Cancer Registry Programme reported breast as the leading site of cancer from 2007 to 2011.[5] Mammography is the single most effective strategy for breast cancer screening.[6] However, it is very costly and not feasible and cost effective in countries with good health infrastructure. Low cost screening approaches, such as Breast self-examination (BSE) could be implemented in resource limited setting when the necessary evidence from on-going studies becomes available.[6] In the literature, it is stated that 90% of the times breast cancer is first noticed by the person herself.[7] Also, several studies have shown that barriers to

Address for correspondence- *Dr Chetna Maliye, Department of Community Medicine, MGIMS, Sevagram, Wardha, Maharashtra, India*
Email*- chetna.maliye@gmail.com*
Received:10/01/2017, Accepted:16/04/2017

diagnosis and treatment can be addressed by increasing women's awareness of breast cancer .[8] Even though BSE is a simple, quick, and cost-free procedure, the practice of BSE is low and varies in different countries. In India, practice of BSE varied from 0 to 52%.[9] Survival from breast cancer depends on two main factors – early detection and optimal treatment. In developing countries, women present with late stages of disease. There are virtually no population-based breast cancer screening programs in developing countries. International groups such as the Breast Health Global Initiative were set up to develop economically feasible, clinical practice guidelines like BSE, to improve breast health outcomes in countries with limited resources.[10,11]

This community based study was carried out to determine the awareness of breast cancer and making the women aware of BSE the easiest method for early diagnosis and to assess the impact of interventional measures on acceptance of BSE for early detection of breast anomaly.

Objectives

1. To assess the awareness about breast cancer and Breast Self Examination among 20 – 49 years women.

2. To create awareness about breast cancer and Breast Self Examination among 20 – 49 years women.

Methods

The study was conducted in the field practice area of Department of Community Medicine of Mahatma Gandhi Institute of Medical Sciences, Sewagram, Maharashtra. Villages of a primary Health Centre (PHC) with a population of 46332 (April 2014) were selected. Study participants were women of age between 20-49 years.

Inclusion criteria: Women residing since six months in the area of study and who gave consent for participation.

Exclusion criteria: Women who denied participation and diagnosed with breast cancer.

Study period: Study was carried over a period of one year (January 2015 to December 2015)

Sample size- 310 women of said age group

Study sample-List of all women of age 20 years till completed age of 49 years was obtained from ASHA and women's Self Help Groups of villages. Sampling was done by simple random sampling method. Women who fell on an even number were selected until a sample of 310 was obtained.

Ethical Considerations: The study was carried out after obtaining ethical clearance from institutional ethical committee.

Baseline survey- In baseline survey all women participants of age group 20 to 49 years were included. Prior to participation, individuals were provided with an informed consent form. A brief introduction was given by the researcher about the study and its objectives. Base line survey was conducted to study the awareness about breast cancer and early detection method by self-administered questionnaire.

Self-administered questions- Prior to initiation of training, information pertaining to socio-demographic profile of the women were filled. Questionnaire included following information for socio demographic profile; age in completed years, education of women, type of family, occupational status of women, socio-economic status of women's family.

Economic status was calculated by modified B.G. Prasad's socio-economic status classification for rural population with All India Consumer Price Index (AICPI) for Industrial workers (IW) as 278 for the month of October 2016.

Intervention: Women were briefed about breast cancer risk factors, preventive measures and followed by demonstration of breast self-examination, stressing on thoroughness and recommended technique. Women were taught about the mirror method for visual inspection of the breast and lying down position palpation. At the end of session, pamphlets in local language depicting the same were distributed. Women were taught to do breast self-examination on a day-to-day basis for one month and on weekly basis for next month to make themselves aware. Intervention was first done individually and then in small groups of 20-25 subjects in each sessions, a week after the 1st session on a mutually convenient day or evening. Monthly Breast self-examination was advised depending on their menstrual status.

The health education session was followed by interactive session addressing doubts. Pamphlet showing risk factors for breast cancer and steps of breast self-examination methodology was distributed to all the participants for increasing awareness of risk factors of breast cancer and facilitating correct steps of breast self-examination at home on a regular basis. Women were asked to attend the next session on a fixed day if they had any query on the procedure of breast self-examination. They also were advised to meet ASHA of their village if they have any doubts.

End line Survey- Post-Test was also done using the same self-administered questionnaire; Competence in conducting self-breast examination was evaluated with self-reported frequency of performance (daily, weekly or monthly) as well as lump detection. Response recorded as yes, No and Don't Know.

There was cent per cent response rate and those with lump

or changes in breast were referred to higher centre for further management.

Data collection

Consenting participants were provided with printed copies of the questionnaire in local language and were given time to fill the questionnaire. Intervention was done on the same day at individual level after collecting filled questionnaire.

Data collection instrument:

The self-administered questionnaire included information on socio-demographic profile, awareness about breast cancer which had eight risk factors, five protective factors and seven susceptibility factors, awareness about breast self-examination in the form of attitude towards and practice of breast self-examination.

Scoring for awareness was done ,there were total 20 features related to breast cancer; for awareness of each feature a single point was awarded and no point was awarded if the women answered no or don't know. Accordingly three categories of breast cancer awareness were defined as per the total scores as depicted in Table 1

ASHA's were involved in motivating participants for cent per cent response in each session.

Data Entry and Analysis: -The data was entered in EPI-INFO program. Analysis was done using EPI-INFO version 7.1.3.10. Initially frequencies of all variables were taken

Table 1: Categories of awareness level

Categories	Score
Poor awareness	0-6
Average awareness	7-13
Good awareness	14-20

to check the completeness of data. Summary tables were obtained in terms of percentages. Z test for difference of proportion was applied for statistical significance.

Results

The breast cancer awareness profile at community level is largely unrepresented, so this interventional study was done as a fact-finding study to collect information pertaining to breast cancer awareness and early detection method awareness related variables particularly in rural set up so as to plan future interventions in this field.

Sociodemographic profile of women-In this study 31.29% women were in the age group of 35-39 yrs and 38.39% women were educated upto high school while few (2.9%) women were illiterate, 51.3% women belonged to nuclear family. 87.10% women were married while 52.56% were farmers which are the main occupation of earning in rural area. Women of 48.71% families were in Class II as per Modified BG Prasad's classification. The findings from DLHS–4 reports for Maharashtra are comparable with the study. [12]

Awareness about breast cancer

Awareness about breast cancer was found only in women 47.74%. Good awareness level was in 12.62%.The awareness was low in young age group No significant change as per type of family in the awareness level was detected. Effect of occupation and education was statistically significant with awareness about breast cancer .50% graduates had average and 50% had good awareness of breast cancer and 66.67% post graduates had good awareness about breast cancer. Teachers and service women had 28.57% and 30% respectively good awareness of breast cancer. Association of education and awareness about breast cancer was found by most of the authors in their study.[13,14]

Table 2: Knowledge regarding risk factors responsible for breast cancer (n=310)

Variables	Re-sponse	Baseline		End line		p value
		n	%	n	%	
Advanced Age	Yes	138	44.52	252	81.29	0.001
	No	30	9.68	56	18.06	
	DK	142	45.81	2	0.65	
Gender	Female	120	38.71	252	81.29	0.001
	Male	6	1.94	54	17.42	
	DK	184	59.35	4	1.29	
Family history of Breast cancer	Yes	76	24.52	264	85.16	0.001
	No	8	5.81	11	3.55	
	DK	216	69.68	35	11.29	
OC Pills	Yes	132	42.58	248	80.00	0.001
	No	36	11.61	41	13.23	
	DK	142	45.81	21	6.77	
Long term use of Hormonal Replace-ment Therapy	Yes	130	41.94	253	81.61	0.001
	No	18	5.81	49	15.81	
	DK	162	52.26	8	2.58	
Infection in either breast	Yes	86	31.39	239	77.10	0.001
	No	20	1.46	48	15.48	
	DK	204	67.15	23	7.42	
Dense Breast Tissue	Yes	91	29.35	237	76.45	0.001
	No	14	4.52	62	20.00	
	DK	205	66.13	11	3.55	
Not having children	Yes	146	47.10	242	78.06	0.0012
	No	2	0.65	30	9.68	
	DK	162	52.26	38	12.26	

DK- Donot Know Z test for difference of proportion

Study reveals low breast cancer literacy with regards to risk factors among rural women, irrespective of their socio-economic and educational backgrounds. Only 44.52% women were aware about risk factors. Knowledge regarding whether breast cancer risk is related with female gender was 38.71%. 76 women (24.52%) had knowledge about risk of breast cancer with history of breast cancer in first degree relative, mother or sister. 42.58% women were aware of association of OC pills with breast cancer, awareness of risk of long term use of hormonal replacement therapy with breast cancer was seen in 41.94%.women..

Awareness about protective factors-Protective factors assessed were breast feeding, regular physical exercise, regular menses, which food type having more protection (vegetarian or non-vegetarian food) and whether oily food is protective. In our study 52.3% women were not aware that breast feeding as a protective factor against breast cancer. 31.6% women had awareness of regular exercise as a protective factor .Regular menses is a protective factor was answered by 43.9% study women

Awareness regarding susceptibility factors to breast cancer-The susceptibility factors assessed were early menarchae, late menopause, late age of pregnancy, multiple abortions, early menarche and obesity and never breastfed a child. Early menarche <11years has been found to be susceptible for breast cancer in many studies (43, 44). Late menopause was considered susceptible for breast cancer by only 29.03% women and late age of pregnancy was considered as susceptible by 47.4% women. Susceptibility of multiple abortions was responded by 47.1% women.60% women in our study were not aware of late menopause has susceptibility for breast cancer. Though breast feeding is considered normal in rural women, never breast feeding a child can be susceptible for breast cancer was answered by 47.1% women.

Awareness of Breast Self-Examination-Very few studies have examined BSE behaviours, performance barriers and perception in routine life by rural women. Though research suggest that many women are aware of BSE and though breast cancer can occur rarely in young women, regular BSE may help them detect cancer at an early stage with no expenses. In our study when awareness of BSE term was assessed 2.9 % women were aware of this term. No one was aware of frequency of BSE. Awareness of time of performing BSE was correctly answered by extremely few (0.6%) women and 1% awareness about correct steps of BSE was noted in women.

16.8 % of the women responded that breast cancer is a communicable disease and spreads from one to another. All breast cancer lumps are painful was the attitude of 11.9% women. Early discovery of lumps increases the chance of survival was accepted by 13.9% women which portrays their perseverance to learn the early diagnosis technique. Study done by Gangane et al in rural India found commonest

Table 3: Attitude towards Breast Self-Examination

Variables	Re-sponse	Baseline		End line		P value
		n	%	n	%	
Breast cancer Is Contagious	Yes	52	16.8	14	4.52	<0.001
	No	49	15.8	245	79.03	
	DK	209	67.4	51	16.45	
All lumps are breast cancer	Yes	37	11.9	13	4.19	<0.001
	No	12	3.9	288	92.90	
	DK	261	84.2	9	2.90	
Breast cancer lump is associated with pain	Yes	29	9.4	20	6.45	<0.001
	No	8	2.6	275	88.71	
	DK	273	88.1	15	4.84	
All nipple secretions are normal	Yes	23	7.4	10	3.23	<0.001
	No	6	1.9	245	79.03	
	DK	281	90.6	55	17.74	
Any swelling or pain in armpit can be related to breast lump	Yes	8	2.6	252	81.29	<0.001
	No	10	3.2	28	9.03	
	DK	292	94.2	30	9.68	
Retraction of nipple /change in skin should be shown to doctor	Yes	15	4.8	246	79.35	<0.001
	No	4	1.3	9	2.90	
	DK	291	93.9	55	17.74	
Discovering lump will increase the chance of survival	Yes	43	13.9	291	93.87	<0.001
	No	4	1.3	9	2.90	
	DK	263	84.8	10	3.23	

Z test for difference of proportion

Table 4: Practice of Breast Self-Examination

Variables	Response	Baseline		End line		P value
		n	%	n	%	
BSE Performance on regular basis	Yes	9	2.9	288	92.90	0.0001
	No	15	4.8	9	2.90	
	DK	286	92.3	13	4.19	
Not Knowing How to perform	Yes	110	35.5	29	9.35	0.0001
	No	5	1.6	258	83.23	
	DK	195	62.9	23	7.42	
Not knowing the frequency of BSE	Yes	112	36.1	27	8.71	0.0001
	No	8	2.6	267	86.13	
	DK	190	61.3	16	5.16	
Did Not thought about its Importance	Yes	10	3.2	21	6.77	0.0001
	No	5	1.6	235	75.81	
	DK	295	95.2	54	17.42	
Not giving importance to Health	Yes	10	3.2	15	4.84	0.0001
	No	6	1.9	246	79.35	
	DK	294	94.8	49	15.81	

Z test for difference of proportion,

reason for not seeking early care is because breast lumps are painless.[15]

We found that 2.9% women were practicing BSE on regular basis (once a month) ,110 (35.5%) women were not aware of the correct procedure and 195 (62.9%) were not aware of it at all. 294 (94.8%) women were not able to answer whether they care about their health? This reveals the attitude of rural women towards their heath, which needs attention as ignoring health leads to delay in diagnosis of disease and once the disease is diagnosed in advanced stage it may also lead to psychosocial problems.

Conclusion

In conclusion, we find wide gap between knowledge and practice & others i.e. 47.74% of the rural women were aware about breast cancer but BSE awareness among these women was found to be only. Post intervention 89.68% women were found to be aware of the breast self-examination word and 88.06% women had awareness of time to perform BSE and 81.61% women had awareness about correct steps of performing BSE at the end line which were statistically significant. ($p<0.05$)

This points that wide gap can be reduced through a rational public health education with well-defined approach exploring the barriers behind these situations in the rural areas where the bulk of the disease is but access to information is still a challenge.

Data show that breast cancer knowledge is related to breast cancer screening utilization. Other data shows that individual breast cancer risk is significantly related to compliance with breast cancer. The only mechanism to increase a rural woman's chance of survival is through breast cancer screening using a community – based outreach program. This study clearly shows that a community oriented educational intervention programme emphasizing on proper technique can bring about the desirable behavioural change among rural women.

