Volume 5 • Issue 2 • July-December 2019

ISSN: 2395-2113
E-ISSN: 2666-3120

Indian Journal of Community and Family Medicine

www.ijcfm.org

Wolters Kluwer

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Indian Journal of Community and Family Medicine • Volume 5 • Issue 2 • July-December 2019 • Pages 83-164

ISSN: 2395-2113
E-ISSN: 2666-3120

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Volume 5 | Issue 2 | July-December, 2019

Indian Journal of Community and Family Medicine

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Indian Journal of Community and Family Medicine, a publication of AIIMS Bhubaneswar, Department of Community Medicine and Family Medicine, is a peer-reviewed print + online Semiannual journal. The journal's full text is available online at http://www.ijcfm.org. The journal allows free access (Open Access) to its contents and permits authors to self-archive final accepted version of the articles on any OAI-compliant institutional/subject-based repository.

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Under The Aegis of
Ministry of Health & Family Welfare
Government of India

Published by

Wolters Kluwer India Private Limited
A-202, 2nd Floor, The Qube, C.T.S. No.1498A/2 Village
Marol, Andheri (East), Mumbai - 400 059, India.
Phone: 91-22-66491818
Website: www.medknow.com

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Volume 5 | Issue 2 | July-December, 2019

Contents

Contents Contd...

Community physicians: Words, actions and outcomes: TRP5

Community Medicine is a science and art of promoting health, preventing diseases, and prolonging life by range of interventions (promotive, preventive, curative, rehabilitative, and palliative) in close partnership or association with healthcare delivery system and with active community participation and intersectoral coordination, as described in the IAPSM textbook.[1] Many terms such as Preventive Medicine, Social Medicine, Community Health, and Public Health are used synonymously for the specialty "Community Medicine." Many specialties undergo changes in the nomenclature which evolves over the years and decades. We observe such requests coming from many other clinical specialties and super-specialties as medicine undoubtedly is dynamic and rapidly changing science. Regulatory bodies such as Medical Council of India had recommended the nomenclature as Community Medicine for the academic purposes to impart MBBS and MD degrees. Recently, Community Medicine has been described as a clinical specialty along with other clinical subjects in the MBBS curriculum released by the National Medical Commission as per the Gazette of India Notification, Regd. No. D. L.-33004/99, Extraordinary No. 390 dated November 6, 2019.[2]

The Royal College of Physicians defines community medicine specialty as one which deals with populations and comprises those doctors who try to measure the needs of the population (both sick and well), those who plan and administer services to meet those needs, and those who are engaged in research and training in the field.[3] The EURO Symposium in 1966 defined community health as one which includes all the personal health and environmental services in any human community, irrespective of whether such services were public or private ones.[4] Even though these definitions reasonably describe the specialty, it is high time for the Community Physicians to focus on certain aspects in the changing world.

We were taught TRP as Temperature, Respiratory Rate, and Pulse for a patient in our early school days of medicine. We also hear TRP as television rating point regularly which tells of a show determining its effectiveness and gives an idea about the reach and frequency of advertising messages toward a target population.[5] TRP5 of a community physician is highly relevant to understand, follow to sharpen our competencies to enhance professional excellence and better outcomes:

T – Teaching and training
R – Research
P1 – Policy-engagement
P2 – Project/programs participation and management
P3 – Public health practice
P4 – Patient care
P5 – People and partnership.

As far as teaching is concerned, all community physicians in a medical college or academic institute are intensely involved with undergraduate students, postgraduate residents, and training of interns. This can be further strengthened by updating not only with new scientific knowledge but also with the technology and medical education techniques and tools. Many of us are actively engaged in training programs of the medical officers, paramedical, health staff, frontlines workers, and others providing health care. Developing the training material and methodologies as per the need should be an important assignment for us.

Community physicians should prepare, implement, and manage research projects to develop new treatments, pioneering cost-effective diagnostics, innovations, and ideas to deal with existing and emerging challenges in health of the community. Bringing out health models, introduction of new vaccines, innovations in disease epidemiology and management of patients, and documenting success stories and good experiences are many of the pioneering competencies. However, some make enormous efforts in research and get it funded as extramural projects and also publish the work as it is required for professional growth in the institutions and disseminating the outcomes with the fellow professionals.

This research should be reflected by framing of policies through advocacy and influencing the policy-makers and key stakeholders in decision-making. Community physicians should be part of various taskforces and core committees constituted by the governments and extend services as technical experts or resource person to the government or other institutions. Our deep theoretical

knowledge should be transformed into action by being a team leader or member or contributor in the health and nutrition program planning, implementation, monitoring, evaluation, and documentation of the case studies, publications, experiences, and results. It will lead to achievement of the set goals in a time-bound manner and improvement in health status of the state or country as a whole. Carrying out projects on a large-scale, capacity building of the healthcare personals and improving the health status of the high priority groups in the community should realistically be followed.

Public health practice by a community physician is a strength which is possessed by virtue of the extensive training. Theoretical knowledge will gradually disappear or will exist only as words in the classrooms. Practical application by actively involving in outbreak investigation, disaster management, public lectures, awareness sessions, supervising or establishing or working in diagnostics and public health laboratories, interventions for control of occupational health hazards, various acts and laws, clinical nutrition in health facilities or applied community nutrition interventions, and behavior change communication are some of the significant examples which must be inculcated and applied.

Patient care in the holistic approach, serving as a family physician, providing quality medical care at different facilities such as hospital, health centers, and outreach areas should be strongly focused. Patient care is the biggest casualty as we begin to spent years in the specialty and move up in the profession. We must be clear in our thoughts that we are Physicians also (we are community medical physicians and professionals). Practice the clinical skills gained right through the academic career at MBBS level and MD resident and in early professional career. Patient care brings respect in the fraternity, builds trust with community, and creates opportunities to widen the network. The list of clinical skills for faculty in Community and Family Medicine has been recommended at the conclave on community and family medicine in Institutes of National Importances on December 18–19, 2015. These recommendations were approved by the MOHFW, Government of India (GOI).[7]

The final P of the TRP5: a community physician is bound by the origin of the specialty and inbuilt in the name itself. We have to spent time with people requiring excellent communication, people-friendly approach with essence of working for the people and with the people. Establishing partnership with international, national, regional organizations, GOI, and State Government officials in the health, Women and Child Development, and others for strong intersectoral coordination, training institutes, media, nongovernmental organizations (NGOs), community, and civil society organizations requires additional efforts but has to be learned and applied.

Dr. Sneh Bhargava Committee report on September 21, 2012, has recommended work standards for faculty of autonomous institutions.[6] Functions of a faculty as recommended by the committee are: teaching and training, research, service delivery and patient care, and corporate activities, which applies to community medicine faculty as well. Distribution of time for all these components of TRP5 varies with position and organization, such as medical school, research organization, practicing physician, or engagement in health system or international or national NGOs.

As we look at P5, only handful of our colleagues translate their research work in policy-making, able to influence the government policies, and manage large-scale program implementation, public health practice, patient care and foster people, and partnership. For enhancing the professional excellence, we must sharpen our skills and practice TRP5 for a competent community physician.

Thus, TRP5 for community medicine can be defined as "Community Physician is a game changer who transmits the acquired knowledge into practice through teaching and training, innovates through research, engages in health policies, manages and participates in the health programs, application of skills in public health practice, imparting quality patient care while working for and with the people by fostering strong partnerships with a mission of creating healthy communities."

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Submitted: 27-Nov-2019 **Revised:** 28-Nov-2019
Accepted: 27-Nov-2019 **Published:** 19-Dec-2019

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Access this article online

Quick Response Code:

Website: http://www.ijcfm.org

DOI: 10.4103/IJCFM.IJCFM_85_19

How to cite this article: Bhatia V, Dora S. Community physicians: Words, actions and outcomes: TRP5. Indian J Community Fam Med 2019;5:83-5.

Review Article

Changing world, changing trusts and health providers' sufferings

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Abstract

Workplace violence (WPV) is a serious problem anywhere, but is one of the most complex issues in health settings. Many factors contribute to WPV is health setting, health workers functioning in stressful environment, 24-h access to many, presence of drugs, and human sufferings with limitations in care. Violence may take a variety of forms, verbal aggression to physical assault, use of deadly weapons against physicians, others, and even patients. It is, therefore, associated with a variety of risks to workers safety, as well as organizational liability. The objective was to know happenings and challenges in the prevention of violence against health providers. This simple review of available studies and opinions was done by using Uptodate, ERMED CONSORTIUM, Cochrane Library, Delnet, and MedIND, and self-experiences were added. Physical violence (PV) against doctors and other health personnel is increasingly being reported. It is believed that more than 75% of doctors face violence during their practice. Almost half of the violent incidents occur in critical care units. WPV has been categorized into physical and mental, but all types of violence are destructive, in one or other way. There is evidence that female health workers are exposed to PV more often than others. It is essential to identify risk factors in order to prevent and manage WPV against health providers. Reasons for violent outbursts include inadequate workforce, infrastructure to treat patient load, and long waiting times. Many health personnel never report exposure of violence to anyone because of various reasons including perception that reporting was useless. Though it is difficult to completely eliminate violence in health-care settings, and although there is no "one-size-fits-all" approach for prevention, there are many ways to reduce the potential for violent occurrences and to minimize the impact if violence does occur.

Keywords: Changing trust, changing trusts and health providers' sufferings, changing world, health providers, sufferings

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Submitted: 22-Mar-2019 **Accepted in Revised Form:** 19-Nov-2019 **Published:** 19-Dec-2019

INTRODUCTION

Workplace violence (WPV) is a serious problem in any setting; however, it is one of the most important and complex issues in health settings. Health workers have been reported to be 16 times more likely to experience WPV than workers in other jobs. According to the International Council of Nurses, the likelihood of health

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_26_19

How to cite this article: Chhabra S. Changing world, changing trusts and health providers' sufferings. Indian J Community Fam Med 2019;5:86-91.

workers' exposure to violence was higher than even that of prison guards or police officers.[1] There are regular reports of doctors being abused, threatened, bullied, manhandled, and even killed. The issue is not restricted to any country but is a worldwide phenomenon. Till the end of the 20th century, the medical profession was considered the most noble of professions. The pendulum has now swayed, and the medical profession falls within the ambit of trade. The patient is considered a consumer in the commercial system. Some doctors are depicted as extortionists who extract money for treating dead bodies. Unfortunately, some have been caught on camera seeking bribes, commissions, and doing wrong to the patients as well as the society. Nobility has gradually taken a backseat, and the respect accorded to the treating doctors is disappearing. Reports of violence against doctors, sometimes leading to grievous injuries or murder, are making headlines across the world.[2,3] High incidences have been reported from India too.[4,5] Further, whether there is real increase in the numbers or increased awareness in the era of electronic mass media and improved telecommunication system needs further analysis.

Objective

The objective was to know the happenings and challenges about violence against health providers in health settings.

MATERIAL AND METHODS

This simple review of available studies and opinions was done, and self-experiences were added.

RESULTS

Frequency

Violence against doctors and other health personnel is increasingly being reported. More than 75% of doctors face violence during their practice. Multiple reviews and studies have been published in contemporary literature, with the largest numbers originating from China.[6-8] In a study, it was revealed that 23.5% of the participants were exposed to PV in the 12 months prior to the day of interview. Nurses were the main victims of PV (78%), and patients' families were the main perpetrators (56%) of violence. A survey of violence against general practitioners (GPs) in Birmingham found that 63% had suffered abuse or violence in the previous year and 0.5% suffered serious injuries. Another survey of GPs had found that over 60% of GPs experienced abuse or violence by patients or their relatives over 1-year period and nearly 20% reported some sort of abuse at least once a month.[9] A German survey revealed that 50% of GPs were confronted with aggressive behavior, 10% of them experiencing critical to violent attacks, such as criminal damage to property and/or physical assault.[10] About 87% of respondents, in a survey in China, reported an increasing trend of violence against doctors.[7] In a study, 78.3% of nurses stated that they had been victims of physical aggression, over the previous 12 months, compared with 45.5% of those employed in pedagogic positions and 55.6% of those working in other fields.[11] In verbal aggression, there were no significant differences between the various professional groups. Results of studies conducted during 2009–2010 in Italy revealed that 13.4% of nurses reported at least one physical attack during the past year.[12,13] In Iran, the results of a systematic review revealed that the prevalence of PV was between 9.1% and 71.6%.[14] Rahmani *et al.* reported that the PV against emergency medical workers in East Azerbaijan was 37.7%.[15] The majority of the physical incidents occurred inside the hospitals (90.1%) against female health workers (67.5%), who were of 30–40 years of age (39.5%). The results showed that the health workers' exposure to PV was 23.5%. The result of a study in Jordan revealed that 22.5% of hospital nurses were exposed to WPV.[16] Abualrub[17] reported that 15.93% of emergency staff reported PV during the past 3 months. The incidence of PV in another study was 21%.[18] In some studies,[19,20] between 46% and 70% of participants reported PV. This may be due to cultural differences between countries or underreporting of violence because of some or other factors. Rahmani *et al.* reported that the frequency of pushing and punching was 71.4% and 20.4%, respectively.[15] Talas *et al.* reported hitting, pushing, or shoving by 73.9% of victims, and the main perpetrators were patients' families, which is consistent with the findings of other studies.[21,22] Merecz *et al.* reported that overall 64% of psychiatric nurses and more than 16% of other nurses had frequently been subjected to PV by patients' families.[22] In another study, patients were the main perpetrators of PV and threats to attack.[23] The results showed that female health workers, especially between 30 and 40 years of age, were exposed to PV more than other workers. Health personnel, especially nurses, should identify the risk factors in order to prevent and manage such violence. Khoshknab *et al.*[24] also reported that nurses were the main victims of PV. Pich *et al.* reported that nurses were at the highest risk of patient-related violence in psychiatrists clinics and 83.9% in nursing homes.[25] This is thought to be due to their close contact with patients and/or their families.[10] The majority of the violent incidents, however, occurred in public hospitals, where treatment is free. The reported numbers of verbal and physical aggression toward health-care staff ranged from 0.4% to 91%.[21,26-28] It has been reported that female

medical trainees reported vastly higher rates of sexual harassment than trainees in the science or engineering.[29-31]

Types of violence

Violence in health care may take variety of forms, such as verbal aggression and physical assault, including the use of deadly weapons against physicians, other workers, and the patients. It is, therefore, associated with a variety of risks to workers' safety, even patients as well as organizational liability. In addition to physical harm, individuals who experience or witness violence in the health-care workplace are at the risk of emotional consequences that can lead to time away from work, burnout, job dissatisfaction, and decreased productivity. However, many healthcare workers consider violence "part of the job."

While WPV has been categorized into physical and mental violence, all types of violence are destructive, in one or other way.[32] PV involves use of physical force against an individual or a group, and can lead to physical, psychological, or sexual harm and includes punching, kicking, slapping, shouting, pushing, biting, pinching, and wounding using sharp objects.[33] In a study, the most common types of PV were pushing or pitching, experienced by 43% of the health providers.[26] Erkol *et al.* also reported that hitting, kicking, and scratching were the most frequent types of PV.[34] A study from India revealed that 87% of violent incidents were verbal and 8.4% were physical.[35] In the 12 months prior to the survey, verbal aggression was experienced by 89.4% of the participants and physical aggression by 70.7%. Employees in the workshop for people with disabilities (41.9%) were less affected by physical aggression than employees in other health-care settings (78.7%).[11] In a study by Franz *et al.*,[11] 70.7% of the people interviewed experienced physical and 89.4% verbal aggression. In the majority of the cases (60%–70%), such violence took the form of either verbal abuse or aggressive gesture.

Causes of violence

Many factors contribute to the violence in health settings. Health-care workers have to function in typically stressful environments. There is 24-h access to health settings. There are some unexpected tragedies. Also, the presence of drugs makes them attractive targets. Almost half of the violent incidents occur in critical care units. Those working in intensive care units face violence almost every day. In a study, lack of people's knowledge of health providers tasks was the most common contributing factor to PV (49.2%).[36] The researchers reported that most of the people did not have a clear concept of the medical staff's duties and in most of the cases, they expected treatments and prescriptions of different medicines by whosoever was available and if their expectations were not met, they behaved violently. Patients are becoming more aggressive in their demands and are much more likely to resort to aggression if not satisfied with care. Poor quality of medical services and increased awareness among patients have resulted in an increase in medical disputes and at times violence against health-care professionals. People attending private hospitals expected exceptional quality of services than in public hospitals.[37] Major reasons for violent outbursts include inadequate workforce and infrastructure to treat the patient load. Long waiting times and short consultation times also contribute. The doctor–patient relationship, historically defined as the legendary Hippocratic Oath, is now unfortunately reduced to a commercial transaction. Poor doctor–patient communication can easily trigger tension whenever doctors fail to meet patients' high expectations. Lack of proper staff training programs for preventing and managing violence and lack of appropriate legislation and policy for pursuing received reports and managing violence in health-care settings are real problems. In a study in New Delhi, 73.5% of doctors attributed long waiting periods as a major cause of violence. Other causes perceived were visiting-hours violation and dissatisfaction with service providers. Doctors reported that patients reported to the hospitals when the disease was advanced and when complications set in, they got impatient and violent. Nursing staff in particular were exposed to physical aggression frequently.[35] Very often, those who abused a medical person were patients themselves who were under the influence of alcohol and drug and were delirious or were in the psychiatry wards.[38] Increased risk of violence was also recorded when a general physician was on house calls, particularly at night.[39] Sometimes, political parties take the law in their hands in such situations. Anxiety, long waiting period before the patient could speak to a doctor, and the feeling that doctor is not giving enough attention to his/her patient lead to frustration giving rise to violence. For government hospitals and primary health centers across the country, money is not the reason, but anxiety, long waiting period, nonavailability of crucial investigations, inordinate delay in referral, and unhygienic and extremely crowded conditions in the emergency and other wards are some of the reasons.[4,5] Assaults by psychiatric patients against mental health-care providers are both a reality and a concern, as the effects of violence can be devastating to the victim. In most of the European countries and in Canada, the health-care cost is borne by the government, and often, the first contact of the patient with medical service is with designated GPs who

take house calls day and night; hence, there is no financial anxiety for medical treatment in these countries.[39] In the USA, although the standard of medical care may be high, this comes at a cost mostly through payment to insurance companies or direct cost out of pocket. More often than not in India, patients by themselves are not violence makers, but their relatives are. Sometimes, unknown, apparently sympathetic individuals political leaders also cause violence.[40]

Effects of violence

Effects of violence have been reported to be variable. The consequences for the employees in health settings include reduction of working spirit, anger, reduction of self-confidence, being absent from work, changing job, and even death.[41] In addition to the immediate harms caused by violence, the number of times one faces violence at work can have cumulative impact on him/her; the more the frequency and the intensity of the incidence, the more the probability of trauma. The other consequences included negative behavioral manifestations. The professional violence could lead to burnout, resulting in the loss of physical and emotional capacity and cause negative behaviors and attitudes toward himself/herself and the others. In a study in China, 49% of doctors even said that they intended to leave the profession.[6] Health-care workers suffered from job dissatisfaction,[23] low self-esteem, and poor quality life.[42,43] In another study, 76% of doctors felt that they would not choose the profession, if given another chance, and 78% did not want their children to be doctors.[44]

Action taken

In a study by Fallahi-Khoshknab,[45] it was revealed that the most common reaction of victims to PV was asking the aggressor to stop violence (45%). More than half of the participants did not report WPV to anyone and considered reporting useless. Furthermore, more than 60% of participants stated that there were no guidelines for reporting violence in their workplace, and more than half of them said that no action was usually taken to pursue the incidence of violence. In a study, AbuAlRub[46] reported that most participants said that no specific policy was thought of for dealing with violence. In another study, the most important reasons for not reporting included the belief that reporting was useless and there was fear of being stigmatized as a troublesome and incompetent person.[24] Franz *et al.*[11] reported that most often interventions to stop the aggression took the form of discussions with the patient (81.0%), requests to change behavior (58.6%), withdrawal from the patient (56.0%), requests for personal support (49.1%), and quite removal of the patient (47.4%). However, more rigorous interventions were performed, too like medication to the patient (46.6%), physical restraint (37.9%), forcible detention of the patient (33.6%), forcible removal of the aggressive person (31.0%), and 18.1% of the respondents asked for help from the police. The study by Rahmani *et al.*[15] revealed that 60.5% did not report violence to any one and the most common reason for not reporting was the perception that reporting was useless (52%).

DISCUSSION

The world is getting more violent with violence in all walks of life. However, the medical profession is increasingly facing PV at workplaces. violence is much more common in health-care places than in other industries, and violent events in health care are perpetrated by patients, family members of patients and visitors, employees, and criminals. The notion that the practice of medicine is a social service, and not a profession, aggravates the situation. Patients' perceptions of societal injustice and commercialization of medicine lead to patient–physician mistrust. Over the years, physician training has lacked core humanistic components that nurture empathy and caregiving. The patient–physician relationship is founded on trust entered by mutual consent.[47] Violence is generally dismissed as the effects on physicians as simply a hazard of the job that should be handled by physician resilience. At the physician's discretion, the patient's care can be transferred to different providers.[48] Medical councils and medical institutions have an obligation to support the decision of the physician while caring for the patient. While it is an offense to assault a public servant, there are no laws for the protection and safety of the medical community. Assaulting medical personnel on duty should be made a serious cognizable offense. Concealed closed circuit televisions with video recording may serve as a deterrent, as well as be used to record evidence. Hospitals and clinics must have panic alarms and all threats/episodes of violence should be recorded in a critical incident book. There must be a zero tolerance policy for WPV which must be embraced as a universally applied core institutional value rather than an imposed bureaucratic requirement. Risk managers committed to decreasing risk of violence in their organizations will need to convene stakeholders from various disciplines and collaborate to implement strategies, individualized according to identified risks, across the organization. Systematic approaches are needed to ensure that clinicians, especially women can safely treat patients in populations where sexism is common. In some places in developed countries, there is existence of transparent policies, appropriate legislation, and reporting

mechanisms.[45] Results of a study in Australia revealed that nearly 70% of health workers were satisfied with WPV control policies and reporting mechanisms.[49] The World Health Organization has drawn out a global action plan to prevent violence in health setting.[50] To combat the problem of WPV the United Kingdom, the National Health Service has issued "Zero tolerance" guidelines.[51]

CONCLUSION

Though it is difficult to completely eliminate violence in health-care settings, and although there is no "one-size-fits-all" approach for prevention, there are many ways to reduce the potential for violent occurrences and to minimize the impact if violence does occur.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Perspective

Theme of World Health Day continued for the 2nd year in row (2018–2019) – What it means to India

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Abstract

Every year, the World Health Organization (WHO) celebrates World Health Day with a particular theme to aware the masses about the subject and focus on its relevance. For the past 2 years (2018–2019), the WHO has kept the theme same considering its prime importance in the contemporary world. The theme "Universal Health Coverage: Everyone Everywhere" is very pertinent for developing countries like India where universal access to adequate health care is a distant dream. Increasing health-care needs with high out-of-pocket expenditure is not allowing the public to move out of poverty. In contrast to continuous rise in the demand for health care, the supply side in India is not prepared to meet the challenges of complex determinants of health. In the past, there have been several interventions in the form of health insurance schemes with its own challenges of fragmentation of risk pools and no linkages with primary health care. Considering these challenges, the Government of India (GOI) has adopted a two-pronged strategy under the ambit of Ayushman Bharat Program. The first approach is upgrading primary health centers and subcenters to health and wellness centers and the second is the launch of Pradhan Mantri Jan Arogya Yojana. Through this program, GOI aims to achieve universal health coverage by 2022 which is achievable, but the challenges in reality are immense.

Keywords: Universal health care, Universal Health Coverage, World Health Day

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Submitted: 14-Sep-2019 **Revised:** 03-Oct-2019 **Accepted:** 16-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION TO WORLD HEALTH DAY AND ITS THEMES

The World Health Organization (WHO) established on April 7, 1948, headquartered in Geneva, Switzerland, a member of the United Nations Development Group, is the organization which is concerned with international public health, having a 6-point agenda, consisting of 2 health objectives of promoting development and fostering health security, 2 strategic needs of strengthening health systems and harnessing research, and 2 operational approaches for enhancing partnerships and improving performance.[1,2]

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_71_19

Every year, World Health Day is celebrated on April 7 by various health institutions with a particular theme to draw the attention of people about the importance of that theme.[3] Different kinds of activities such as debates, essay competitions, poster competitions, art exhibitions, quiz, and award ceremony are organized to fulfill the objective of World Health Day. The theme of World Health Day 2018 was Universal Health Coverage: Everyone Everywhere which is continued for 2019 also because of the fact that millions of people still do not have access at all to health care and millions are forced to choose between health care

How to cite this article: Pushpa, Kumar D, Sagar V, Kashyap V, Kumari AP. Theme of World Health Day continued for the 2nd year in row (2018–2019) – What it means to India. Indian J Community Fam Med 2019;5:92-6.

and other daily expenses such as food, clothing, and home. Universal health coverage (UHC) is an aspirational goal, which means that we all have desires and full hopes to achieve it certainly 1 day if we all try to make this dream come true. The dream of providing promotive, preventive, curative, and rehabilitative health interventions for each and every person at an affordable cost is all about achieving UHC, but it certainly does not mean free coverage for all possible health interventions, regardless of cost, as no country can provide all its services free of charge on a sustainable basis. Greater equity, improved health outcome, efficient accountable and transparent health system, reduction of poverty, greater productivity, increased opportunities for job, and financial protection are the expected outcomes from UHC.

The WHO uses 16 essential health services in four categories (reproductive, maternal, newborn, and child health; infectious diseases; noncommunicable diseases; and service capacity and access) as indicators of the level and equity of coverage in most countries of the world.[4] These all are interrelated and are accessible only with the achievement of right to health. Right to health means health interventions which are of good quality, affordable, acceptable , appropriate and delivered timely. Three core dimensions of UHC proposed by the WHO are the proportion of a population covered by existing health-care systems, the range of health-care services available to a population, and the extent of financial risk protection available to local population.[5,6] The vision of UHC for 2030 is universal health entitlement to each and every citizen, guaranteed access to an essential health package (including cashless inpatient and outpatient care), and freedom of people to choose between public and private sector facilities.

UNIVERSAL HEALTH COVERAGE AND SUSTAINABLE DEVELOPMENT GOALS

One of the key features of the United Nations' Sustainable Development Goals is the progressive realization of UHC.[7] India also has dreams of achieving UHC and has supported the theme of health for all since its independence which is evidenced by the reports of the Bhore Committee that had recommended a publicly financed national health service and a proper system for comprehensive preventive and curative care for all, long back in 1946.[8] India is still committed toward achieving UHC, and its ambitions are clearly reflected in its health policies and institutional mechanisms, which are focused toward increasing coverage as well as access to health services. While announcing the budget for 2018–2019, the Union Finance Minister, Mr. Arun Jaitley, quoted "Only Swasth Bharat can be a Samriddha Bharat. India cannot realize its demographic dividend without its citizens being healthy and Ayushman Bharat Program will build a New India by 2022 and ensure enhanced productivity, well-being and avert wage loss and impoverishment."

AYUSHMAN BHARAT – A STEP TOWARD UNIVERSAL HEALTH COVERAGE

Ayushman Bharat Program (ABP), launched in India, is one of the most ambitious missions in order to achieve UHC, consisting of two schemes: (1) health and wellness centers (HWCs) and (2) National Health Protection Scheme (NHPS)/Pradhan Mantri Jan Arogya Yojana which are complementary to each other.[9] HWCs are desired to provide comprehensive primary care including noncommunicable diseases and maternal and child health services, essential drugs free of cost, and diagnostic services, whereas NHPS is supposed to provide financial risk protection to poor and vulnerable families up to a maximum of 5 lakh rupees/family/year.[10] The upgradation of 150,000 (of the existing 180,000) subhealth centers and primary health centers (PHCs) in India to HWCs by December 2022 is one of the two initiatives of ABP, along with an increase in the list of services provided through it. The aim is to make comprehensive primary health care accessible to the community within a short duration of 30 min of walking distance.[11-13] The target is of making about 11,000 HWCs in financial year 2018–2019, and about 16,000 HWCs in the financial year 2019–2020, functional which also includes upgrading all 4000 PHCs in urban areas to HWCs by March 2020.[14] The benefits of these HWCs will be available to 100% of population of our country when they are fully functional. The second initiative of ABP is NHPS which is the world's largest government-funded health-care (insurance) program.[9] The previous program Rashtriya Swasthya Bima Yojana was providing Rs. 30,000 insurance coverage for up to 5 members of a family per annum, for a target beneficiary of about 60 million families. The target beneficiary in AB-NHPS has increased to about 107.4 million families considering its aim to target the beneficiaries beyond the traditional approach of "below poverty line" population.[10] It includes "vulnerable and deprived population" which are identified through socioeconomic and caste census.[15]

NEED OF UNIVERSAL HEALTH COVERAGE IN INDIA

The most important key in moving toward UHC is efficiency and priority setting to get the maximum value for the money spent. The need of health care is very unpredictable leading to out-of-pocket expenditures and wage loss as well in the poor and vulnerable families.[16,17] The situation in India is

so grave that around 50 million households fall in poverty annually due to out-of-pocket expenditures, which is mainly because of limited health-care facilities in public sectors. This forces patients toward private sectors along with the fact that our health-care system is dominated by a private sector, the share of private expenditure in total health expenditure is quite high as compared to the public expenditure, and there is a huge scarcity of public services in the public health sector.[18,19] Outpatient care is also equally responsible along with hospitalization for the impoverishments of households. The families whose source of income is solely daily wages are the real sufferers as hospitalization causes loss of wages to more than one earning member of the family. Health insurances do not support for comorbidities and patient support services. AB-NHPS is meant to provide only secondary and tertiary inpatient care and not comprehensive outpatient care. Noncommunicable diseases, such as hypertension, diabetes, and mental illness, require long-term care and are best managed through comprehensive primary care in outpatient setting. Health schemes which favor only hospitalization over comprehensive outpatient care and coverage may not be appropriate for health needs of society. If the benefit package of the beneficiaries is designed such that their social, economic, and health-care needs are covered, such as provision of outpatient care, medicine and diagnostic charges, travel allowances, and compensation of wage loss, including special packages for elderly on long-term medication support, children with special needs, long-term rehabilitation services for people, and road traffic accident victims, then only it will lead to a complete health-care package. A health insurance covering financial risk protection will be fruitful to a patient only if it is readily accessible (if the health facility is not very far away) and with a favorable health outcome (trained health-care service providers are present).[11-13]

STRENGTH WEAKNESS OPPORTUNITY AND THREAT (SWOT) ANALYSIS OF AYUSHMAN BHARAT

Synergistic actions between AB-NHPM and HWCs will complement between secondary, tertiary, and primary health care and thus will help the common person to deal with the health issues in a more efficient way. India is still behind its neighboring countries Sri Lanka and Bangladesh in aspects of health outcome which is basically because of inadequate funding, lack of synergistic action between disease control and other social sector programs, poor regulatory mechanisms, and lack of good capacity in the management of health. There is a wide difference between rural and urban indicators of health.[20] The 12th plan promotes the provision of safe and healthy environment to all, providing universal access to basic health services and medicines as well, and regular evaluation of health systems along with making the communities health conscious by various means such as communication, behavior change, and participatory governance.[21] This will be possible only when trained health-care providers and technical health-care workers in adequate numbers are ensured for primary health care along with increase in human resource to achieve the WHO norms of having at least 23 health workers (doctors, nurses, and auxiliary nurse midwives)/10,000 population and by recruitment of adequate number of dentists, physiotherapists, pharmacists, technicians, and other health professionals at particular levels of health-care delivery systems where they are required. Hence, this scheme is an opportunity for Indian health system for providing better health care to masses.

India is having a long list of challenges to overcome which will be a hindrance in achieving UHC by 2022, such as very high disease burden, problems in reproductive and child health, malnutrition, gender inequality, lack of proper education, lack of trained human resource, especially in health, inadequate research works in the way to achieve health for all, commercial health-care delivery system, unequal access to health care, improper resource allocation, high out-of-pocket expenses on health, increase in geriatric population, and various other social determinants of health such as alcoholism, illiteracy, superstitions, poverty, and many more.[22-24] To add to the list is a lack of political will, poor intersectoral coordination, and frequent natural disasters also.

This does not mean that the goal of UHC cannot be achieved in India. There is always a ray of hope when we look back to our history. Huge success of elimination of polio and eradication of smallpox and guinea worm despite the challenges proves that nothing is impossible if we all collectively try to achieve it. There are many such examples in the field of maternal and child health services too. Now, the maximum deliveries are institutional deliveries or at least conducted by trained birth attendants, even in hard-to-reach areas, which ensures proper care during delivery, lowering the risks of maternal mortality and increasing the prospective of child immunization also. Furthermore, they get financial support in the form of incentives, and the government ensures that there is no out-of-pocket expenditure for a pregnant female by providing her with all investigations during ante natal care and medicines free of costs along with free transportation by 108 ambulance/Mamta Wahan. The facility of free transportation has been extended to infants also. This is

possible because of strengthening and investments on comprehensive primary health care. In India, we have great potential of human resources which can be trained at a low cost. They can represent the community and help in the development of health services also. A very good example of this potential human resource is the success of nearly one million accredited social health activists under the National Health Mission, who is a part of the community and serves their own people, proving the effectiveness of community health workers.[25,26]

WAY FORWARD

Along with it, the role of representatives who are elected, Panchayati Raj institutions in rural areas, and local bodies in urban areas is very vital in achieving UHC as their political will and power can also help in bringing the desired changes in our country. This is because health is always underfunded due to its low ranking in the priority list of the political leadership. Higher budgetary demands for health by the Ministry of Health must be justified by evidence-driven investment case scenarios as too often in India, decisions about provision and priorities about health care are being made without any supporting evidence or evaluations of cost-effectiveness. Organization of health assemblies at regular intervals at different levels will enable the community to review about the health plans and about their performances also. Strengthening and utilization of civil society and nongovernmental organizations for mobilization of community and dissemination of information along with community-based monitoring of health services can play a pivotal role. Confidential complaints and grievances about health services can be tackled through development of a system of grievance mechanism at the block level which will improve the quality of health services at ground level. Along with financing and institutionalization, measuring the progress toward UHC is equally important. In a country like India, the practical and affordable solution for achieving UHC is only by strengthening of primary health care by increasing investments on comprehensive primary health care.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Perspective

Indicators of scientific impact: The need for a tectonic shift

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Abstract

The proliferation of research witnessed in the past couple of decades has increased the need for distinguishing the impact of publications. As it could take a long time for a scientific finding to be translated into action, surrogate measures are sought after. Citation of a published work is often considered the ideal surrogate measure. The growth of social media and the use of published work in policy documents and news media have called for other alternate measures. The measures of scientific impact are formulated into impact indicators. Journal impact factor is a widely known indicator of scientific impact. Initially intended for the purpose of rating journals, it is often used for rating the article and the author. Impact factor is an average and is influenced by the outliers. The field of research, citation index, and the problem of deliberate self-citation influence it. The h-index, an author-level metric, should be interpreted with other complementary indices such as the e-index and q-index. Altmetric Attention Score, a novel indicator which uses alternative measures of impact such as used in social media, discussions, and policy documents, is a promising indicator.

Keywords: Altmetrics, h-index, impact factor, scientometrics

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Submitted: 20-Feb-2019 **Accepted in Revised Form:** 10-Jul-2019 **Published:** 19-Dec-2019

INTRODUCTION

Scientific journals and scholarly articles have seen a widespread proliferation in the present age. An estimate says that there is an increase in scholarly articles by 3% every year.[1] The growth is contributed in part due to an increase in poor-quality predatory journals and poor publishing ethics. Owing to this, the need to distinguish oneself in the scholarly world has become crucial for getting research grants and promotions. The field of scientometrics, involved in evaluating the impact of scientific research, has been growing proportionately to address this need. At this juncture, it is pertinent to address two questions – What are all the measures of scientific impact? Moreover, which indicator/composite indicator gives a satisfying answer to address the need of identifying scholarly research?

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_12_19

MEASURES OF SCIENTIFIC IMPACT

Quantifying the impact of research has been a pursuit spanning decades since the inception of the impact factor by Garfield.[2] The scientific impact of research is the best measured by its application to benefit humanity. The benefit may vary in terms of its intensity and reach. However, not all published research show a direct tangible benefit. It may take decades for scientific research to be applied in action. Due to this, surrogate indicators of research outcomes were sought after. Of these, the citation is the widely used measure, included in most of the scientometric indicators.

How to cite this article: Akkilagunta S, Deshmukh P, Bhatia V. Indicators of scientific impact: The need for a tectonic shift. Indian J Community Fam Med 2019;5:97-9.

Citation depends on the access to the article, the type of publication, the field of research, age of the article, and the topic itself. For example, exploratory research might garner fewer citations compared to a clinical trial, and similarly, new and novel topics against the old topic. Review articles gather far more citations compared to the original research. The problem of deliberate self-citation could be used to manipulate. Due to these reasons, an effort has been made to include research outcomes apart from citation.

Few databases have used alternative measures of scientific impact. For example, page views, downloads, and social media sharing have been used in public library of science metrics.[3] These measures are still plagued by the limitations of access, and hence, more relevant to open-access journals. Even a question arises whether they reflect impact or mere feedback. Other alternative measures include media coverage, blogging, and use in Q and A threads. However, important of them all would be the use of research as a reference in policy documents. The use of research in policy would be the closest to scientific impact in terms of its benefit to humanity. Mere citation in policy documents may not implicate its direct contribution to policy. However, it is a beginning in the right direction.

JOURNAL IMPACT INDICATORS

The second question relates to finding the best available composite indicator of scientific impact at all three levels – Journal, Article, and Author. The impact factor is the widely known journal-level metric of journals in the Web of Science database and is published every year as Journal Citation Reports. The impact factor measures the average number of citations received in a year by all the articles published in the previous 2 years. Since the measure is an average, it is affected by the skewness of the distribution. A study on biochemical journals showed that the top-cited 15% of the articles contribute to 50% of the citations.[4]

The original purpose of the impact factor had been to help librarians choose journals for a subscription. However, it has become the basis for the author to choose a journal for submission, a judge of the researcher's capability, and the basis for funding research projects. It has been used to distinguish authors and articles. An article or author may be published in a journal with a high impact factor, but itself may not be necessarily cited. Other journal-level metrics include SCIMAGO Journal rank, impact per publication, and Source Normalized Impact per Paper using the SCOPUS database. Article influence score and Eigenfactor score use the Web of Science database. These indicators vary from each other in the time window of citation, subject field limit, the range of citable items, and the adjustment for self-citation.[5]

AUTHOR-LEVEL INDICATORS

Author-level metrics are used to distinguish between researchers based on the impact of their publications. H-index introduced by a physicist, Hirsh, has been widely reported. To calculate the h-index, the papers of an author are arranged in decreasing order of the number of citations received. The h-index is then the largest rank "h" such that the paper on this rank has h or more citations.[6] For example, an author with h-index of 23 has 23 papers with 23 or more citations. Since its conception, improvements have been made to refine it further. Individual h-index has been developed to reduce the contributing effect of coauthors.[7] Due to its nature, the h-index ignores papers with fewer citations and also those with a very high number of citations. As a result, two researchers with a huge difference in the citation count may have an identical h-index. A complementary metric termed e-index has been developed to account for those citations not included in the estimation of h-index.[8] Another index termed q-index evaluates deliberate self-citation by researchers.[9] Interpreting h-index requires the use of other complementary indices. Another commonly used indicator is i-10 index, i.e., number of articles with at least 10 citations.

Experts proposed g-index to overcome the poor weightage given by h-index to total citations and papers with a large number of citations. The papers by an author are similarly ranked in descending order of their citations. The g-index is the highest rank that the top g papers cumulatively have at least g^2 citations. A researcher with a g-index of 10 has 10 papers that have together received at least 100 (10^2 citations).[10] However, both the h-index and g-index do not adjust for the age of the article. A contemporary h-index tries to address this issue by giving weightage to recent well-cited articles.[11]

Other author-level metrics are the SIGAPS score and ResearchGate (RG) score. RG score is a composite score that includes citation indirectly in the form of journal impact factor.[12] Other components of the RG score are discussion (question and answers) and followers. However, it has been criticized due to its lack of transparency and the inclusion of journal impact factors in its assessment.[13]

ARTICLE-LEVEL INDICATORS

The commonly used article-level metrics are – mean normalized citation score, Relative Citation Ratio, and Altmetric Attention Score. While the first two use citations, the Altmetric Attention Score is comprehensive including

traditional measures such as citation and contemporary indicators. The contemporary indicators include media attention, discussion, blogging, social media, and citation in policy documents.[14] Altmetrics, however, faces drawbacks such as heterogeneity, data quality, and lack of reliability. The accuracy of data on social media attention, blogging, etc., is questionable. The error in estimation is multiplied due to the inclusion of a wide variety of indicators. The methodology is revised often which makes it unreliable.[15] Although Altmetrics is appealing due to its contemporary nature, it is still in its nascent phase. Further research is required to overcome these limitations and enhance its use in future.

CONCLUSION

Citation still forms a base for most of the research impact indicators. In this era of digital publication, open-access and social media influence demands the inclusion of other research outcome indicators. Altmetrics and other similar indices while promising need further research.

To conclude, the growth of scientometrics has enabled a long list of impact indicators. There is a need for a unified, comprehensive indicator at each level to allow for simplicity and transparency in the assessment of scientific impact. Despite its drawbacks, the journal impact factor is still used by funding agencies for decision-making. In India, impact factor and h-index have been reported for funding agencies such as Indian Council of Medical Research as a measure of research output.[16] As discussed above, no single indicator allows for a comprehensive, unbiased assessment. Ensuring awareness and access to the key scientometric indices is necessary for informed decision-making.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Perspective

Swachh Bharat Abhiyan – A long journey to achieve a big dream

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Abstract

Even after 70 years of independence, poor state of sanitation glares as one of the challenges of India. The government has tried to establish a well functioning sanitation program in the country since 1954. This program has undergone lot of changes since then and in 2014 it was renamed as Swachh Bharat Abhiyan. In order to promote safe water practices, several pipelines were installed and rivers were cleaned. Imposing Swachhta Abhiyan for carrying out activities, conducting several training programs and workshops, opening of Pink toilets, Namami Ganga, Swachh Vidyala are few of the worth mentioning initiatives under the program. Though the services are being provided at door-steps and the citizens are supported financially for toilet construction, the actual proportion of people using these toilets is under debate. Swachhata Pakhwada is being celebrated twice a year. Post celebration observance of safe disposal of waste and minimal usage of plastic is questionable. Achieving an open defecation free nation with assured safe sanitation is an initiation from the government and acceptance by the population. Implementation of these programs can only lead India becoming one of the cleanest countries in the world.

Keywords: Drawbacks, sanitation program, success

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Submitted: 19-Jun-2019 **Revised:** 28-Nov-2019 **Accepted:** 03-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION

It all began with the germ theory that sanitation and hygiene are the most vital instruments of health and well-being. When the investigation of cholera epidemic was carried, the need of safe and sustainable drinking water came into light. According to the United Nations Development Programme, in 2015, 2.3 billion people lacked basic sanitation and 892 million practiced open defecation.[1] According to the WHO in 2015, 82% of global urban versus 51% of global rural population use improved sanitation facilities.[2]

Even after 70 years of independence, poor state of sanitation glares as one of the challenges of India. In 2012 report of the WHO, India accounted almost for a third of the world's population without improved sanitation and two-third of population practicing open defecation.[3]

NATIONAL SANITATION PROGRAMS

It was in 1954, the National Water Supply and Sanitation Program was initiated with the objective of providing safe water and adequate drainage facilities for the entire urban and rural population of India. In 1986, the government launched the Central Rural Sanitation Program (CRSP), the first nationwide sanitation program. The Nirmal Gram Puraskar was launched to recognize the achievements and

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_49_19

How to cite this article: Priya PK, Katole A, Padhy GK. Swachh Bharat Abhiyan – A long journey to achieve a big dream. Indian J Community Fam Med 2019;5:100-2.

efforts of gram panchayats toward full sanitation coverage. In 2001, the CRSP was overhauled with the introduction of the Total Sanitation Campaign (TSC), which carried forward the demand-driven approach focusing on awareness building. Several other large sanitation programs have been launched since then such as the Nirmal Bharat Abhiyan in rural India (replaced TSC) and Basic Services for Urban Poor.[4] On October 2, 2014, came the world's largest sanitation campaign, Swachh Bharat Abhiyan (SBA), with the aim of creating a clean and open defecation free (ODF) India by 2019.[5]

SUCCESS STORIES

A 35,000 L water tank and several water pipelines have been installed in the village of Navlewadi under this mission. The villagers of Chauras jointly cleaned the banks of river Narmada and cleared the garbage piles after the initiation of Swach Bharat. Puzhakkal village of Kerala has become a role model for the state in tackling solid wastes. The villagers have installed waste bins and set up biogas plant, and an entire waste management plan is in place. A series of motivational campaigns had been conducted in the backward districts of Koraput (Odisha) and had resulted in making 11 villages ODF. Women of Oontkar village conduct regular gathering to discuss on cleanliness and the ways to implement it.[6]

Swach Cess has been levied to facilitate the functioning of the program. The government has gained around 149.90 crores for the year 2018–2019 through this, which has to be utilized for various activities of Swachhata.[7]

The Ministry of Drinking Water and Sanitation has been conducting various state and district level workshops for the successful implementation of the program and various resource persons were called in for the same.[8] The introduction of pink toilets has strengthened women's right to privacy, health, hygiene, and quality services. The incorporation of public–private partnership in the maintenance of pink toilets has added feather to the cap.[9] Namami Gange Program has made 4470 villages located across 52 districts of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal ODF.[10] Since October 2014, under Swach Bharat Mission–Gramin (SBM-G), 926.21 lakh toilets have been built and 617 districts declared ODF.[11] Since the launch of SBM (G), there is 36.73% increase in sanitation coverage.[10]

Under Swachh Vidyalaya initiative, 417,796 toilets were constructed in 261,400 elementary and secondary government schools by August 2015, which has led to 11.08 lakh government schools getting access to gender-segregated toilets.[12] This has not stopped with providing just toilets, but also Swachhata education at this tender age which helps them to build a better future.

In Raipur, the government has taken spectacular efforts from distributing color-coded bins for domestic disposal to their timely collection door to door in a color-coded van everyday. This has indeed motivated the citizens for appropriate categorization of domestic by-products and their routine disposal.

Different information education and communication strategies were deployed for creating awareness of SBA. Aggressive mass media campaign casting Mr. Amitab Bachchan under the title "Darwaza Bandh" was telecasted for promoting continuous toilet use. Other celebrities to name a few like Mrs. Shilpa Shetty and Mrs. Vidya Balan have been actively propagating the message. Mr. Akshay Kumar's "Toilet Ek Prem Katha" was supported by the ministry and it was positively received by the SBM (G) beneficiary audience.[10]

DRAWBACKS

Although the government has constructed sanitary toilets at the household level as promised, the number of families started using this facility is under question. Since the cultural practice and belief of a set of population is always against the use of toilets very close to their homes, the practice of open defecation still continues in such areas.[4] When villages declare themselves of ODF status, the number of them legally confirmed is under doubts. Since behavior change occurs over a period of time, is it possible to achieve 100% ODF status in a short span of 5 years?

Although manual scavenging is prohibited under the law, as per the Socio Economic and Caste Census 2011, there were 182,505 manual scavengers in the rural areas of the country.[13] Hence, the ultimate truth behind these figures being that one of the objectives of SBA is remained unfulfilled.

The other objective was the scientific municipal solid waste management system. This has to be considered in urban areas only, as the practice of proper segregation and disposal is not completely functional in rural areas yet. The reduced use and appropriate disposal of plastics have been insisted in the program, especially under Swachhata Pakhwada. However, after this fortnight program, what is the postobservation effect? Are the procedures followed all round the year? Despite knowing the hazards of plastic use and its improper disposal, no steps are particularly

focused to curtail this matter under SBA. The huge amount of tax collected for the purpose of Swachhata remains unaccounted for, despite being questioned under right to information.[7] Even though the government has apportioned the color bins, people were not educated about the methods to segregate and dispose the wastes. Furthermore, there are no ideal techniques for plastic waste disposal. If the legislations were to be made stricter, public place littering might reduce significantly. The rag pickers can be employed to collect the reusable wastes and plastic wastes on regular basis door to door.

CONCLUSION

The Indian government has taken a tremendous effort in initiating the world's largest sanitation drive. A lot of resources in means of time, money, and workforce have been invested into this camp through active involvement of the government offices, staff, and programs. However, the amount of resources pooled into this program, was it effective in achieving the desired sanitary status of the country? Has the government ideally improved the health status of people with this drive? Is the mission under routine monitoring and evaluation program? Is this short time span enough to judge this program a success or a failure? These are the few lingering questions left behind in our minds besides giving a loud round of applause for such a beginning to a long journey.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Role of smartphone technology in medical education in India

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Abstract

Introduction: In this era of technology, a smartphone has become a powerful tool. It is often used in communication and entertainment. It has a significant role in medical education, too.

Objective: The objective of this study was to discuss the use of smartphone in medical education, its advantages and disadvantages, and challenges to its widespread use in this field.

Material and Methods: A review of the literature was done in PubMed and Google Scholar for the articles related to our objective.

Results: A smartphone can help a student in acquiring the study material (books, videos and updates), making better notes/record and for searching answers. It has the advantage of easily fitting into the pocket, improving the accessibility to the internet, and can be used as a mini-computer to edit documents. In the field of medical research, a smartphone can ease the review of literature and data collection. It is beneficial in resource constraint settings; help in integration of specialities and uniformity in teaching. However, it has certain disadvantages like being a costly device with a limited lifespan, prone to theft or damage, can cause dependency, information overload, distraction during class, increase in screen time, and can cause straining of eyes or sleep disturbances. Several studies have shown medical students using it for studies and they have a positive attitude toward it.

Conclusion: Smartphone technology can be revolutionary for medical education if used aptly. There are certain challenges in the implementation of a smartphone in medical education in India which can be addressed through certain measures.

Keywords: Internet, medical education, smartphone, teaching

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Submitted: 21-May-2019 **Revised:** 09-Sep-2019 **Accepted:** 16-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION

With advances in technology, the cellular phone got evolved to smartphone, and it increased the accessibility to the Internet.[1] The first smartphone was designed by IBM in 1992 as Simon. Since then, various companies are manufacturing smartphones, namely, Apple, Samsung, Nokia, and Blackberry.[2] Smartphones are equipped with communication facilities, wireless network, internet access, camera, applications, multimedia, microphones, big screen, large memory, and faster processor.[3] A smartphone can be considered as a handheld computer rather than a simple mobile telephone.[4]

Recently, the Medical Council of India has revised the undergraduate (MBBS) curriculum to a competency-based

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_42_19

How to cite this article: Chandra A, Nongkynrih B, Gupta SK. Role of smartphone technology in medical education in India. Indian J Community Fam Med 2019;5:103-7.

curriculum.[5] Smartphones can play a vast role in the medical field in areas of patient care and monitoring, health education, communication, education, and research.[6] With the advent of smartphone and the internet, opportunities have expanded in education and have enhanced the learning experience for students.[7] These days, students are well versed with smartphone technology, and the numbers are increasing day by day.[1,8] It is anticipated that smartphone may eventually replace traditional textbooks.[9] Smartphone technology can play a vital role in the delivery and acquisition of the knowledge among medical students.[10] The objective of this article is to discuss the use of smartphone in medical education, its advantages and disadvantages, and challenges to its widespread use in this field.

USES OF SMARTPHONE IN MEDICAL EDUCATION

Smartphones can be used for accessing textbooks, medical podcasts and news, medical journals, online lectures, and tutorial videos. They can be used as medical calculators, for taking notes, defining unfamiliar terms, and communication.[9] They are also used in answering medical questions, patient management, and for taking decisions for treatment.[11] Simulation applications can develop the clinical skills and better concepts.[12,13] Pimmer *et al*. reported that students have adopted mobile technology in resource-constraint environments (limited books and teachers) of developing countries to enhance their learning, for documentation and for sharing of cases, and description of procedures and instruments in the form of photograph or video.[14] They can be used for learning clinical examination and preparing for objective structured clinical examination by watching related videos.[15]

Based on the operating systems of the smartphone, there are two dominant platforms for applications – Apple app store (iOS) and Google Play store (Android). Seabrook *et al*. in 2012 reported 4561 medical applications, 15% of which are targeted on medical students; majority of them are free.[16] There are a wide range of applications available for medical education purposes [Table 1].[8,9,15,17-21]

ADVANTAGES OF USING SMARTPHONE TECHNOLOGY FOR MEDICAL EDUCATION

A smartphone is portable; therefore, it can be used while commuting. It provides rapid access to resources and multimedia, enhances flexible communication, and helps in efficient time management.[9] Smartphone can be used to complete work-based assessment without computers and maybe with higher completion rates and reliability. It not only makes it easy to maintain a logbook, but also preserves important pictures and diagrams.[22] Internet connectivity in smartphone provides instant answers to queries and facilitates quick revision, especially when someone is not carrying a textbook.[1] It can help a student in making better notes, create more opportunities for group learning, and it can provide updated information from the latest resource.[23] The burden of teachers also reduces as they do not have to teach everything; students can search themselves, and if in doubt, they can ask their teachers.[14] Scornavacca *et al*. found that short message service of a cell phone can be used efficiently for a large class interaction and for feedback from students.[7] Smartphone applications can improve the quality and ease data collection in medical research.[17] With access to journals and databases on a smartphone, it is easier to undertake a review of literature and research-related work.

DISADVANTAGES OF SMARTPHONES TECHNOLOGY FOR MEDICAL EDUCATION

Pimmer *et al*. and Wallace *et al*. have found that smartphone may cause superficial learning without internalization, as students may copy-paste the content from the Internet without using their own brain and can lack basic knowledge.[9,14] Among students, it can increase the dependency on smartphones than on personal knowledge and skills.[24] Smartphones can cause distraction due to frequent notification and social media use during classes.[1,9,24] Students may use smartphones more for social communication and entertainment than for an educational purpose.[18] There might be an unreliable source of information providing inaccurate and wrong knowledge, which can substantially hamper the quality of education or students.[24] Chase *et al*. have reported disadvantages of the device such as high-cost factor, a risk of theft/loss, information overload, unable to work in the absence of the Internet, and distracts students from patient and clinical environment.[23] It also may cause blurring of boundaries between personal and professional life through frequent and informal communication.[9] Use of smartphone can increase the screen time, which predisposes to obesity and depressive episodes and affects the quality of life.[25] The heavy use of smartphone among medical students can cause sleep disturbance, memory impairment, headache, and concentration problems.[26] Small text size or small screen of mobile devices requires greater concentration for reading e-books, which can strain eyes.[1]

BARRIERS IN USING SMARTPHONE TECHNOLOGY FOR MEDICAL EDUCATION BY STUDENTS

Jebraeily *et al*., Safdari *et al*., Masika *et al*., and Subhash *et al*. have reported the barriers in using smartphones by the

Table 1: List of smartphone applications and their uses

Uses	Application name
Books	British National Formulary, Google Books, Oxford Handbook of Clinical Medicine's Student Consult
CME apps	Allconferencealert, MedPage Today, Medscape CME
Diagnosis	AliveECG, Diagnosaurus, Diagnostics, iStethoscope, PedNeuroAiims
Dictionary	Dorland's Medical Dictionary, Eponyms, Oxford Medical Dictionary, Stedman's Medical Dictionary, Taber's Medical Dictionary
Document editor	Google Documents, Google Sheets, MS Excel, MS Word, MS PowerPoint, Numbers, Pages, Polaris Office, SmartOffice, WPS Office
Ebook reader	Adobe, Foxit, iBook, Kindle, WPS Office, Xodo
Examination apps	Color blindness test, hearWHO, Visual acuity test
File organizing	AndroZip, Files, File Manager, File Master
Group communication	ChatOn, Facebook groups, Gmail, Google Drive, Hangout, Telegram, WhatsApp
Medical calculators	Calculate by QxMD, Drug Infusion, MedCalc, Medscape, NIN Health Calculator, Pepid
Medication guides	Daily Rounds, Drug Dictionary, Epocrates, Lexicomp, Omnio
Medical updates. News	CIMS, DynaMed, Medscape, Mayo Clinic, Podcasts, Pubsearch, Sanford Guide, Skyscape, UpToDate
Note taking	Evernote, ColourNote, Google Keep, Notes, OneNote, Paper, Skitch, S Note
Nutrition/diet calculation	Nutrify India Now, RDA Calculator
Research purposes	Epicollect5, Epi Info, Google Forms, ODK Collect, PubMed
Search engine/encyclopedia	Google, Medical Encyclopedia, Pepid, WikiMed
Simulation/learning	Anatomy 3D, iResus, Muscles 3D, Physiology 3D, Plastic Surgery Simulator, Touch Surgery
Specialty specific	AnthroCal, Burns, iRadiology, iSpineOperations, Mersey, NeoTube, Neurology Reference app, Peds Anesthesia, Pedz
Testing knowledge	Daily Rounds, Diagnosis, Prognosis
Videos	Geekey Medics, YouTube
Web browser	Firefox, Google Chrome, Opera, Safari, UC Browser

medical students as lack of accreditation of medical apps, lack of technical skills, lack of device, suboptimal internet access, cost of acquiring the apps, financial constraints, small screen, time constraint, lack of perceiving the advantage, lack of support and update of applications by their developers, lack of motivation in using applications, lack of encouragement through professors, problems related to security and confidentiality of information, and lack of easy use of applications.[18,27-29]

SMARTPHONE TECHNOLOGY AMONG INDIAN MEDICAL STUDENTS FOR EDUCATION

A smartphone is a common mode of using the internet for medical information among Indian medical students.[15] Mobile learning (M-learning) is complementary to Electronic learning (E-learning).[30] E-learning has been as an effective tool for education in various disciplines of medicine such as ophthalmology, dermatology, pharmacology, anatomy, biochemistry, and community medicine; smartphones can be the mode for e-learning.[31-36] Patil *et al.* found that by using an M-learning group, students acquire a deeper knowledge and learning rather than surface learning.[31] Students perceive the importance of smartphone as for effective learning and have a positive attitude toward it.[19,31,37] Rohilla *et al.*, Gavali *et al.*, and Subhash *et al.* reported that approximately 94%–96% of MBBS students own a smartphone, 56%–93% of them use smartphone for academic purposes, and approximately 80% of students feel that a smartphone should be introduced in the medical education course.[1,18,19] Sahanaa and Mishra reported that medical students enjoy using smartphone application for their medical research as an effective tool for data collection.[17]

ADDRESSING THE LACUNAE OF INDIAN MEDICAL EDUCATION THROUGH A SMARTPHONE

There is a perceived lack of integration of various streams and specialties.[38] Smartphone technology can help in the coordination of various specialties and deliver video modules for teaching. Collaboration between institutions to enhance educational quality and productivity can be done.[39] It can help in large group discussions and interactions. Ineffective assessment system of learning can be addressed by frequent assessment, group assignments, and feedback through smartphone technology.[40] Shortage of faculty in institutions can be addressed through an online course provided through smartphone application.[41]

INTRODUCTION OF SMARTPHONE IN MEDICAL EDUCATION – IMPACT AND CHALLENGES

Various studies in developed and developing countries have shown that medical students perceive the importance of smartphone as a tool for mobile learning (M-learning)/e-learning and have a positive attitude toward it.[1,14,18,19,23,31,37] Most of the disadvantages of smartphones are related to the Internet and social media, than specifically to a smartphone. However, effective utilization of smartphone for self-learning and accessing information was seen when a smartphone equipped with telemedicine applications

and internet access was provided.[42] Chase *et al.* found that M-learning has a positive impact on the learning experience of a medical student, especially on the clinical environment, but universal access to the Internet remains a big challenge.[23]

Introducing a smartphone in medical education may be costly and unaffordable for some students.[43] The challenges will be in development and providing a reliable smartphone application and in providing internet connectivity. With the introduction of smartphone technology, there will be a need for faculty training in using mobile technology for teaching, learning, and support.[37] Smartphones need to be replaced or refurbished after a particular duration, as they have a limited lifespan and are more prone to damage.