References

1. Stark JJ, Nelson JK. The breasts of "Night": Michelangelo as oncologist. N Engl J Med. 2000; 343; 1577-1578.
2. Althuis MD, Dozier JM, Anderson WF,Devesa SS. Global trends in breast cancer incidence and mortality 1973-1997. Int J Epidemiol, 2005;34 (2):405–12.
3. IARC,WHO,GLOBOCAN 2012,Estimated cancer Incidence, Mortality and Prevalence worldwide in 2012. Available from: http://www.globocan.iarc.fr/factsheets/ populations/ factsheet.asp .
4. Hortobagyi GN, Garza S J, Pritchard K, Amadori D, Haidinger R, Hudis CA et al. The global breast cancer burden: Variations in epidemiology and survival. Clin Breast Cancer. 2005;6:391–401.
5. NCDIR , Time Trends in Cancer Incidence Rates. 2013. Consolidated Report of HBCR, 2007-2011. Bengaluru, ICMR 2016.
6. ,Pinnoti JA,Barros AC, HeggR Z. Breast cancer program in developing countries. Breast Dis. 1995;8 243–256.
7. Simsek S, Tug T. Benign tumors of the breast: Fibroadenoma, Sted.2002;11; 1025.
8. Lagerlund M, Hedin A, Sparén P, Thurfjell E, Lambe M. Attitudes, beliefs, and knowledge as predictors of nonattendance in a Swedish population-based mammography screening program. Prev Med.2000; 31:417–28.
9. Yadav P, Jaroli DP. Breast cancer: Awareness and risk factors in college-going younger age group women in Rajasthan. Asian Pac. J. Cancer Prev.2010; 11:319–22..
10. Yip CH and Taib NA.Breast health in Developing countries, Climaatcteric, 2014,17;(2) 54-59
11. Pakseresht S, Ingle G, Garg S, Sarafraz N. Stage at diagnosis and delay in seeking medical care among women with breast cancer, Delhi, India. Iran Red Crescent Med J. 2014; 16(12):e144-90
12. International Institute for Population Sciences. District Level Household and Facility Survey -4 State (2012-13). 2014.
13. Zahid AM, Kanwal N, Sami M, Larik PA FM. Risk of Breast Cancer among Young Women and Importance of Early Screening. Asian Pacific J Cancer Prev. 2015; 16 (17):7485–9.
14. Heck KE, Wagener DK, Schatzkin A, Devesa SS, Breen N. Socioeconomic status and breast cancer mortality, 1989 through 1993: an analysis of education data from death certificates. Am J Public Health; 1997; 87(7):1218–22.
15. Gangane N, Anshu, Manvatkar S, Prevalence and Risk Factors for Patient Delay Among Women With Breast Cancer in Rural India. Asia-Pacific J Public Health, 2015;1–11.

ORIGINAL ARTICLE

Assessment of Implications of Alcohol Prohibition in Bihar: A Pilot Study

Neeraj Agarwal[1], Chandra Mani Singh[2], Chandramani Kumar[3], A K Shahi[4]

[1]Professor & Head, [2]Additional Professor, [3]Senior Resident, Department of Community & Family Medicine, AIIMS Patna, Bihar, [4]State Health Society, Bihar,

Abstract

Background: Bihar government has implemented a total alcohol prohibition in state since April 2016. Alcohol de-addiction centre had been started in each district to tackle the problem of alcohol withdrawal. However it seems that number of expected people did not turn up at these de-addiction centres. Apart from it, there is reporting of alcohol availability in state despite ban.
Objectives: This study was conducted to estimate the alcohol users after ban, to describe type of alcohol being consumed and place of availability of alcohol.
Methods: A cross sectional study was conducted in three blocks relatives of identified alcohol user were interviewed by trained field investigators in two weeks of data collection period (25th July to 10th August 2016). Data was collected by trained investigators using predesigned semi structured questionnaire.
Results: Majority of drinkers (64%) stopped taking alcohol after the ban and above 25% people shifted to other substance like Toddy, Ganja (Marijuana) etc. Majority of drinkers are still getting alcohol illegally from nearby locality or neighbouring district. Most common available type of alcohol is country made (Local, Desi) alcohol. Female / spouse of male were very happy after this ban as male gives their quality time and money for wellbeing of homes.
Conclusion: About 30% known alcoholics still consuming alcohol. Most of them getting it illegally from nearby villages and districts. Above one fourth of the alcoholics have shifted to other substance abuse after ban to satisfy their desire.

Key words: Alcohol, Prohibition, De-addition centre, Assessment.

Introduction

Alcohol consumption is an old age habit of human beings across the globe. The ancient epics, Mahabharata and Ramayana have frequent references to drinking, indicating that the habit was not uncommon.[1] Distilled alcoholic beverages like arrack and toddy were known in India since at least 800 BC.[2] India is a country of diversity and drinking pattern of alcohol in country varies according to literacy status, caste, religion and socioeconomic status. National Family Health Survey 3 data shows higher alcohol intake by those who belongs to lower socio-economic status, less educated, schedule caste & tribe. People from Christian and Sikh community had higher alcohol intake than other communities.[3] Ill effects of alcohol consumption are well known whether it is social or health related. The FAO of United Nations in a study observed declined income among tribal population of Bihar and Madhya Pradesh who used to consume alcohol.[4] Harmful effect of alcohol on health and economic burden has also been observed in other studies in India.[5,6] Alcohol ban in India had started from pre independence era. Between the 1920s and 1930s to almost two decades after Independence, alcohol was banned in vast regions of India. The anti-alcohol protests took its inspiration from the views of Mahatma Gandhi. Large portions of present day Assam, Madhya Pradesh, Odisha, Tamil Nadu, Maharashtra, Gujarat, Andhra Pradesh, Karnataka and Kerala had implemented prohibition since about 1937. In 1967 all states except Mizoram and Gujarat repealed the law of alcohol ban.[7] At present, few states and UTs like Gujarat, Nagaland, Kerala and Lakshadweep are still following alcohol prohibition. Bihar government has implemented a complete alcohol prohibition in the state since April 2016. Not only drinking, possession and carrying alcohol is a serious punishable offence. Alcohol de-addiction centre had been started in

Address for correspondence- *Dr Chandramani Kumar, Department of Community & Family Medicine, AIIMS Patna, Phulwarisharif, Bihar. PIN – 801507*

Received: 08/04/2017, Accepted: 21/06/2017

each district to tackle the problem of alcohol withdrawal symptoms. Trained doctors and paramedical staffs have been deployed at each de-addiction centre to take care of persons suffering from withdrawal symptoms. However, it seems that number of expected people could not turn up at the de-addiction centres after prohibition of alcohol. Few deaths have been also reported after complete alcohol ban. Apart from it, there is reporting of alcohol availability in state despite ban. Department of C&FM, AIIMS Patna was approached by Bihar govt. for assessment of current status of alcohol prohibition in the state. We conducted this study to estimate the alcohol users after ban, to describe type of alcohol being consumed and place of availability of alcohol.

Methods

A cross sectional study was conducted in three blocks of Purnea district namely Kasba, Jalalgarh and B Kothi. Before commencement of this study, a preliminary survey was conducted by govt. of Bihar using ASHAs to identify the alcohol users in villages. ASHAs were given a predesigned questionnaire to help in identification of alcohol users. From Kasba, Jalalgarh and B Kothi of Purnea district, 1266 people were identified by ASHAs as alcohol users. Details of those alcohol users of these three blocks was provided to department of C&FM, AIIMS Patna by Bihar government. Out of 1266 known alcohol user, spouse or near relative of 1069 known users were interviewed by trained field investigators. It was a complete enumeration of all identified known alcoholics. Informed consent was taken from the respondents and those who gave consent to participate in study were included in final data analysis. In this way total sample size came out to be 1069. Data was collected by the field investigators using predesigned pre-tested semi structured questionnaire in two weeks of data collection period (25th July to 10th Aug., 2016). Semi-structured questionnaire was prepared and field tested by department of C&FM, AIIMS Patna. Data was entered in MS excel spreadsheet and analysed using SPSS software version 22.

Results

Out of 1069 respondents, majority (654, 61.2%) belonged to Hindu religion however, 194 (18.1%) respondents did not disclosed their religion. (Table 1) Among 1069 respondents, 301 (28.2%) admitted that their spouse/

Table 1: Religion of respondents (n = 1069)

Religion	Number	Percentage
Hindu	654	61.2
Muslim	205	19.2
Others	16	1.5
Not Mentioned	194	18.1
Total	**1069**	**100.0**

Table 2: Current status of alcohol intake by people (n = 1069)

Current status	Number	Percentage
Yes	301	28.2
No	684	64.0
Never taken	73	6.8
No response	11	1.0
Total	**1069**	**100**

near relative still taking alcohol whereas 684 (64%) said that no one taking alcohol in their home at present. 11 (1.0%) subjects did not respond to this question. (Table 2)

On asking about source of alcohol from those respondents who admitted about intake of alcohol, 195 (64.8%) said that alcohol is available in nearby locality i.e. within village and/or nearby villages. Around one third (101, 33.6%) respondents did not know the source of availability of alcohol. More than three fourth (237, 78.7%) respondent said that desi alcohol is available whereas few respondents said about the availability of only foreign liquor or both. Out of 301 respondents, 45 (15.0%) did not know the type of alcohol being consumed by their spouse/near relative. Among 684 persons who had quit alcohol after prohibition by the state government, respondents of 219

Table 3: Source of alcohol, type of alcohol being consumed and shifting to other substance abuse after alcohol ban

Variables	Frequency	Percentage
Source of alcohol (n = 301)		
Nearby locality	195	64.8
Neighbouring districts	1	0.3
Other States	4	1.3
Dont Know	101	33.6
Type of alcohol or its substitute available (n = 301)		
Desi	237	78.7
Foreign	12	4.0
Both	7	2.3
Dont Know	45	15.0
Toddy	75	11.0
Toddy and Ganja	7	1.0
Ganja	98	14.3
Bhang	14	2.0
Cough syrup and Medicine	2	0.3
None	219	32.0
No Response	269	39.3

(39.3%) respondents said that they had not started any new substance abuse. Ganja was started by a considerable amount of people (98, 14.3%) after quitting alcohol. 75 (11.0%) people also started toddy. Few people also started Bhang, cough syrup and some medicines in place of alcohol. However, a large proportion of respondents (269, 39.3%) did not answered this question. (Table 3)

Only 7 (2.3%) among 301 current alcoholic people tried treatment for quitting alcohol but they are still drinking alcohol. This proportion found to be little more (126, 18.4%) among those who have quit alcohol. Majority of the people from both group did not went for treatment. (Table 4) Among those 126 people who quit alcohol after ban, majority preferred to take treatment from quacks (61; 48.4%) and private hospitals (23; 18.3%). Only 16 (12.6%) people preferred govt. hospitals including de-addiction centre. (Table 5)

Table 4: Treatment for withdrawal symptoms

Current status of alcohol intake		
Treatment taken	**Frequency**	**Percentage**
Currently taking alcohol (n = 301)		
Yes	7	2.3
No	241	80.1
No response	53	17.6
Quitted alcohol (n = 684)		
Yes	126	18.4
No	517	75.6
No response	41	6.0

Table 5: Place of treatment (n = 126)

Place	Frequency	Percentage
De addiction centre /other govt. facilities	16	12.6
Pvt. Hospital	23	18.3
Quacks	61	48.4
Dont Know	19	15.1
Not Mentioned	07	5.5
Total	**126**	**100.0**

Seven people were reported dead due to alchohol intake after ban. However probable reason of death could not be ascertained. Participants were also asked about any change in domestic quarrel after alcohol ban in the state. Out of 1069 participants, 186 (17.7%) responded as decrease in quarrel, where as 6 (0.6%) responded that there was increse while 76 (7.1%) said there was no change in domestic quarrel. Remaining 798 (74.6%) participants did not answer this question.

Discussion

Alcohol ban is not an easy decision for any government as it is associated with considerable loss of revenue. Despite that, government of Bihar imposed alcohol ban in state since April 1, 2016. Initially only country liquor was banned, followed by all types of alcohol within few days of implementation of first phase.[8] Some other states in India like Gujarat, Nagaland and Kerala have already implemented alcohol ban and Bihar has made new entry in this group. Other states like Andhra Pradesh, Haryana, Tamil Nadu, Mizoram and Manipur all experimented with partial or complete ban on liquor. But change in governments as well as a negative feedback from the public have forced political parties to reverse the decision. Widespread smuggling and sale of illicit liquor have also been the reasons for such bans to collapse.[9] Mizoram had implemented ban in 1997 and lifted in 2014. Increase in illegal trade of alcohol was one of the main reason for lifting the ban.[10] Andhra Pradesh also lifted the ban in 1997 for same reason. Interstate smuggling of alcohol, unemployment, decline in tourism, and increase in illegal manufacturing of home-made liquor have also been observed after alcohol ban in Gujarat.[11] All these reports unanimously support the view that alcohol ban led to illegal preparation and trade of alcohol. Our findings of the study support such views as about 28% people were still drinking alcohol in study area. All of them were getting mainly illicit country liquor illegally. Present study also shows lesser turn out at de-addiction centre and shifting of some people to other substance abuse like toddy, ganja and/or even some allopathic medicines and cough syrup. Both of these findings could be inter-related as there is a possibility that many people might have started other substance rather than visiting de-addiction center to overcome withdrawal symptoms. Participants expressed that alcohol prohibition is a way of side income for police and administration. These views support the observation of Tanu S et al. who noticed similar situation in Gujarat.[11] Present study also revealed that almost all people especially females were happy on alcohol ban but they want it to be more operational. Although majority of women respondent preferred to remain silent but some revealed about decrease in domestic quarrel following alcohol ban. We have not assessed implications of alcohol ban on all parameters which is an important limitation of our study. Since we have interviewed the wives or near relatives of known alcoholic there is a chance of social disability bias and some data might have been concealed because of legal issues with alcohol ban. This is another major limitation of present study.

Conclusions

Nearly 64% of known alcoholics have quit alcohol after ban however, in general majority (75% - 80%) of people have quit alcohol barring few (20% - 25%). Those who are still consuming alcohol, mainly taking desi alcohol.

Desi alcoholic beverages are still available although at higher prices. Considerable number of alcoholics have started using other substances; most commonly ganja in place of alcohol. Few reported death in area after alcohol ban. However, probable reason of death could not be ascertained. To retrieve more clear picture on this issue, another study covering larger representative section of Bihar can be carried out.

References

1. Murthy P. Culture and alcohol use in India. WCPRR March 2015: 27-39. (Accessed on 24/08/2016)
2. Simmonds C. Alcohol, its production, properties, chemistry and industrial applications. London, Macmillan, 1919 (Accessed on 24/08/2016)
3. National Family Health Survey – 3 (2005 - 06). http://rchiips.org/nfhs/NFHS-3%20Data/VOL-1/India_volume_I_corrected_17oct08.pdf
4. Food and Agriculture (FAO) Organization Investment Centre. Socio-economic and production systems studies. India: Overview of socio-economic situation of the tribal communities and livelihoods in Madhya Pradesh and Bihar. FAO Investment Centre Studies and Reports, 1998 (Accessed on 24/08/2016)
5. Bonu S, Rani M, Peters DH, Jha P, Nguyen SN. Does use of tobacco or alcohol contribute to impoverishment from hospitalization costs in India? Health Policy & Planning, 20: 41-49, 2005. (Accessed on 24/08/2016)
6. Saxena S, Sharma R, Maulik PK. Impact of alcohol use on poor families: a study from North India. Journal of Substance Use, 8:78-84, 2003. (Accessed on 24/08/2016)
7. How Indian states have fared in banning alcohol? http://www.livemint.com/Politics/PminUIJiL3vo0x8K45mgfM/How-Indian-states-have-fared-in-banning-alcohol.html (Accessed on 09/09/2016)
8. "Of populism and prohibition" April 20, 2016. http://www.thehindu.com/opinion/editorial/of-ban-on-liquor-in-indian-states/article8495211.ece (Accessed on 24/08/2016)
9. "States with total and phase-wise prohibition of alcohol in India" April 6, 2016 http://indianexpress.com/article/india/india-news-india/bihar-liquor-ban-states-having-total-prohibition-gujarat-kerala/ (Accessed on 24/082016)
10. "Mizoram lifts 18-year-old ban on alcohol". The Indian Express. 10 July 2014. http://indianexpress.com/article/india/india-others/mizoram-lifts-18-year-old-ban-on-alcohol/ (Accessed on 24/08/2016)
11. Sachdeva T, Soni J. Effects of Total Liquor Ban on Gujarat's Economy. International Research Journal of Commerce Arts and Science, 2014, Vol. 5, Issue 5, 121-131. (Accessed on 24/08/2016)

ORIGINAL ARTICLE

Awareness about Pregnancy and Birth Related Disorders in Women at Low Resource Settings

S Chhabra[1], S Chopra[2]

[1]Director Professor, [2]Ex-Post graduate student, Obstetrics Gynaecology, Mahatma Gandhi Institute of Medical sciences, Sevagram, Wardha, Maharashtra, India

Abstract

Background: Disorders during pregnancy, birth and post-birth are leading causes of morbidity and mortality during reproductive age in developing countries. It is imperative that disorders are prevented, if not prevented, recognised, managed timely and appropriately. Since there is limitation to prevention of many disorders, it is essential that women are made aware of disorders, action needed so that they take action. Lack of awareness leads to delay in seeking care. Present article is based on information collected from women of low resource settings.
Objective: To assess the awareness among women regarding disorders which can occur during pregnancy, birth and postbirth.
Methods: Fifteen hundred women(750 rural,750 urban), who presented to prenatal clinic for the first time and who were not sick, were randomly interviewed through predesigned questionnaire in local language, by the social worker who was briefed about the objective of the study.
Results: Very few rural as well as urban women were aware of disorders like anaemia, pre-eclampsia, eclampsia, antepartum haemorrhage, preterm labour, prelabour rupture of membranes, abnormal presentations, obstructed labour, fetal distress, postpartum haemorrhage, which are responsible for most of the maternal and perinatal deaths. Only 67(8.9%) rural, 74(9.9%) urban women had some knowledge of one or other disorder. Most commonly known disorder was anaemia. Health providers were the source of knowledge.
Conclusion: In low resource settings, there is lack of awareness amongst women regarding disorders which can be life threatening to mothers and newborns . Action is needed.

Key words-Pregnancy, Birth, Post birth, Disorders, Awareness.

Introduction

Every day around 830 women die due to pregnancy and birth related complications.[1] Earlier WHO and AbouZahr et al reported that 99% maternal deaths occurred in developing regions. Sub-Saharan Africa and South Asia accounted for 57% and 30% deaths respectively.[2-4] Pregnancy, birth and postbirth disorders are among the leading causes of morbidity and mortality during reproductive age in developing countries. Most of these deaths and disabilities are preventable through appropriate services, especially emergency obstetric care (EmOC).[5] In developed countries, every pregnant woman has access to essential obstetrics care due to which deaths and disabilities are rare, but the scenario is not the same in developing countries. Reasons are many and complex. Maternal morbidity and mortality can be prevented significantly, if women and their families recognise obstetric danger signs and prompt health care is provided.[6] Raising awareness about the danger signs among pregnant women would lead to early detection of obstetric problems and reduce the delay in deciding to seek care.[7,8] For prevention of maternal and neonatal morbidity and mortality, it is essential that the disorders are recognized well in time and are managed appropriately and timely. However for utilization of services, women need to be aware of the disorders to take appropriate and timely action.

Objective

Present study was done to assess the awareness among women regarding disorders which can cause maternal/ neonatal morbidity and mortality during pregnancy, birth and postbirth.

Address for correspondence- *Dr S Chhabra, Obstetrics Gynaecology, Mahatma Gandhi Institute of Medical sciences, Sevagram, Wardha, Maharashtra, India* **Email:** *chhabra s@rediffmail.com*

Received: 07/02/2017 , Accepted:22/04/2017

Methods

Institution based pilot study was conducted in obstetrics and gynaecology outpatient department after approval of the ethics committee of the institute. The institute is rural based in the area where per capita income in many rural families is less than a dollar / day. Fifteen hundred pregnant women, who had reported to antenatal outpatient department for the first time were randomly interviewed. Since it was difficult to calculate the sample size, hence, whoever gave consent were interviewed in the antenatal clinic for over one year. Women who were sick were excluded from the study. This article is based on the analysis of information collected through interviews carried out by the social worker who was briefed about the objective of the study. Questions were asked in local language, verbally and answers were recorded by the interviewer on a predesigned and pretested questionnaire. Women were not given questionnaire to fill. Questions were about demography and awareness regarding pregnancy related disorders and possibilities of fatalities.

Out of 1500 study subjects,750 were rural and 750 were urban inhabitants . Out of 750 rural inhabitants, 12(1.6%) were teenagers (<20 yrs), 669(89.2%) were between 20-29 years and only 69(9.2%) were between 30-34 years age group. Out of 750 urban subjects, 18(2.4%) were teenagers, 642(85.6%) were between 20-29 years and 90 (12%) belonged to 30-34 years age group. Among rural women, 520(69.33%) were primigravida, 181(24.13%) were second / third gravida and 49(6.53%) were fourth-fifth gravida. About 77.33% (580) of urban women, were primigravida, 148(19.73%) were second / third gravida, and 22(2.93%) were fourth-fifth gravida. About 68.13% of rural women and 90.67% of urban women had some education, 25.2 % rural and 18.4 % urban inhabitants belonged to below poverty line (BPL), 28.94% of rural and 29.06 % of urban women were from lower socio-economic class (SEC); 22.53% rural and 24.26% of urban women were from lower middle class families and 114(15.2%) each in both categories were from middle class families as per Kuppuswamy's criteria for Socio-Economic Class. (Vijaya et al 2013).

Results

The knowledge of disorders, which can cause maternal and perinatal morbidity or mortality such as low haemoglobin (anaemia), hypertension (pregnancy induced hypertension (PIH), eclampsia, vaginal bleeding (antepartum haemorrhage, APH), early pains (preterm labour), leaking before labour (prelabour rupture of membranes),baby in different positions(abnormal presentations), baby getting stuck in birth canal (obstructed labour), baby suffering inside uterus (foetal distress) and post birth heavy bleeding (postpartum haemorrhage), were found in very few women. In most of the cases health providers were the source of knowledge.

None of 12 rural teenagers and 6(33.33% of 18) urban teenagers knew about anaemia. About 16.66% of rural as well as urban teenagers knew about PIH and 3 of rural and 3 urban teenagers knew about APH (Table 1). Among 1500 subjects, more urban women than rural had knowledge that death could occur during pregnancy, birth and postbirth period. Only one urban primigravida knew about the possibility of death during pregnancy. However amongst multigravida, 26(1.73%) knew about the possibility of death during pregnancy. Only 8(0.53%) [3(0.4%) rural, 5 (0.7%) urban] multigravida knew about the possibility of death during labour and 9(0.6%) [4(0.5%) rural and 5 (0.7%) of urban] multigravida knew about the possibility of death during birth and post birth period (Table 2). Overall 73(4.87%)

Table 1: Knowledge about pregnancy related disorders

		Anaemia				Hypertensive Disorders				Antepartum Haemorrhage			
	Rural		Urban		Rural		Urban		Rural		Urban		
Age	Parity	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	NO
< 19 years	Primi (30=R12+U18)	0	12	6	12	2	10	3	15	3	9	3	15
20-29 years	Primi (1029=R495+U534)	15	480	16	518	12	483	7	527	8	487	9	525
	G2-3 (229=R135+U94)	21	114	23	71	10	125	15	79	5	130	14	80
	G4-5 (53=R39+U14)	7	32	5	9	3	36	6	8	4	35	3	11
30-34 years	Primi (41=R13+U28)	9	4	7	21	6	7	3	25	5	8	5	23
	G2-3 (100=R46+U54)	8	38	6	48	1	45	4	50	1	45	4	50
	G4-5 (18=R10+U8)	5	5	2	6	1	9	2	6	1	9	1	7
Total (1500)		**65**	**685**	**65**	**685**	**35**	**715**	**40**	**710**	**27**	**723**	**39**	**711**
Total %		**8.6**	**91.4**	**8.6**	**91.4**	**4.7**	**95.3**	**5.3**	**94.7**	**3.6**	**96.4**	**5.2**	**94.8**

R=Rural, U=Urban

Table 2: Knowledge about Death occurring during Pregnancy, Labour And Postpartum period

		Death during pregnancy				Death during Labour				Death during Postpartum				R	U	Total
		Rural		Urban		Rural		Urban		Rural		Urban				
Age	Parity	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
<19	Primi	0	12	1	17	0	12	0	18	0	12	0	18	**12**	**18**	**30**
20-29	Primi	0	495	0	534	0	495	0	534	0	495	0	534	**495**	**534**	**1029**
	G2-3	2	133	4	90	1	134	3	91	2	133	2	92S	**135**	**94**	**229**
	G4-5	3	36	3	11	0	39	0	14	0	39	0	14	**39**	**14**	**53**
30-34	Primi	0	13	0	28	0	13	0	28	0	13	0	28	**13**	**28**	**41**
	G2-3	2	44	5	49	2	44	2	52	2	44	3	51	**46**	**54**	**100**
	G4-5	3	7	4	4	0	10	0	8	0	10	0	8	**10**	**8**	**18**
Total		**10**	**740**	**17**	**733**	**3**	**747**	**5**	**745**	**4**	**746**	**5**	**745**			**1500**
%		**1.3**	**98.7**	**2.3**	**97.7**	**0.4**	**99.6**	**0.7**	**99.3**	**0.5**	**99.5**	**0.7**	**99.3**			

R=Rural, U=Urban

Table 3: Knowledge about Labour and Postpartum related disorders

Age			≤19	20-29			30-34			Total	%	
Parity			Primi	Primi	G2-3	G4-5	Primi	G2-3	G4-5			
Preterm pains(premature rupture of membranes)	R	Yes	0	10	7	3	3	3	2	28	3.7	100
		No	12	485	128	36	10	43	8	722	96.3	
	U	Yes	6	13	16	3	4	2	1	45	6.0	100
		No	12	521	78	11	24	52	7	705	94.0	
Abnormal Presentations	R	Yes	1	3	4	1	2	0	1	12	1.6	100
		No	11	492	131	38	11	46	9	738	98.4	
	U	Yes	3	5	4	1	3	4	1	21	2.8	100
		No	15	529	90	13	25	50	7	729	97.2	
Fetal Distress	R	Yes	0	4	3	2	3	2	2	16	2.1	100
		No	12	491	132	37	10	44	8	734	97.9	
	U	Yes	1	6	3	2	3	3	1	19	2.5	100
		No	17	528	91	12	25	51	7	731	97.5	
Obstructed Labour	R	Yes	0	0	1	1	0	2	1	5	0.7	100
		No	12	495	134	38	13	44	9	745	99.3	
	U	Yes	2	3	3	1	2	2	2	15	2.0	100
		No	16	531	91	13	26	52	6	735	98.0	
Postpartum haemorrhage	R	Yes	1	5	4	3	3	3	1	20	2.7	100
		No	11	490	131	36	10	43	9	730	97.3	
	U	Yes	2	5	5	0	3	5	1	21	2.8	100
		No	16	529	89	14	25	49	7	729	97.2	

of 1500 women knew about preterm labour, [28(13 primigravidae,15 multigravida rural, 45(23 primigravidae, 22 multigravidae) urban]. About 2.3% (35) of women knew something about fetal distress who were mostly urban inhabitants.Twenty (1.33%) women, mostly from urban areas knew about obstructed labour. More of urban women had knowledge regarding postbirth haemorrhage than rural. Also mostly urban teenage primigravida knew about postbirth haemorrhage (Table 3, Fig 1, Fig 2).

About 0.41%, 2.09% and 0.41% of illiterate women, 1.42%, 4.2% and 1.90% women with primary education,

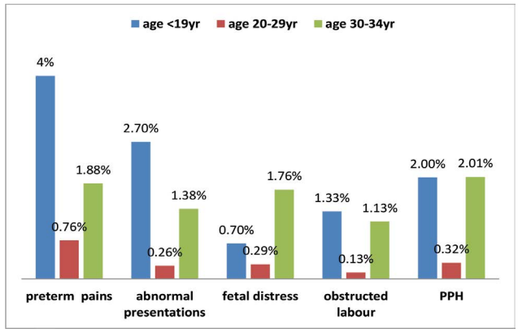


Figure – 1: Knowledge about disorders in relation to age

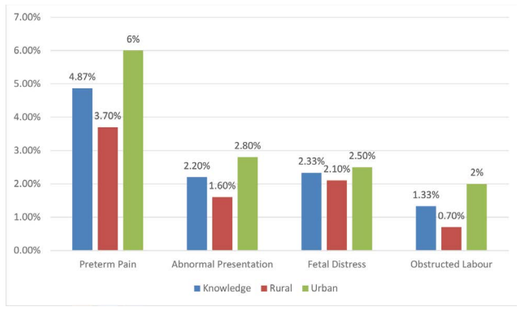


Figure –2 : Knowledge about disorders in relation to residence

4.43%, 6.96%, 5.06% of those with secondary education, 2.8%, 6.7% and 4.7% women with higher secondary education had knowledge about disorders in pregnancy, labour and postpartum respectively. About 12.5%, 20.8% and 12.5% graduate women and 14.2%, 21.4% and 7.1% of postgraduate women had knowledge about disorders in pregnancy, labour and postbirth respectively. (Table IV),

Nearly 2.85%,1.4% and 0% urban illiterate women , 1.81%, 5.45% and 1.8% of women with primary education , 5.7%, 7.69% and 3.84% of women with secondary education, and 2.63%, 4.6% and 3.94% of women with higher secondary education, had knowledge about disorders during pregnancy, labour and postbirth respectively. About 3.6%, 6.4% and 4.4% graduate women and 7.6%, 11.6% and 10.52% women with postgraduate degree had knowledge about disorders in pregnancy, labour and postbirth respectively (Table IV).