THE WAY FORWARD

Smartphones are ubiquitous, and a pragmatic approach needs to be adopted for their use in medical education in India. Most of the disadvantages and barriers to the use of smartphones can be addressed by providing the smartphones at low cost or subsidized prices with internet access and authorized applications, training of medical teachers, and implementing some rules such as restricting the time limit or duration of mobile use in the campus or silent-mode phones during classes. The financial constraints can be overcome by the provision of financial assistance.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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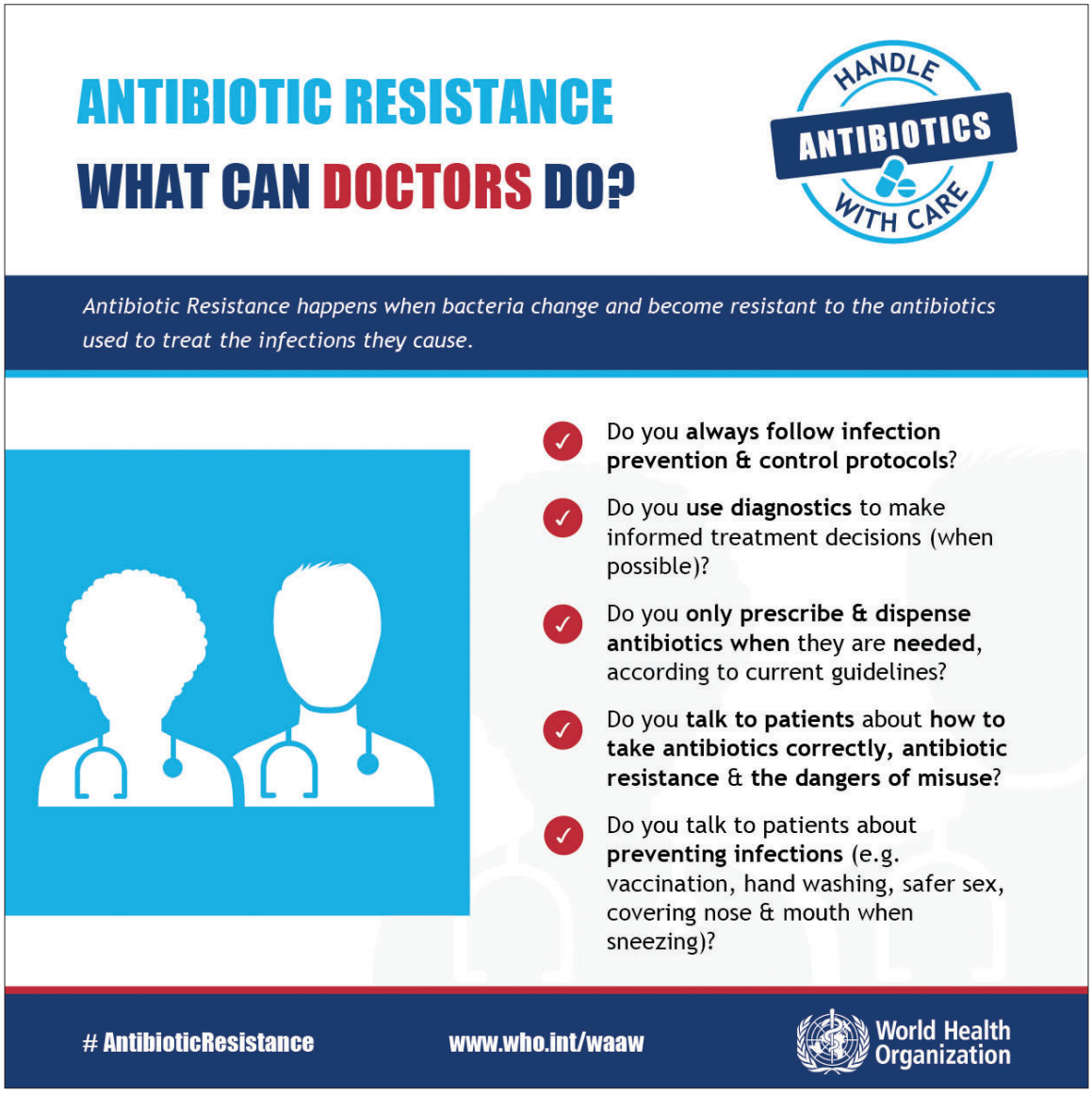

Original Article

Effect of teaching communication skills to medical undergraduate students: An exploratory study

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Abstract

Introduction: Good communication skills are an essential component of physician training. Effective communication between the doctor and the patient leads to better compliance, better health outcomes, decreased litigation, and higher satisfaction both for doctors and patients. Traditional medical teaching imparts students with theoretical and practical knowledge of diseases process, diagnostic and treatment modalities but does not address communication skills, which are most essential in dealing with patients.

Material and Methods: The present randomized control study was conducted in a Medical College of North Karnataka. A total of 60 students participated who were randomly assigned into two groups. Attitude toward learning communication skill was assessed using the Communication Skills Attitude Scale (CSAS). Pre- and post-assessment of communication skill was done using the Kalamazoo Essential Elements Communication Checklist.

Results: All the study participants ($n = 60$) were 3rd-year MBBS students with the mean age of 21 ± 1.8 years. The CSAS median score for positive attitude was 57.5 and for negative attitude was 25 (minimum score = 13 and maximum score = 65). Significant difference was noted in the study group after training in communication skills ($P < 0.01$) compared to the control.

Conclusion: Adequate training in communication does improve the skills of medical students and help in better relationship with patients.

Keywords: Communication skills, communication skills attitude scale, Kalamazoo Essential Element Communication Checklist, medical students

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Submitted: 05-Aug-2019 **Revised:** 03-Oct-2019 **Accepted:** 16-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION

Good communication skills are one of the essential components of physician training. Effective communication between the doctor and the patient is necessary for better treatment compliance, better health outcomes, and higher satisfaction both for doctors and patients. It is crucial for doctors to have active listening skills so as to gather information effectively and also to handle emotions of patients actively. At the same time, it is important to demonstrate empathy, rapport, ethical awareness, and professionalism. Teaching good communication skills can also improve diagnostic efficiency and decision-making ability resulting in lower rates of complaints and malpractice claims.[1]

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_66_19

How to cite this article: Nayak RK, Kadeangadi DM. Effect of teaching communication skills to medical undergraduate students: An exploratory study. Indian J Community Fam Med 2019;5:108-13.

In the past, many litigations against doctors have been reported because of lack of communication skills. Patients appreciate physicians who listen actively, encourage them to ask clarifying questions, understand and value their privacy and comfort. Proper body language, facial expression, touch, gestures, and interpersonal distance are some of the nonverbal aspects which are of extreme importance in building rapport between the doctor and the patient.

Many students do not realize the importance or understand the need for learning and developing communication skills as a part of their course. Teachers have now realized the importance of teaching and imparting communication skills.[2] Medical trainees imbibe basic communication skills consciously or subconsciously during their internship by observing their peers and senior colleagues, but these skills may not be adequate to exhibit good communication in their professional careers.[3] The Medical Council of India Vision statement 2015 also stresses the need to include communication skills in the 1st year MBBS along with other basic clinical skills and professionalism.[4] Traditional medical teaching imparts medical students with theoretical and practical knowledge of diseases processes and gives them education about diagnostic and treatment modalities but does not address communication skills, which are most essential in dealing with patients.[5]

Studies on teaching and learning communication skills in medical students are very few. It is hence very important to explore the needs of students, outline the objectives and the modalities of communication skill training. Hence, the present study was conducted to assess the attitude of medical students towards learning communication skills and to assess the effect of inclusion of an appropriate communication skills course in the undergraduate medical curriculum.

MATERIAL AND METHODS

The present randomized control study was conducted in a Medical College of North Karnataka. Undergraduate students belonging to 3rd year MBBS course were included in the study. The reason for selecting the 3rd year MBBS students was that these students would have just started with their clinical postings and this type of training would benefit them in performing better in clinical case taking. Of the total 97 students studying in 3rd year, only 62 students gave consent to participate in the study. Of these, 2 students were absent during the main study giving a total sample of 60. The sample included both boys and girls. It was ensured that all 60 students were present till the end of the training. The training sessions were clubbed with medicosocial case discussion classes in community medicine and care was taken that the regular classes were not hampered. No extra classes were conducted. The study was conducted over a period of 3 months from July to September 2018. Attitude toward learning communication skill was assessed using Communication Skills Attitude Scale (CSAS) developed by Rees *et al*.[6] CSAS consists of 26 items, of which 13 are positive attitude statements (PASs) and 13 negative attitude statement (NAS) which are inter mingled. Each item is scored on Likert's scale with 5 responses (1 - strongly disagree and 5 - strongly agree). Minimum and maximum possible scores thus were 13–65 for both positive and negative questions. Higher scores in both indicate strong attitude either positive or negative towards learning communication skills. The CSAS is a validated tool and has a Cronbach's alpha value of 0.862 for the PAS and 0.565 for the NAS.[7] The CSAS scale was distributed after the medico-social case discussion classes after taking written informed consent from all the students. The students were then randomly assigned into two groups of thirty students each. Randomization was done by the authors using the random number table. Single blinding technique was followed and the participants were unaware about which group they belonged to. For the control group, a lecture of 1 h duration was delivered regarding the importance of communication skills in doctor patient relationship. The study group was exposed to a short communication skill course of 5 days (1 h each day) duration consisting of lecture, role play, and feedback [Table 1]. The role play was performed by the students with preliminary training. The content of the role play included patient history taking and counseling skills. Feedback was given by other students in the group. Pre- and post-assessment of communication skills was done in both the study and control groups using Kalamazoo Essential Elements Communication Checklist (KEECC). The KEECC has a Cronbach's alpha value of 0.89, signaling high internal consistency and reliability across items.[8] The KEECC is a seven-item rating scale with each item corresponding to the essential elements of physician communication. The ratings are made on a 3-point Likert scale (2-well done, 1-needs improvement, 0-not done). Responses to the seven items were summed up to provide a total communication score, the higher scores representing good communication skill and lower scores poor communication skill. Pre- and post-scores were also compared in the control group, and the difference in the study and control groups was noted. Ethical Clearance was obtained from the Institutional Ethics Committee for human research before data collection.

Statistical analysis

The data obtained were entered and analyzed in SPSS statistical software 22 developed by IBM Corporation, India trial version. $P < 0.05$ was considered as statistically

Table 1: Schedule for communication training program for UG medical students

Days	Duration (h)	Teaching content	Teaching/learning methods	Assessment/ evaluation	Groups
1	1	Attitude towards communication skills Basic communication skills Importance of communication in medicine	Lecture	CSAS	Common to study and control groups
		Pretest with KEECC			Common to study and control groups
2	1	Benefits of effective communication Patient interview skill (Calgary Cambridge model)	Lecture	-	Only for the study group
3	1	Patient interview skill	Role play - demonstration by the teacher - communication skills in history taking	Reflections	Only for the study group
4	1	Basic communication skills patient interview skills	Role play - demonstration by the teacher - communication skills in councelling	Reflections	Only for the study group
5	1	Patient interview skills	Role play by students on real patients - demonstrating history taking and counseling skills	Reflections	Only for the study group
6	1	Posttest with KEECC			Common to study and control groups

KEECC: Kalamazoo Essential Elements Communication Checklist, CSAS: Communication Skills Attitude Scale

significant. The median scores of CSAS subscales were compared, and *t*-test was done to determine statistically significant differences between both the groups.

RESULTS

All the study participants (n = 60) were 3rd-year MBBS undergraduate students with the mean age of 21 ± 1.8 years. Among the 60 students, the median score for positive attitude was 57.5 and the median score for negative attitude was 25 [Table 2]. The higher positive score indicates that all students have positive attitude toward learning communication skills. Positive and negative questions are shown separately in Figures 1 and 2.[9] Among the positive scores, the lowest positive attitudes were expressed in item 22 (My ability to pass exams will get me through medical school rather than my ability to communicate).

Table 3 shows the pre- and post-assessment scores by Kalamazoo Essential Elements Checklist. The study group performed extremely well after the short course in communication skill training. The students performed better in building a relationship and opening the discussion with the patient. Gathering information and understanding the patient's perspective also improved in the posttest assessment. Significant difference was noted in the pre- and post-scores for sharing information with the patient and providing an appropriate closure to the discussion. None of the students in both groups were aware about the closure component in communication. No much change was noticed in the control group for each of these components.

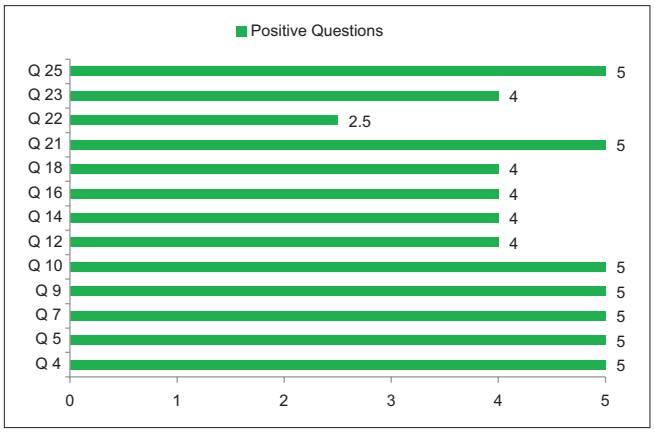

Figure 1: Bar chart showing only the positive questions in the Communication Skills Attitude Scale with the corresponding Likert score (n = 60)

The total median score in the study group before the intervention was 9 which was improved to 40 after the communication skills training was imparted. This difference was statistically significant ($P < 0.05$). The *t*-test showed no difference in score for the control group ($P = 0.328$).

DISCUSSION

The present study showed an increased positive attitude and decreased negative attitude towards learning communication skills which was similar to a study done in Saudi Arabia (PAS – 52 vs. NAS – 34.5).[10,11]

A study done by Wright *et al.*, which compared the attitudes in 1st -and 4th-year students, found that that 4th-year medical

Table 2: List of questions in the Communication Skills Attitude Scale

	1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree	Median score
1	In order to be a good doctor I must have good communication skills	5
2	I can't see the point in learning communication skills	1
3	Nobody is going to fail their medical degree for having poor communication skills	3
4	*Developing my communication skills is just as important as developing my knowledge of medicine*	*5*
5	*Learning communication skills has helped or will help me respect patients*	*5*
6	I haven't got time to learn communication skills	2
7	*Learning communication skills is interesting*	*5*
8	I can't be bothered to turn up to sessions on communication skills	2
9	*Learning communication skills has helped or will help facilitate my team working skills*	*5*
10	*Learning communication skills has improved my ability to communicate with patients*	*5*
11	Communication skills teaching states the obvious and then complicates it	2
12	*Learning communication skills is fun*	*4*
13	Learning communication skills is too easy	3
14	*Learning communication skills has helped or will help me respect my colleagues*	*4*
15	I find it difficult to trust information about communication skills given to me by nonclinical lecturers	2
16	*Learning communication skills has helped or will help me recognize patients' rights regarding confidentiality and informed consent*	*4*
17	Communication skills teaching would have a better image if it sounded more like a science subject	3
18	*When applying for medicine, I thought it was really a good idea to learn communication skills*	*4*
19	I don't need good communication skills to be a doctor	1
20	I find it hard to admit having some problems with my communication skills	2
21	*I think it's really useful learning communication skills on the medical degree*	*5*
22	*My ability to pass exams will get me through medical school rather than my ability to communicate*	*2.5*
23	*Learning communication skills is applicable to learning medicine*	*4*
24	I find it difficult to take communication skills learning seriously	2
25	*Learning communication skills is important because my ability to communicate is a life-long skill*	*5*
26	Communication skills learning should be left to psychology students, not medical students	1
	PAS	57.5
	NAS	25

Positive questions are in bold and italicized. PAS: Positive attitude statement, NAS: Negative attitude statement

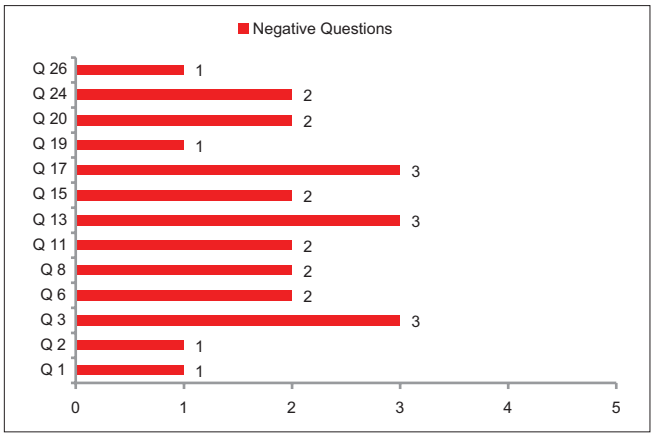

Figure 2: Bar chart showing only the negative questions in the Communication Skills Attitude Scale and the corresponding Likert score (n = 60)

students did not differ much from 1st-year medical students in terms of attitudes toward communication skills training, but they had significantly higher confidence scores about communicating with patients.[12] This study indicates that the positive attitude increased by perceived relevance of the skills by the students.[9] In the present study, the subjects were 3rd-year students, and we found that a significantly higher number of students had a positive attitude toward learning communication skills. This may be due to the fact that these students were in contact with the patients during clinical posting and began to understand the importance of effective communication skills in patient care.

Haq *et al.* describe the content and methods used to teach communication skills to medical students. Suggested curriculum projects should be designed to improve medical students' communication skills during the undergraduate years, which they can refine and practice throughout the MBBS course and later.[13] The present study was designed to understand the utility of teaching communication skills to medical students. The most effective point in time to learn these at medical school is probably during the clinical posting. After a short training, doctors can be as effective as teachers.[14] We tried to focus our training courses for the 3rd-year medical students and found that these skills can be taught and learned and practiced to improve clinical competence. The training in our teaching module was done by faculty doctors. Medical students' interpersonal and communication skills are a fundamental dimension of their clinical competence.[15]

In this study, we found that students' skills and confidence in communicating with patients increased after training. Yedidia *et al.* studied the effect of communications training on medical students' performance and concluded that communications curricula using an established educational model not only improved the 3rdyear medical students' overall communications competence, but also their skills in relationship building, organization, time management, patient assessment and clinical competence.[16] These

Table 3: Comparison between pre- and post-scores by Kalamazoo Essential Elements Checklist in both groups (*n*=30)

KEECC item (total item score)	Study group		Control group	
	Pretest	Posttest	Pretest	Posttest
Build a relationship (6)	2	6	2	3
Open the discussion (6)	2	4	3	3
Gather information (8)	4	7	2	2
Understand the patient perspective (6)	0	5	1	0
Share information (8)	1	6	1	0
Reach agreement (6)	0	4	0	0
Provide closure (8)	0	8	1	0
Total score	9	40	10	8
P	<0.001*		0.328	

*Statistically significant value. Statistical test used is *t*-test. $P<0.05$ considered as significant. KEECC: Kalamazoo Essential Element Communication Checklist

findings were similar to our observations. In a study done by Joekes *et al*., where students received a curriculum that included communication skills training integrated into a "professional development" vertical module, noticed that students receiving the professional development training showed significant improvements in certain communication skills and achieved higher ratings for use of silence, not interrupting the patient, and keeping the discussion relevant, compared to students receiving the traditional curriculum.[17] We observed a similar increase in the use of verbal and nonverbal communication skills by our students after the training.

Deveugele *et al*. in their efforts to teach communication skills to medical students used various methods like group discussions in small groups (10–15 students), with focus on role playing with colleagues and simulated patients and showing videotapes of real consultations etc., observed a positive effect in the communication skills of students.[18] Karlberg and Lindgren incorporated a continuous and structured training in communication skills during the early phase of medical studies. As a result of these programs, they noticed significantly higher satisfaction in medical encounters among patients. These results agree with our findings in which lectures, role plays and feedback were used as teaching methods.[19] Based on our observations, it was found that there is a utility of communications skills training in the formative years. These soft skills can be imparted to medical students by the faculty, practiced to increase competency, used to build doctor–patient relationships and enhance health outcomes.[20]

CONCLUSION

Undergraduate medical students had a strong positive attitude toward learning communication skills in our study. Levels of knowledge and confidence among medical students were found low in communicating with patients as assessed by the pretest questionnaire. Intervention done in the form of teaching communication skills had helped medical students understand the importance of communication and complexity of communication issues in health care as assessed by the posttest questionnaire.

It is recommended that communication skills training programs be designed and incorporated into the curriculum of MBBS program so that medical students learn as well as pay more attention to communication skills. Inculcating habits of good communication skills during formative years will help the medical students and future practitioners. Communication skills' training during formative years is a positive investment for the better future health of the society. Regular courses on effective communication should be included in the medical school curriculum.

Acknowledgment

Authors would like to thank the Medical Director, the Principal and the Head of Department, Community Medicine, SDM College of Medical Sciences and Hospital, Dharwad, Karnataka for providing permission and administrative assistance to conduct the study. Special thanks to all the 7th term medical students for their participation in the study and the faculty of the Department of Community Medicine for the cooperation.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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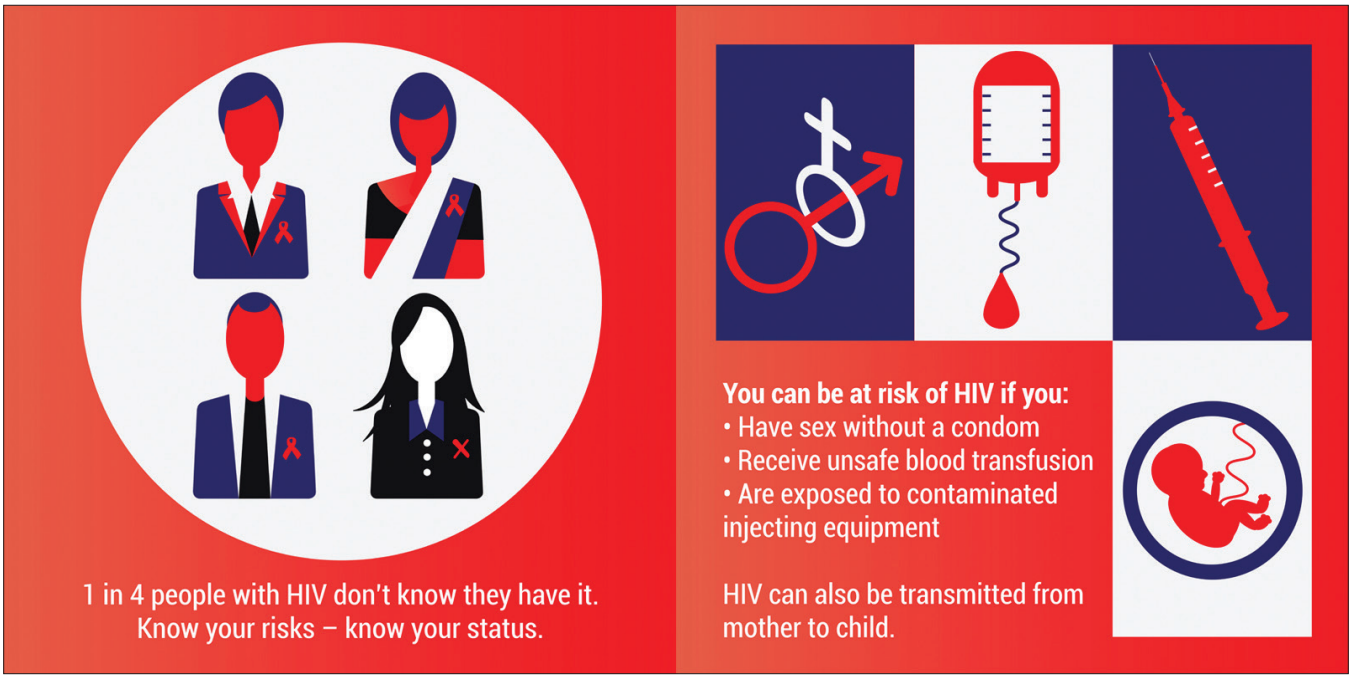

Original Article

Education to increase early detection and myths about cancer among population in sub-district Medan Selayang Indonesia

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Abstract

Introduction: Cancer is estimated to affect about 14 million new cases globally each year. In Indonesia, the incidence is estimated at about 347,000 new cases each year. Most cancer patients seek medical advice only at advanced stage due to ignorance and lack of knowledge.

Aims: This is a community service study with the aim to conduct the training of tutor (TOT) of social health-care workers about awareness, early detection, and myths of cancer in subdistrict Medan Selayang, Indonesia.

Settings and Design: This is a community service study.

Material and Methods: Two hundred and five social health-care workers were trained on "Early Detection and myths about cancer" covering six sessions in six rural areas. A competition was held after 1 month of training.

Statistical Analysis Used: *t*-test was used to perform the statistical analysis.

Results: There was a statistically significant increase ($P = 0.03$) in *Inspeksi visual asam asetat* (IVA) participants ($n = 95$) in 2018 compared to 2017 ($n = 26$). Most of the 2017 participants were around 30 years and 45 years old (65%) and were not well educated (63%). The myths of cancer among the participants was assessed as good (20%), average (30%), and below expectation (50%).

Conclusion: TOT of social health-care workers shows a good response on educating people about early detection and myths of cancer. Social health-care providers play an important role in improving community health care.

Keywords: Cancer, early detection, education, myths

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Submitted: 03-Apr-2019 **Revised:** 16-May-2019 **Accepted:** 09-Jul-2019 **Published:** 19-Dec-2019

INTRODUCTION

Cancer is estimated to affect about 14 million new cases globally each year. In Indonesia, the incidence is estimated at about 347,000 new cases each year, with an estimated increase by 70% within the next two decades. Charge for cancer treatment is around 895 billion US dollars/year. Mortality due to cancer is high and is reported to occur in about 1 in 6 deaths.[1,2]

In Indonesia, most cancer patients seek medical advice only at advanced stage, making treatment difficult. This is

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_32_19

How to cite this article: Wdjaja SS, Rusdiana, Savira M. Education to increase early detection and myths about cancer among population in sub-district Medan Selayang Indonesia. Indian J Community Fam Med 2019;5:114-6.

mainly due to ignorance and fear about the disease. The myths about cancer with the use of alternative treatment methods will reduce life expectancy and quality of life and increase mortality.[3,4] In the era before the social health insurance which was introduced by the Indonesian government, cancer patients were unable to seek proper treatment due to financial issues. With the introduction of social health insurance, now all citizens are covered by this scheme. However, due to ignorance and delay made in seeking treatment, cancer treatment in these patients is impossible. The mortality and morbidity are still high because most of the patients present with late-stage cancer. The early detection of cancer has been the main target of the Indonesian health-care system and world cancer control programme. Education that covers the entire community will be in the right direction.

Medan is the third largest city in Indonesia and is one of the subdistricts called Medan Selayang which has 41 *Posyandus* (integrated health-care community centers) that provide community health care and counseling. There are 41 *Posyandus* in this subdistrict with 205 social health-care workers from six rural areas, namely, Padang Bulan (PB) Selayang I, PB Seayang II, Tanjung Sari, Asam Kumbang, Beringin, and Sempakata, which serve a total population of around 119,831 within 9.01 km^2 and easily accessible by public transport.[5] Medan Selayang subdistrict has the right objective to educate social health-care workers on early detection and myths about cancer. This education will serve the community and training of tutors (TOTs) in social health workers on early detection and myths about cancer in Medan Selayang.

MATERIAL AND METHODS

Two hundred and five social health-care workers were trained on "Early Detection and Myths about Cancer" covering six sessions in six rural areas. The session also covers the bi-monthly routine examination for "*Inspeksi visual asam asetat* (IVA)" or "visual inspection with acetic acid" in the year 2018. Age and education status are recorded, and knowledge about the myths of cancer is determined after the training which comprises:

Education in three phases:

1. Prior knowledge (given earlier about early detection and myths about cancer)
2. Early detection of breast and cervical cancers
    - Early detection method in self-examination of breast cancer and the importance of routine Papanicolaou stain smear.
3. Extension training
    - Conduct self-breast examination and counseling under the guidance of the tutors
    - Audio–visual screening on cancer, booklets, and posters for all *posyandus*.

Program evaluation and sustainability

After the program, the social health-care workers are expected to play an active role in educating the people, thus enabling to find an increase in early-stage cancer by bringing the suspected early-stage cancer patient to the primary health-care centers or the hospital which will support the general health program.

Evaluation on the success of education was determined from the increasing number of IVA participants at the free IVA examination at PB Selayang II, Health Centre PB, Medan Indonesia. A competition was held after 1 month of training to find the social health-care worker who succeeded in bringing the highest number of IVA participants and the ability to do community counseling on early detection and myths about cancer.

RESULTS

Medan Selayang is a subdistrict of 9.01 km^2 comprising six rural areas with a total population of around 119,831. There was a statistically significant increase ($P = 0.03$) in IVA participants ($n = 95$) in 2018 compared to 2017 ($n = 26$). Most of the 2017 participants were around 30 years and 45 years old (65%) and were not well educated (63%). The myths of cancer among the participants was assessed as good (20%), average (30%), and below expectation (50%).

The illustrations of IVA participants based on gender and rural areas are shown in Tables 1 and 2, respectively.

DISCUSSION

The knowledge on cancer in this education program showed that social health-care workers had minimal knowledge about cancer before training. Awareness on

Table 1: Population according to gender and rural areas

Rural area	Female	Male	Total
Sempakata	7.330	7.691	14.020
Beringin	5.860	5.268	11.128
PB Selayang II	12.492	12.422	24.914
PB Selayang I	6.687	6.562	13.248
Tanjung Sari	18.1764	19.728	37.494
Asam Kumbang	9.445	9.582	19.027
Total			119.831

Adopted from "Badan Statistik Pusat Kota Medan 2017." PB: Padang Bulan

Table 2: Total Inspeksi visual asam asetat's participants

Rural area	2017	2018
Sempakata	2	12
Beringin	3	20
PB Selayang II	8	30
PB Selayang I	5	15
Tanjung Sari	4	10
Asam Kumbang	2	8
Total	26	95

PB: Padang Bulan

the importance of early detection of cancer is still below expectation, especially in the community. The haunting myths on fears and shame to hide the disease are the main causes for patients to rely heavily on alternative medicine.

From the first TOTs in Medan sub-district competition, there was a significant increase in the number of IVA participants and showed that most of them are not well educated. This suggests the need for more public talks, which should be the priority of the health department. The increasing number of participants suggests increased awareness of early cancer detection and dispels the myths, and TOT can be a good method which should be encouraged. The issues on early cancer detection and myth awareness should be spread especially in the rural communities.

CONCLUSION

Education and community health counseling awareness are important in the rural areas. TOTs showed a good response in educating people about early cancer detection and their myths. This should be sustained and followed up. Social health-care providers play an important role in improving community health care.

Acknowledgment

This is to acknowledge that the community service study was supported by the Ministry of Research and Technology and Higher Education Republic Indonesia under grant DRPM.

Financial support and sponsorship

This study was financially supported by the Ministry of Research and Technology and Higher Education Republic Indonesia under grant DRPM.

Conflicts of interest

There are no conflicts of interest.

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Original Article

Quality of life after myocardial infarction in women from rural India

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Abstract

Introduction: Health expenditures in survivors of myocardial infarction (MI) causes increased financial burden. Secondary prevention strategy can be planned with knowledge of health-related quality of life (HRQoL) in survivors of MI.

Aim: To study HRQOL using Mac New Heart questionnaire.

Objective: Female survivors of MI will undergo the questionnaire and the scores across physical, social and emotional domains will be noted.

Material and Methods: Observational study. Female survivors of MI attending follow up in cardiac outpatient department between January 2017 and January 2018 were subjected to MacNew Heart Disease HRQoL questionnaire.

Statistical Analysis Used: Pearson's correlation coefficient; software used was SPSS 22.0 version.

Results: Mean age 60 years; mean duration since MI – 7.88 months; 74% were married and 88% on vegetarian diet. Those women with mean age of 40 years, vegetarian and married had better mean scores. The emotional score improved over a period of time whereas the physical and social score remained the same.

Conclusion: Female survivors above 40 years showed poor scores across all three domains and therefore need early cardiac rehabilitation as also long-term follow up.

Keywords: Female survivors, health-related quality of life, myocardial infarction

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Submitted: 14-Apr-2019 **Revised:** 28-May-2019 **Accepted:** 09-Jul-2019 **Published:** 19-Dec-2019

INTRODUCTION

Coronary artery disease is on the rise and in India, mortality varies from <10% in rural locations in less developed states to >35% in more developed urban locations.[1,2] In 2015, there were an estimated 422.7 million cases of cardiovascular disease (CVD) (95% uncertainty interval: 415.53–427.87 million cases) and 17.92 million CVD deaths (95% uncertainty interval: 17.59–18.28 million CVD deaths).[2] In 2020, it is estimated that this disease will be responsible for a total of 11.1 million deaths globally.[3]

In India, more than 10.5 million deaths occur annually, and it was reported that CVD led to 20.3% of these deaths in men and 16.9% of all deaths in women.[1] The mortality varies from <10% in rural locations in less developed states to >35% in more developed urban locations.[2]

Heart disease affects women approximately 10 years later than men, possibly due to the protective effect of estrogen.

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_33_19

How to cite this article: Gupta Y, Chiwhane AA. Quality of life after myocardial infarction in women from rural India. Indian J Community Fam Med 2019;5:117-22.

A woman's risk of a heart disease increases steeply after menopause, when her low-density lipoprotein-cholesterol and triglyceride levels begin to increase and her good cholesterol level begins to fall. After menopause, women's cholesterol levels are, on average, higher than those of men of about the same age.[4]

Sex differences occur in the pathophysiology and clinical presentation of MI and affect treatment delays.[5] The prevalence and risk factors in Asian women with CAD is different from that of Western population as hyperlipidemia is major risk factor in Indian women.[6] The prevalence of CAD is more in the illiterate and the low-income group believed to be due to lack of access and affordability for acute care management and secondary prevention.[7] The Indian population of patients with MI show variance from conventional risk factors like association of chronic infection in addition to dyslipidemia, obesity, and hypertension.[8] MI survivors experienced lower health-related quality of life (HRQoL) on domains of general health, physical health, daily activity, and mental health compared to the general population.[9] After acute MI, there is limitation in physical activity and need for early cardiac rehabilitation.[10]

Percutaneous transluminal coronary angioplasty (PTCA) is the treatment in myocardial infarction (MI), and in one study it was observed that undergoing revascularization improved the physical component of the HRQoL. Undergoing revascularization improved the physical summary component (PCS) in patients, but in the younger patients and those without personal antecedents or risk factors, the PCS was affected more, perhaps due to greater expectations for recovery in these patients.[11]

The need of long-term follow-up and cardiac rehabilitation improved HRQoL in patients with MI.[12]

A detailed search on "HRQOL in female survivors of MI in India," from Google Scholar, Pub med, Springer and Research gate yielded negative results. This study was conducted keeping in mind trend changes in different population- and gender-specific presentation of MI and its effect on quality of life especially in the low middle-income group population. CVD-affected households with lower socioeconomic status were at heightened financial risk.[13]

Aim

To study HRQOL using Mac New Heart questionnaire.

Objective

Female survivors of MI will undergo the questionnaire and the scoring across physical, social and emotional domains.

MATERIAL AND METHODS

- Type of study: Observational
- Study population: Female patients diagnosed with MI who underwent PTCA and attended follow-up in cardiac outpatient department between January 2017 and January 2018. Out of 55 study subjects, 2 refused consent and 3 were admitted for complications of MI
- Study setting: Tertiary care rural hospital from central India
- Sample size: 50
- Selection criteria: Adult female patients diagnosed with MI having undergone angioplasty. Females with co-morbidities like chronic kidney disease, chronic obstructive pulmonary disorder, hepatic or cardiac failure, malignancy, HIV and other life-threatening illnesses or critically ill were excluded
- Data collection procedures and instrument/tools: These patients were subjected to a detailed Mac New heart QOL questionnaire after prior consent. A validated Mac new heart quality of life indicators questionnaire has been used in this study. The original QLMI (Quality of Life after MI) items were generated through interviews with physicians, nurses, allied health professionals, patients with MI, and by reviewing the literature.[14] The Mac New Heart Disease HRQOL questionnaire (Mac-New) is a self-administered modification of the original QLMI instrument.[15,16] The Mac New consists of 27 items which fall into three domains (a 13-item physical limitations domain scale, a 14-item emotional function domain scale, and a 13-item social function domain scale). There are 5 items that inquire about symptoms: angina/chest pain, shortness of breath, fatigue, dizziness, and aching legs. The Mac New has been successfully administered, to our knowledge, in at least 12 clinical and/or experimental studies to more than 5200 patients with heart diseases including "Lim LL-Y, Johnson NA, O'Connell RL, Heller RF: Quality of life and later adverse health outcomes in patients with suspected heart attack. Aust NZ J Pub Health 1998," "Foster C, Oldridge NB, Dion W, Forsyth G, Grevenow P, Hansen MA, Laughlin J, Plitcha C, Rabas S, Sharkey RE, Schmidt DH: Time course of recovery during cardiac rehabilitation. J CardiopulmonRehabil 1995." This questionnaire was not self-administered in this study but was translated by the interviewer as one on one interview. Researcher who conducted this interview made them understand the questions before documenting the scores. Questions pertaining to sexual life were not included
- Ethical considerations: Local Institutional Ethics Committee gave approval.

RESULTS

Table 1 shows baseline characteristics of the subjects.

Graph 1 shows linear correlation of scores with each other which means that there is interdependence of scores with each other.

Table 1: Baseline characteristics of the subjects

Characteristics	Mean/percentage
Age	59.10±11.22 (34-82 years)
Duration since PTCA	7.88±7.38 (1-48 months)
Co-morbidities	
Hypertension	82%
Diabetes mellitus	32%
Alcohol	0%
Tobacco	2%
Smoking	0%
Diet	
Vegetarians	88%
Nonvegetarians	2%
Mixed diet	10%
Education	
Primary	46%
Secondary	22%
Higher secondary	2%
Graduation	6%
Postgraduation	4%
Marital status	
Married	74%
Unmarried	0%
Widow	24%
Separated	2%
Family income (monthly) (Rs.)	
Below 5000	28%
5000-10,000	64%
Above 10,000	8%

PTCA: Percutaneous transluminal coronary angioplasty

The mean age of the patients was 60 years. Hypertension was the most common comorbidity. Seventy-four percent of patients were married. More number of patients had only primary education. The average family income was between Rs. 5000 and Rs. 10,000.

Pearson's coefficient is applied to see for the linear relationship between the variables. There is a linear positive correlation between emotional, physical and social score, Table 2.

The *f*-test was applied to more than 2 category variables and it was observed, a positive correlation of the score with age. It was observed that there was a positive correlation of women below 40 years of age and married with emotional score ($P < 0.05$), Table 3.

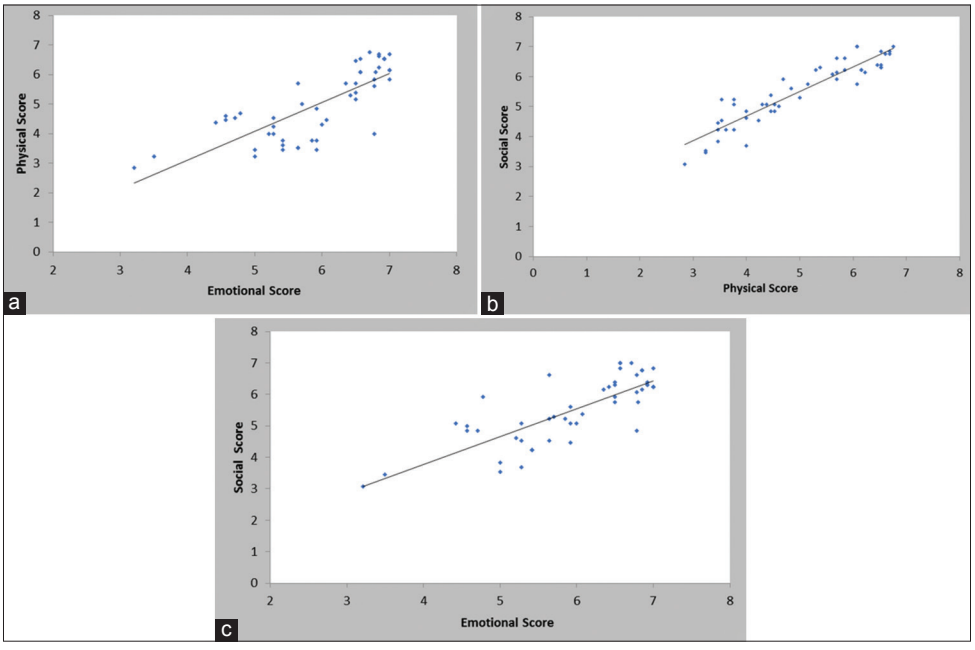
There was a positive correlation of physical score in women below 40 years, vegetarian and married ($P < 0.05$) Table 4.

There was a positive correlation of social score in women below 40 years of age, vegetarian and married ($P < 0.05$). Table 5.

Statistics

Sample size $n = 50$.

The sample size (n) is calculated according to the formula: $n = z^2 \times p \times (1\text{-}p)/e^2$. Where: z = 1.96 for a confidence level (α) of 95%.



Graph 1: (a) Correlation between emotional and physical score, (b) correlation between emotional and social score, (c) correlation between physical and social score

Table 2: Correlation between Mac New Heart Quality of Life after Myocardial Infarction score Pearson's correlation coefficient

	Mean±SD	*n*	95% confidence	Emotional versus physical	Emotional versus social	Physical versus social
Emotional	5.94±0.93	50	5.67-6.20	0.76	0.79	0.92
Physical	4.96±1.17	49	4.48-5.25	*P*=0.0001 (Significant)	*P*=0.0001 (Significant)	*P*=0.0001 (Significant)
Social	5.49±1.05	50	5.19-5.79			

SD: Standard deviation

Table 3: Association of demographic variables with emotional score

Variables	*n*	Mean±SD	*F*	*t*	*P*	Significance
Age (years)						
≤40	5	6.79±0.15	3.60		0.020	Significant
41-60	22	6.11±0.85				
61-80	22	5.63±0.96				
>80	1	4.57±0				
Duration (months)						
≤10	39	5.98±0.87	0.59		0.62	Not
11-20	9	5.65±1.23				significant
21-30	1	6±0				
31-40	0	0±0				
41-50	1	6.85±0				
History of hypertension						
Present	41	5.94±0.85		0.08	0.93	Not
Absent	9	5.91±1.31				significant
Diabetes mellitus						
Present	16	5.65±0.98		1.50	0.15	Not
Absent	34	6.07±0.89				significant
Tobacco						
Present	1	4.57±0		1.49	0.14	Not
Absent	49	5.96±0.92				significant
Smoking						
Present	0	0±0	-	-	-	-
Absent	50	5.94±0.93				
Dietary pattern						
Vegetarian	44	6.03±0.78	2.36		0.15	Not
Nonvegetarian	1	5.92±0				significant
Mixed	5	5.09±0.77				
Education						
Primary	23	5.78±0.97	1.39		0.25	Not
Secondary	11	5.84±1.03				significant
Higher secondary	1	5.28±0				
Graduation	3	6.42±0.57				
Postgraduation	2	5.89±1.01				
Marital status						
Married	37	6.15±0.82	8.88		0.005	Significant
Unmarried	0	0±0				
Widow	12	5.32±1.00				
Separated	1	5.24±0				
Monthly income (Rs.)						
Below 5000	14	5.82±0.98	0.45		0.63	Not
5000-10,000	32	6.02±0.93				significant
>10,000	4	5.62±0.97				

SD: Standard deviation

P = prevalence of CAD 4%–6% in rural populations.[17]

$n = 1.96^2 \times 0.04 \times (1–0.04)/0.06^2$.

$n = 40.97 \approx 50$ patients needed in the study.

Statistical analysis was done by using descriptive and inferential statistics using Pearson's correlation coefficient and software used in the analysis was SPSS 22.0 version developed by IBM Corporation, New York and $P < 0.05$ is considered as level of significance.

DISCUSSION

Coronary artery disease prevalence in rural population in India is between 4% and 6%. This population is low middle-income group with average monthly income between Rs. 5000 and 10,000. Survivors of MI can burden the household income which may affect prognosis of this disease. This study evaluated factors affecting the quality of life in female survivors of MI. Irrespective of duration since MI, these patients were studied for HRQoL. Many studies followed the patients for more than 1 year. Female survivors of MI from rural population have very poor mean scores as observed in this study. Females younger than 40 years, married and on a vegetarian diet had better scores in all three domains. There were studies on HRQoL in female survivors of MI. Interestingly in a study by "Vladan Peric *et al.*" it was observed that the predictors of improvement of QOL after 2 years of coronary artery bypass graft (CABG) were serious angina, absence of hereditary load, male sex, and absence of diabetes.[18] Many studies compare between PTCA and CAD and observed that CABG had better QOL.[19] Few studies have tested the validity of Mac New Heart in all regions of world and in different languages and found it to be a useful tool. In this study, women with low middle-income group had very low mean scores in all the three domains but there was no positive correlation of family income with the scores. There was a positive correlation of one domain with the other and similar factors affecting all three domains which is a new finding in this study. Other studies have observed that all three scores improved with time. In other study across the globe, hypertension, dyslipidemia and smoking affected the scores whereas in this study older women, widowed, unmarried or separated, on mixed or nonvegetarian diet had poor scores. Contrary to observations by other studies, the presence of co-morbidities, low income or education did not affect the scores.

The HRQOL helps to make policy on cardiac rehabilitation, psychological counseling and support as well as creating awareness in those with poor scores. Strategy planning in secondary prevention as well as conscious use of health-care resources can avoid escalation of healthcare

Table 4: Association of demographic variables with physical score

Variables	*n*	Mean±SD	*F*	*t*	*P*	Significance
Age (years)						
≤40	5	6.51±0.31	4.58		0.007	Significant
41-60	22	5.17±1.19				
61-80	22	4.49±0.98				
>80	1	4.61±0				
Duration (months)						
≤10	39	4.98±1.13	0.81		0.49	Not
11-20	9	4.80±0.19				significant
21-30	1	4.30±0				
31-40	0	0±0				
41-50	1	6.61±0				
History of hypertension						
Present	41	4.87±0.11		1.22	0.12	Not
Absent	9	5.39±1.41				significant
Diabetes mellitus						
Present	16	4.60±1.05		1.50	0.13	Not
Absent	34	5.14±1.20				significant
Tobacco						
Present	1	4.46±0		0.43	0.656	Not
Absent	49	4.97±1.18				significant
Smoking						
Present	0	0±0	-	-	-	-
Absent	50	4.96±1.17				
Dietary pattern						
Vegetarian	44	5.12±1.10	3.79		0.030	Significant
Nonvegetarian	1	3.46±0				
Mixed	5	3.87±1.76				
Education						
Primary	23	4.57±0.95	1.93		0.13	Not
Secondary	11	5.01±1.27				significant
Higher secondary	1	5.28±0				
Graduation	3	5.62±1.25				
Postgraduation	2	4.23±1.05				
Marital status						
Married	37	5.17±1.15	4.76		0.034	Significant
Unmarried	0	0±0				
Widow	12	4.38±1.07				
Separated	1	5.03±0				
Monthly income (Rs.)						
Below 5000	14	4.80±1.08	0.20		0.81	Not
5000-10,000	32	5.04±1.26				significant
>10,000	4	4.49±1.17				

SD: Standard deviation

Table 5: Association of demographic variables with social score

Variables	*n*	Mean±SD	*F*	*t*	*P*	Significance
Age (years)						
≤40	5	6.67±0.35	3.75		0.017	Significant
41-60	22	5.62±1.03				
61-80	22	5.11±0.99				
>80	1	5±0				
Duration (months)						
≤10	39	5.50±1.00	0.56		0.64	Not
11-20	9	5.37±1.33				significant
21-30	1	5.07±0				
31-40	0	0±0				
41-50	1	6.76±0				
Hypertension						
Present	41	5.42±1.01		0.90	0.34	Not
Absent	9	5.79±1.21				significant
Diabetes mellitus						
Present	16	5.18±0.85		1.44	0.15	Not
Absent	34	5.64±1.11				significant
Tobacco						
Present	1	4.84±0		0.62	0.53	Not
Absent	49	5.50±1.05				significant
Smoking						
Present	0	0±0	-	-	-	-
Absent	50	5.49±1.05				
Diet						
Vegetarian	44	5.65±0.94	4.94		0.011	Significant
Nonvegetarian	1	4.46±0				
Mixed	5	4.28±1.16				
Education						
Primary	23	5.20±0.84	1.66		0.18	Not
Secondary	11	5.50±1.23				significant
Higher secondary	1	6±0				
Graduation	3	4.53±1.02				
Postgraduation	2	5.01±1.21				
Marital status						
Married	37	5.72±0.99	7.51		0.009	Significant
Unmarried	0	0±0				
Widow	12	4.84±0.97				
Separated	1	4.63±0				
Monthly income (Rs.)						
Below 5000	14	5.50±0.94	0.002		0.99	Not
5000-10,000	32	5.48±1.14				significant
>10,000	4	5.49±0.89				

SD: Standard deviation

expenditures and unnecessary use of valuable healthcare services in the background of limited resources in a rural population. There is need for increased awareness, healthcare providers, policymaking on sex-specific presentation in MI. Offer effective psychological treatment, tailored secondary prevention, evaluate psychosocial risk factors (widowed, financial restraints, lack of family support) as part of early cardiac rehabilitation especially in women above 40 years.

Limitations

This is a single-center study. However, the findings are still relevant to a national setting. This study is an cross-sectional design with subjects studied at each time point hence cannot reflect the changing QOL with increasing duration since MI. Combining variables for analysis and consideration of multiple other comorbidities, was inappropriate considering this small sample size.

CONCLUSION

Limited factors affected the HRQOL in female survivors which can help in planning cardiac rehabilitation and secondary prevention in a subset of patients without the need to generalize the same in view of economizing health-care costs.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Original Article

Evaluation of knowledge and awareness regarding usage of MCP card amongst health functionaries and beneficiaries

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Abstract

Introduction: Mother and child protection (MCP) card has been developed as a tool to help families to know about various types of services which they need to access for the health and well-being of women and children. The auxiliary nurse-midwife (ANM)/anganwadi worker (AWW) record the desired information in place provided in the card and the beneficiaries are pregnant women and mother/families of children up to 3 years of age. The present study was therefore undertaken with the objectives to assess the knowledge of health functionaries on appropriate usage of MCP card; to study the knowledge of beneficiaries about the MCP card and its importance in maternal and childcare.

Material and Methods: This was a cross-sectional study, conducted from February 1, 2018 to April 30, 2018 on health functionaries at anganwadi center and beneficiaries of MCP card. One hundred and five anganwadis and 3 beneficiaries per anganwadi were selected using convenience sample consisting of one pregnant female, one mother/family member of child <6 months and one mother/family member of child between 6 months and 3 years. Data regarding sociodemographic details of health functionaries and beneficiaries along with data regarding usage of MCP card were assessed.

Results: Overall knowledge regarding immunization was maximum (87.6%) among health functionaries, whereas knowledge regarding five cleans was minimum (10.5%). Only 56.3% and 76.5% AWW and ANM received orientation training regarding MCP card. Out of 315 beneficiaries, only 50.8% beneficiaries knew about correct validity of MCP card, i.e., 0–3 years and 190 (60.3%) beneficiaries found MCP card helpful during referral. Majority of beneficiaries wanted custody of MCP card to be with the mother or beneficiary themselves. Only 8.6% and 4.4% beneficiaries wanted custody of card to be with AWW and ANM, respectively.

Conclusion: The MCP cards are being used adequately for keeping the background information, antenatal care provided to the mother, and immunization among both health functionaries and beneficiaries.

Keywords: Beneficiaries, evaluation, health functionaries, Mother and Child Protection, usage

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Submitted: 21-Feb-2019 **Revised:** 24-Apr-2019 **Accepted:** 09-Jul-2019 **Published:** 19-Dec-2019

INTRODUCTION

The Mother and Child Protection (MCP) card was introduced in National rural health mission and Integrated child development scheme with effect from April 1, 2010.[1] It endorses an integrated, holistic approach to ensure proper childcare leading to survival, growth, development, and

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_13_19

How to cite this article: Melwani V, Toppo M, Khan A. Evaluation of knowledge and awareness regarding usage of mcp card amongst health functionaries and beneficiaries. Indian J Community Fam Med 2019;5:123-8.

protection of the young child through child-centered, family-focused, and community-based intervention.[2]

The MCP card has been developed as a tool for families to learn, understand, and follow healthy practices for achieving good health of pregnant women, young mothers, and children. This card helps families to know about various types of services which they need to access for the health and well-being of women and children. It empowers families to make decisions to improve health and nutritional status and supports development of young children on a continual basis.[3]

The Auxiliary Nurse-Midwife (ANM)/Angan Wadi Worker (AWW) record the desired information in the place provided in the card and the beneficiaries are pregnant women and mother/families of children up to 3 years of age. MCP card is an important document to track maternal and childcare thus, its proper handling is necessary. Since the education level of ANM/AWW is usually up to 8th class and their level of understanding is poor. The present study was therefore undertaken to evaluate the usage of the MCP card by Integrated Child Development Services (ICDS) and health functionaries and the beneficiaries.

Objectives

The main objectives were as follows:

1. To assess the knowledge of health functionaries on appropriate usage of MCP card
2. To study the knowledge of beneficiaries (pregnant and lactating mothers or family members with children below 3 years) about the MCP card and its importance in maternal and childcare.

MATERIAL AND METHODS

The present study was a community-based cross-sectional study, conducted for a period of 3 months from February 1, 2018 to April 30, 2018. The study population consisted of health functionaries available at anganwadi center filling the MCP card and beneficiaries such as pregnant female, mother, or family of child up to 3 years. A list of all the anganwadi centers of Bhopal city was downloaded from the ICDS portal. One hundred and five anganwadis were selected using systematic random sampling. At least 3 beneficiaries per anganwadi were selected using convenience sample consisting of one pregnant female, one mother/family member of child <6 months, and one mother/family member of child between 6 months and 3 years. Three different category of beneficiaries have been chosen so as to have representation of all these in the study sample as MCP card covers all of them. A total of 105 anganwadi and 315 beneficiaries were selected in the study. Two sets of questionnaires were developed, one for health functionaries and other for the beneficiaries.

The ethical clearance was obtained from the Ethics Committee of Gandhi Medical College. The purpose of study was explained to study participants, and their informed verbal consent was obtained. Data regarding sociodemographic details of health functionaries, their knowledge regarding all the sections of MCP card [Table 1], its importance were enquired and entered in first set of questionnaires. Knowledge regarding importance, uses, and benefits of MCP card was enquired from beneficiaries and entered in second set of questionnaires. Data were compiled using MS Excel and analyzed using EpiInfo™ version 7.2.2.6 software (CDC). Epi Info™ is a trademark of the Centres for Disease control and Prevention (CDC). The software is in the public domain and freely available for use, copying translation and distribution.

RESULTS

Section I-Responses of health functionaries

The present study included 105 health functionaries, of them 87 (82.8) were AWWs, 17 (16.2%) were ANM and only 1 (1%) were Acredited Social Health Activist (ASHA).

Majority of health functionaries (53.4%) belonged to 31–40 years of age, followed by 41–50 years (18.1%). Moreover, 29.6% health functionaries were educated up to high school, 13.3% were educated up to primary school, whereas 1.9% health functionaries were illiterate [Table 2].

There are 12 sections in the MCP card [Table 1]. It is important to have good knowledge and awareness about each section of MCP card for proper entry into MCP card and providing relevant information to beneficiaries. Among AWW, there was good knowledge regarding immunization schedule (90.8%), pregnancy record (75.9%), and growth

Table 1: Sections of Mother and Child Protection card

Serial number	Sections of MCP card
1	Family identification
2	Birth record
3	Pregnancy record
4	Institutional identification
5	Danger signs in pregnancy
6	Regular checkups during pregnancy
7	Care during pregnancy
8	Five cleans
9	Breastfeeding practices
10	Growth monitoring
11	Newborn care
12	Immunization schedule

MCP: Mother and child protection

monitoring (70.1%), whereas 11.5% knew about five cleans. Knowledge regarding newborn care was poor in ANM and none of the ANM knew about five cleans section [Table 3].

Overall knowledge regarding immunization was maximum (87.6%) among health functionaries, whereas knowledge regarding five cleans was minimum (10.5%) [Table 3].

About 56.3% and 76.5% AWW and ANM, respectively, received orientation training regarding MCP card and the place of training for 45.7% health functionaries was District Hospital, Bhopal.