Only 0.52% of rural BPL women; 1.84%, 2.76% and 1.84% of low SEC women; 2.95%,4.73% and 2.36% of lower middle class ; 5.26%, 8.7% and 6.14% of middle class ; 10.8%, 18.9% and 10.8% of upper middle class women and 8.3% of upper class women had knowledge about disorders in pregnancy, labour and postbirth respectively.

Among urban BPL women 0.7%,1.44% and 1.44% ; 2.75%, 3.21% and 1.83% of low SEC women, 3.29%, 4.94% and 4.94% of lower middle SEC women, 7.01%, 11.4% and 8.7% of middle SEC women, 11.6%, 18.3% and 8.3% of upper middle SEC women and 13.1%, 21% and 21% of upper SEC women had knowledge about disorders in pregnancy, labour and postbirth respectively.(Table V)

Discussion

To ensure emergency obstetric care accessible to every woman, awareness of obstetric complications during pregnancy, labour and postbirth period is the first essential step for appropriate and timely health seeking. [5,6,11] Records of maternal deaths capture the immediate cause of death, but do not provide information about the real factors, especially delays at various levels which lead to maternal deaths.[12] Complaints which may be due to mild or severe illness, are ignored by women as well as families because, they do not recognize them as dangerous. Pregnant

Table IV: Knowledge regarding disorders in relation to education and residence

	Disorders during pregnancy				Disorders during Labour				Disorders during Postpartum				R	U	Total
	Rural		Urban		Rural		Urban		Rural		Urban				
Education	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
Illiterate	1	238	2	68	5	234	1	69	1	238	0	70	239	70	309
Primary	3	209	1	54	9	201	3	52	4	206	1	54	210	55	265
Secondary	7	151	3	49	11	147	4	48	8	150	2	50	158	52	210
Higher Secondary	3	102	4	148	7	98	7	145	5	100	6	146	105	152	257
Graduate	3	21	9	241	5	19	16	234	3	21	11	239	24	250	274
Post Graduate	2	12	13	158	3	12	20	151	1	12	18	153	14	171	185
Total	**19**	**731**	**32**	**718**	**39**	**711**	**51**	**699**	**23**	**727**	**38**	**712**	**750**	**750**	**1500**
%	**2.53**	**97.47**	**4.27**	**95.73**	**5.2**	**94.8**	**6.8**	**93.2**	**3.07**	**96.93**	**5.07**	**94.93**			

Table V: Relation between Socio-Economic Status, Residence and Knowledge about Disorders

	Disorders during pregnancy				Disorders during Labour				Disorders during Postpartum				R	U	Total
	Rural		Urban		Rural		Urban		Rural		Urban				
Socio-economic	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
BPL	1	188	1	137	1	188	2	136	1	188	2	136	189	138	**327**
Low	4	213	6	212	6	211	7	211	4	213	4	214	217	218	**435**
L.M.	5	164	6	176	8	161	9	173	4	165	9	173	169	182	**351**
Middle	6	108	8	106	10	104	13	101	7	107	10	104	114	114	**228**
U.M.	4	33	7	53	7	30	11	49	4	33	5	55	37	60	**97**
Upper	2	22	5	33	4	20	8	30	3	21	8	30	24	38	**62**
Total	**22**	**728**	**33**	**717**	**36**	**714**	**50**	**700**	**23**	**727**	**38**	**712**	**750**	**750**	**1500**
%	**2.93**	**97**	**4.4**	**95.6**	**4.8**	**95.2**	**6.67**	**93.33**	**3.06**	**96.93**	**5.06**	**94.93**			

women lack knowledge on obstetric danger signs (during pregnancy, birth and postbirth period), due to various factors. It is essential that women and communities are aware of disorders which can cause maternal or neonatal morbidity and mortality. Lori et al have reported that the first delay i.e the decision to seek care by the woman and/or by the family, is one of the most complex factors in maternal deaths as well as disabilities, as it involves many layers of socio-cultural factors such as education, woman's status, cultural beliefs, husband's perception of maternal care, severity of illness, family's opinion and many other factors.[13] In the present study only 67(8.9%) rural, 74(9.9%) urban women had some knowledge of one or other forms of disorder.

The delay in the recognition of obstetric complications among women, family and communities including traditional midwives was the most common cause of delay as per the study conducted by Lori et al.[13] It is believed that recognition of danger signs of obstetric complications in advance will lead to early seeking of health care reducing the first delay.[14] Researchers have reported that women are concerned about their inability to recognise essential danger signs indicating the need for education regarding pregnancy and birth related disorders. Present study revealed that most of the women were unaware about disorders which could become fatal during pregnancy, birth or postbirth. One disorder most commonly known among rural as well as urban women, was anaemia but that too was less than 10%. Anaemia is known to be a very common disorder responsible for 19% of maternal deaths directly/indirectly in India.[15] Anaemia contributes to 20% of all maternal deaths globally. In a study conducted by Hailuet, knowledge level of pregnant women about danger signs of obstetric disorders was low and affected by residential area.[6] The difference in knowledge level could be due to difference in sociodemography, culture and health interventions as well as methodological differences. Urban residence was found to have significant association with knowledge about at least two danger signs during pregnancy,childbirth and postbirth period.[17] In a study by Pembeet et al it was found that 26% of women knew at least one danger sign during pregnancy while only 23% were aware about at least one birth-related danger signs.[18] However, 40% of women knew about one danger sign that arises after birth. Few women knew about three or more danger signs. Half of the women knew at least one possible danger sign during pregnancy, birth and postbirth. However from Ethiopia, Gebrehiwot et al reported that 79.6% mothers had information about danger signs.[19] 61.9% of women had information about vaginal bleeding and 41.9% of them knew about liquor coming out before labour and 19% knew about unusual abdominal pain. Study showed that significant proportion of the pregnant women were unaware of obstetric danger signs.[6] In the present analysis also there was a difference in number of rural and urban women, though both rural and urban women were not aware of disorders which could become fatal during pregnancy, birth and post birth. Most frequently known labour related disorders were preterm pains and PLROM which are not only responsible for morbidity and mortality of baby but sometimes lead to long term problems for mother also. Lack of education had greater role in this unawareness than economic status. While attempts are being made to have EmOC available for all women, it is essential to create awareness regarding pregnancy and birth related disorders, especially in rural women of low resource settings, so that the health care services are used timely and to their full potential. The deficiencies in awareness can be addressed by designing appropriate strategies including provision of targeted communication, information and education, depending on local socioeconomic milieu and resources available.

Acknowledgement

We are grateful to Global Health through Education Training and Services for funding the pilot study and to the women who helped us in collecting the needed information.

References

1. WHO Maternal Mortality Factsheet 2015; N0348.Available at :http://www.who.int/mediacentre/factsheets/fs348/en
2. WHO Library Cataloguing-in-Publication DataMaternal mortality in 2005 : estimates developed by WHO, UNICEF(1996) Available at : http://www.who.int/whosis/mme_2005.pdf
3. AbouZahr C, Wardlaw T, Stanton C, Hill K. Maternal mortality. World Health Statistics Quarterly 1996; 49(2):77–87. [PubMed]
4. Hill K, AbouZhar C, Wardlaw T. Estimates of maternal mortality for 1995 .Bull World Health Organ. 2001;79(3):182–193. [PMC free article] [PubMed]
5. Basic Package of Health and Nutrition Services For Southern Sudan ,UNICEF 2008; 4.2(1)Available at :www.unicef.org/southsudan/South_Sudan_Basic_package_of_health_services.pdf
6. Hailu M, Gebremariam A, AlemsegedF .Knowledge about obstetric danger signs among pregnant women in AletaWondoDistrict,Sidama zone, Southern Ethiopia ,Ethiop J Health Sci.2010;20(1):25-32
7. Thaddeus S, Maine D. Too far to walk: Maternal mortality in context. SocSci Med. 1994;38:1091–1110. doi: 10.1016/0277-9536(94)90226-7. [PubMed][Cross Ref]
8. JHPIEGO. Maternal and Neonatal Health Program. Birth Preparedness and Complication Readiness: A Matrix of Shared Responsibilities. Maryland, USA: JHPIEGO; 2004:1.4 (https://www.google.co.in/?gfe_rd=cr&ei=FkLzV4voF-KK8QeP2LLwDQ#q=jhpiego+maternal+and+neonatal+health+program)
9. Vijaya K, Ravikiran E. Kuppuswamys Socioeconomic Status Scale-Updating Income Ranges for the Year 2013;National Journal of Research in Community Medicine. 2013 ;2(2) : 79-148
10. Maternalandperinataldeathenquiryandresponse,UNICEF2005;9-10 Available at :www.chsj.org/uploads/1/0/2/1/10215849/mapedirreport.pdf
11. Paxton A, Bailey P, Lobis S, Fry D. Global patterns In availability of emergency obstetrics care. Int J GynaecolObstet2006;93:300-307.
12. Nour NM. An introduction to maternal mortality. Rev Obstet Gynecol. 2008;1(2):77-81
13. Lori JR. A critical analysis of maternal morbidity and mortality in Libera, West AfricaMidwifery 2011. doi:10.1016/j.midw.2010.12.001 [PubMed]
14. White Ribbon Alliance for Safe Motherhood/ India, Best Practices Sub-committee. Saving Mothers' Lives: Field Guide for Implementing Best Practices in Safe Motherhood. New Delhi, India: White Ribbon Alliance for Safe Motherhood/India; 2002. Available at pdf .usaid .gov / pdf _ docs / Pnadh636.pdf
15. Kausar R. Maternal mortality in India, Magnitude, Causes and Concerns. IndMedica2005;2:05-06
16. Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis.Lancet Glob Health ;2014 http://dx.doi.org/10.1016/S2214-109X(14)70227-X
17. Federal Ministry of Health (FMOH), Ethiopia. Health and Health Related Indicators: 2006/7. Addis Ababa, Ethiopia: FMOH; 2007. Available at :www.moh.gov.et//Health...Health+Related+Indicators./1b5b2a9f-a960-4024-8d92...
18. PembeAB, UrassaDP, CarlstedtA ,Lindmark G, Nistrom L. et al, Rural Tanzanian women's awareness of danger signs of obstetric complications,BMC Pregnancy Childbirth.2009; 9: 12
19. Gebrehiwot H, Bahta S, Haile N. Awareness of Danger Signs of Pregnancy and its Associated Factors among Pregnant Women who Visit ANC in Mekelle Public Hospitals. AmJAdvDrug Delivery. 2014; 2(2):164-73.

ORIGINAL ARTICLE

Travel Pattern and Profile of Clients Using Online Registration System and Mobile Accessibility for Vaccination in a Newly Established Yellow Fever Vaccination Clinic at AIIMS Patna, India

Dhananjay Kumar[1], Pragya Kumar[2], Neeraj Agarwal[3], Chandra Mani Singh[4], Sanjay Pandey[5], Alok Ranjan[2]

[1]Senior Resident, [2]Assistant Professor, [3]Professor, [4]Additional Professor, [5]Associate Professor, Department of Community Medicine & Family Medicine, All India Institute of Medical Sciences (AIIMS) Patna

Abstract:

Background: Prevention of Yellow Fever (YF) in travellers to Yellow Fever endemic zone can be done with YF 17D vaccine which is a live attenuated vaccine and can be given only up to one hour after reconstitution. The objective of this study was to study the demographic and travelling pattern of clients who got vaccinated at newly established Yellow Fever Vaccination Centre (YFVC) at AIIMS Patna and to assess the vaccine wastage by initiating online and telephonic registration system.

Methods: We developed a web based portal to register the name of passengers who wanted to take YF vaccine at AIIMS Patna from August to December 2016. General demographic characteristics of travellers and their travelling pattern was also obtained.

Results: Total 428 doses used and 409 persons were vaccinated from August to December 2016 with vaccine wastage of less than 5%. Most of them have taken vaccine for travelling to the African endemic countries (81.9%) and the main purpose of their visit was for doing job (85.5%).

Conclusion: By using online registration system and twenty four hour accessibility on mobile phone, we have achieved a remarkable achievement in terms of keeping vaccine wastage below 5% level.

Key words: Yellow Fever, Yellow Fever vaccination, Vaccine wastage

Introduction

Yellow fever (YF) is caused by infection with a flavivirus (family Flaviviridae) that is transmitted to humans primarily through the bite of Aedes spp. and Haemagogus spp. Mosquitoes in Africa and South America, respectively. YF virus infection can be asymptomatic or cause a spectrum of disease ranging from a mild non-specific febrile illness to haemorrhagic fever with multi-organ failure and death.[1] the "yellow" in the name refers to the jaundice that affects some patients. Approximately 200,000 cases and 30,000 deaths occur annually especially in Africa.[2]

Prevention of YF in travellers is critical, because no specific treatment of YF disease exists. Effective prevention strategies include the use of personal protective measures, such as insect repellent on skin and clothing, staying in accommodations with screens or air conditioning, and vaccination. The YF 17D vaccine has historically been considered one of the safest vaccines, with more than 500 million doses delivered globally. This vaccine is required while travelling to 43 endemic countries of Africa and Latin America.[3] This vaccine can be administered only up to one hour of its reconstitution.

The risk of acquiring yellow fever is difficult to predict because of variations in ecologic determinants of virus transmission. For a 2-week stay, the estimated risks for illness and death due to yellow fever for an unvaccinated traveller visiting an endemic area in: 1.West Africa are 50 per 100,000 and 10 per 100,000, respectively and 2. South America are 5 per 100,000 and 1 per 100,000, respectively.[4]

Address for correspondence- *Dr Pragya Kumar, Department of Community and Family Medicine, All India Institute of Medical Sciences (AIIMS) Patna, Bihar,* **E-mail:** *pragyasinha2002@gmail.com*

Received:13/02/2017, Accepted: 20/04/2017

The purpose of immunisation for travellers is twofold: Firstly it is to protect them against catching yellow fever. Secondly it is to protect local populations from catching yellow fever from infected traveller, leading to an epidemic. The countries that require proof of vaccination are those where the disease may or may not occur and where the mosquito vector and potential non-human primate hosts of yellow fever are present. Any importation of the virus into such countries by infected travellers could result in its propagation and establishment, leading to a permanent risk of infection for the human population. Proof of vaccination is often required for travellers arriving from countries with risk of yellow fever transmission and sometimes for travellers in transit through such countries.[4]

Some countries like India are theoretically in danger of epidemics, as they have the right mosquitoes to transmit the virus, and have the kinds of monkeys who could become infected and act as a store or reservoir for the virus.