Table 2: Sociodemographic variables of health functionaries

Serial number	Sociodemographic variables of health functionaries (*n*=105)	Frequency (%)
1	Age group	
	<20	0 (0)
	21–30	15 (14.2)
	31–40	56 (53.4)
	41–50	19 (18.1)
	>50	15 (14.3)
2	Education status	
	Illiterate	2 (1.9)
	Primary	14 (13.3)
	Middle	21 (20)
	High	31 (29.6)
	Higher secondary	17 (16.2)
	Graduate	20 (19)

About 92%, 82.4%, and 100% AWW, ANM, and ASHA, respectively, were currently using MCP card. The reasons for not using MCP card by AWW were lack of training (4.6%) and nonavailability of MCP cards (3.4%), whereas the reason by ANM was nonavailability of MCP cards (17.6%) [Table 4].

When enquired about the custody of MCP card, 96.2% health functionaries answered it should be mother. Usage of MCP card as answered by AWW was being done for immunization (100%), growth monitoring (98.9%), antenatal care (ANC) visit (81.6%), and home visits (19.5%). Majority of ANM and ASHA were using MCP cards for ANC visits [Table 4].

About 98.9% AWW, 100% ANM, and 100% ASHA advised the beneficiaries to take MCP card during referral as answered by health functionaries themselves.

Majority of health functionaries (76.2%) stated treatment start on time if the beneficiaries use MCP card during referrals. As per 12.4%, 7.6%, and 1.9% health functionaries, MCP card is helpful for record maintenance, easy identification and easy availing of health services. Whereas 16.2% did not respond at all as they did not know the advantage of it.

Table 3: Distribution according to knowledge regarding various sections of mother and child protection card among health functionaries

Serial number	Knowledge about various sections of MCP card	AWW (*n*=87), *n* (%)	ANM (*n*=17), *n* (%)	ASHA (*n*=1), *n* (%)	Total (*n*=105), *n* (%)	*P*
1	Family identification	38 (43.7)	4 (23.5)	0	42 (40)	0.21
2	Birth record	53 (60.9)	17 (100)	1 (100)	71 (67.6)	0.006
3	Pregnancy record	66 (75.9)	16 (94.1)	1 (100)	83 (79)	0.21
4	Institutional identification	15 (17.2)	2 (11.8)	0	17 (16.2)	0.78
5	Danger signs in pregnancy	16 (18.4)	2 (11.8)	0	18 (17.1)	0.72
6	Regular checkups during pregnancy	51 (58.6)	8 (47.1)	1 (100)	60 (57.1)	0.47
7	Care during pregnancy	26 (29.9)	4 (23.5)	0	30 (28.6)	0.7
8	Five cleans	10 (11.5)	0	1 (100)	11 (10.5)	0.005
9	Breastfeeding practices	43 (49.4)	5 (29.4)	0	48 (45.7)	0.21
10	Growth monitoring	61 (70.1)	14 (82.4)	0	75 (71.4)	0.17
11	Newborn care	38 (43.7)	1 (5.9)	1 (100)	40 (42.9)	0.006
12	Immunization schedule	79 (90.8)	13 (76.5)	0	92 (87.6)	0.007

MCP: Mother and child protection, ASHA: Accredited Social Health Activist, ANM: Auxiliary nurse-midwife, AWW: Anganwadi worker

Table 4: Distribution according to the usage of mother and child protection card

Serial number	Variables	AWW (*n*=87), *n* (%)	ANM (*n*=17), *n* (%)	ASHA (*n*=1), *n* (%)	Total (*n*=105), *n* (%)
1	Currently using MCP card				
	Yes	80 (92)	14 (82.4)	1 (100)	95 (90.5)
	No	7 (8)	3 (17.6)	0	10 (9.5)
2	Reasons for not using				
	Lack of training	4 (4.6)	0	0	4 (3.8)
	Nonavailability	3 (3.4)	3 (17.6)	0	10 (9.5)
	NA	80 (92)	14 (82.4)	1 (100)	95 (9.05)
3	Custody of MCP card must be with (*P*=0.03)				
	Mother	84 (96.6)	16 (94.1)	1 (100)	101 (96.2)
	AWW/ANM	3 (3.4)	0	0	3 (2.9)
	Both	0	1 (5.9)	0	1 (0.9)
4	Usage of MCP card (multiple responses)				
	ANC visit	71 (81.6)	16 (94.1)	1 (100)	88 (7.6)
	Growth monitoring	86 (98.9)	15 (88.2)	0	101 (96.2)
	Immunization	87 (100)	14 (82.4)	0	101 (96.2)
	Home visit	17 (19.5)	10 (58.8)	0	27 (25.7)

ANC: Antenatal care, ASHA: Accredited Social Health Activist, MCP: Mother and child protection, NA: Not available, ANM: Auxiliary nurse-midwife, AWW: Anganwadi worker

Table 5: Distribution according to problems faced and suggestions given by health beneficiaries

Variables	AWW (*n*=87), *n* (%)	ANM (*n*=17), *n* (%)	ASHA (*n*=1), *n* (%)	Total (*n*=105), *n* (%)
Problems encountered during usage of MCP card				
Difficult to understand numbers	2 (2.3)	5 (29.4)	0	7 (6.7)
Beneficiary forget to bring card	23 (26.4)	1 (5.9)	0	24 (22.9)
Supply of MCP card is less	23 (26.4)	1 (5.9)	0	24 (22.9)
Incomplete data entry	1 (1.1)	1 (5.9)	0	2 (1.9)
None	38 (43.7)	9 (52.9)	1 (100)	48 (45.7)
Suggestions for better usage of MCP card (multiple responses)				
Color coding for weight charts	43 (49.4)	3 (17.6)	1 (100)	47 (44.8)
Better working by seniors like ASHA	0	1 (5.9)	0	1 (1)
Better supply	10 (11.5)	0	0	10 (9.5)
Proper training	3 (3.4)	0	0	3 (2.9)
Two copies on same number (for mother and health worker)	0	1 (5.9)	0	1 (1)
None	30 (34.5)	11 (64.7)	0	41 (39)

ASHA: Accredited Social Health Activist, MCP: Mother and child protection, ANM: Auxiliary nurse-midwife, AWW: Anganwadi worker

Table 6: Distribution according to sociodemographic variables of beneficiaries

Serial number	Sociodemographic variables of beneficiaries (*n*=315)	Frequency (%)
1	Age group	
	<20	31 (9.8)
	21–30	275 (87.3)
	31–40	9 (2.9)
	41–50	0 (0)
	>50	0 (0)
2	Education status	
	Illiterate	53 (16.8)
	Primary	49 (15.6)
	Middle	87 (27.6)
	High	77 (24.5)
	Higher secondary	13 (4.1)
	Graduate	36 (11.4)
3	Socioeconomic class	
	Lower	3 (1)
	Lower middle	89 (28.3)
	Middle	162 (51.4)
	Upper middle	54 (17.1)
	Upper	7 (2.2)

Majority of health functionaries (45.7%) did not encountered any problem during usage of MCP card, whereas 22.9% health functionaries answered beneficiaries forget to bring MCP card and again 22.9% mentioned that the supply of MCP card is low [Table 5].

Majority of health functionaries (44.8%) suggested that growth charts must be color coded and 9.5% suggested supply of MCP card must be improved, while 34.5% did not provided any suggestions [Table 5].

Section II-Responses of beneficiaries

Out of 315 beneficiaries, equal number of pregnant females (105), mother or family member of child <6 months (105), and mother or family member of child between 6 months and 3 years (105) were included.

Majority of beneficiaries (87.3%) were 21–30 years of age and 27.6% and 24.5% were educated up to middle and high school, respectively. Maximum beneficiaries (51.4%) belonged to middle socioeconomic status as per the modified BG Prasad classification [Table 6].

Maximum beneficiaries, i.e., 94.3% knew MCP card is used for immunization followed by growth

Table 7: Distribution according to treatment/immunization without mother and child protection card

Serial number	Treatment/Immunization without MCP card by health functionaries (*n*=315)	Frequency (%)
1	Sometimes send back	27 (8.6)
2	Ask to bring next time	155 (49.2)
3	Give treatment	133 (42.2)

MCP: Mother and child protection

Table 8: Distribution according to reasons for reading mother and child protection card

Serial number	Reasons for reading MCP card (*n*=201)	Frequency (%)
1	Growth monitoring	97 (48.2)
2	Date of next checkup/immunization	88 (43.8)
3	To know how to self-care	12 (6)
4	Know about danger sign	4 (2)

MCP: Mother and child protection

monitoring (34.9%), ANC (29.8%), and postnatal care (12.1%), whereas 6% beneficiaries did not respond at all.

About 286 (90.8%) beneficiaries were explained about usage of MCP card. Of them, 71.3% were explained by AWW followed by ANM (24.1%) and ASHA (4.6%).

Only 50.8% beneficiaries knew about correct validity of MCP card, i.e., 0–3 years.

About 42.2% beneficiaries mentioned that health functionaries provide treatment without MCP card, whereas 8.6% of them mentioned that they are not provided with any treatment or immunization [Table 7].

Out of 315, 190 (60.3%) beneficiaries found MCP card helpful during referral. Of them, 95.8% got timely treatment during referral and in 3.1% it was useful in saving life of mother and child.

Out of total beneficiaries enquired, 20.1 (63.8%) participants ever read MCP card. Reasons for reading MCP card in majority of beneficiaries (48.2%) was growth monitoring followed by to see date of next checkup or immunization (43.8%) [Table 8].

Majority of beneficiaries wanted custody of MCP card to be with the mother or beneficiary themselves. Only 8.6% and 4.4% beneficiaries wanted custody of card to be with AWW and ANM, respectively.

DISCUSSION

The present study involved 105 health functionaries, of them 87 (82.8%) were AWWs, 17 (16.2%) were ANM and only 1 (1%) were ASHA.

The AWW had good knowledge regarding immunization schedule (90.8%), pregnancy record (75.9%), and growth monitoring (70.1%), whereas 11.5% knew about five cleans. However, the ANM had poor knowledge regarding newborn care was and none of them were aware about five cleans section. Whereas in a report by the National Institute of Public Cooperation and Child Development which focused on the role, perception, and job performed by ANMs with regard to the various sections in the MCP card, and they reported the job and responsibilities as very lucid. The role perceived, and job performed by ANMs, herself focus mainly on "recording of information" in the MCP card related to regular checkups during pregnancy (77.2%); danger signs during pregnancy (77.2%); postnatal record of mother (81.8%); record of newborn baby (81.8%); and immunization and Vitamin A supplementation (68.1%). Furthermore, they observed role perception and job performed by ASHAs with regard to the various sections in the MCP card was moderate. The ASHAs mainly perceived their role, as a recorder of information with respect to only "family identification."[1]

About 56.3% AWW and 76.5% ANM received orientation training regarding MCP card. Around 45.7% health functionaries were trained at District Hospital, Bhopal. In our study, 92%, 82.4%, and 100% AWW, ANM, and ASHA, respectively, were currently using MCP card. Reasons given by AWW for not using MCP card was lack of training (4.6%) and nonavailability of MCP cards (3.4%), whereas nonavailability of MCP cards was the reason given by 17.6% ANM. In a study by Kumar *et al*., all the AWW were aware and had used the MCP card to record information, whereas, not all, but 15 out of 17 (88.2%) of Sahiyya were aware and 12 out of 17 (70.59%) had used it. Majority of the Sahiyyas were trained in Primary health centre (PHC), whereas, among trained AWW's, 50% of them received training as job training and rest 50% in PHC. The reason for deficiency of training could be due to lack of interest by AWWs and Sahiyyas or may be due to the excessive burden of their own household work.[4] In another study by Paul *et al*., almost all the ASHAs, ANMs, and AWWs were aware of the MCP card and also reported using it. They observed that the MCP card has been mainly used by ASHAs and ANMs for explaining about ANC services and explaining about how to prepare for delivery; and by AWWs for explaining about childhood illnesses; and advising about nutrition, immunization, etc.[5] Whereas in a study conducted by Thakur *et al*., they found that all the AWWs were trained before joining.[6]

In the present study, 76.2% health functionaries stated treatment start on time as advantage of MCP card

during referrals. As per 12.4%, 7.6%, and 1.9% health functionaries, MCP card is helpful for record maintenance, easy identification, and easy availing of health services. Thus, further study is needed to identify advantages of MCP card for both functionaries and beneficiaries.

Out of 315 beneficiaries involved in the present study, equal number of pregnant females (105), mother or family member of child <6 months (105) and mother or family member of child between 6 months and 3 years (105) were included. Majority of beneficiaries (87.3%) belonged to 21–30 years of age and 27.6% and 24.5% were educated up to middle and high school. Maximum beneficiaries (51.4%) belonged to middle socioeconomic status as per the modified BG Prasad classification. In a study by Jena *et al*. on 200 beneficiaries, 36% were aged between 25 and 29 years and 14% mothers were illiterate. Most of the mothers belonged to type 2 and type 3 socioeconomic status, i.e., 33.5% and 38%, respectively.[7]

In the present study, maximum beneficiaries, i.e., 94.3% knew MCP card is used for immunization followed by growth monitoring (34.9%), ANC (29.8%), and postnatal care (12.1%). Only 50.8% beneficiaries knew about correct validity of MCP card, i.e., 0–3 years. Rama *et al*. in their study observed 95% of the participants were aware of the need for immunization of their infant; 58% of the participants were not aware of this shape and only 42% of the participants had adequate knowledge regarding correct interpretation of the normal growth curve.[8]

Out of total beneficiaries enquired, 201 (63.8%) participants have read MCP card. Reasons for reading MCP card in majority of beneficiaries (48.2%) were growth monitoring followed by tracking of next checkup or immunization (43.8%).

Majority of beneficiaries wanted custody of MCP card to be with the mother or beneficiary themselves. Only 8.6% and 4.4% beneficiaries wanted custody of card to be with AWW and ANM, respectively. Thus, further study is needed to explore the reasons why beneficiaries do not want to handle their card to health functionaries.

CONCLUSION

MCP cards have been developed to support families to understand and follow positive practices for achieving good health of pregnant women, young mothers, and children. This study demonstrated that both the health beneficiaries and health functionaries had good knowledge about usage of MCP cards. They were mainly using card for keeping the background information, to provide adequate antenatal care provided to the mother, to deliver effective immunization, and to track the treatment schedule. However, provision of proper training and proper guidelines to health functionaries regarding the use of MCP cards can further improve the effectiveness of services provided though MCP cards. Moreover, advanced training can also support to created further awareness about MCP cards among health beneficiaries, to motivate them to take MCP card during hospital visits and Anganwadi visit, and to teach them about importance of various sections of MCP card and to its proper storage.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Original Article

Activity limitation and participation restriction in veterans of Indian Armed Forces: A cross-sectional study

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Abstract

Introduction: The armed forces provide lifelong medical benefits to all their veterans. As most of them are older, their health needs are quite different from those of serving personnel. Having led a relatively active and disciplined life in the services, their general health might also be better than that of their civilian counterparts. Unfortunately, there are no data available on the health of Indian military veterans. This study was planned to ascertain the level of activity limitation (AL) and participation restriction (PR) and determine factors affecting AL and PR.

Material and Methods: This community-based, cross-sectional study was conducted among 406 veterans and their spouses aged 60 years and above residing in an urban housing society. House-to-house surveys were conducted. The study was done over 6 months (July–December 2016). Ethical clearance and informed consent were taken. The questionnaire used in the study was designed by incorporating elements from the International Classification of Functioning, Disability, and Health questionnaire and the WHO Disability Assessment Schedule.

Results: Of the 406 veterans and their spouses surveyed, 188 (46.3%) were male and 218 (53.7%) were female. The majority of them were in the age groups of 61–70 years (175, 43.1%) and 71–80 years (173, 42.6%). Most of them were living with other family members with only 59 (14.5%) living alone. AL score was good or average in most of them (263 and 124, respectively), and it was bad or very bad in only a small number (11 and 8, respectively) Similarly, the PR score was good or average in 316 and 78 participants, respectively. Only 12 (2.8%) had a bad PR score. PR score increased significantly beyond the age of 80 years ($P = 0.00$). AL was more in males as compared to females. PR was more in those who were not married/divorced/single ($P < 0.05$). AL and PR were independent of the type of caregivers ($P > 0.05$). The most common ailments reported by males were body aches and pains, hearing defects, and problems related to micturition. Complaints of feeling low or depressed were significantly higher in females ($P < 0.05$). The top five causes of morbidity in the study population were hypertension (209, 51.5%), diabetes (125, 30.8%), defective vision (116, 28.6%), cataract (105, 25.9%), and dental problems (102, 25.1%).

Conclusion: This study provides an insight into the magnitude of disease, impairment, and disability among veterans. Hypertension was the most common morbidity. Assessment of the AL and PR is useful planning geriatric care and educating caregivers and families to improve the quality of life of the elders.

Keywords: Activity limitation, morbidity, participation restriction, veterans

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Submitted: 24-Jun-2019 **Revised:** 24-Jul-2019 **Accepted:** 05-Sep-2019 **Published:** 19-Dec-2019

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_51_19

How to cite this article: Sashindran VK, Dudeja P, Aggarwal V. Activity limitation and participation restriction in veterans of Indian Armed Forces: A cross-sectional study. Indian J Community Fam Med 2019;5:129-33.

INTRODUCTION

The world population is aging rapidly. Considering the elderly (>60 years age) in 2000, it is estimated that this population will double from 11% to 22%.[1] As per the 2011 census, the elderly constituted 8.6% of the total Indian population.[2] Their numbers are predicted to increase to 133 million by 2021 and 301 million by 2051.[3] The present century is considered the "century of elderly" and the next one shall witness the "aging of the aged."[4]

The phenomenon of aging is inevitable and does not even spare armed forces veterans. Rising life expectancy will lead to a swelling of their ranks. Concerns for scaling geriatric services in India are real and urgent. Changes in societal structure with a tendency to stay as nuclear families also pose social and personal challenges to these elderly.[5] These elderly are better off than their civilian counterparts as most of them are pensioners and thus financially secure. Access to free health care for themselves and their dependents also insulates them from the crippling costs of health care in the civil setup. The elderly abuse due to financial dependence and lack of health insurance is less common among military veterans. The health needs of the veterans are presently being taken care by the Ex-Servicemen Contributory Health Scheme which has been striving to ensure a robust health-care delivery.[6] Compulsory annual medical examinations in the armed forces ensure early detection and good management of diseases such as hypertension, diabetes, and coronary artery disease leading to better general health of our veterans. They, however, face difficulties due to loss of social recognition, reduced mobility, chronic and terminal diseases, dementia and depression, and loneliness. Our challenge, therefore, lies in not improving the quantum of their health but the quality of their health.

With increasing age, many veterans have functional disabilities, necessitating assistance to manage simple chores at home. The more infirm need dedicated caregivers for performing activities of daily living such as bathing, eating, going to toilet, and also taking medicines. There are multiple tools to assess the disability status of the elderly, but the International Classification of Functioning, Disability, and Health (ICF) is the standard one.[7] According to the ICF, activity limitation (AL) is the difficulty in performing a task and participation restriction (PR) is the problem faced in performing a social role in life situations. AL is one of the most common geriatric problems which not only affects the individuals but also has significant societal impact.[8] The elderly with reduced AL and PR require both formal and informal care. Data on these aspects of our veterans are scarce. This study was planned to ascertain the level of AL and PR among elderly veterans and determine the factors affecting them.

MATERIAL AND METHODS

This was a community-based, cross-sectional study conducted in an urban area of western Maharashtra. The sample size calculation was based on the assumed prevalence of disability in the elderly as 32% and for a precision of 5% and 95% confidence level. The sample size was computed to be 334.[9] The study was conducted over a period of 1 year from August 2016 to August 2017. All veterans residing in a housing society meant exclusively for ex-serviceman (n = 406) were included. A questionnaire was developed based on the ICF and WHO Disability Assessment Schedule with 36 items.[9] Data on sociodemographic profile, morbidity status, body function, AL, and PR were collected. Fourteen questions were used to assess AL, and these addressed the domains of understanding and communication, getting around, self-care, and life activities. There were 9 questions to assess PR focusing on the domains of getting along with people and participation in society. The scoring for questions was as follows: 1 = none, 2 = mild, 3 = moderate, 4 = severe, 5 = extreme/cannot do, and 8 = not applicable. The total attainable score for AL and PR was 70 and 45, respectively. The scoring categories for AL were as follows: 0–18 (good), 19–36 (average), 37–54 (bad), and 55–72 (very bad). Similarly, the scoring categories for PR were as follows: 0–15 (good), 16–30 (average), and 31–45 (bad). A lower score indicated good health with less limitations and restrictions. Institutional ethical clearance was obtained before the study, and written informed consent was taken from all participants. House-to-house surveys were conducted. Data collection was done on Sundays and holidays, and prior intimation to individuals was given through E-mail, posters in the shopping complex, military canteen, and housing society office. This ensured smooth data collection and detailed interviews were possible. Data were analyzed in IBM statistics SPSS software Version 22.0 (IBM Corp., Armonk, NY, USA). The Chi-square test was used for comparison of proportions and the Mann–Whitney U-test was used to compare scores.

RESULTS

The demographic details of the study population are given in Table 1. AL and PR scores of individuals are shown in Table 2. PR scores increased significantly with age beyond 80 years (P: 0.006). AL was more in males as compared to females [Table 2]. PR was more in those not married/divorced/single ($P < 0.05$). AL and PR were

Table 1: Sociodemographic profile of respondents

Variable	Male (*n*=188), *n* (%)**	Female (*n*=218), *n* (%)**	Total
Marital status			
Married	158 (84)	178 (82)	336
Single/divorced/widow/widower	30 (16)	40 (18)	70
Age (years)			
60-70	69 (36.7)	117 (53.6)	186
70-80	94 (50)	79 (36.2)	173
80-90	23 (12.1)	19 (08.7)	42
>90	2 (1.2)	3 (01.5)	5
Living alone			
Yes	24 (12.7)	35 (16)	59
No	164 (87.3)	183 (84)	347
Who takes care of you?			
Family member	139 (74)	179 (82.1)	318
Outsider*	30 (16)	29 (13.3)	59
Self-care	19 (10)	10 (4.6)	29

*Forty-one (69.5%) caretakers were working as part time and 11 (18.6%) were only trained in elderly care, **% is column percentages

Table 2: Association between age, gender, and activity limitation and participation restriction in the elderly

Variables	Activity limitation score				χ^2	*P*
	Good (0-18)	Average (19-36)	Bad (37-54)	Very bad (55-72)		
Age (years)						
<80	126	52	5	5	1.298	0.730
>80	137	72	6	3		
Gender						
Male	106	69	6	7	10.767	0.013
Female	157	55	5	1		
Variables	**Participation restriction score**				χ^2	*P*
	Good (0-15)	Average (16-30)	Bad (31-45)			
Age (years)						
<80	157	28	3		10.124	0.006
>80	159	50	9			
Gender						
Male	151	34	3		3.293	0.193
Female	165	44	9			

independent of type of caretakers ($P > 0.05$). Based on ICF, the ailments that were significantly more common among males were body aches and pains, hearing defects, and problems related to micturition. Complaints of feeling low and being depressed were significantly more common among women ($P < 0.05$). Gender differentials in health status as per ICF are given in Table 3. The top five causes of morbidity in the study population were hypertension 209 (51.5%; 46.5–56.4), diabetes 125 (30.8%; 26.3–35.5), defective vision 116 (28.6%; 24.2–33.2), cataract 105 (25.9%; 21.7–30.4), and dental problems 102 (25.1%; 21.0–29.6). Physical and mental health in the past 1 month was rated "bad" by 10% and 5% of individuals, respectively. Nearly 12% had cut back their activities in the past 1 month due to health reasons. The prevalence of current smokers and regular drinkers in the population was 6.7% and 27%, respectively.

DISCUSSION

Aging is a process of progressive decline of various physiological functions leading to loss of viability.[10] It is very important to understand the health needs of the elderly so as to improve the existing health-care infrastructure.[11] Majority of the studies conducted earlier have focused on morbidity profile of the elderly in rural, urban slums and urban areas. No studies have been conducted on armed forces veterans. We assessed AL and PR along with morbidity status of armed forces veterans. The International Classification of Functioning, Disability, and Health (ICF) is the highest standard for describing health and disabilities. According to ICF the difficulties faced by an individual in performing various physical tasks are covered under the heading of AL and problems faced by individuals in social interactions and engaging in real life situations are covered under PR. This is a powerful tool in guiding the assessment and referral of the elderly to restorative therapy and supportive services.[12]

The number of elderly females was more as compared to those of males. In most societies, females have higher life expectancy than men. Worldwide, this ratio is 1.01.[13] This pattern is also seen among the elderly in India.[10-12,14]

The proportion of individuals living alone in our study is comparable to that reported by Thakur *et al*. in another study done in the same city but in a different area.[14] The majority of the elderly staying alone had children working outside the city/country. These people face a lot of social problems due to isolation and do not have strong bonds with their neighbors or community as is common in rural areas of India. These elderlies need support to combat loneliness. They also need a medical support system, especially in times of emergency.[15]

Family members are expected to be key caregivers for the elderly in India. Surprisingly, 14% of our individuals relied on caregivers who were not family members. Only a few of these caregivers were trained. The role of an ideal caregiver is to provide social stimulation and adapt activities to match the recipients' physical and cognitive abilities. The range of help required by our individuals from caregivers varied from assistance during evening walks to performing activities of daily living and finally to care of the totally bedridden. Trained caretakers are more efficient as compared to untrained ones as they can operate and maintain medical equipment such as nebulizers, feeding pumps, wheelchairs, and changing dressings.[16] However, they also come at a price which even these people cannot often afford.

Table 3: Health status of veterans based on the International Classification of Functioning, Disability, and Health

Question	Sex	Median	Range	*P* Mann-Whitney U-test
How much of body aches or pains did you have?	Male	2	7	0.003
	Female	2	7	
Have you had a problem with a skin defect of face, body, arms, or legs?	Male	2	7	0.382
	Female	2	7	
Have you had a problem with your appearance due to missing or deformed or paralyzed arms, legs, and feet?	Male	2	7	0.513
	Female	2	7	
How much difficulty did you have in using your hands and fingers, such as picking up small objects or opening or closing containers?	Male	1	7	0.195
	Female	1	7	
How much difficulty did you have in seeing and recognizing a person you know across the road?	Male	1	7	0.997
	Female	1	7	
How much difficulty did you have in seeing and recognizing an object at arm's length or in reading?	Male	2	7	0.931
	Female	2	7	
How much difficulty did you have in hearing what is said in a conversation with one other person?	Male	2	7	0.000
	Female	2	7	
How much of a problem did you have passing water (urinating) or in controlling urine (incontinence)?	Male	1	7	0.002
	Female	1	7	
How much of a problem did you have with defecating, including constipation?	Male	1	7	0.105
	Female	1	7	
How much difficulty did you have with shortness of breath at rest?	Male	1	7	0.568
	Female	1	7	
How much difficulty did you have with shortness of breath with mild exercise, such as climbing?	Male	1	7	0.055
	Female	1	7	
How much difficulty did you have with coughing or wheezing?	Male	1	7	0.565
	Female	1	7	
How much of the time did you have a problem with sleeping, such as falling asleep, waking up frequently during the night, or waking up too early in the morning	Male	1	7	0.991
	Female	1	7	
How much of a problem did you have with feeling sad, low, or depressed?	Male	2	7	0.027
	Female	2	7	
How much of a problem did you have with worry or anxiety	Male	2	7	0.015
	Female	2	7	

PR denotes difficulties faced by individuals in different life situations. In our study, it increased significantly with age. One reason for this could be the fact that aging compounded by the impact of chronic diseases leads to a significant decline in various bodily functions resulting in loss of independence and social roles.

It has been shown that AL rises with increasing age and is higher in women than in men.[16] However, in our study, AL was more in males as compared to females. This can be explained by differential distribution of gender in the age with a significantly higher percentage of males in the age group of 70 years and above. PR was more in those who were widowed or divorced ($P = 0.002$). This restriction could be due to both physical and social reasons. For example, an elderly female with bilateral osteoarthritis staying single will have more PR as compared to another female with the same physical condition but staying with her spouse. Cultural and societal factors have a strong impact on PR as individuals behave as they are expected to for their age by the society.

AL and PR were independent of the caregiver. The care given to an elder in the family depends on the composition of the family. The care here is delivered either by grown-up children and their spouse or by paid informal caregivers. The role of the family caregiver can be difficult in case the children and their spouses are both working. The elders in these families will be left to themselves for most of the day. Some elderly people can afford caregivers. They are usually informal caregivers with no professional training. Trained caregivers are expensive and are not covered under the ex-serviceman health-care scheme or for that matter any private medical insurance policy in India.

AL and PR in our study population were far better than that of the elderly in an urban area of Chandigarh.[9] Veterans during their service have active lifestyles and lead life which is disciplined and structured. These habits of a lifetime persist even after retirement. This could explain why our veterans have lesser AL and PR as compared to civilian elders with similar morbidities.

Warbhae reported hypertension to be the major morbidity in his study on urban elders.[17] The prevalence of hypertension in our individuals was more than that reported by Vandana Nikumb (28% in the elderly of an urban area of Navi Mumbai),[18] Reddy *et al.* (49% at a rural tertiary care hospital in South India),[19] and less than that reported

by Jamkhandi and Bhattacharji (71% in those reporting to the outpatient clinic of a family practice unit of a tertiary care center in South India).[20] Our results were comparable to that from these studies with respect to other common morbidities seen in the elderly.[14-18]

The prevalence of current smokers in the present study was less (6.7%) as compared to that reported by Kaur *et al*. They found the prevalence to be 88.1%.[21] This too can be attributed to service lifestyle where smoking is prohibited in unit areas and discouraged in social functions too.

In our study, we found that aging is not a surrogate for disability as a large proportion of our elders were leading a good life despite their ailments. Disabilities affect the quality of life of the elderly. Most studies focus on the medical model of disability associating it with morbidity conditions neglecting various impairments and problems encountered by the elderly. AL PR studies are vital to arrive at a holistic assessment of elderly health.

CONCLUSION

This study provides a valuable insight into the magnitude of disease, impairment, and disability among veterans. Despite multiple ailments, our veterans have low AL and PR. Hypertension is the most common morbidity in this population. Assessment of the AL and PR is useful planning geriatric care and educating caregivers and families to improve the quality of life of the elders.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Original Article

Nutritional status of pulmonary tuberculosis patients: A hospital-based cross-sectional study

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Abstract

Introduction: Undernutrition among tuberculosis (TB) patients is associated with adverse treatment outcomes and increases risk of mortality. The nutritional status of pulmonary TB patients attending Outpatient Department of Combined Hospital, Thakurganj, Lucknow, Uttar Pradesh, India.

Material and Methods: Two hundred recently diagnosed patients and those who were on intensive phase therapy were selected prospectively. A structured questionnaire was used to collect sociodemographic, lifestyle, health, and dietary information of the selected TB patients. Clinical information was collected from medical records. Nutritional status was measured as body mass index (BMI) (weight and height) using standard techniques.

Results: Nutritional status measured as BMI was categorized as underweight (<18.5) and normal (BMI >18.5) was the primary outcome of the study. Ninety-eight (49%) TB patients were very severely undernourished (BMI <16) and 159 (79.5%) patients had BMI <18.5. Only 44.5% patients reported receiving diet counselling during hospital visit. The adjusted analysis showed higher odds of underweight among patients who had breathing difficulty (adjusted odds ratio [AOR] = 2.85; confidence interval [CI] = 1.19–6.85; $P = 0.01$). Patients with diabetes had significantly lower odds of underweight (AOR = 0.12; CI = 0.02–0.95; $P = 0.04$). Higher odds of low BMI were also found among patients consumed tobacco (AOR = 2.4; CI = 0.95–6.28; $P = 0.05$), using open defecation (AOR = 3.77; CI = 0.91–15.64; $P = 0.06$), but findings were not statistically significant.

Conclusion: This study has demonstrated high proportion of severe undernutrition among pulmonary TB patients. There is an urgent need for the provision of proper nutrition management and counseling of TB hospitals at the hospitals as per the national nutrition guidelines for TB patients.

Keywords: Active-phase tuberculosis, nutritional status, tuberculosis, tuberculosis patients, tuberculosis Uttar Pradesh

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Submitted: 16-May-2019 **Revised:** 09-Jul-2019 **Accepted:** 09-Sep-2019 **Published:** 19-Dec-2019

INTRODUCTION

Tuberculosis (TB) is the most common cause of death from infectious diseases that affected humankind for more than 4000 years.[1] Pulmonary TB considered to be most contagious due to its spread through coughing and contaminated air droplets and accounts for about 80% of TB burden.[2]

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_39_19

How to cite this article: Shukla A, Pandey S, Singh SP, Sharma J. Nutritional status of pulmonary tuberculosis patients: A hospital-based cross-sectional study. Indian J Community Fam Med 2019;5:134-40.

TB remains a leading cause of morbidity and mortality in developing countries.[1] Six countries accounted for 60% of the New cases of TB: India, Indonesia, China, Nigeria, Pakistan, and South Africa.[3] India as the country with the highest burden of TB disease in the world and accounts for one-fourth of the global TB burden.[4]

Social, behavioral, economic, and environmental factors such as undernutrition, indoor air pollution, smoking and alcohol addiction, ignorance, and poverty are associated with TB, out of these, social determinants and undernutrition are the single most important predisposing factor.[5] Undernutrition and TB have a bidirectional relationship, undernutrition, and weak immunity can result in the disease and disease can worsen the nutritional status. Undernutrition among TB patients leads to worse treatment outcomes.[5] Severe undernutrition at diagnosis has been shown to be associated with a two-fold increased risk of death. Therefore, undernutrition needs to be treated concurrently with treatment of the infections.[2] Diabetes, smoking, heavy alcohol use, and undernutrition are individual risk factors, but their combined effect can triple or quadruple the risk of development of recent active TB disease.[6] Anemia is common in patients with pulmonary TB and appears to be more common among TB/HIV-coinfected patients.[7] Expected reasons for this include increased blood loss from hemoptysis (blood in sputum for TB patients), bone marrow involvement (decreased red blood cell production), poor appetite, and food intake resulting in poor micronutrient status.[7,8]

According to the WHO global TB report, 2.8 million people developed TB in India in 2015[3], and among states, Uttar Pradesh accounts for highest number of incidence cases of TB, i.e., 3 lakhs.[4] The state also has a very high burden of undernutrition compared to other states of the country. In the age group, 15–49 years, 26% of population is underweight (body mass index [BMI] <18.5).[9] This high burden of TB and undernutrition, calls for evidence on nutritional status, and management of nutritional issues of TB patients in high caseload facilities. In this background, we conducted a hospital-based study to assess nutritional status and its associated factors among TB patients in a public TB hospital in Lucknow, Uttar Pradesh, India.

MATERIAL AND METHODS

A hospital-based cross-sectional study was conducted during December 2017–March 2018, at Government Combined Hospital, Thakurganj, Lucknow, Uttar Pradesh. Government Combined Hospital, Thakurganj, Lucknow, is a secondary-level 200-bedded hospital rendering health services to over 1 million inhabitants in Northwest Lucknow. The hospital provides inpatient and outpatient services to the population in the surrounding area and adjacent regions. The hospital has Directly Observed Treatment Short Course (DOTS) clinic where TB patients are given DOTS. The total caseload of hospital is approximately 90–100 new smear-positive patients per month.

Study participants

With the anticipated frequency of undernutrition among TB patients to be 85%[10] and 5% precision level, required sample size for the study was 196 TB patients. This number was further rounded off taking into consideration nonresponse and refusal. Final sample consisted 200 pulmonary TB patients.

Newly diagnosed sputum-positive male and female aged 15–49 years at the time of initiation of treatment or patients who were within the first 2 months of treatment (intensive phase therapy) were included in the study. Patients were diagnosed primarily on the basis of sputum smear microscopy according to the RNTCP guidelines.

Patients who were on DOTS continuous phase, drug-resistance TB patients, and defaulter/relapse cases/pregnant women/lactating mother/critically ill patients who could not stand were excluded from the study.

Data collection

Sociodemographic and lifestyle

A questionnaire was developed to record information on age, gender, residential status sputum smear status, grade of sputum smear, previous history of treatment, history of any illness, or death in a family member diagnosed as TB. Information was also obtained on lifestyle factors conditions such as housing, water and sanitation condition, smoking, and alcohol; all information was corroborated with patient hospital record.

Nutritional assessment

Anthropometric measurements for calculating BMI used to determine the nutritional status of the patients. BMI is calculated by weight for height defined as the weight in kilogram of the individual divided by the square of the height in meter. The standard protocol suggested by the WHO 2006 was followed to conduct and interpret anthropometric assessment.

The weight assessment was conducted using standard weighing scale with patients wearing light cloths. Weighing

instruments calibrated (±10 g precision) each morning to ensure validity of the results. Height was measured using standard procedure with a stadiometer. Measurements were recorded to nearest centimeter. All measurements were done by the researcher themselves.

Outcome measures

Nutritional status

Nutritional status defined as BMI was the principal outcome measure. Outcome was classified into two categories as undernutrition (BMI <18.5 kg/m^2) and normal (BMI >18.5 kg/m^2).

Covariates

Guided by existing literature and technical guidelines, a set of potential sociodemographic, diet, lifestyle, and behavioral risk factors that may be associated with BMI among TB patients were used. The variables in the study included sociodemographic factors such as age, sex, level of education, religion, marital status, family size, occupation and income, living conditions, and place of residence. Consumption of alcohol and tobacco, substance abuse, dietary habits, and disease-related factors such as symptoms experience, changes in diet and appetite after initiation of TB treatment, side effects of drugs, and received diet counseling at the hospital or not was also included as covariates.

Statistical analysis

Patients' characteristics by BMI groups were analyzed using the Pearson Chi-square test or Fisher's exact test. We studied associations between BMI (dependent variable) in two classes (<18.5 kg/m^2, [underweight] and ≥18.5 kg/m^2) and sociodemographic, disease, lifestyle, and dietary characteristics. All variables associated with the outcome in the literature or that had a $P < 0.20$ in the bivariate analysis were considered eligible to enter the multivariate model using logistic regression. All data were analyzed using SPSS 24 Statistics (IBM, Madison, WI, USA).

Ethical considerations

The research proposal was approved by the Institutional Ethics Committee of IIPH Delhi. Formal permission was also obtained from Chief Medical Officer of the Combined Hospital, Thakurganj Lucknow, Uttar Pradesh.

A participant information sheet was developed in the local language (Hindi) to provide information about the study to the respondents. The purpose of the study was explained and written consent was obtained from all the respondents before including them in the study. In case respondent was not able to give write then the consent was taken from a witness on his/her behalf. In case the respondent did not want to answer any question he/she was not forced to reply.

RESULTS

A total of 159 (79.5%) TB patients were undernourished. Ninety-eight (49%) patients were in the category of severe undernutrition (BMI <16) and very severe undernutrition (BMI <14) was present among 41 (20.5%) patients. Sixty (30%) patients were moderate undernutrition (BMI 16–18.5) and remaining 42 (21%) patients were in the category of normal weight (BMI >18.5). Three patients out of these 42 had BMI >25. Undernutrition was more prevalent (83.3%) among patients who were on intensive phase therapy compared to newly diagnosed patients (76.3%) [Table 1].

Tables 2-4 represent the percentage distribution background characteristics by BMI status. The profile of the respondent shows that higher proportion of respondents was males (64%) in the age group of 18–25 and 36–59 years. Thirty-three percent respondents were illiterate, 46% were unemployed, and 70.5% of them were earning International Normalized Ratio <5000/month. Majority of respondents (67%) were living in crowded house and almost 31% of them were practicing open defecation. Significant differences were seen in nutritional status in across several socioeconomic characteristics including religion ($P = 0.01$), marital status ($P = 0.02$), using open defecation ($P = 0.001$), and place of residence ($P = 0.03$).

BMI also differ significantly among patients with diabetes and other disease ($P = 0.01$), had breathing difficulty ($P = 0.001$), and taking antidiabetic treatment ($P = 0.005$). Among lifestyle factors, BMI differs significantly among patients who reported consuming alcohol ($P = 0.04$). BMI did not differ with other lifestyle factors including tobacco use and type of tobacco consumed. Majority (74.5%) of respondents reported that they were consuming 1–2 meals

Table 1: Nutritional status of tuberculosis patients

BMI categories	Patient type		Total (*n*=200), *n* (%)
	New smear positive (*n*=110), *n* (%)	Intensive phase therapy (*n*=90), *n* (%)	
Very sever (BMI <16)	53 (48)	45 (50)	98 (49)
Severe (BMI-16-18.5)	31 (28.2)	30 (33.3)	61 (30.5)
BMI (<18.5)	84 (76.3)	75 (83.3)	159 (79.5)
Normal (BMI >18.5)	26 (23.6)	15 (16.7)	41 (20.5)

BMI: Body mass index

Table 2: Percentage distribution of respondents as per body mass index status and sociodemographic characteristics

Variables	Underweight (BMI <18.5)		Total, (*n*=200), *n* (%)	*P*
	Yes (*n*=158), *n* (%)	No (*n*=42), *n* (%)		
Age group (years)				
15-25	73 (46.2)	11 (26.2)	84 (42)	0.041
26-35	23 (14.6)	11 (26.2)	34 (17)	
36-49	62 (39.2)	20 (47.6)	82 (41)	
Gender				
Male	103 (65.2)	25 (59.5)	128 (64)	0.497
Female	55 (34.8)	17 (40.5)	72 (36)	
Religion				
Hindu	99 (62.7)	17 (40.5)	116 (58)	0.010
Muslim	59 (37.3)	25 (59.5)	84 (42)	
Educational level				
Illiterate	52 (32.9)	13 (31.0)	65 (32.5)	0.389
Can read and write	27 (17.1)	12 (28.6)	39 (19.5)	
Primary education	50 (31.6)	10 (23.8)	60 ((30)	
Secondary and above	29 (18.4)	7 (16.7)	36 (18)	
Occupation				
Unemployed	74 (46.8)	18 (42.9)	92 (46)	0.180
Daily wage worker	63 (39.9)	22 (52.4)	85 (42.5)	
Private/business	21 (13.3)	2 (4.8)	23 (11.5)	
Public worker (reference)				
Monthly income				
<5000 rs	113 (71.5)	28 (66.7)	141 (70.5)	0.167
5000-10,000 rs	36 (22.8)	8 (19.0)	44 (22)	
>10,000 rs	9 (5.7)	6 (14.3)	15 (7.5)	
Marital status				
Married	98 (62.0)	34 (81.0)	132 (66)	0.021
Unmarried/widow/divorce	60 (38.0)	8 (19.0)	68 (34)	
Migration	58 (36.7)	10 (23.8)	68 (34)	0.117
Place of residence				
Urban	92 (58.2)	32 (76.2)	124 (62)	0.033
Rural	66 (41.8)	10 (23.8)	76 (38)	
Type of house				
Kuccha	64 (40.5)	11 (26.2)	75 (37)	0.199
Pucca	78 (49.4)	27 (64.3)	105 (52.5)	
Mixed	16 (10.1)	4 (9.5)	20 (10)	
House member				
<5 members	52 (32.9)	14 (33.3)	66 (33)	0.959
≥5 members	106 (67.1)	28 (66.7)	134 (67)	
Drinking water source				
Tube well	62 (39.2)	14 (33.3)	76 (38)	0.775
Bottle water/RO	33 (20.9)	10 (23.8)	43 (21.5)	
Other sources	63 (39.9)	18 (42.9)	81 (40.5)	
Toilet facility				
Septic tank	99 (62.7)	38 (90.5)	137 (68.5)	0.001
Open defecation	59 (37.3)	4 (9.5)	63 (31.5)	

BMI: Body mass index

per day and only 43.7% of TB patients reported that they received diet counseling at the facility.

Table 5 shows the adjusted and unadjusted odds ratio (OR) with 95% confidence interval (CI) estimated from multiple logistic regression. Odds for underweight among TB patients increased if they were using open defecation (adjusted OR [AOR] =3.77; CI = 0.91–15.64; $P = 0.06$) and consumed tobacco (AOR = 2.4; CI = 0.95–6.28; $P = 0.06$). Statistically significant increase in odds of having low BMI was found among patients who were facing breathing difficulty (AOR = 2.85; CI = 1.19–6.85; $P = 0.01$). The findings further showed that patients with diabetes (AOR = 0.04; CI = 0.02–0.95; $P = 0.04$) were likely to have significantly lower odds of underweight. Odd of having low BMI also found among patients who were using substance (AOR = 0.22; CI = 0.05–1.07; $P = 0.05$), residing in rural areas (AOR 1.35; CI = 0.42–4.40; $P = 0.6$), taking 1–2 meals (AOR = 1.15; CI = 0.29–4.54; $P = 0.8$), and not received diet counseling (AOR = 1.37; CI = 0.59–3.17; $P = 0.5$), although the association was not statistically significant.

DISCUSSION

In the present study, the nutritional status was measured as BMI. Overall prevalence of undernutrition was 79% (BMI <18.5) among TB patients. Forty-one (20.5%)

Table 3: Percentage distribution of respondents as per body mass index status and disease symptoms

Symptoms	Underweight (BMI <18.5)		Total (*n*=200), *n* (%)	*P*
	Yes (*n*=158), *n* (%)	No (*n*=42), *n* (%)		
Cough	142 (89.9)	37 (88.1)	179 (89.5)	0.778
Cough type				
Productive	128 (81.0)	30 (71.4)	158 (79)	0.175
Nonproductive	30 (19.0)	12 (28.6)	42 (21)	
Fever	129 (81.6)	36 (85.7)	165 (82.5)	0.537
Night sweat	77 (48.7)	15 (35.7)	92 (46)	0.132
Hemoptysis	53 (33.5)	12 (28.6)	65 (32.5)	0.541
Chest pain	109 (69.0)	29 (69.0)	138 (69)	0.994
Weakness	153 (96.8)	40 (95.2)	193 (96.5)	0.639
Weight loss	142 (89.9)	37 (88.1)	179 (89.5)	0.778
Loss of appetite	126 (79.7)	31 (73.8)	157 (78.5)	0.405
Breathing difficulty	120 (75.9)	20 (47.6)	140 (70)	<0.001
Other symptoms	21 (13.3)	6 (14.3)	27 (13.5)	0.867
Duration of symptoms (weeks)				
<2	26 (16.5)	9 (21.4)	35 (17.5)	0.451
>2	132 (83.5)	33 (78.6)	165 (82.55)	
DM	3 (1.9)	5 (11.9)	8 (4)	0.011
Other disease	12 (7.6)	9 (21.4)	21 (10.5)	0.019
Antidiabetic treatment	2 (1.3)	5 (11.9)	7 (3.5)	0.005
History of hospitalization	58 (36.7)	16 (38.1)	74 (37)	0.869
Contact history of TB	53 (33.5)	19 (45.2)	72 (36)	0.161
Family history of DM	23 (14.6)	7 (16.7)	30 (15)	0.734
Previous death in house with TB	21 (13.3)	4 (9.5)	25 (12.5)	0.512

BMI: Body mass index, TB: Tuberculosis, DM: Diabetes mellitus

Table 4: Percentage distribution of respondents as per body mass index status and lifestyle factors

Variables	Underweight (BMI <18.5)		Total (*n*=200), *n* (%)	*P*
	Yes (*n*=158), *n* (%)	No (*n*=42), *n* (%)		
Tobacco user	75 (47.5)	15 (35.7)	22 (11)	0.174
Duration of tobacco use (*n*=90)				
Current	40 (53.3)	6 (40.0)	46 (23)	0.273
Quitter	35 (46.7)	9 (60.0)	44 (22)	
Tobacco type - smoking (*n*=90)	43 (57.3)	7 (46.7)	50 (25)	0.311
Tobacco type - smokeless	41 (61.3)	12 (80.0)	53 (26.5)	0.179
Alcohol user	27 (17.1)	2 (4.8)	29 (14.5)	0.044
Other substance abuse	8 (5.1)	4 (9.5)	12 (6)	0.282
Frequency of meal in a day				
0 meals	16 (10.1)	6 (14.3)	22 (11)	0.445
1-2 meals in a day	117 (74.1)	32 (76.2)	149 (74.5)	
3-4 meals in a day	25 (15.8)	4 (9.5)	29 (14.5)	
Received diet counseling	69 (43.7)	20 (47.6)	89 (44.5)	0.647

BMI: Body mass index

patients had BMI (<14), considered as extreme underweight with extremely high risk.[11] The study explored the association of nutritional status of TB patients with sociodemographic, lifestyle, and health-related factors. The results of multivariate analysis showed that patients who had breathing difficulty, consuming tobacco, and other substances were likely to have lower BMI. Patients were diagnosed with diabetes had higher probability of high BMI.

Prevalence of undernutrition (79.5%) in the current study was higher when compared with study conducted in Ghana (51%),[12] Manipur state of India (64.5%).[13] However, the prevalence in the present study was lower than the study conducted in Chhattisgarh state of India (85%).[10] This difference may be due to demographic factors, sociocultural situation, lifestyle, and socioeconomic status of the region. The nutritional status was also found to be significantly associated with age group in bivariate analysis, but in adjusted analysis, age was not independently associated with nutritional status. These findings are in line with the other studies conducted in Ethiopia[14] and Ghana.[12] In contrast to findings from study of Ghana, the present study found no significant association with educational level, income, and immediate family size.

The result from the Sri Lankan study indicated that malnutrition together with sociocultural and economic factors, poor sanitation, and lack of awareness makes people more susceptible to TB. Similarly, open-air

Table 5: Odds ratios with 95% confidence interval estimated from logistic regression predicting the factors associated with underweight (body mass index <18.5)

Variables	Unadjusted OR	Adjusted OR (95% CI)	*P*
Age group (years)			
15-25 (reference)			
26-35	0.32	0.30 (0.09-1.00)	0.068
36-49	0.47	0.36 (0.11-1.21)	
Religion			
Hindu (reference)			
Muslim	0.41	0.55 (0.22-1.39)	0.277
Marital status			
Unmarried/widow/divorce	2.60	2.39 (0.81-7.05)	0.126
Area of residence			
Rural	2.30	1.35 (0.42-4.40)	0.633
House member			
≥5 members	1.02	0.90 (0.37-2.19)	0.720
Toilet facility			
Open defecation	5.66	3.77 (0.91-15.64)	0.065
Breathing difficulty	3.47	2.85 (1.19-6.85)	0.011
Comorbidity			
DM	0.14	0.12 (0.02-0.95)	0.044
Tobacco user	1.63	2.44 (0.95-6.28)	0.058
Other substance abuse	0.50	0.22 (0.05-1.07)	0.054
Food preference - Nonvegetarian	0.69	0.78 (0.24-2.49)	0.606
Frequency of meal in a day			
1-2 meals in a day	3.76	1.15 (0.29-4.54)	0.812
3-4 meals in a day (reference)			
Not received diet counseling	1.17	1.37 (0.59-3.17)	0.525

OR: Odds ratio, CI: Confidence interval, DM: Diabetes mellitus

defecation was statistically significant with nutritional status in bivariate analysis and showed that patients with no toilet facility had lower BMI as compared to patients with proper toilet facilities.[15]

Diabetes was found to be significantly associated with high BMI among TB patients reflecting a complex interaction between infection, noncommunicable diseases, and nutrition.[16] Smoking and alcohol are important risk factors for TB.[6,17] However, these did not turn out to be related with nutritional status of TB patients in our study.

In the present study, most of the study participants reported consuming two meals in a day, and this was mainly related to their lower appetite and adaptive mechanisms to food insecurity. Unlike other studies,[18,19] meal frequency showed increased risk of having low BMI, but findings were statistically insignificant. Patients who received dietary counseling had better BMI compared to one who did not received. Adjusted analysis showed increased risk of lower BMI among patients who did not receive diet counseling, although the findings were statistically inconclusive and similar results were reported when compared with the findings of other studies.[14]

This is one of the important studies from the high TB burden state reporting primary data on nutritional status of TB patients. However, there are certain limitations that should be kept in mind while interpreting the findings. Because of the location of the study (public hospital) and low-cost services, poor patients and severe cases might have overrepresented in the study. There may be recall bias in self-reported information such as duration of symptoms before diagnosis of TB that could not be verified. However, to reduce recall bias most of the information provided was verified through medical records. Further, small sample size limits generalizability of the findings.

The high prevalence of severe and life-threatening undernutrition among TB patients highlights the need for proper nutritional management of TB patients. Guidance documents on nutrition care and support for TB patients provide systematic information about nutrition management of TB patients;[11] however, implementation of nutrition guidelines yet to be initiated in the facilities. In the hospital where study was conducted, counseling was provided by doctors/nurses in the absence of trained diet/nutrition counselor. Nutrition messages were not uniform and insufficient to address nutritional issues of patients. Therefore, creating diet counseling centers within TB hospitals, and DOTS clinics are vital to promote healthy balanced diet to achieve the desired energy and protein intake for TB patients and clarifying misconceptions regarding diet and supplements. Further, linking benefits of existing food supplement programs and promotion of consumption of locally available food products can help achieving end-TB targets.

CONCLUSION

The present study found the high prevalence of severe undernutrition among TB patients receiving treatment at the public sector TB Hospital. Nutrition management of the TB patients was found inadequate and implementation of nutritional guidelines for TB patients yet to be initiated in the facilities. There is an urgent need to focus on provision of nutrition counseling and proper nutrition management of TB patients at TB hospitals.

Acknowledgment

The study team is grateful to Chief Medical Officer of Government Combined Hospital Thakurganj, Lucknow, Uttar Pradesh, for providing permission to conduct the study. The authors are thankful to staff of the general TB Hospital for extending their support during the study. The authors are grateful to patients and their families without them this study would not have been possible.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Original Article

Assessment of menstrual hygiene among adolescent girls of East Delhi: A community-based cross-sectional research from an urban resettlement colony

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Abstract

Introduction: Even though menstruation is a normal physiological process, menstrual hygiene is a most neglected issue with many myths and social stigmas being associated with it. Due to unhygienic menstrual practices, young girls are vulnerable to reproductive tract infections and pelvic inflammatory diseases and other complications. Therefore, the objective of this study was to assess the knowledge, attitude, and practices of menstrual hygiene among adolescent girls.

Material and Methods: This is a descriptive cross-sectional study conducted in an urban resettlement colony of Kalyanpuri, East Delhi. One hundred and five adolescent girls participated in the study. The mean age of the participants was 14.18 ± 2.13 years. Predesigned and pretested semi-structured questionnaire was used. Institutional Ethical clearance was obtained.

Results: In this study, out of 105 girls, only 35.2% girls had knowledge about menstruation before they experienced menarche. Only 56.2% girls were aware that menstruation is a normal physiological process. Overall knowledge level about menstrual hygiene was unsatisfactory. Only 31.4% of girls were using sanitary pads during menstruation, 59.25% of the respondents had good practices. About 12.4% girls had positive attitude toward menstrual hygiene.

Conclusion: Although practices on menstrual hygiene management among adolescents were fairly satisfactory, knowledge and attitude still need to improve. Findings indicate the need of behavior change communication campaigns along with frequent reinforcement of school health education programs.

Keywords: Adolescents, Delhi, menstrual hygiene

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Submitted: 09-Jul-2019 **Revised:** 17-Jul-2019 **Accepted:** 03-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION

Adolescents structure a sizeable extent of the populace and an imperative asset of any nation. The World Health Organization (WHO) defines "Adolescents" as individuals in the 10–19 years age group.[1] The principle physical changes amid this period incorporate the preadult's development spurt, gonadal development, development of sexual organs and attributes, and other changes in the body. Menarche is the most critical occasion in the life of a preadult young lady. It

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_53_19

How to cite this article: Acharya AS, Tiwari N, Rasania SK, Khandekar J, Bachani D. Assessment of menstrual hygiene among adolescent girls of East Delhi: A community-based cross-sectional research from an urban resettlement colony. Indian J Community Fam Med 2019;5:141-6.

is the first menstrual period mostly happening between the ages of 12–15 years and is a vital achievement of pubescence generally for women. Menarche marks the start of a huge number of physical, physiological, and mental changes in the lives of the immature young women. Despite the fact that, the menarche is nevertheless one milestone of the development process, it is frequently, socially characterized as the marker of young lady's development and availability for marriage and sexual movement.

Menstrual cycle is a typical natural process and a key indication of regenerative (reproductive) wellbeing, yet in numerous societies it is treated as something negative, dishonorable, or filthy. The continued silence around menstruation combined with restricted access to information at home and in schools results in millions of women and girls having almost no learning about what's going on to their bodies when they bleed and how to manage it.[2] Women's capability of managing their menstruation hygienically are influenced by many factors. The most common factors are restricted access to cheaper and hygienic materials and disposal choices, lack of personal bathroom, fresh water and soap for menstrual hygiene. Menstrual hygiene management is defined as "Women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials."[3] Menstrual cycle requires the accessibility of material assets to retain menstrual blood, encourage individual cleanliness and discard squander, preferably with satisfactory security.[4]

Knowledge about menstrual hygiene directly from childhood may raise safe practices and may help in reducing the suffering of the millions of women. Menstrual hygiene and management will directly contribute to (SDG)-3 on "Ensuring healthy lives and promoting well-being for all ages," SDG-4 on ensuring "Inclusive and equitable quality education and promote lifelong learning."[5]

With this foundation, the present study was attempted to assess the knowledge, attitude, and practices and source of information among the adolescent girls of a resettlement colony of East Delhi and also to identify the status of menstrual hygiene among them.

MATERIAL AND METHODS

The study was a descriptive cross-sectional study conducted in an urban resettlement colony, Kalyanpuri in East Delhi. This pilot study was planned under a project of ICMR-MOHFW, named "Health Accounting Scheme-Empowering people for health care through multisectoral coordination – An Operational Evaluation" which is being carried out in two blocks (intervention block 18 and 12 and control block 20). These blocks were selected by simple random sampling. These two intervention and control blocks comprised 1004 households with total population 5023. It includes 986 adolescents who were enrolled in the Health Accounts Scheme, 517 boys and 469 girls of age group 10–19. This study was done during the preintervention phase of the scheme. All participants were invited after taking proper consent from the head of households and assent from the adolescents. As it was a pilot study, a convenience sample of 109 adolescents was taken. They were invited at Urban Health Center of Kalyanpuri. The inclusion criteria were unmarried, nonpregnant, nonlactating adolescent girls of age 10–19 years who had attained menarche, and willing to participate in the study. Four adolescent girls were excluded as they had not attained menarche. Hence, a total of 105 girls who fulfilled the inclusion criteria formed the final study sample. They were given a questionnaire which was explained to them. After completing data collection, health education was given and sanitary napkins were distributed among participants. Institutional ethical clearance was taken for the Health Account Scheme study. Informed consent was also obtained from the head of the family and the adolescent girl before the study.