There are approximately 40 centres in India which are approved by the Government of India but none was in Bihar and its neighbouring state Jharkhand before the month of July 2016. People of this area often were unaware and got vaccinated in private facilities without a valid certificate leading to harassment while travelling. A Yellow fever vaccination centre (YFVC) was inaugurated on 21st July 2016 in the Department of Community and Family Medicine, All India Institute of Medical Sciences, Patna. This initiative proved its worth for the resident of Bihar and neighbouring states who had to travel to other states for Yellow Fever vaccination. The vaccination is done on every working Tuesday currently.

The objective of this study was to study the demographic and travelling pattern of clients who got vaccinated at newly established YFVC at AIIMS Patna and to assess the vaccine wastage after initiating online and telephonic registration system.

Methods

A web based portal on AIIMS Patna website was developed with the help of IT department. The clients could register their name on this portal. They could also register their name telephonically on given mobile and land line number on AIIMS Patna website. A confirmatory e-mail was sent to every registered client mentioning the time and date of vaccination along with the details of the documents they need to carry. Appointments were also given to clients who contacted through telephone.

In the present study we analysed the data of total number of doses of Yellow Fever vaccine used and total number of persons vaccinated along with wastage of the vaccine. Apart from that a self-administered questionnaire was used from the month of October 2016 to study the general demographic characteristics of travellers and their travelling pattern which included questions related to where they are going to travel, purpose of travel, the tentative schedule of travel and the source of information of AIIMS Patna as a Yellow Fever vaccination centre. The period of study was from August to December 2016.The data was analyses using Statistical Package for Social Sciences (SPSS) version 22.0 software package. Frequency table and percentage was used to see the vaccination and travelling pattern of the persons vaccinated. Total doses (428) was used to see the frequency of total number of persons vaccinated and the data of 193 persons were analysed (who came in the month of October to December) to see their demographic profile and travelling pattern.

The ethical clearance was obtained from institutional ethical committee of AIIMS Patna and the informed consent was obtained from each participant.

Results

Total 428 doses used and 409 persons were vaccinated from August to December 2016. Most of the persons were vaccinated in October (33.25%) and November (28.11%).

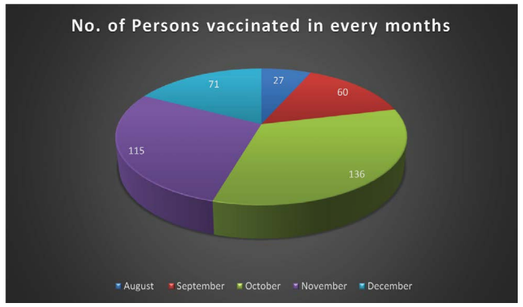


Figure 1: Number of persons vaccinated from August-December 2016

Table 1: No of doses of Yellow Fever vaccine used and vaccine wastage(August-December 2016)

Month	No of doses used	Vaccine wastage (in doses)	Vaccine wastage (in percentage)
August	30	03	10.0
September	70	10	14.3
October	136	00	0.0
November	120	05	4.2
December	72	01	1.4
Total	428	19	4.4

Total vaccine wastage was 4.4% with a zero dose wastage in month of October in spite of maximum persons vaccinated in that month. (Figure 1 and Table 1)

Most of the persons (53.9%) vaccinated for yellow fever were in 21-30 years age group. Mostly they were Male (94.3%) and belonged to Hindu (88.1%) by religion. Majority of them belonged to Bihar (59.1%) followed by Uttar Pradesh (39.9%). (Table 2)

Table 2: General characteristics of travellers came for Yellow Fever vaccination at AIIMS Patna (N=193)

Characteristics	Frequency	Percentage
Age-group		
Below 20 years	13	06.7
21-30 years	104	53.9
31-40 years	55	28.5
41-50 years	16	08.3
Above 50 years	05	02.6
Gender		
Male	182	94.3
Female	11	05.7
Religion		
Hindu	170	88.1
Muslim	21	10.9
Christian	02	01.0
Education		
Up to primary	05	02.6
Secondary	41	21.2
High school	59	30.6
Intermediate	33	17.1
Graduation and above	55	28.5
Belonging state		
Bihar	114	59.1
Uttar Pradesh	77	39.9
Others	02	01.0

Table 3: Showing Travelling pattern of persons vaccinated with Yellow Fever vaccine at AIIMS Patna (N=193)

Variables	Frequency	Percentage
Region of visit		
African countries	158	81.9
Central and South	05	02.6
American countries	30	15.5
Multiple locations		
Purpose of visit		
Job	165	85.5
Business	04	02.1
Tourism	13	06.7
Meeting with relatives	06	03.1
others	05	02.6
Tentative plan of travel		
Within 10 days	27	14.0
11-30 days	63	32.6
More than 30 days	103	53.4
How came to know about AIIMS Patna yellow fever vaccination centre		
From friends or family	63	32.6
members	35	18.1
From travel agent	81	42.0
From internet	14	06.2
Other sources (newspaper/ T.V./Radio etc.)		

Most of them have taken vaccine for visiting the endemic African countries (81.9%) and the main purpose of their visit was for doing job (85.5%). Around 53% persons had scheduled their journey more than one month after being vaccinated. The main source of their information regarding AIIMS Patna as Yellow Fever vaccination centre was internet (42%) followed by friends and family member (32.6%). (Table 3)

Discussion

A total of 409 persons were vaccinated in the last 5 months in 21 sessions with an average of around20 persons per session. Since the YF 17D vaccines can be administered only up to one hour of its reconstitution, this property increases the chances of vaccine wastage. The newly established yellow fever vaccination centre in its earlier days has achieved a remarkable achievement in terms of keeping vaccine wastage below 5% level(The maximum permissible level of vaccine wastage in 10%). The reasons behinds this may be:

1. Development of an on line registration system to provide travellers to register their name for vaccination and on time reply of their every e-mail.

2. Provision of mobile and land line number to those travellers who are not familiar to internet to register their name. For the ease of clients a call was made to each of them two days prior to their scheduled date along with the necessary instructions.

3. Reconstitution of vaccine only after required number of client arrived at the centre to cover up them in one hour period.

4. Two sessions, in initial days could not be held due to lack of required number of clients. A written/verbal communication was sent to them citing valid reasons behind the cancellation and new appointment was given for vaccination.

5. The wastage got lessened after the provision of two doses of vaccine vials apart from the regular 10 dose vial by the Central Research Institute, Kasauli.

By adopting these methods we were able to achieve an overall vaccine wastage below 5%.

Total 409 persons were vaccinated from August to December but analysis of 193 persons for their demographic and travelling pattern details was done. Most of the persons vaccinated were in 21-30 years age group and the main purpose of their travel to Yellow Fever endemic zone was the engagement in various occupations.

Due to lack of job opportunities in India people are forced to travel to other countries. Around 40% people from Uttar Pradesh travelled to Patna and arrived for Yellow fever vaccination. These people are mainly from the eastern Uttar Pradesh (UP).

Conclusion

By using online registration system and twenty four hour accessibility on mobile phone in a newly established YFVC was a leap forward in reducing vaccine wastage. It also aided in smooth conduction of immunisation sessions along with more number of clients per session.

References

1. Barnett ED. Yellow fever: epidemiology and prevention. Clin Infect Dis 2007 ; 44 : 850 – 856 .
2. Monath TP: Yellow fever: an update. Lancet Infect Dis 2001, 1(1):11–20.
3. Jentes ES, Han P, Gershman MD, Rao SR, Rocque RC, StaplesJE, Ryan ET, and the Global TravEpiNet Consortium. Travel Characteristics and Yellow Fever Vaccine Usage Among US Global TravEpiNet Travelers Visiting Countries with Risk of Yellow Fever Virus Transmission, 2009–2011. AmJTropMedHyg2013; 88(5):954–961.
4. Gershman MD, Staples JE. Infectious Diseases Related to Travel (Chapter 3). Yellow fever.https://wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to travel/yellow-fever. Accessed January 9, 2017

SHORT COMMUNICATION

Oral Cancer Needs More Attention: A Hospital Based Study in North India

Mohammad Athar[1], Farhad Ahamed[2], Sanjay Kala[3], Vinod Jangra[4], Aniket Sirohi[5], Ayush Lohiya[2]

[1]Assistant Professor, Department of Surgery, GSVM Medical collage, Kanpur, [2]Senior Resident, Centre for Community Medicine, AIIMS, New Delhi, [3]Professor, Department of Surgery, Kasturba Hospital, New Delhi, [4]General Duty Medical Officer, [5]Junior Resident, Centre for Community Medicine, AIIMS, New Delhi

Abstract

Background: In India oral cancer is an important public health problem accounting for country's 30% cancer burden. The objective of this study was to describe the socio-demographic profile, food habits and substance use pattern of oral cancer patients and to elicit their relation with stage of oral cancer.
Methods: It was a hospital based cross-sectional study. Study included histopathological diagnosed oral cancer patients attending General Surgery outpatient department (OPD) of GSVM hospital, Kanpur, Uttar Pradesh. Study period was from August 2011 to July 2014. Pre-tested semi-structured interview schedule was administered to capture socio-demographic factors, food habits and substance use pattern.
Results: The male female ratio in this study was 5.2:1. Maximum number of the participants in the study were from the age group of 41 to 50 years (32.2%). Buccal mucosa was the most frequently involved site, accounting for 45.7% cases. Personal habit revealed that most of the participants were tobacco chewers (72.9%). Almost one third of the participants with oral cancer each were in stage 4 (34.2%) and stage 3 (30.7%) of TNM staging.
Conclusion: We found a relatively younger population with male predominance presented in the health facility. Later stage of disease presentation is also a matter of concern.

Key words: Oral cancer, substance use, TNM staging

Introduction

Cancer is one of the major causes of mortality and morbidity in developing and developed countries.[1] It is the second most common cause of death after cardiovascular diseases worldwide.[2] Breast cancer, tobacco related head and neck cancers, cervical cancer, lung cancer, large bowel cancer and stomach cancer account for more than half of the cancer burden in India.[3] In India, oral cancer ranked among the top three cancers and accounts for over 30% of all cancers in India. The age-adjusted rate of oral cancer in India is as high as 20 per lakh population.[4] Oral cancer refers to a heterogeneous group of cancers arising from different parts of oral cavity, with different predisposing factors, prevalence and treatment outcomes.[5] Due to widespread use of tobacco and alcohol, oral and pharyngeal cancers contribute a major proportion to world's cancer burden.[6] Tobacco use, including smokeless tobacco, and excessive alcohol use are estimated to contribute to almost 90% of oral cancer. Worldwide oral cancer is 11th most common cause of cancer.[7] Oral cancer in early stage can be diagnosed by altered oral mucosal architecture. Earlier detection and treatment of oral cancer offers the best chance of long-term survival. Oral cancer is most common among lower socio-economic group due to higher exposure to risk factors like tobacco. Inaccessibility to health care facilities causes delay in diagnosis among this group of people.[8] Diagnosis at a later stage leading to unfavorable treatment outcome and considerable high cost of the treatment makes the oral cancer an important public health problem in India.[9] Multiple factors contribute to oral cancer etiology. Though a group of environmental and lifestyle factors have been considered as risk factors of oral cancer, smoking, tobacco chewing, alcohol are widely accepted preventable risk factors of oral cancer.[10] Considering all these facts about oral cancer in India, we planned this study to evaluate socio demographic pattern, associated substance use, and the presenting TNM stage of the disease among the patients presenting with oral cancer in General Surgery outpatient department of a tertiary care hospital in North India.

***Address for correspondence*:** *Dr Vinod Jangra, Department of Surgery, Kasturba Hospital, New Delhi.* **Email:** *drvinodjangra86@gmail.com*

Received:15/10/2016, Accepted:18/04/2017

Table 1: Socio-demographic characteristics of study participants (N=199)

Sex	No. of participants	Percentage
Male	167	83.9
Female	32	16.1
Age group (years)		
≤ 18	3	1.5
19-30	32	16.1
31-40	39	19.6
41-50	64	32.2
51-60	32	16.1
61-70	24	12.0
≥ 71	5	2.5
Anatomical sites		
Buccal mucosa	91	45.7
Tongue	40	20.1
Lip	18	9.1
Gingiva	15	7.5
Angle of the mouth	12	6.1
Palate	5	2.5
Floor of the mouth	5	2.5
Others	13	6.5
Stage		
Stage 1	25	12.6
Stage 2	45	22.6
Stage 3	61	30.7
Stage 4	68	34.1
Religion		
Hindu	154	77.4
Muslim	44	22.1
Christian	1	0.5
Substance used		
Tobacco chewing	30	15.1
Betel nut and Tobacco chewing	26	13.1
Tobacco chewing, Betel nut and smoking	22	11.1
Tobacco chewing, Betel nut, smoking and alcohol	19	9.5
Betel nut	18	9.1
Tobacco, smoking and alcohol	14	7.1
Tobacco and Smoking	13	6.5
Betel nut and smoking	12	6.0
Smoking	11	5.5
Other combinations	34	17.0
Substance used*		
Tobacco chewing with or without other addiction	145	72.9
Smoking with or without other addiction	107	53.8
Alcohol intake with or without other addiction	67	33.7
Betel nut chewing with or without other addiction	71	35.7

*categories are not mutually exclusive

Methodology

The study was a hospital based cross-sectional study and conducted among participants attending OPD of Surgery department of GSVM Medical College Kanpur. The study period was from August 2011 to July 2014. Consecutive sampling was done and all the participants diagnosed with oral squamous cell carcinoma during the study period were included in the study for further investigations. Sample size was not calculated as the objective of the study was to describe the profile of the patients. Diagnosis was made on the basis of histopathology report of excisional or incisional biopsy. A pre-tested semi-structured interview schedule was administered by the investigators. Information regarding socio-demographic factors, food habits and substance use pattern (tobacco chewing, betel nut chewing, alcohol intake, and smoking) by participants were collected using interview schedule. Site of primary tumor, size and characteristic of tumor were also elicited. Staging of carcinoma was done by TNM classification of malignant tumors developed by Union for International Cancer Council (UICC).[11] Data was analyzed in Stata 12 (StataCorp. 2011. Stata Statistical Software Release 12. College Station, TX: StataCorp LP). Bivariate and multivariate analysis was done to elicit association between TNM staging of oral cancer and substance use pattern, age of the participants and anatomical site of involvement.