Data collection

A predesigned, pretested, semi-structured questionnaire was used. Care was taken to ensure privacy and confidentiality. The pretested questionnaire was administered under supervision of the investigators to prevent the participants from sharing responses. The semi-structured questionnaire included topics relating to knowledge regarding menstruation, source of information regarding menstruation and hygiene practiced during menstruation. Following data collection, queries from the participants relating to menstrual and reproductive health were addressed by the investigators.

Data were entered in Microsoft Excel and analyzed after data cleaning in SPSS version 16 (IBM Inc., Chicago, Illinois, USA). Continuous data were expressed in terms of mean and standard deviation (SD), and 95% confidence interval was used. The categorical data were expressed as percentage/proportions and difference in proportions was compared using chi-square test. $P < 0.05$ was considered to be statistically significant.

RESULTS

Total study participants were 105 with mean age 14.18 ± 2.13 years. Majority (86.6%) of them were Hindus, 5.7% Muslims, 3.8% Sikhs, and 3.8% Christians.

About one-fifth (20.9%) mothers of adolescent girls were illiterate, 27.6% just literate, 22.8% primary, 22.8% middle 14.2%, high school 9.5%, higher secondary 1.9%, and 2.8% girls were unaware about the details of mother's education. More than half 59% girls attained menarche in the age 12–14 years [Table 1], while 27.6% girls have attained in early age <12 years. In this study, age of menarche ranged from 10 to 16 years with the mean age of 12.2 (SD 1.26) years. Only one girl attained early menarche at the age of 10 years. The length of menstruation cycle was 28–32 days in 28.6%% girls [Table 1]. The duration of menstrual cycle ranged from 15 to 60 days. Three girls reported that their length of cycle was 15 days and 1.9% girls reported 60 days. This is not normal, and they were advised for further investigations. Blood flow for more than 5 days was reported by 14.3% girls.

Regarding knowledge about menstruation, only 35.2% girls heard about menstruation before menarche. More than half (54.3%) girls were fearful during menarche; around one-fifth girls (21.9%) felt stressed [Table 2]. Most common reasons for fear were fear of staining cloth (70.2%) fear of following restrictions (7.0%), fear of pain (7.0%), fear of smell (7.0%), fear of getting infection (5.3%), etc.

Out of the total, only 4.8% girls had correct knowledge that menstrual blood comes from the uterus. Only 56.2% of girls had correct knowledge that menstruation is a physiological process, while only 33.3% knew about the cause of menstruation [Table 3].

Thirty-three (31.4%) girls used only sanitary pad as a type of absorbent [Table 4]. 49.5% girls used to change <2 absorbent/day. 73.6% of girls used to dispose their used absorbent in a dustbin) and 72.4% of girls did not miss school because of menstruation. Only half of the (51%) girls took regular bath and kept their genital area clean.

Of the various restrictions imposed during menstruation [Table 5], important ones were like not attending religious functions which was seen among majority, 82.9% of the study participants. Others restrictions were not allowed to enter kitchen or do cooking in 37.1% study participants. Mother was the source of information in more than half (54.3%) of the girls followed by school (50.5%), sister (23.8%), friends (12.5%), and TV/internet only in 8.6%, while there was no role of ASHA and Anganwadi worker in adolescent health education [Table 6].

Mother's education and knowledge regarding menstruation before menarche was not significant ($\chi^2 = 2.41$, $P > 0.05$).

Table 1: Menstrual pattern in adolescent girls of Kalyvanpuri, East Delhi (*n*=105)

Attributes	Frequency, *n* (%)
Age (years) at which menarche attained	
<12	29 (27.6)
1–14	62 (59.1)
>14	14 (13.3)
Length of cycle in days	
<28	61 (58.1)
28–32	30 (28.6)
>32	14 (13.3)
Duration of blood flow in days	
<2	2 (1.9)
2–5	88 (83.8)
>5	15 (14.3)

Table 2: Distribution of respondents according to their attitudes during menstruation (*n*=105)

Attitude during menstruation*	Frequency, *n* (%)
Fear	57 (54.3)
Discomfort	40 (38.1)
Stressed	23 (21.9)
Normal	13 (12.4)

*Multiple response table

Table 3: Distribution of respondents according to their knowledge about menstruation (*n*=105)

Attributes	Frequency, *n* (%)
Heard about menstruation before menarche	
Yes	37 (35.2)
No	68 (64.8)
Knowledge about menstruation	
Normal physiological process	59 (56.2)
Don't know	43 (40.9)
Others	3 (2.9)
Knowledge of organ from where bleeding occurs	
Uterus	5 (4.8)
Urinary bladder	27 (25.7)
Abdomen	14 (13.3)
Don't know	59 (56.2)
Knowledge of cause of menstruation	
Correct (hormones)	35 (33.3)
Incorrect	7 (6.7)
Don't know	63 (60.0)

DISCUSSION

Girls start to menstruate during puberty, typically between ages of 10–19 years.[6] In the present study, maximum number (59%) of girls had attained menarche between 12 and 14 years. Pariya *et al*. conducted a cross-sectional study in West Bengal found similar results.[7] Another study conducted in Aligarh found 69% of girls had attained menarche in similar age group.[8]

According to the WHO standard, a menstrual cycle is defined as the interval from the 1st day of one bleeding episode up to and including the day before the next

Table 4: Distribution of respondents according to their practices during menstruation (*n*=105)

Attribute	Frequency, *n* (%)
Type of absorbent	
Sanitary pad	33 (31.4)
Cotton cloth	29 (27.6)
Both	43 (41.0)
Number of pads/absorbent changes every day	
<2	52 (49.5)
2–4	51 (48.6)
>4	2 (1.9)
Disposal of used absorbent	
Dustbin	80 (76.0)
Open drain	11 (10.5)
Indiscriminate disposal	11 (10.5)
Flush in toilet	2 (1.9)
Burnt	1 (1.0)
School/workplace attendance during menstruation	
Attended	76 (72.4)
Missed	29 (27.6)

Table 5: Restrictions practiced during menstruation by study subjects (*n*=105)

Restriction followed during menstruation*	Frequency, *n* (%)
Not worshiping/attending religious place/ ceremony	87 (82.9)
Not cooking or allowed to enter kitchen	39 (37.1)
Not attending school	29 (27.6)
No hair washing	27 (25.7)
Not sleeping on usual bed	10 (9.5)

*Multiple responses

Table 6: Source of information about menstruation in the study subjects (*n*=105)

Source of information*	Frequency, *n* (%)
Mother	57 (54.3)
School	53 (50.5)
Sister	25 (23.8)
Friends	20 (19.0)
TV/internet	9 (8.6)

*Multiple responses

bleeding episode. The menstrual cycle is usually around 28 days but can vary from 21 to 35 days.[9] In our study, 44.8% of girls had menstrual cycle in between 28 and 32 days. 54.3% had 2–5 days of menstrual flow, which was slightly lower than the findings of Mathiyalagen *et al.* in his study.[10]

Menstruation is entrenched with stigma and taboos, menstruation is rarely discussed in families or schools, and menarche often arrives suddenly to girls with little or no knowledge of what is happening. In this study, only 35.2% girls were aware of menstruation before menarche. Similarly, about 24.7% of adolescent were aware before menarche in other studies.[11] Menstruation is a natural process linked to the reproductive cycle of women and girls. It is not a sickness, but if not properly managed, it can result in health problems which can be compounded by social, cultural, and religious practices.[12] Only 56.2% of girls were aware that menstruation is a normal physiological process. Each cycle involves the release of an egg (ovulation) which moves into the uterus through the fallopian tubes. Tissue and blood start to line the walls of the uterus for fertilization. If the egg is not fertilized, the lining of the uterus is shed through the vagina along with blood. The bleeding generally lasts between 2 and 7 days, with some lighter flow and some heavier flow days. The cycle is often irregular for the 1st year or two after menstruation begins.[11] The menstrual cycle is regulated by a complex hormonal system with positive and negative feedback mechanisms and changes in sensitivity of peripheral tissues.[13] In this study, 33.3% of girls were aware that menstrual cycle of female reproduction is regulated by hormones.

In this study, only 12.4% of girls had normal attitude toward menstruation. 54.3% of girls were fearful, 21.9% were stressed, and 38.1% had discomfort and even 27.6% of girls missed their school attendance during menstruation. Menstruation is normal, but attitude toward menstruation is not, this is because menstruation remains a taboo in many societies and various negative cultural attitudes and beliefs are still associated with it.[14] In almost all cultures, menstruation is supposed to be kept secret and completely hidden from others. Young girls are taught from a younger age, and they have to manage it privately and discreetly. The lack of menstrual hygiene education and facilities greatly impacts the lives of women and girls.[15] Menstruating women and girls are still often considered "dirty" or "impure" which may lead to forced seclusion, reduced mobility, and dietary restrictions. Furthermore, menstruating girls and women can be excluded from participation in daily social activities. Some cultural beliefs around menstruation reinforce gender inequities and have negative impact on the dignity, health, and education of women and girls.

Many women experience restrictions on cooking work activities, sexual intercourse, bathing, worshipping, and eating certain foods.[16] These restrictions are due to the overall perception of the people regarding menstruation as they consider it dirty and polluting.[17] In this study, similar restrictions were found to be practiced.

A report by Plan India indicates that only 12% of Indian women out of 355 million menstruating women use sanitary pads, >88% of women resort to stunning options such as unsanitized cloths or rugs, ashes, and husk sand (Sinha K).[18] The biggest barrier to using a sanitary napkin is affordability. Around 70% of women in India cannot

afford them.[17] In our study, 33.14% of girls were using only disposable sanitary pads as absorbent material during menstruation, and 41% used both sanitary pads and cloth where as 27.6% of girls used only cloth. In the current study, the use of sanitary napkins was affected by the free availability of sanitary napkins in government school of Delhi.

Another issue that needs to be addressed is the disposal of materials used to soak menstrual blood. In our study, 76% of girls usually discarded the used material in community dustbins. Such a practice is detrimental to the environment and better techniques of disposing of the products used are needed. Incinerators can be installed in school and in community.

There are few limitations in our study. Our results were based on self-reporting by the study respondents. Hence, there could be underreporting by them. Another limitation could be generalizability of the results due to convenience sampling used in this study.

CONCLUSION

To conclude, the present study has underscored the necessity of adolescent girls to have adequate and precise knowledge about menstruation before menarche. They should also be taught about its relationship with their reproductive health. The overall knowledge about menstruation and menstrual hygiene of the adolescent girls of resettlement colony was found to unsatisfactory although the practices were noted to be fairly satisfactory. Most restrictions were laid down by the force of the family showing a poor attitude in the management of menstruation.

The girls should be made aware of the facts of menstruation and proper hygienic practices through mass media, school curriculum and school teacher, health personnel and above all, and well-informed parents. There should be monthly telecounseling sessions at all schools and Anganwadi centers, regular counseling session for mothers of adolescent girls should be arranged at school and Anganwadi centers because mother and school are the main source of information for adolescent girls. Health camps in schools need to be conducted to treat the girls suffering from reproductive tract morbidities.

Acknowledgment

This study was financially supported by the Indian Council of Medical Research, task force grant number no. 5/7/1/208-RHN, IRIS number 2008-0826, A to C. We are grateful for valuable guidance from late Prof., Dr. Deoki Nandan, Dr. Saumya Swaminathan, Dr. Balram Bhargava Dr. V. M. Katoch, Dr. R. S. Sharma, and Dr. Neeta Kumar.

Financial support and sponsorship

This study was financially supported by the Indian Council of Medical Research, task force grant number no. 5/7/1/208-RHN, IRIS number 2008-0826, A to C.

Conflicts of interest

There are no conflicts of interest.

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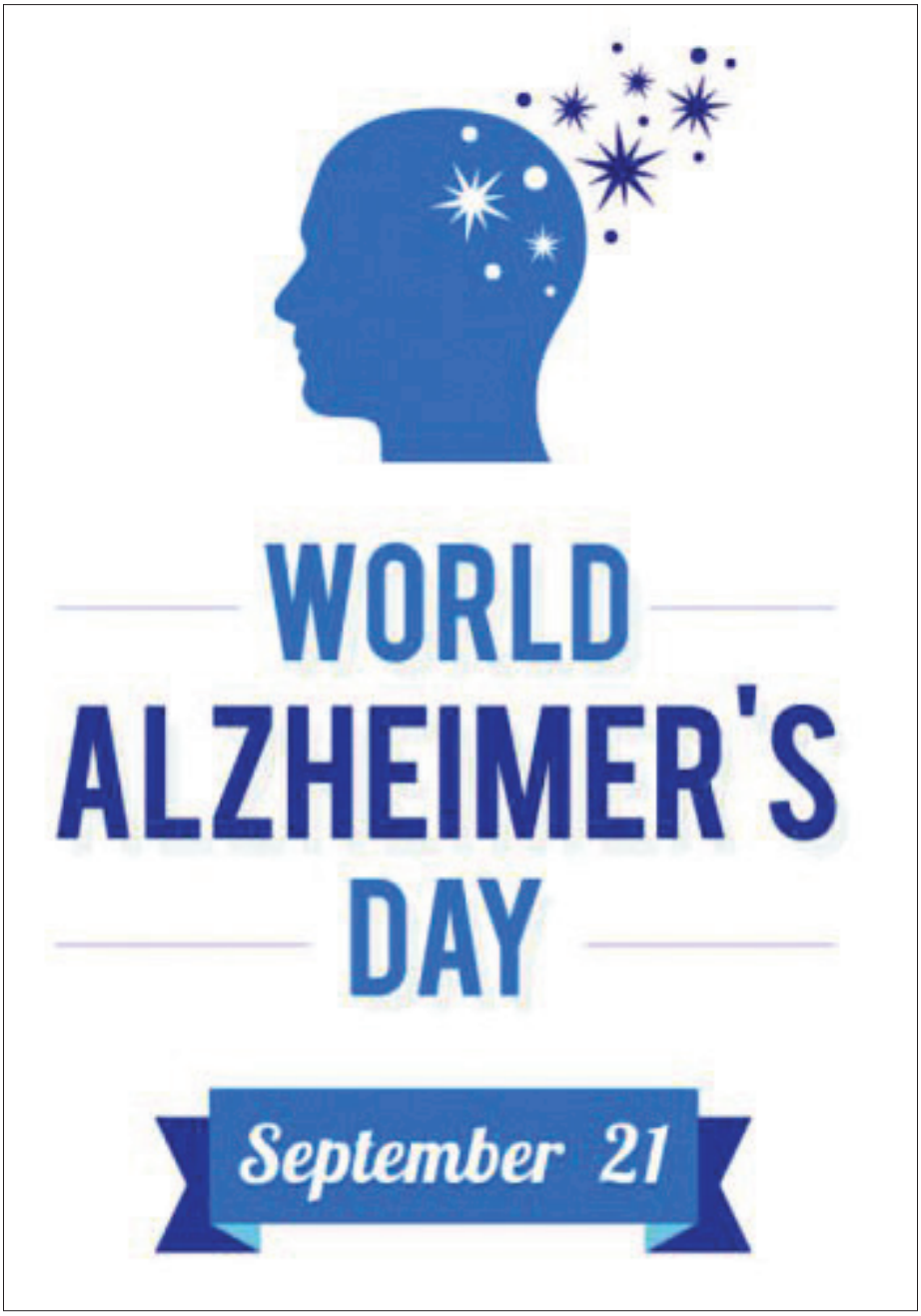

Original Article

Depression and associated factors in type 2 diabetic patients: A community-based cross-sectional study from East Delhi

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Abstract

Introduction: Diabetes is a chronic disease which has no cure and requires life-long management, frequent hospital visits, as well as monitoring of blood sugar levels, which can cause distress to the patient. Various risk factors have been identified that may influence the course of diabetes and its complication, of which depression has emerged as a significant factor. Diabetes mellitus doubles the likelihood of depression as compared to normal individuals. We conducted this study to find the prevalence of depression and its associated factors in diabetes mellitus patients in East Delhi.

Material and Methods: A community-based cross-sectional study was conducted among 250 diabetics aged above 30 years in East Delhi in 2017. They were screened for depression using Physical Health Questionnaire 9. Sociodemographic details, diabetic profile, and behavioral factors were assessed. Data were collected and entered in SPSS software version 23. Multivariate analysis was done for associated factors.

Results: Out of total 250 study patients who fulfilled the inclusion and exclusion criteria, 79 (31.6%) were males and 171 (68.4%) were females. Age, gender, marital status, type of family, diabetic profile, comorbidity, complications, blood pressure status, body mass index, physical activity, stress, and sleeping hours were the factors assessed for the association with depression.

Conclusion: Diabetes is a chronic illness requiring a variety of self-management behaviors. To improve patients' diabetes self-management behaviors, health-care providers should cultivate patient-centered relationships. Screening of all diabetics for depression is of paramount importance.

Keywords: Comorbidities, complications, depression, diabetes, Physical Health Questionnaire 9

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Submitted: 18-Jul-2019 **Revised:** 05-Sep-2019 **Accepted:** 16-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION

Diabetes mellitus is a major public health problem all over the world. By 2030, India is expected to have around 79.4 million people with diabetes, most of them with Type 2 diabetes mellitus (T2DM).[1] Diabetes is a chronic disease which has no cure and requires life-long management, frequent hospital visits, as well as monitoring of blood sugar levels, which can cause distress to the patient. Various risk factors have been identified that may influence the course of diabetes and its complication, of which depression has emerged as a significant factor. Diabetes mellitus doubles the likelihood of depression as compared to normal individuals.[2]

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_56_19

How to cite this article: Singh K, Acharya AS, Rasania SK. Depression and associated factors in Type 2 diabetic patients: A community-based cross-sectional study from East Delhi. Indian J Community Fam Med 2019;5:147-53.

Patients with T2DM and depressive symptoms are reported to have worse glycemic control, amplification of symptoms, reduced adherence to dietary and drug recommendations, decreased physical activity, and increased microvascular and macrovascular complications.[3] Depressed diabetics have poor self-management and moreover, depression in diabetics increases the risk of cardiovascular disease leading to higher mortality.[4] Depression and other associated comorbidities can significantly worsen the health and economic burden of diabetes patients.

Untreated depression may further exacerbate the progression of diabetes. The importance of screening for and addressing depression in people with diabetes is recognized in the guidelines of several countries and also by the International Diabetes Federation. It is also important to identify the risk factors associated with diabetes in order to improve their quality of life.

MATERIAL AND METHODS

This is a community-based, cross-sectional study which was carried out from December 2016 to March 2018. Data were collected during the calendar year of 2017.

The study participants were recruited from the diabetic clinic of Lal Bahadur Shastri (LBS) Hospital, Kalyanpuri, which is a secondary-level care center with bed strength of 100 located in East Delhi. The diabetic clinic is scheduled twice a week, i.e., Monday and Wednesday afternoon from 2 to 4 p.m. A team of health professionals supervise the working of clinic, which includes medicine specialists, residents, nursing staff, and other staff. Besides outpatient department facilities, the hospital provides free-of-cost diabetes medicines and laboratory investigations including glycated hemoglobin (HbA1c). Diabetes was diagnosed using the guidelines of American Diabetes Association (ADA) with either blood sugar levels after fasting >126 mg/dl and postprandial >200 mg/d or HbA1c cutoff of >6.5.

All the diabetics aged >30 years residing in Kalyanpuri and attending the diabetic clinic of LBS in the calendar year of 2017 formed the study population. The inclusion criteria were permanent residents of Kalyanpuri (residing for >1 year), diagnosed cases of Type II diabetes attending the diabetic clinic (>1 year), and patients of both sexes >30 years. Patients with known psychiatric illness, those with serious illnesses, those on antidepressants, or pregnant patients were excluded from the study.

A sample size of 250 patients was calculated for this study taking prevalence of depression as 41% based on the study on Thour *et al.*[5] (2015), Chandigarh, with 15% relative error.

The diabetic clinic was visited once a week. Four hundred and seventeen study patients who were registered at LBS were screened for eligibility in the study. Two hundred and ninety-seven study patients who fulfilled the inclusion and exclusion criteria were enrolled from the diabetic clinic. Once they were enrolled from the diabetic clinic at LBS, they were interviewed at their residence at Kalyanpuri, which is a purposive sampling. Data were recorded in the predesigned, pretested interview schedule.

Out of the 297 study participants, 27 (9.09%) could not be traced at given address. Ten (3.36%) were not available on three consecutive visits and hence were excluded. The remaining 120 cases did not fulfill the inclusion criteria as 110 were nonresidents of Kalyanpuri, 6 were on antidepressants, and 4 were pregnant. Finally, 250 study participants were enrolled in the study. An informed written consent was recorded from each study participant and for illiterate participants, thumb impression was taken in front of a witness. All the study participants who were found suffering from depression were referred to the Department of Psychiatry in a secondary-level hospital/Lady Hardinge Medical College for further workup.

Study tools

The following instruments were used to assess the study participants:

1. A pretested semi-structured interview schedule consisting of:
    a. Sociodemographic particulars
    b. A detailed history of diabetes, its duration, treatment, complications, and associated comorbidities was recorded
    c. Behavioral factors included hours of sleep, addiction habits regarding smoking, alcohol consumption, and smokeless tobacco use.

2. Physical activity using the Global Physical Activity Questionnaire by the WHO

The tool was developed by the WHO for physical activity surveillance in countries. It collects information on physical activity participation in three settings (or domains) as well as sedentary behavior, comprising of 16 questions. The domains are activity at work, travel to and from places, and recreational activities, for which total score is calculated as total physical activity metabolic equivalent of task minutes/week. Physical activity cutoff value as per WHO recommendations, should be more than 600.

3. Assessment of stress using the General Health Questionnaire 12

The General Health Questionnaire is widely used to measure mental health status especially in detection of emotional stress. Each item is accompanied by four responses, typically being "not at all," "no more than usual," "rather more than usual," and "much more than usual;" the scores range from 0 to 3, respectively, with a score of 3 as cutoff for detecting stress.

4. A questionnaire for Depression scale (Physical Health Questionnaire 9)

The Physical Health Questionnaire 9 (PHQ 9) is a screening questionnaire containing nine questions which assess major depressive disorders according to the Diagnostic Statistical Manual IV Edition (DSM IV) criteria. The questions are concerning fatigue, concentration, depressive complaints, thoughts of death, etc., on a 5-point Likert scale, as follows: not at all, various days, more than half the days, and almost every day; 0, 1, 2, and 3 points were scored, respectively, for these categories, and a sum score of the nine questions was calculated. Score was classified into different grades of severity using standard cutoff values: 5–9 was classified as mild depression, 10–14 as moderate depression, 15–19 as moderately severe depression, and 20–27 as severe depression. The time frame of questions was last fortnight [Annexure 1]. It is validated and available in Hindi and used in other studies,[5-7] Institutional Ethical clearance was obtained for the study (Approval no. LHMC/ECHR/2016/54R1). Written informed consent was obtained from each patient.

Statistical analysis

Data analysis was done by coding the data and entering it in Statistical Package for the Social Sciences version 23. Mean and standard deviation were used for quantitative data. Chi-square test, ANOVA, and *t*-test were applied wherever necessary. Bivariate analysis and multivariate analysis were done. Odds ratio (OR) with 95% confidence interval (CI) was calculated for categorical comparisons. All tests were two tailed, with $P < 0.05$ considered statistically significant.

RESULTS

Out of the total 250 study participants who fulfilled the inclusion and exclusion criteria, 79 (31.6%) were males and 171 (68.4%) were females. The overall mean age of the study participants was 55.17 ± 11 years, with a range from 31 to 82 years [Table 1].

Half of the study participants with nearly equal proportion of males (51.8%) and females (49.1%) were diagnosed with diabetes mellitus in the last 5 years.

Table 1: Distribution of the study participants according to sociodemographic characteristics (*n*=250)

Sociodemographic characteristics	Total, *n* (%)
Age	
31–40	34 (13.6)
41–50	63 (25.2)
51–60	64 (25.6)
>60	89 (35.6)
Gender	
Male	79 (31.6)
Female	171 (68.4)
Marital status	
Married	182 (72.8)
Widow/widower	68 (27.2)
Type of family	
Nuclear	112 (44.8)
Joint	138 (55.2)

About one-fourth (25.3%) of the males and almost one-third (31.6%) of the females had a family history of diabetes. Approximately two-fifths (43.6%) of the study participants had uncontrolled diabetes (as per the standard guidelines of ADA) and approximately one-third (34.4%) of the study participants were not aware of their current diabetic status (blood sugar reports were not available at the time of interview). Majority of the study participants (80%) had low adherence to diabetic medication (as per Morisky Medication Adherence Score 8) [Annexure 2]. Males were more adherent to the medication as compared to females. The difference was found to be statistically highly significant ($P < 0.01$). More than one-third (35.2%) of the study participants had one or more complication of diabetes. Approximately three-fourth (75%) of the study participants were having tingling, burning sensation, or numbness, whereas nearly two-fifth (47%) were having blurring of vision as a complication of diabetes. Other complications such as shortness of breath, chest pain, syncope, palpitation, and burning micturition were also reported.

Prevalence of depression

The prevalence of depression was found to be 17.6% (95% CI, 13.6–22) as per the PHQ 9. Mild depression was seen in 22 (8.8%) study participants, moderate depression in 12 (4.8%) study participants, and moderately severe and severe depression in 6 (2.4%) and 4 (1.6%) participants, respectively. Majority (82.4%) of the study participants did not have depression.

Factors associated with depression

Factors which were studied for the association with depression were age, gender, marital status, type of family, diabetic profile, comorbidity, complications, blood pressure status, body mass index (BMI), physical activity, stress, and sleeping hours.

On bivariate analysis, age, type of family, comorbidities, complications, physical activity, stress, and sleeping hours were significantly associated with depression. Age more than 50 years was associated with depression with an OR of 3.42 (95% CI, 1.51–7.72) as compared to 31–50 years' age group. Participants living in a joint family showed twice more risk of having depression (OR: 2.20, 95% CI, 1.09–4.45) as compared to nuclear family. Participants who were under stress were at more risk of depression (OR: 46.5, 95% CI, 18.45–117.44) as compared to those who were not stressed. Odds of having depression was less in those who were physically active as compared to those who were physically inactive (OR: 0.033, 95% CI, 0.16–0.64). Participants having sleep >7 h had decreased odds of having depression compared to those who were sleeping <7 hours (OR: 0.14, 95% CI, 0.07–0.28,). Diabetics with comorbidities were associated with depression with an OR of 3.30 (95% CI, 1.61–6.77) as compared to diabetics with no comorbidities. Diabetics with complications were associated with depression with an OR of 6.02 (95% CI, 2.08–17.38) [Table 2].

On bivariate analysis, age, type of family, physical activity, stress, comorbidities, complications, and sleeping hours were found to be associated with depression. However, in a multivariate analysis, only family type, stress, and sleeping hours were found to be associated with depression [Table 3]. Depression was seen three times more in joint family as compared to nuclear family (OR: 3.64, 95% CI, 1.22–10.8). Presence of stress leads to fifty times more chances of depression compared to the study participants who were not having stress (OR: 50.8, 95% CI, 16.6–152.4). Sleeping hours <7 h have more odds of having depression compared to the study participants sleeping >7 h (OR: 7.04, 95% CI, 3.4–14.3).

DISCUSSION

This was a community-based, cross-sectional study to determine the factors of depression in patients of T2DM. Out of the total 250 study participants, 79 (31.6%) were males and 171 (68.4%) were females. As the diabetic clinic was functional between 2 and 4 p.m. on working days, there was a preponderance of females (68.4%) as compared to males (31.6%); as males are employed during that time, they could not attend the diabetic clinic.

Overall, the mean age was 55.17± 11 years with a range from 31 to 82 years. Almost half (50.8%) of them were in the age group of 41–60 years. The age distribution of the study participants in the present study is in conformity to studies conducted by Bahety *et al.*[6] (mean age: 56.09 ± 5.92 years) and Chew *et al.*[8] (mean age: 56.94 years). In other studies[5,7,9-14] also, similar age distribution was seen.

The clinical profile of the study participants was assessed according to the duration of diabetes since diagnosis, family history of diabetes, their diabetic status as per standards of ADA, adherence status as per the Morisky Medication Adherence Scale 8, complications of the diabetes, and comorbidities.

Half of the study participants were diagnosed with diabetes mellitus within the last 5 years. Similar finding was seen in studies conducted by Chung *et al.*[15] (57.1%) and Zhang *et al.*[16] (46.1%). Approximately one-third (29.6%) of the study participants had a family history of diabetes mellitus, but higher percentage was seen in other studies.[11,15,17] This difference may be due to more than half of the study participants being illiterate and may not be aware of the family history.

Oral hypoglycemic drugs were the most common medication used by majority (89%) of the study participants, which is similar to a study done by Chew *et al.*[8] (91.1%). About one-third (35.2%) of the study participants had one or more complications of diabetes, which is in concordance with other studies.[5,18] The present study showed that nearly half of the study participants (49.6%) had at least one comorbidity which was also reported by Vankar *et al.*[18] (54%) and Roy *et al.*[19] (46%).