Ethical issues: This study was conducted as part of service improvement and written informed consent was sought from all the participants. All the ethical principles stated in the Helsinki Declaration were strictly followed. Anonymity of the participants and confidentiality of information were maintained throughout the study.

Results

There were 199 cases of squamous cell carcinoma of oral cavity confirmed by biopsy from August 2011 to July 2014. The male female ratio in this study was 5.2:1. Most of the

Table 2: Bivariate analysis of TNM staging of oral cancer with selected co-variates

Substance		Stage 1 and Stage 2	Stage 3 and Stage 4	Crude odds ratio (95% CI)	Adjusted odds ratio (95%CI)	p-value
Betel nut	**Betel nut**	40(34.4)	76(65.6)			0.80
	Non-Betel nut	30(36.1)	53(63.9)	0.9 (0.4-1.7)		
Smoking	**Smoking**	15(31.9)	32(68.1)			0.59
	Non-smoking	55(36.1)	97(63.9)	0.8 (0.3-1.7)		
Alcohol	**Alcohol**	21(31.3)	46(68.7)			0.42
	Non-alcohol	49(37.1)	83(62.9)	0.7 (0.3-1.5)		
Tobacco	**Tobacco**	46(32.3)	96(67.6)			0.19
	Non-tobacco	24(42.1)	33(57.9)	0.6 (0.3-1.3)		
Age	**<40 years**	17(29.8)	40(70.1)			0.31
	>40 years	53(37.3)	89(62.7)	0.7 (0.3-1.4)		
Site	**Buccal**	45(37.3)	63(62.7)			0.03
	Non-Buccal	25(27.4)	66(72.6)	1.8 (0.9-3.5)	1.8(1.03-3.43)	

participants were vegetarian by food habit (97.5%). Mean (SD) age of the participants of oral cancer was 45.8 (13.0) years. Almost 16.1% participants were aged between 18 to 30 years. (**Table 1)**

Buccal mucosa was the most frequently involved site, accounting for 45.7% cases, followed by tongue (20.1%). Personal habit revealed that almost three-fourth were tobacco chewer (72.9%). Almost half of the participants were smokers (53.8%). Most of the participants with oral cancer were in stage 4 of TNM staging (34.2%), followed by stage 3 (30.7%). **(Table 1)**

On bivariate analysis, no statistically significant association was found between TNM staging and other possible factors studied (substance use pattern, age of patient or anatomical site of cancer). But after adjusting for possible confounding factors, the association between anatomical sites of cancer involvement and TNM staging of oral cancer were found to be statistically significant (p<0.05). **(Table 2)**

Discussion

In India oral cancer is a disease of public health importance. Oral cancer lesion remains localized for long time and early treatment achieves a cure rate of 90%. Unfortunately most of the oral cancer participants present to the health facilities at a later stage leading to less chance of survival.[12]

The mean age of participants with oral cancer was found to be 45.8 years in our study. Though US national cancer institute SEER program reported the mean age of diagnosis of oral cancer as 65 years, most of the Indian studies reported oral cancer in lower age group than American population.[12-15] It may be attributed to the early onset of smoking or tobacco chewing in India.[15] Literature from India has reported that the peak age of oral cancer incidence occurs a decade earlier than the western age group.[16] According to NFHS-3 data in India 55.8% male and 10.8% female in the age group of 12 to 60 years have been found to be consuming tobacco in the form of smoking or chewing.[17] According to global adult tobacco survey, 47.9% adult male and 20.3% adult female use any form of tobacco in India. Almost 9.6% minors aged 15 to 17 use tobacco.[15] Studies have proved that the high prevalence of oral cancer in India is attributed to higher use of tobacco products in India.[18] Three minor males (age <18 years) were found to have oral cancer positive in our study. This important finding may advocate strict ban on sale of tobacco products among minors.

The male to female ratio of oral cancer in our study was found to be 5.2:1 which is higher than almost all Indian studies.[14] This factor may be contributed to the low prevalence of tobacco, betel nut, alcohol consumption among Indian females. But literatures are reporting rising trends of smoking and alcohol intake among Indian females.[19, 20] This may further increase oral cancer burden in India.

In this study buccal mucosa is the most common site involved in oral cancer. Multiple studies from India have reported buccal mucosa as the most commonly affected site for oral cancer.[21,22] Other studies showed tongue, lip and floor of the mouth as frequently involved sites.[22]

Indian data suggested that the odds of developing oral cancer are 3.19 among those who chewed tobacco and betel nut and 2.89 among those who chewed tobacco alone as compared to those who do not chew anything. Bidi smoking (OR-4.63) and alcohol drinking (OR-1.65) are other risk factors of oral cancer.[23-26] In this study majority of participants are tobacco chewers and smokers. Though government has already implemented act regarding

tobacco selling to minors and public space smoking (The cigarettes and other tobacco products prohibition of advertisement and regulation of trade and commerce, production, supply and distribution (COTPA) act, 2003), strict monitoring of the act is needed.[27] State government of Punjab has already implemented national tobacco control program successfully through enforcing anti-tobacco law and sensitization of all stakeholders.

Most of the cancer cases in this study presented in the late stages of the disease that is stage 3 and stage 4. An Indian study from Andhra Pradesh has shown similar findings.[25] This signifies the need for early identification of oral cancer through awareness generation. Prevalence of oral cancer is more among lower socio-economic group. Lack of awareness and less accessibility to healthcare facilities leads them to present at a later stage of disease. Increase awareness through programmatic approach and strict control of tobacco product selling can reduce the problem significantly.

Study had few limitations: This study was done in tertiary care hospital, so there were more chances of having severe cases as it was also a referral center for peripheral hospitals. Smoking was not categorized into filtered cigarettes and bidi. Studies in past have proved that both type of smoking have different magnitude of effect on oral cancer.[23] In this study, quantity, quality and frequency of these substance use could not be analyzed which may have some relation with the magnitude of effect on oral cancer.

Conclusion

We found a relatively younger population presenting at a later stage of oral cancer in the health facility. Most of the participants had a history of use of tobacco product, betel nut and alcohol either singly or in combination.

There is a need to increase awareness regarding oral cancer and its risk factors especially among younger population. Also, there is a need to strictly enforce COTPA act in the country.

References

1. Mallath MK, Taylor DG, Badwe RA, Rath GK, Shanta V, Pramesh CS, Digumarti R,Sebastian P, Borthakur BB, Kalwar A, Kapoor S, Kumar S, Gill JL, Kuriakose MA,Malhotra H, Sharma SC, Shukla S, Viswanath L, Chacko RT, Pautu JL, Reddy KS,Sharma KS, Purushotham AD, Sullivan R. The growing burden of cancer in India:epidemiology and social context. Lancet Oncol. 2014 May;15(6):e205-12.
2. Jemal A, Siegel R, Ward E, Murray T, Xu J, Thun MJ. Cancer statistics, 2007.CA Cancer J Clin. 2007 Jan-Feb;57(1):43-66.
3. Sankaranarayanan R. Cancer prevention and care in India: an unfinished agenda.Lancet Oncol. 2014 May;15(6):554-5.
4. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, Mathew B, Rajan B; Trivandrum Oral Cancer Screening Study Group. Effect of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. Lancet.2005 Jun 4-10;365(9475):1927-33.
5. Coelho KR. Challenges of the oral cancer burden in India. J Cancer Epidemiol. 2012;2012:701932.
6. Saman DM. A review of the epidemiology of oral and pharyngeal carcinoma:update. Head Neck Oncol. 2012 Jan 13;4:1. doi: 10.1186/1758-3284-4-1.
7. Global data on incidence of oral cancer. Oral health. Available at http://www.who.int/oral_health/publications/cancer_maps/en/(Last accessed on 10 September 2014)
8. Kumar S, Heller RF, Pandey U, Tewari V, Bala N, Oanh KT. Delay in presentation of oral cancer: a multifactor analytical study. Natl Med J India. 2001 Jan-Feb;14(1):13-7.
9. P. S. Khandekar, P. S. Bagdey, and R. R. Tiwari. Oral cancer and Some epidemiological factors: a hospital based study. Indian Journal of Community Medicine. 2006; 31(3):157–9.
10. Shenoi R, Devrukhkar V; Chaudhuri, Sharma BK, Sapre SB, Chikhale A. Demographic and clinical profile of oral squamous cell carcinoma patients: a retrospective study. Indian J Cancer. 2012 Jan-Mar;49(1):21-6.
11. IARC Screening Group. International Agency for Research on Cancer. World Health Organization. Available from: http://screening.iarc.fr/atlasoralclassiftnm.php
12. Kumar S, Heller RF, Pandey U, Tewari V, Bala N, Oanh KT. Delay in presentation of oral cancer: a multifactor analytical study. Natl Med J India. 2001Jan-Feb;14(1):13-7.
13. Bagan JV, Scully C. Recent advances in Oral Oncology 2007: epidemiology, aetiopathogenesis, diagnosis and prognostication. Oral Oncol. 2008 Feb;44(2):103-8.
14. Chattopadhyay A. Epidemiology study of oral cancer in eastern India. Indian J Dermatol 1989;34:59-65.
15. Global adult tobacco survey (GATS). India Fact sheet (2009-2010). Available at http://www.who.int/tobacco/surveillance/en_tfi_india_gats_fact_sheet.pdf. (Last accessed on 10 September 2014)
16. Sankaranarayan R. Oral cancer in India, an epidemiologic and clinical review. Oral Surg Oral Med Oral Pathol 1990;69:325-30.
17. International Institute for Population Sciences (IIPS) and Macro International. 2007. National Family Health Survey (NFHS-3), 2005–06: India: Volume II. Mumbai: IIPS.
18. Garg KN, Raj V, Chandra S. Trends in frequency and duration of tobacco habit in relation to potentially malignant lesion: A 3 years retrospective study. J Oral Maxillofac Pathol. 2013 May;17(2):201-6.
19. Ng M, Freeman MK, Fleming TD, Robinson M, Dwyer-Lindgren L, Thomson B, Wollum A, Sanman E, Wulf S, Lopez AD, Murray CJ, Gakidou E. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. JAMA. 2014 Jan 8;311(2):183-92.
20. Obot SI, Room R. Department of Mental health and Substance abuse. Geneva: World Health Organization; 2005. Gender and drinking problems: Perspectives from low and middle income countries. Available at http://www.who.int/substance_abuse/publications/alcohol_gender_drinking_problems.pdf. (Last accessed on 10 September 2014)
21. Sharma P, Saxena S, Aggarwal P. Trends in the epidemiology of oral squamous cell carcinoma in Western UP: an institutional study. Indian J Dent Res. 2010 Jul-Sep;21(3):316-9.
22. Krishna A, Singh R, Singh S, Verma P, Pal U, Tiwari S. Demographic risk factors, affected anatomical sites and clinic-pathological profile for oral squamous cell carcinoma in a north Indian population. Asian Pac J Cancer Prev. 2014;15(16):6755-60.
23. Subapriya R, Thangavelu A, Mathavan B, Ramachandran CR, Nagini S. Assessment of risk factors for oral squamous cell carcinoma in Chidambaram, Southern India: a case-control study. Eur J Cancer Prev. 2007 Jun;16(3):251-6.
24. Znaor A, Brennan P, Gajalakshmi V, Mathew A, Shanta V, Varghese C, Boffetta P.Independent and combined effects of tobacco smoking, chewing and alcohol drinking on the risk of oral, pharyngeal and esophageal cancers in Indian men. Int J Cancer. 2003 Jul 10;105(5):681-6.
25. Addala L, Pentapati CK, Reddy Thavanati PK, Anjaneyulu V, Sadhnani MD. Risk factor profiles of head and neck cancer patients of Andhra Pradesh, India. Indian J Cancer. 2012 Apr-Jun;49(2):215-9.
26. Aruna DS, Prasad KV, Shavi GR, Ariga J, Rajesh G, Krishna M. Retrospective study on risk habits among oral cancer patients in Karnataka Cancer Therapy and Research Institute, Hubli, India. Asian Pac J Cancer Prev. 2011;12(6):1561-6.
27. The cigarettes and other tobacco products prohibition of advertisement and regulation of trade and commerce, production, supply and distribution act, 2003. Ministry of Law and Justice. Available at http://www.smoke-free.ca/warnings/laws/india/india-act-2003.pdf. (Last accessed on 10 September 2014)

CASE REPORT

Stroke in Young with Hyperhomocysteinemia: A Case Report

Rashmi Ranjan Mohanty[1], Smita Das[2]

[1]*Associate Professor, Department of Medicine, AIIMS, Bhubaneswar, Odisha,* [2]*Assistant Professor, Department of Pharmacology, IMS & SUM Hospital Bhubaneswar*

Abstract:

Stroke in young is now a major health concern in developing countries along with coronary artery disease (CAD), according to various Indian studies, its prevalence is 25-34%. Among the undetermined etiological factors thrombophilic disorders constitute 60% cases of stroke. A 19 year old young male presented with symptoms of left middle cerebral artery (MCA) thrombosis, on evaluation homocysteinemia is noticed. In this case homocysteinemia seems to be the only risk factor responsible for stroke.

Key words : hemiplegia, hypercoagulable state, infarction

Introduction

Although ischemic stroke most commonly occurs in elderly patients, one out of every ten stroke case is younger than 45 years. In adults and mainly the older population cerebro-vascular accidents (CVA) are strongly related to cardiovascular risk factors such as hypertension, diabetes, hypercholesterolemia, nicotine-abuse and obesity. Last year hyperhomocysteinemia has also been put forward as a cardiovascular risk factor. The causes of stroke among young adults are more diverse than in the eldely and require a thorough diagnostic work up. A recent case of a young man with a cerebro-vascular accident and hyperhomocysteinemia was seen.

Case Proper

A 19 yr old young male, presented with weakness of right half of the body since 4 days with deviation of angle of mouth to left side. On general examination – no significant abnormality was noticed. Detailed neurological examination – higher intellectual functions- normal, cranial nerve – LMN type right 7th cranial Nerve palsy, sensory system – pain and temperature sensation decreased over the right half of the body. Motor system - power of right upper and lower limb was found to be 2/5 with plantar extensor on right side. Rest of the examination was normal.

Lab Investigations

Haemoglobin -13.5gm/dl, total leucocyte count –11093 cells/mm^3 , platelets -3.4 lakhs , ESR-10 mm/hr. Peripheral smear was showing neutrophilia and lymphopenia. Complete urine examination-normal. Blood urea-30mg/dl, serum creatinine -0.5, RA-negative, CRP-negative,ASO-negative, QBC for MP-negative, Anti ds-DNA-negative, ANA-negative. Ultra sound abdomen imaging–normal. HIV- negative, ECG-normal, Chest–X ray PA view–normal. FBS-125mg/dl, HbA1c-5.4%. Fasting lipid profile–normal. Bilateral carotid Doppler study–Normal, Echo-Normal, NCCT Head-Left capsuloganglionic multiple hypodensities(infarct)

Coagulation Profile: 1. APLA Ab's-IgM, IgG normal; 2. Prothrombinactivity–Normal; 3. Fibrinogen-362 mg/dl, 4. Antithrombin activity-105%; 5. Factor-V-88% 6.Serum Homocystein-26.68umol/l, 7. Protein-S activity(free form)-27% (50%-140%); 8. Protein–C activity -88.4%. We concluded arterial thrombosis as a result of hyperhomocysteinemia. The patient was managed with heparin, oral anticoagulants, antiplatelets and physiotherapy.

Discussion

Incidence of homocysteinemia varies between 1 in 50,000 and 1 in 200,000. The term 'Homocysteinemia' is used when homocystein level is more than 14 umol/lit . By far the most common cause of mild to moderate elevations in homocysteine is a dietary deficiency of folate and / or vitamin B 12 .

Address for correspondence- *Dr Rashmi Ranjan Mohanty, Department of Medicine, AIIMS, Bhubaneswar, Odisha.*
Email: *drrashmimohanty@gmail.com*

Received: 13/09/2016, Accepted: 20/04/2017

Numerous observational studies over the last decade indicates that homocystenemia is an independent risk factor for vascular disease though a rare cause in young patients.[1] Carotid stenosis appears to have a graded response to increased levels of homocysteine. Increased carotid plaque thickness has been associated with high homocysteine and low B-12 levels. Plasma homocysteine is considered to promote arterial endothelial dysfunction, enhances thromboxane-A2 formation and platelet aggregation, smooth muscle proliferation, increased activation of factor V and X, increased fibrinogen levels ,reduced antithrombin activity and increased binding of lipoprotein (A) to fibrin.[2,3] Thus it induces a prothrombotic state that causes premature atherosclerotic vascular disease.[4]

Conclusion

The pool of evidence from some observational studies suggest that elevated levels of homocysteine are associated with increased risk of carotid artery disease and stroke.[5] Further prospective studies are needed in order to characterize the association between homocysteine and risk of stroke in young patient. The impact of vitamin supplementation in patients with hyperhomocysteinemia both in primary and secondary prevention of stroke deserves great attention.[6]

References

1. Saposnik G, Ray JG, Sheridan P, McQueen M, Lonn E. Homocystine lowering therapy and stroke risk, severity, and disability: additional finding from the HOPE 2 trial. Stroke. 2009 Apr;40(4): 1365-72
2. Boushey CJ, Berseford SA, Omen GS, Motulsky AG. Aquantitative assessment of plasma homocysteine as a risk factor for vascular disease . JAMA.1995;274: 1049 – 1057
3. Woo KS, Chook P, Lolin YL, et al . Hyperhomocysteinemia is a risk factor for arterial endothelial dysfunction in humans . Circulation. 1997;96 (8) : 2542 – 44
4. Clarke R, Collins MB, Lewington S, Donald A, Alfthan G et al, Homocysteine and risk of ischemic heart disease and stroke: A meta-analysis. The homocysteine studies Collaboration. JAMA. 2002 ; 288 : 2015 – 2002
5. M. Modi, S. Prabhakar, S. Majumdar, et al. Hyperhomocysteinemia as a risk factor for ischemic stroke: An Indian scenario. NEUROLOGY INDIA.2005; 53(3):297-301
6. Spence JD, Howand VJ, Chambless LE, Malinow MR, et al . Lowering homoctsteine in patients with ischemic stroke to prevent recurrent stroke, myocardial infarction and death: Vitamin intervention for stroke prevention (VISP) randomized controlled trial. JAMA.2004 Feb 4; 291(5): 565-75

CASE REPORT

AIDS Cholangiopathy – Diagnostic Imaging Features

Vandana V. Ahluwalia[1], Ankita Chauhan[2], Prerna Singh Saharan[3], Shamrendra Narayan[2]

[1]*Professor,* [2]*Assistant Professor,* [3]*Senior Resident, Department of Radiodiagnosis ,Sarojini Naidu Medical College, Agra 282002, India*

Abstract:

It is important to emphasize that the presence of intrahepatic or extrahepatic biliary stenotic foci in an HIV-positive patient with low CD4 count suggests a possibility of AIDS-associated cholangiopathy, which may be an indicator of progression of the disease. It presents with a clinical variable presentation, although right upper quadrant pain and fever accompanied by an elevated serum alkaline phosphatase (ALP) level are the most common manifestations. We present a case of a young female patient diagnosed with AIDS cholangiopathy as evidenced by clinical features, altered liver function profile indicating obstructive jaundice, classical imaging features on USG, MRI and MRCP, and very low CD4 count.

Keywords – Obstructive jaundice, biliary stenosis, AIDS cholangiopathy, Ultrasonography, MRCP

Introduction

An AIDS-associated cholangiopathy is a form of biliary tract inflammation with stricture formation seen in severely immunosuppressed AIDS patients. Development of AIDS cholangiopathy during Antiretriviral Therapy (ART) may be a sign of progression of the disease, predisposed either by immunocompromised status or resistance to anti-retroviral therapy. Though imaging plays a pivotal role in diagnosis, findings should always undergo evaluation according to the clinical context. Magnetic Resonance Imaging (MRI) and Magnetic resonance cholangiopancreatography (MRCP) have progressively become valuable due to their ability to demonstrate biliary stenosis and wall changes. Though Antiretroviral therapy improves prognosis and decreases the incidence of AIDS cholangiopathy, high ALP level is related to a less favorable outcome.

Case Report

A thirty-six-year-old HIV seropositive female patient presented in OPD with the complaint of fever and abdominal pain. She was diagnosed with HIV infection three years back and has a lack of adherence to antiretroviral therapy (ART). The blood investigation revealed pancytopenia and increased direct bilirubin with altered liver enzymes indicative of cholestatic pattern (Gamma-glutamyl-transferase [GGT] and alkaline phosphatase eight times above the reference value). Her CD4 T lymphocyte count was 80/mm^3. She was referred for ultrasound and underwent MRI and MRCP for further characterizing the cause for obstructive pattern of jaundice

Abdominal ultrasonography showed mild hepatomegaly with uniformly thickened gallbladder wall with no evidence of cholelithiasis or pericholecystic fluid(Fig. 1b). There was no significant dilatation of intrahepatic biliary radicals; though, there was echogenic cuffing along central biliary radicals. The intrahepatic biliary duct shows pronounced mural wall thickening with echogenic peribronchial cuffing along the central intrahepatic biliary radicals (IHBR). The intrahepatic biliary duct (IHBD) shows marked mural wall thickening with echogenic polypoidal projections from it's anterior and posterior wall likely representing mucosal edema (Fig. 2). The extrahepatic Common bile duct (CBD) shows focal pronounced mural thickening distally measuring 5-6 mm with distal cutoff/ suboptimal visualization of CBD tapering (Fig. 1a).

MRI and MRCP also corroborate iso-to-hyperintense rim of mural thickening around distal CBD with short-segment narrowing (stricture) along its distal CBD and corresponding to asymmetrically pronounced wall thickening on ultrasound (Fig. 3). Also, T2 hypointense projections with dilated CBD corresponds to polypoidal projections on ultrasound (Fig. 4). IHBD also show beaded appearance consistent with sclerosing cholangitis related changes. Note made of few enlarged peripancreatic nodes. The patient was started on HAART and antimicrobials under the supervision and showed significant improvement

Address for correspondence- *Dr Vandana V. Ahluwalia, Department of Radiodiagnosis ,Sarojini Naidu Medical College, Agra 282002, India.* **Email:** *drvahluwalia@gmail.com*

Received: 31/08/2016, Accepted: 22/06/2017

in laboratory parameters (CD4 count) and ultrasound features on six-month follow-up.

Discussion

The term "AIDS cholangiopathy" (or AIDS-related cholangitis) was first coined in 1986 by Margulis et al.[1] who described biliary tract abnormalities in patients with AIDS. It can present as an AIDS-defining illness or in HIV positive individuals with CD4 counts below 100/mm^3.[2] The exact prevalence of AIDS cholangiopathy is unknown; a study showed an incidence of around 1% in HIV-positive patients.[3]

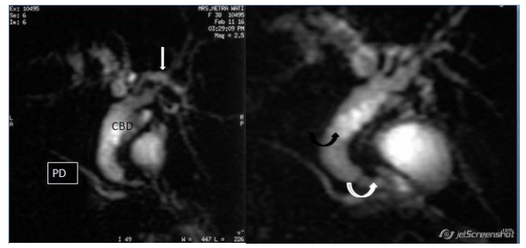
The etiology of AIDS cholangiopathy is related to opportunistic infections in the biliary tract. However, no specific organism is detectable in up to 50% of patients. These diseases likely cause a secondary sclerosing cholangitis due to the associated persistent inflammation. Enteric infection leads to portal bacteremia which, in turn, leads to subsequent bile duct injury and destruction. Most frequently associated pathogens are cytomegalovirus and Cryptosporidium parvo. Inflammation with edema of the biliary mucosa is the histologic hallmark of AIDS cholangiopathy. The mucosal thickening can be diffuse, or it can be focal in which case it is fine and nodular as seen in our patient. The polypoidal defects are seen on imaging correlate with the presence of granulation tissue histologically and do not affect prognosis.[4]

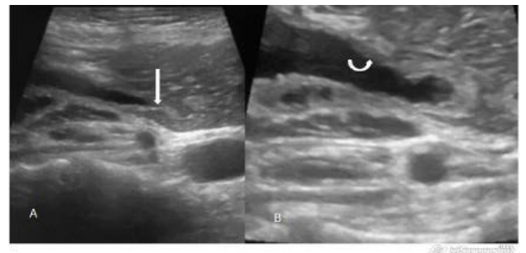
Affected patients frequently present with right upper quadrant abdominal pain and, less commonly, with fever and jaundice. Papillary stenosis typically presents with severe abdominal pain. It is characteristically sharp in nature and may radiate to the back. High spiking fever in patients with AIDS cholangiopathy indicates a bacterial superinfection.[2]

Cello described four different entities of cholangiographic abnormalities in AIDS cholangiopathy - papillary stenosis and cholangitis (most common presentation ~ 50%), papillary stenosis alone (30%), intrahepatic sclerosing cholangitis alone (10%), long extrahepatic bile duct stricture (10%).[5] Papillary stenosis is suggestive when there is common bile duct diameter of >8mm, tapering of the distal 2–4mm of the common bile duct, and marked retention of contrast beyond 30 minutes. The common bile duct can show a beaded or scalloped appearance. The severity of involvement is more along the left intrahepatic ductal system than the right side.

Ultrasonography is useful for the initial screening of AIDS cholangiopathy as it can provide the intraluminal caliber of CBD, the thickness of the gallbladder wall and bile ducts, the presence of stones, sludge or pericholecystic fluid.[7] Endoscopic ultrasound accurately excludes stones, extra-biliary compression, and tumors when compared to transabdominal ultrasound, and can better detect dilation and wall thickening of the CBD. Computed tomography (CT) of the abdomen can demonstrate dilated intrahepatic biliary and disclosing abnormalities of the pancreas and liver better than USG, but it is much less sensitive than the latter to detect stenosis and thickening of the common bile duct wall.[6]

MRCP provides a noninvasive and accurate diagnosis of HIV/AIDS cholangiopathy with the aid of particular ductal abnormalities including papillary stenosis, multiple intrahepatic strictures, and long segmental extrahepatic strictures. Endoscopic retrograde cholangiopancreatography (ERCP) is the diagnostic gold standard, however, should be reserved to take a biopsy





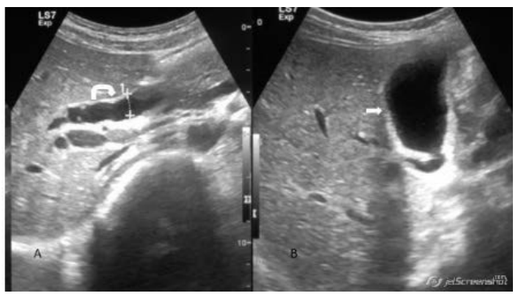


Figure 1 A – shows dilated CBD with thickened wall and echogenic mucosal thickening projecting intraluminally(curved arrow). B. Gallbladder wall shows edematous thickening(arrow).

Figure 2 A, B (zoomed view) shows gradual tapering of lower CBD(arrow) and revealing echogenic proliferative mural thickening with granulation tissue(curved arrow).

Figure 3. Coronal STIR MR image shows intrahepatic biliary ductal segmental narrowing (arrow)with wall thickening at lower CBD (curved arrow).

Figure 4 – MRCP shows beaded appearance of intrahepatic biliary ducts (arrow) and segmental narrowing at distal CBD (black dashed arrow) with proximal dilatation (black curved arrow) and pancreatic duct(PD).

in doubtful cases and for further intervention to facilitate biliary drainage in stenosis.

Cross-sectional imaging allows differentiation from other causes of biliary dilatation including primary sclerosing cholangitis and opportunistic infection in HIV-positive patients, including infectious (bacterial) cholangitis, portal biliopathy, pancreatic or duodenal lymphoma, and mycobacterial lymphadenopathies. Papillary stenosis with intrahepatic ductal strictures is relatively unique to AIDS cholangiopathy.[5] The typical imaging findings of Primary sclerosing cholangitis include ductal wall thickening, segmental ectasias, multifocal strictures, and beaded appearance of the intrahepatic and extrahepatic bile ducts.[8] Pyogenic Cholangitis, another differential diagnosis, usually has a different septic context and is associated with hepatic parenchymal abnormalities (e.g., peribiliary microabscesses or multifocal perfusion disorders) which the AIDS-associated cholangiopathy lacks.[9] Imaging manifestations of Recurrent pyogenic cholangitis include biliary strictures, ductal wall thickening secondary to fibrosis, and intraductal pigmented stones. Other causes of distal CBD fibrous stenosis are secondary to the passing of gallstones or chronic pancreatitis 8. In acalculous cholecystitis, there is gallbladder wall thickening; it occurs in severely septic patients with multiple organ failures or signs of peritonitis. In Cholangiocarcinoma, the progressive biliary obstruction presents as infiltrating ductal masses invading the hepatic parenchyma, with a delayed capture of contrast CT.[8]

The history or presence of any opportunistic infection (especially cryptosporidiosis) with systemic involvement at the time of diagnosis of AIDS cholangiopathy is a poor prognostic marker. Serum alkaline phosphatase (ALP) is a good clinical indicator of prognosis of patients with AIDS cholangiopathy. Patients with serum ALP > 1,000 IU/l or eight times the normal value have shorter life expectancy compared to individuals with normal or slightly elevated serum ALP levels. CD4 lymphocyte counts, type of cholangiopathy and previous sphincterotomy do not affect survival.[10]

Conclusion

AIDS cholangiopathy is a biliary syndrome in patients with AIDS. This entity is diagnosed by clinical features, raised alkaline phosphatase, and imaging. Pseudodiverticula in the bile duct walls and high-grade extrahepatic bile duct stenosis, are typical findings of sclerosing cholangitis while moderate ductal dilatation associated with irregular margins and nodules leans more toward AIDS cholangiopathy. Raised ALP enzyme and related systemic involvement of cryptosporidiosis are indicative of poor prognosis. The best management of AIDS cholangiopathy is HAART.

References

1. R. Abdalian and E. J. Heathcote, "Sclerosing cholangitis: a focus on secondary causes," Hepatology, vol. 44, no. 5, pp. 1063–1074, 2006.
2. H. Bouche, C. Housset, J. L. Dumont et al., "AIDS-related cholangitis: diagnostic features and the course in 15 patients," Journal of Hepatology, vol. 17, no. 1, pp. 34–39, 1993.
3. Devarbhavi H, Dierkhising R, Kremers WK, Sandeep MS, Karanth D, Adarsh CK. Single-Center experience with drug induced liver injury from India: causes, outcome, prognosis and predictors of mortality. Am J Gastroenterol 2010
4. C. D. Collins, A. Forbes, J. N. Harcourt-Webster, N. D. Francis, J. A. Gleeson, and B. G. Gazzard, "Radiological and pathological features of AIDS-related polypoid cholangitis," Clinical Radiology, vol. 48, no. 5, pp. 307–310, 1993.
5. Cello JP. AIDS-related biliary tract disease. Gastrointest Endosc Clin N Am 1998; 8: 963-73.
6. Nash JA, Cohen SA. Gallbladder and biliary tract disease in AIDS. Gastroenterol Clin North Am. 1997; 26(2): 323-335
7. B. L. Dolmatch, F. C. Laing, andM. P. Federle, "AIDS-related cholangitis: radiographic findings in nine patients," Radiology, vol. 163, no. 2, pp. 313–316, 1987.
8. Brooke Jeffery R. Colangiopatía del SIDA. Federle M, Jeffery R, Woodward P, Borhani A. Abdomen: Diagnóstico for imagen. Segunda edición. Madrid: Marbán Libros; 2011. Capítulo III – 2. 26-29.
9. Van Erpecum K. Complications of bile-duct stones: acute cholangitis and pancreatitis. Clin Gastroenterol 2006; 20(6):1139-1152.
10. Ko WF, Cello JP. Prognostic factors for the survival of patients with AIDS cholangiopathy. Am J Gastroenterol 2003;98 (10); 2176-81.

STUDENT/RESIDENT CORNER

Suicide in India and its Decriminalisation

Saurav Nayak

MBBS Intern, All India Institute of Medical Sciences, Bhubaneswar

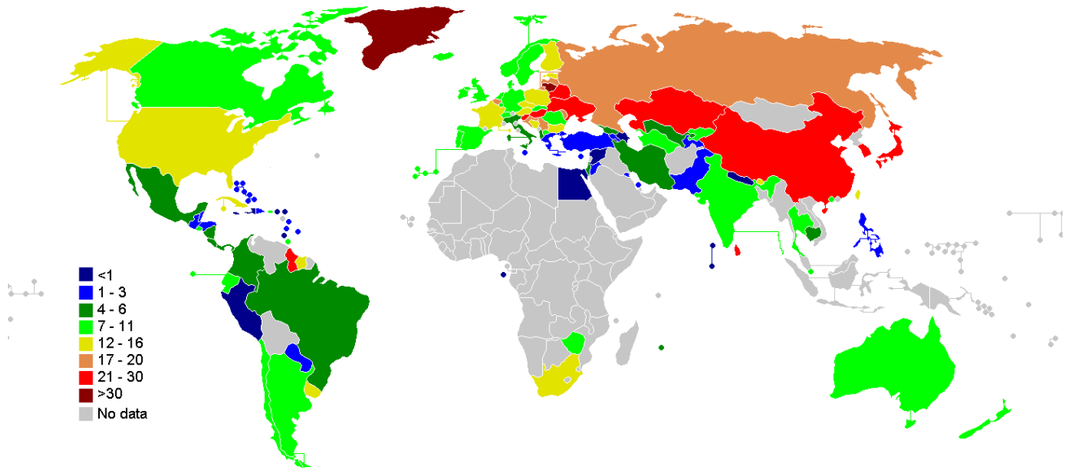


Fig. 1 : India's suicide rate per 100,000 people compared to other countries, according to the World Health Organization, Geneva.

As of now according to the law of the land in India, Section 309 of the Indian Penal Code reads, "**309. Attempt to commit suicide:** *Whoever attempts to commit suicide and does any act towards the commission of such offence, shall be punished with simple imprisonment for a term which may extend to one year or with fine, or with both.*" [1]

According to a report by WHO about 800000 people commit suicide worldwide every year, out of which 17% are Indian.[2,3]

Higher rates of suicides have been acknowledged to the mental health care system in place. India lacks a robust mental health care facility with only one psychiatrist for every 343,000 Indians currently; and this is aggravated by depression, acute economic insecurity, and anxiety among youths over educational success, and distress among young women caught modern India and pressure from traditionally minded families believing in matrimony.[4]

Currently young adults being a vulnerable group show the highest rates of suicide world over. Suicide being responsible for 6% of all deaths among young people.[5] According to a study in India, suicide rate was highest in the 15-29 years age group (38 per 100,000 population) followed by the 30-44 years group (34 per 100,000 population). The rates of suicide was 18 per 100,000 in those aged 45-59 years and 7 per 100,000 in those aged >60 years.[6] Various studies in India have varying results with rates of psychiatric disorders ranging from 9.5 to 24.9%.[7] 24% of suicides had a psychiatric diagnosis, namely major depressive disorder, bipolar affective disorder, or schizophrenia; substance abuse was prevalent in 18%, as was revealed by a particular psychological autopsy study.[8] In another psychological autopsy of 100 consecutive suicides in a rural population, 37% had a DSM-III-R psychiatric diagnosis; alcohol dependence (16%) and adjustment disorders (15%) were the commonest diagnoses, and schizophrenia, major depressive episode, and dysthymia constituted a smaller proportion (2% each).[9]

On March 28th 2017 after five hours of continuous debating

Address for Correspondence- *Dr Saurav Nayak, All India Institute of Medical Sciences, Sijua , Bhubaneswar.*
Email: nayaksaurav2604@gmail.com

Received- 10/04/2017, Accepted- 30/04/2017

over the Mental Health Care Bill, the Lok Sabha finally gave its approval to the bill which is on its final journey to become an act. The bill, passed by the Rajya Sabha in August 2016, ensures every person shall have a right to access mental health care and treatment from mental health services run or funded by the appropriate government. However its most striking feature is the fact that it aims at suicide in India, as a clause in the bill decriminalises suicide, stating that a person who attempts suicide should be presumed to have severe stress, and shall not be punished. "Notwithstanding anything contained in section 309 of the Indian Penal Code, any person who attempts to commit suicide shall be presumed, unless proved otherwise, to have severe stress and shall not be tried and punished under the said Code," is the text what the relevant clause of the bill reads. Shri Jagat Prakash Nadda, the incumbent Health Minister of India added, "Suicide is a mental disease. It will not be a criminal act, it will be decriminalised. It recognises that it is done under severe mental stress."[10] Earlier Minister of State for Home Affairs, Shri Haribhai Parathibhai Chaudhary had stated the 210th Law Commission of India Report regarding Decriminalisation of Suicide as, "The Law Commission of India, in its 210th Report, had recommended that Section 309 (attempt to Commit suicide) of IPC needs to be effaced from the statute book. As law and order is the State subject, views of States/UTs were requested on the recommendations of the Law Commission. 18 States and 4 Union Territory Administrations have supported that Section 309 of the IPC may be deleted. Keeping in view the responses from the States/UTs, it has been decided to delete Section 309 of IPC from the Statute book." [11]

Overall the situation seems grim as of now, however waiting for the President's assent to become the Mental Health Care Act, 2017 , the Mental Health Care Bill sure deals with the current scenario of suicide in India and seems to be a plausible solution to the alarming rates of suicide. Coupled with the fact that it also aims at improving the availability and standards of health care provided to individuals affected by psychiatric diseases, this surely is a great step towards a better India.

References

1. Indian Kanoon. Section 309 in The Indian Penal Code [Internet]. IndianKanoon.org. 2010. Available from: https://indiankanoon.org/doc/1501595/
2. World Health Organisation. WHO Suicide data. Who. 2016.
3. The Registrar General of India. Suicides In India [Internet]. 2012. Available from: http://ncrb.nic.in/CD-ADSI-2012/suicides-11.pdf
4. India's Mental Health Crisis - The New York Times [Internet]. 2014. Available from: https://www.nytimes.com/2014/12/31/opinion/indias-mental-health-crisis.html
5. Patton GC, Carolyn Coffey, Susan M Sawyer, Russell M Viner, Dagmar M Haller, Krishna Bose, et al. Global patterns of mortality in young people: a systematic analysis of population health data. Vol. 374, Lancet. 2009. p. 881–92.
6. Patel, V., Ramasundarahettige C, Vijayakumar L, Al. E. Suicide mortality in India: A nationally representative survey. The Lancet. 2012.
7. Rao A. Attempted suicide. Indian J Psychiatry. 1965;253–64.
8. Khan FA, Anand B, Devi MG, Murthy KK. Psychological autopsy of suicide-a cross-sectional study. Vol. 47, Indian journal of psychiatry. 2005. p. 73–8.
9. Manoranjitham SD, Rajkumar AP, Thangadurai P, Prasad J, Jayakaran R, Jacob KS. Risk factors for suicide in rural south India [Internet]. Vol. 196, The British Journal of Psychiatry. p. 26–30. Available from: http://bjp.rcpsych.org/cgi/content/abstract/196/1/26
10. Mental Healthcare Bill decriminalising suicide receives Parliament's approval [Internet]. 2017. Available from: http://www.firstpost.com/india/mental-healthcare-bill-decriminalising-suicide-receives-parliaments-approval-3355352.html
11. Decriminalisation of Section 309 [Internet]. 2014. Available from: http://pib.nic.in/newsite/PrintRelease.aspx?relid=112967

Instructions for Authors

About the Journal and its scope

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

Objectives of the journal

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

IJCFM will to cater to the needs of

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

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

Types of articles

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

Preparation of Manuscripts

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

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

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

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

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

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

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

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

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

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

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

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

Word Limits

Original article (Maximum 4000 words)

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

Short Communication (Maximum 2000 words)

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

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

Continuing Medical Education: 2000 words

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

Clinical Trial registration

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

Units

Système international units should be used throughout the text.

Drugs

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

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.

Conflict of interest

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

Funding

Source of funding should be clearly mentioned

Plagiarism

Every manuscript submitted will undergo plagiarism check and if found to be plagiarized, will be either rejected or returned to the authors for amendment, depending upon the quality of the work and the extent of plagiarism.

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.

Not published previously/submitted elsewhere

The manuscripts will be received, subjected to editorial & peer reviews and accepted for publication on the premise that it has not been published previously nor is it submitted elsewhere for publication.

Copyright

Copyright of the published articles shall lie with the journal and authors will transfer the copyright of their published articles to the journal when they submit the manuscript. Authors will be provided with a copy of the issue in which their article is published. Reproduction of the published material shall require permission of the journal office and acknowledgment.

Please e mail your manuscript to:

ijcfm2015@gmail.com

Forthcoming Events

1. 4th Annual Public Health Conference 2017; 5-7 July, Bangkok, Thailand. Details can be accessed from http://www.publichealthconference.org
2. APCRICON -2017 – Goa; 8-9 July. Details can be accessed from www. Apcri.org
3. ICOPH 2017 – 3rd International Conference on public health 2017, - 27 Jul – 29 Jul Kuala Lumpur Malaysia. Details can be accessed from http://publicheatlh
4. IEA World Congress of Epidemiology – 19-22 August, 2017, Sitama Japan.
5. XII Joint National Conferenceof Indian Society for Malaria and Other Communicable Diseases & Indian Association of Epidemiologists (ISMOCD), 2017; 1- 3 September 2017, Armed Forces Medical College (AFMC), Pune
6. Nutritional Management of Severe Acute Malnutrition (SAM): A capacity building workshop (September 11 – 15, 2017). Available at www.PHI.org.
7. Cancer Research and Control (September 18-21, 2017). Available at www.PHI.org
8. Applied Methods of Equity Analysis in Healthcare Financing (September 19-22, 2017). Available at www.IPHI.org
9. 14th International Conference on Urban Health 26-29 September, 2017, Coimbra, Portugal
10. 22nd WONCA World Conference of Family doctors – WONCA 2018, 17 Oct-21 Oct, 2018 seoul, South Korea available at – htth://wonca2018.com
11. 6th International Conference on Epidemiology & Public Health October 23-25, 2017 Paris, France
12. The International Association for Adolescents Health 11th World Congress on Adolescent Health New Delhi ;27-29 October 2017
13. 9th NCHPE – National Conference on Health Profession's Education 2017 – 9-11 Nov. 2017 at Johrat Medical College, Assam.
14. 5th International Conference on HIV/AIDS, STDs & STI, Nov 13-14, 2017 Las Vegas, Nevada, USA.
15. 45th National Conference of IAPSM – Smt. Kashibai Medical College, Pune- 2018
16. 62nd Annual National Conference of IPHA – King George's Medical University Lucknow, UP. – 9- 11- Feb 2018 Available at http://iphacon2018.com

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

ISSN 2395 -2113 (Print)

Indian Journal of Community & Family Medicine

Content