In our study, age, family type, stress, physical activity, comorbidity, complications, and sleeping hours came out to be significantly associated with depression on univariate or bivariate analysis.

There was a highly statistically significant association between depression and presence of comorbidities in the study participants, which was similar to studies done by other authors.[19-22]

In our study, there was a highly statistically significant association between depression and presence of complications in the study participants, which was similar to studies done by various authors,[6,16,18,23] although on multivariate analysis of these factors, family type, stress, and sleeping hours were found to be significant.

Patients staying within a joint family showed more signs of depression than who stayed in a nuclear family, which was also seen in a study done by Niraula *et al.*[23]

Table 2: Bivariate logistic regression analysis of factors associated with depression

Sociodemographic characteristics	Depression present (*n*=44), *n* (%)	Depression absent (*n*=206), *n* (%)	OR (CI)	*P*
Age (years)				
31–50 (*n*=97)	8 (18.2)	89 (43.2)	3.42 (1.51–7.72)	0.003
>50 (*n*=153)	36 (81.8)	117 (56.8)		
Gender				
Males (*n*=79)	11 (25.0)	68 (33.0)	1.47 (0.70–3.10)	0.30
Females (*n*=171)	33 (75.0)	138 (67.0)		
Marital status				
Married (*n*=182)	29 (65.9)	153 (74.3)	1.10 (0.92–1.31)	0.26
Widow/widower (*n*=68)	15 (34.1)	53 (25.7)		
Type of family				
Nuclear (*n*=112)	13 (29.5)	99 (48.1)	2.20 (1.09–4.45)	0.02
Joint (*n*=138)	31 (70.5)	107 (51.9)		
Stress				
Not stressed (*n*=192)	7 (15.9)	185 (89.8)	46.5 (18.45–117.47)	0.00
Stressed (*n*=58)	37 (84.1)	21 (10.2)		
Physical activity				
Adequate	17 (38.6)	135 (65.5)	0.33 (0.16–0.64)	0.001
Inadequate	27 (61.4)	71 (34.5)		
Sleep hours				
>7	46 (58.2)	75 (43.9)	7.02 (3.4–14.3)	0.00
<7	33 (41.7)	96 (56.1)		
Family history of DM				
Present (*n*=74)	15 (34.1)	59 (28.6)	1.28 (0.64–2.57)	0.47
Absent (*n*=176)	29 (65.9)	147 (71.4)		
Diabetes duration since diagnosis (years)				
<5 (*n*=125)	17 (38.6)	108 (52.4)	1.75 (0.90–3.40)	0.09
>5 (*n*=125)	27 (61.4)	98 (47.6)		
On current treatment				
None (*n*=13)	2 (4.5)	11 (5.3)	1.18 (0.25–5.54)	0.83
Any drug (*n*=237)	42 (95.5)	195 (94.7)		
Comorbidity				
Present	32 (72.7)	92 (44.7)	3.30 (1.61–6.77)	0.001
Absent	12 (27.3)	114 (55.3)		
Complications				
Present	19 (43.2)	41 (19.9)	6.02 (2.08–17.38)	0.001
Absent	25 (56.8)	165 (80.1)		
Blood pressure status				
Normal	10 (22.7)	55 (26.7)	1.85 (0.95–3.58)	0.06
Hypertensive	34 (77.2)	151 (73.6)		
BMI				
Normal	12 (27.3)	45 (21.9)	1.30 (0.62–2.73)	0.48
Overweight/obese	32 (72.7)	160 (78.04)		

BMI: Body mass index, DM: Diabetes mellitus, CI: Confidence interval

Table 3: Multivariate logistic regression analysis of factors associated with depression (Physical Health Questionnaire-9 score)

Variables	OR (95% CI)
Age	2.32 (0.69–7.9)
Family type	3.64 (1.22–10.8)
Comorbidity	1.73 (0.57–5.29)
Complications	0.83 (0.46–1.50)
Stress	50.8 (16.6–152.4)
Physical activity	0.79 (0.29–2.15)
Sleep	0.23 (0.08–0.64)

OR: Odds ratio, CI: Confidence interval

Presence of stress increases the chances of depression up to fifty times. However, in a study done by Wang *et al.*,[17] it was seen that patients who had stress had an average of 4.49 times more depression than those without stress. Hence, all efforts should be made to reduce stress levels in diabetic patients. They can indulge in more of recreational activities, meditation, or hobbies.

Participants sleeping <7 h were found to be at risk of depression in the present study. The study conducted by Wang *et al.*[17] showed that participants who slept <7 h had 2.52 times more depression compared to nondepressive patients. Yu *et al.*[24] showed that with longer sleep duration, participants were less likely to have depression (OR: 0.45, $P = 0.02$). Thereby, it should be emphasized through counseling/health education to have an adequate sleep of 7 h or more in patients with T2DM.

Diabetes is a chronic illness requiring a variety of self-management behaviors and a patient-centered model of care for providing a more skillful approach to improving diabetes self-care behaviors. Depression in diabetics was mainly associated with patient-initiated behaviors that are difficult to maintain (e.g., exercise, diet, and medication adherence) but not with preventive services for diabetes. Depression was found to be associated with various clinical and behavioral factors and physical activity, so the community should be educated on healthy behavioral practices. Family support should be reinforced with counseling sessions specifically targeting the depressed diabetics. Capacity building of health-care providers at primary care level for identification of depression in diabetics needs to be undertaken.

CONCLUSION

According to PHQ 9 score, depression was found to be present in 44 (17.6%) study participants. Mild depression was seen in 22 (8.8%) study participants. Majority (82.4%) of the study participants did not have depression. There was a statistically significant association between depression with age, family type, comorbidity, complications, sleep hours, physical activity, and stress. There was no statistically significant association of depression with marital status, occupation, socioeconomic status, family history of diabetes, duration of diabetes, adherence status, and BMI.

Nearly every fifth diabetic is associated with depression. Hence, screening of all the diabetics for depression is of paramount importance. Further studies testing the effectiveness and cost-effectiveness of enhanced models of care of diabetic patients with depression are needed. Use of depression scoring can prove to be a cost-effective tool for screening of depression in diabetes, which would be of immense public health significance.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Annexure 1: Summary of Physical Health Questionnaire -9 components

Components
Interest or pleasure in activity
Feeling down, depressed, or hopeless
Trouble falling or staying asleep or sleeping too much
Feeling tired or having little energy
Poor appetite or overeating
Feeling bad about yourself or low self-esteem
Trouble concentrating on reading, recreation, or work
Talking to yourself or restlessness
Suicidal ideation or self-harm

Annexure 2: Morisky Medication Adherence Scale -8

Components
1. Do you sometimes forget to take your pills?
2. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine?
3. Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?
4. When you travel or leave home, do you sometimes forget to bring along your medicine?
5. Did you take all your medicines yesterday?
6. When you feel like your symptoms are under control, do you sometimes stop taking your medicine?
7. Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?
8. How often do you have difficulty remembering to take all your medicine? ___A. Never/rarely ___B. Once in a while ___C. Sometimes ___D. Usually ___E. All the time

Case Report

May–Thurner Syndrome

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Abstract

May–Thurner syndrome (MTS) is an anatomically variable clinical condition in which the left common iliac vein is compressed between the right common iliac artery and the underlying spine. This anatomic variant results in an increased incidence of left iliac or iliofemoral vein thrombosis. We would like to substantiate that MTS is often underdiagnosed, and it should always be suspected in left iliofemoral vein thrombosis in young individuals.

Keywords: Cockett syndrome, iliac vein compression syndrome, left iliac vein thrombosis, left iliofemoral vein thrombosis, May–Thurner syndrome

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Submitted: 26-May-2019 **Revised:** 09-Jul-2019 **Accepted:** 16-Oct-2019 **Published:** 19-Dec-2019

INTRODUCTION

May–Thurner Syndrome (MTS), also known as iliac vein compression syndrome/Cockett syndrome is an anatomically variable clinical condition in which the left common iliac vein is compressed between the right common iliac artery, and the underlying spine leads to left iliac or iliofemoral vein thrombosis.[1] It was first described by May and Thurner in 1957 as "a venous spur."[2]

CASE REPORT

A 46-year-old Caucasian female with a past medical history of hypothyroidism presented with pain and swelling on the left lower limb of 5-day duration. It was associated with redness and warmth. She denied any history of trauma to the legs, similar episodes in the past, long travel, surgical procedures, and immobilization. There were no fever, no chest pain, or breathlessness. She had no significant past medical history. There was no family history of deep-vein thrombosis (DVT). She was married with two children and denied the use of oral contraceptive pills. She had no history of recurrent miscarriages.

On physical examination, she was not dyspneic at rest. Vital signs showed a heart rate of 84 beats/min, blood pressure of 130/70 mmHg, and a respiratory rate of 16 breaths/min. The oxygen saturation was 100% on room air. The cardiovascular and respiratory examinations were unremarkable.

On examination of the lower limbs, the left lower limb was warm, swollen up to the thigh measuring 4 cm more than the right, shiny, and tender to touch. There was no evidence of stasis dermatitis, venous ulcers, or varicosities. The peripheral pulses were well felt. The left hip and knee joint movements were painful, tender, and restricted.

Investigations showed significantly elevated D-dimer level at 9.67 mg/L. Full blood count, renal and liver functions, and chest radiograph were normal. Electrocardiogram showed sinus rhythm.

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_43_19

How to cite this article: Neethu S, Sahla F, Alexander J, Pratap T, Jalal MJ. May–Thurner syndrome. Indian J Community Fam Med 2019;5:154-6.

She was given 1 dose of low molecular-weight heparin, enoxaparin, which was continued at a dose of 1 mg/kg body weight 2 times a day.

Computed tomography (CT) scan of the abdomen and pelvis showed diffuse venous thrombosis involving the left iliac vein down to the superficial femoral vein [Figures 1 and 2]. The thrombus terminated at the point where the left common iliac vein crosses posterior to the right common iliac artery. In the absence of any suspicious pelvic mass, these features were suggestive of MTS.

Protein C, Protein S, lupus anticoagulant, anti-thrombin III, and autoimmune markers were unremarkable. Her symptoms of the swelling had improved on the day following admission. She was offered catheter-based thrombolysis with a possible angioplasty and intravascular stenting.

However, she opted for medical management first and intervention at a later date if symptoms recurred. The risk of postthrombotic syndrome and recurrent DVT with medical management alone was reinforced to her, but she declined intervention. She was then shifted to a Factor Xa inhibitor (rivaroxaban) for the treatment of the DVT. She was discharged on the 3rd hospital day on rivaroxaban to complete 6 months of treatment. On follow-up, the patient remained well and again declined any intervention.

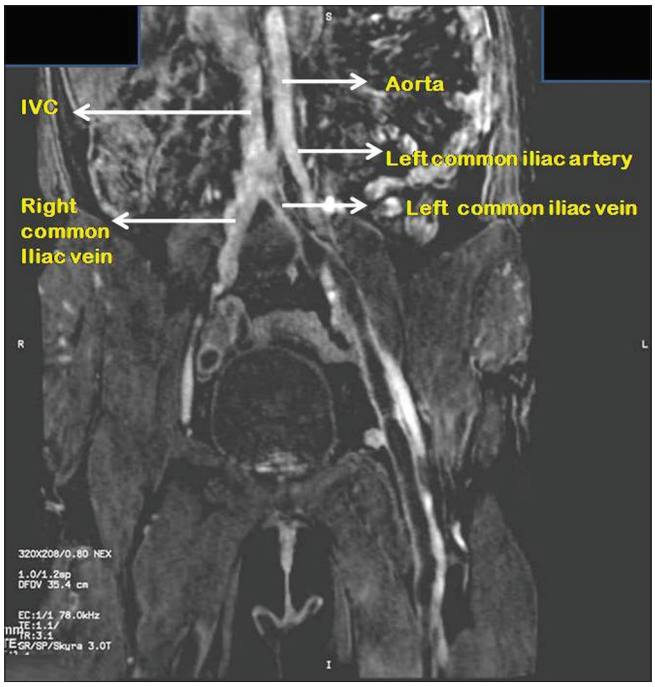

Figure 1: Computed tomography scan of the abdomen and pelvis showed diffuse venous thrombosis involving the left iliac vein down to the superficial femoral vein (coronal view)

Subsequent hypercoagulable workup excluded the diagnosis of Protein C, Protein S, antithrombin III deficiency, Factor V Leiden mutation, prothrombin gene mutation, antiphospholipid antibody syndrome, and hyperhomocysteinemia.

DISCUSSION

MTS should be suspected in patients, in their second to the fourth decade of life, especially females (five times more prevalent) presenting with unprovoked deep venous thrombosis of the left leg.[1,3] Most of the patients give a history of surgery, pregnancy, oral contraceptive use (birth control pill), dehydration, cancer, and infections.[4] Symptoms include mild venous stasis ulcer to significant left leg venous claudication, DVT, and pulmonary embolism.[4] An iliac venogram is the diagnostic test of choice for MTS.[3] Various causes of iliac vein compression, such as pelvic mass, trauma, and prior surgeries, should be ruled out before diagnosing MTS.

The primary goals of treatment for MTS are to:[3]

1. Restore normal blood flow in the compressed common iliac vein
2. Remove any clot that may have formed as a result of narrowing and
3. Repair the anatomical defects.

Treatment strategies have evolved from more invasive, open surgical techniques to minimally invasive therapies using catheters and imaging guidance. These new techniques often use thrombolytics to dissolve the blood clot and balloons and stents to prop open the vein. Anticoagulation is also considered as the mainstay of treatment for DVT and is used in a combination with these techniques.[4]

In general, long-term anticoagulation and elastic compression stockings are recommended following treatment to help prevent recurrent clot formation and limit the risk of postthrombotic syndrome. Less common treatment options

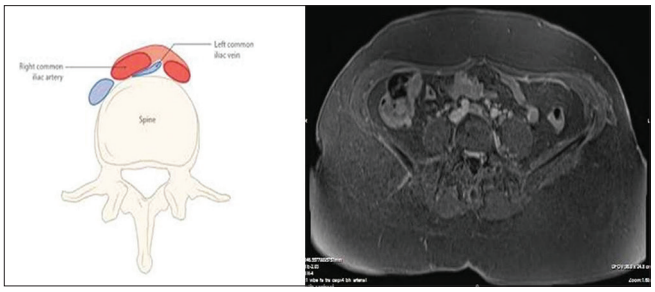

Figure 2: Computed tomography scan of the abdomen and pelvis showed diffuse venous thrombosis involving the left iliac vein down to the superficial femoral vein (axial view)

for MTS include open surgical clot removal (thrombectomy) with repositioning of the right common iliac artery away from the left common iliac vein and various bypass procedures. These surgical procedures are usually reserved for cases in which minimally invasive therapies such as angioplasty and stent placement have failed.[4]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Short Communication

The Maintenance and Welfare of Parents and Senior Citizens Act, 2007- Helping the conditions of the elderly in India

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Abstract

Aging in India is exponentially increasing due to the impressive gains that society has made in terms of increased life expectancy. About 8.6% of the total population in India is in this age group, with 8.2% males and 9% females. With increasing age, an aged person becomes dependent and faces a lot of problems. There is a feeling of neglect and sadness and that the people have an indifferent attitude toward them. Furthermore, the prevalence of mistreatment with the elderly is on the rise. Such a situation has resulted because of degenerating traditional values and weakened family system. The Maintenance and Welfare of Parents and Senior Citizens Act came into existence in the year 2007 to provide maintenance support to elderly parents and senior citizens. Parents according to the Act mean biological, adoptive, and stepparents, and the age of parents is irrelevant to claim maintenance. Adult children and adult grandchildren are legally obligated to pay maintenance; the amount is determined by the needs of the claimant so that the elderly person can lead a normal life. If children intentionally abandon the senior citizen completely, he/she is liable to pay a fine of Rs. 5000 or face imprisonment for 3 months or both. The legislative approach has its limitation, but it has the potential to arouse the social and ethical debates in the country to alleviate the dependent status of older persons.

Keywords: Aging, elderly, legislative approach, life expectancy, Maintenance Act 2007

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Submitted: 16-May-2019 **Revised:** 22-Jul-2019 **Accepted:** 16-Oct-2019 **Published:** 19-Dec-2019

PROBLEM STATEMENT

Aging in India is exponentially increasing due to the impressive gains that society has made in terms of increased life expectancy. With the rise in the elderly population, the demand for holistic care tends to grow. The geriatric population is expected to be 840 million in the developing countries by the year 2025.[1] About 8.6% of the total population in India is in this age group, with 8.2% males and 9% females.[2] It is projected that the proportion of Indians aged 60 years and older will rise to 11.1% in 2025.[3] According to a report by the Ministry of Statistics and Programme Implementation, Government of India, "Elderly in India (2016)," in rural areas, 66% of elderly men and 28% of elderly women were working, while in urban areas, only 46% of elderly men and about 11% of elderly women were working.[2] The needs of this group are very heterogeneous, and it comprises one of the most vulnerable populations of society.

With increasing age, an aged person becomes dependent and faces a lot of problems which include physical abuse (infliction of pain or injury), psychological or

Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_40_19

How to cite this article: Raj U, Galhotra A. The maintenance and welfare of parents and senior citizens act, 2007- Helping the conditions of the elderly in India. Indian J Community Fam Med 2019;5:157-61.

emotional abuse (infliction of mental anguish and illegal exploitation), verbal abuse, financial abuse, and neglect in getting food and medical care.[2] A study that examined the extent and correlation of elder mistreatment among 400 community-dwelling older adults aged 65 years and above in Chennai found the prevalence of mistreatment to be 14%. Chronic verbal abuse was the most common, followed by financial abuse, physical abuse, and neglect.[4] Those elderly who are staying with their children are prone to abuse. Of the elderly who reported abuse, 45% faced it only because they were economically dependent on the abuser, according to the HelpAge India Survey in 2014. Lena *et al*.[5] found that among those who are living with children, half of them felt neglected and sad and that people had an indifferent attitude toward the elderly. It was also found that 47% felt unhappy in life and 36.2% felt that they were a burden to the family. According to Srivastava and Mohanty, estimated 18 million elderly in India are living below the poverty line. Such a situation has created a feeling of neglect, dependency, loneliness, powerlessness, and meaninglessness among the poor old persons.[6]

NEED FOR THE ACT

Such a situation has resulted because of degenerating traditional values and weakened family system. This has led to the breakdown of the joint family system and the emergence of nuclear families. Aged parents have become a matter of burden for them. Intergenerational ties that were once the hallmark of the traditional family system have broken down. The younger generation is considering that the senior citizens are limiting their "independence" and subject them to neglect – almost everyday. Stories of elderly people from well-to-do families, living on the streets after being ill-treated by their children, have become common. In the so-called modern society, the economically inactive old person is treated as a burden on the limited resources of the family. The care of the elderly, therefore, has emerged as an important issue in India.

This article brings out a perspective regarding awareness about the various aspects of the Maintenance Act and law that can improve the lives of the elderly in India. We, as community physicians, are not aware of various sections of the law, then how can we expect an elderly with limited resources to have knowledge about it and stake a claim from their children. As a physician, our role is to provide good health, and health is defined as by the WHO as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" i.e. not just prescribing pills but improving the overall condition of an elderly.

THE ACT

In 2007, the Maintenance and Welfare of Parents and Senior Citizens Act came to existence to provide maintenance support to elderly parents and senior citizens. The Act contains 7 chapters and 32 sections. The Act helps cater to their basic needs, adjudication, and disposal of matters in their best interest, establishment, and management of institutions and services and for the rights guaranteed and recognized under the constitution and for matters connected therewith.

THE MAINTENANCE AND WELFARE OF PARENTS AND SENIOR CITIZENS (AMENDMENT) BILL, 2016

This amendment paved the way for all the dependent persons irrespective of age. Any person or parent who is unable to operate his bank account or attend matters relating to his property due to age, disease, or disability shall be included in under this Act, and not only "health care," but also "shelter, mental and physical health care" shall be provided. Maintenance of parents or grandparents under this section shall be the obligation of those children who are entitled to receive the benefits of inheritance or succession under the statutory law or personal law, and punishment under this Act has been made more strict–rigorous imprisonment which may extend up to 5 years or fine which may extend up to one lakh rupees or both.

WHO CAN CLAIM MAINTENANCE?

The Act defines parents as biological, adoptive, and stepparents. The age of parents is irrelevant to claim maintenance. The Act defines grandparents as includes both maternal and paternal grandparents. The Act defines senior citizens as an Indian citizen who is 60 years of age or older. The Act defines children as son, daughter, grandson, and granddaughter but does not include a minor; maintenance includes provisions for food, clothing, residence, medical attendance, and treatment; senior citizens as any person being a citizen of India, who has attained the age of 60 years or above; welfare as provision for food, health care, recreation centers, and other amenities necessary for the senior citizens; and parent as father or mother and stepmother. The only condition for claiming maintenance under this Act is that the concerned elderly must be unable to maintain themselves from their earnings and property.

WHO IS LEGALLY OBLIGATED TO PAY MAINTENANCE?

Adult children and adult grandchildren, both male and female, are responsible for paying maintenance to parents and grandparents. An application can be filed against any one or more of them. Senior citizens who do not have children or grandchildren can claim maintenance from a relative who either possesses their property or who will inherit their property of the senior citizen after their death. The relative must not be a minor and must have sufficient means to provide maintenance. If more than one relative is entitled to inherit the property, maintenance must be paid by relatives in proportion to their share in the inheritance.

HOW MUCH MAINTENANCE MUST BE PAID?

The Act mandates that the maximum maintenance paid will be Rs. 10,000/month. The maintenance amount is determined by the needs of the claimant, and the aim is to provide maintenance for the person to lead a normal life.

FILING MAINTENANCE PROCEEDINGS

The application for maintenance must be filed before the maintenance tribunal in any district where

- The parent, grandparent, or senior citizen resides; or
- The parent, grandparent, or senior citizen has last resided; or
- The person against whom maintenance is claimed resides.

ENFORCING THE MAINTENANCE ORDER

Once an order is passed by the maintenance tribunal, if the other person is ordered to pay a sum, such amount must be deposited within 30 days of the announcement of the tribunal's order. The failure to pay maintenance without sufficient reason will result in a warrant for collecting the due amount. If the person does not pay maintenance even after the warrant is executed, the person is liable to imprisonment for a maximum of 1 month or until the amount is paid, whichever is earlier. The application for the enforcement of maintenance must be filed within 3 months from the date on which it became due. Otherwise, the application will be dismissed.

PROTECTION OF SENIOR CITIZENS

Any person who is responsible for the protection and care of a senior citizen and intentionally abandons the senior citizen completely is liable to pay a fine of Rs. 5000 or be imprisoned for 3 months or both. In addition, senior citizens can apply to the maintenance tribunal to declare the transfer of property void. The following conditions apply:

- The transfer of property, irrespective of whether it is a gift or not, the transfer must have taken place after the commencement of the Act
- The property must be transferred by attaching some conditions that require the person to whom the property is transferred to provide basic amenities and physical needs to the senior citizen
- The other person must have failed to or refused to provide the amenities and physical needs to the senior citizen
- Parents can opt to claim maintenance either under Section 125 of the Criminal Procedure Code, 1973, or under this Act – they cannot opt for both.

RESPONSIBILITY OF THE STATE GOVERNMENT

The state government must ensure that all government hospitals and hospitals partly or fully funded by the government arrange separate queues for senior citizens and provide beds for all senior citizens. In addition, every district hospital must have special facilities for senior citizens. Section 19 of the Act also mandates the establishment of an old-age home in every district and provides for the protection of life and property of the elderly. These old-age homes must be able to accommodate at least 150 poor and needy senior citizens.[7]

IMPLEMENTATION

More than 58 crore rupees have been released by the Government of India supporting the old-age homes in states since 2013–2014. More than 21,000 beneficiaries were covered by about 900 old-age homes in various states who received assistance [Table 1].[8,9] Except Maharashtra, every state appointed maintenance officer; except Manipur, every state notified maintenance tribunal. It is important that all states and union territories have a notified appellate tribunal.

ROLE OF THE LEGISLATION IN IMPROVING THE CONDITIONS OF THE ELDERLY

The enactment of the Maintenance and Welfare of Parents and Senior Citizens Act 2007 is a legislative milestone. The level of awareness about the human rights of older people in Indian society, particularly among older persons, is very limited. The elderly have a barrier to access to health and welfare schemes because of the stigma attached. Aging is a natural process, and several problems associated with it are attributed as a consequence of aging. They are not very keen to undertake treatment for this. This is in addition to the common health and

Table 1: Implementation status of maintenance and welfare of parents and senior citizens acts, 2007

Name of state/UT	Date of notification of act	Appointed date of enforcement of act in state/ UT	Date of notification of rules	Date of notification of maintanence officer	Date of notification of maintanence tribunal	Date of notification of appellate Tribunal
Andhra Pradesh/Telangana	22.04.2008	28.04.2008	28.12.2011	Action taken	19.08.2008	19.08.2008
Bihar	28.09.2011	19.10.2011	07.09.2012	09.11.2011	09.11.2019	09.11.2019
Chhattisgarh	26.09.2008	26.09.2008	07.05.2010	24.01.2009	24.01.2009	24.01.2009
Goa	23.09.2008	01.10.2008	01.10.2009	24.09.2009	24.09.2009	24.09.2009
Gujarat	07.10.2008	07.10.2008	19.05.2009	19.05.2009	19.05.2009	19.05.2009
Haryana	22.10.2008	22.10.2008	19.06.2009	28.08.2009	23.11.2010	23.11.2010
Himacha P.	Has it own law					
J and Kashmir	The act not applicable					
Jharkhand	12.04.2008	01.04.2008	19.11.2014	14.02.2009	14.02.2009	14.02.2009
Karnataka	27.03.2008	01.04.2008	19.11.2009	13.09.2010	19.02.2009	19.02.2009
Kerala	24.09.2008	24.09.2008	28.08.2009	17.08.2009	17.08.2009	17.08.2009
Madhya Pradesh	23.08.2008	23.08.2008	02.07.2009	02.07.2009	02.07.2009	02.07.2009
Maharashtra	27.02.2009	01.03.2009	23.06.2010	*	28.09.2010	28.09.2010
Odisha	20.09.2008	01.10.2008	24.09.2009	01.10.2009	01.10.2009	01.10.2009
Punjab	15.07.2008	15.07.2008	17.10.2012	27.08.2008	27.08.2008	27.08.2008
Rajasthan	31.07.2008	01.08.2008	18.06.2010	19.09.2008	19.09.2008	19.09.2008
Tamil Nadu	29.09.2008	29.09.2008	31.12.2009	31.12.2009	31.12.2009	31,12.2009
Uttar Pradesh	25.09.2012	25.09.2012	24.02.2014	31.10.2014	20.10.2014	20.10.2014
Uttarakhand	11.11.2008	01.11.2008	19.12.2011	07.08.2014	07.08.2012	07.08.2012
West Bengal	5.12.2008	05.12.2008	12.01.2009	20.01.2009	20.01.2009	20.01.2009
North-eastern states						
Meghalaya	22.06.2012	22.06.2012	2012	25.09.2012	08.05.2014	08.05.2014
Sikkim	03.05.2012	01.02.2012	*	27.06.2012	18.12.2011	18.12.2011
Tripura	14.08.2008	15.08.2008	22.08.2008	15.12.2008	15.08.2008	15.08.2008
Assam	04.10.2008	04.10.2008	27.09.2012	02.08.20008	02.08.2008	02.08.2008
Manipur	29.10.2009	30.10.2009	02.12.2011	06.07.2012	*	14.09.2012
Mizoram	29.12.2008	01.01.2009	09.07.2014	01.12.2014	01.12.2014	01.12.2014
Nagaland	22.04.2008	22.04.2008	*	07.02.2014	07.02.2014	07.02.2014
Union Territories						
Andaman & Nicobar Islands	21.05.2008	21.05.2008	29.02.2012	04.03.2010	04.03.2010	04.03.2010
Chandigarh	21.10.2008	21.10.2008	12.08.2009	17.04.2012	22.12.2008	22.12.2008
Dadra & Nagar Haveli	17.09.2008	17.09.2008	06.05.2010	07.04.2010	07.04.2010	07.04.2010
Daman & Diu	17.09.2008	17.09.2008	04.05.2010	07.04.2010	07.04.2010	07.04.2010
Delhi	08.09.2008	01.09.2008	30.06.2009	01.10.2009	01.10.2009	11.02.2011
Lakshadweep	25.10.2008	22.09.2008	16.03.2015	16.03.2015	16.03.2015	16.03.2015

Source: http;//socialjustice.nic.in

social conditions such as dementia, depression, incontinence, and widowhood, which the elderly face.[10]

Being economically dependent on children is one of the major reasons for abuse in the elderly. It is also vital to have a bottom-up approach so that people who are the main target or are potential targets are made aware of how to identify, prevent, and protect oneself from such a situation. Awareness of the law will help the elderly to have economical support for themselves. This can lower the dependency on food, housing, and medical care, which can decrease the dependency, thereby promoting the decision-making power of older persons and their ability to protect and enhance their health with dignity. With these provisions in place, the need is to emphasize on implementation. We, the community physicians, can play a very important role in both preventing the abuse as well as empowering the elders to fight back against such violation of their basic human rights.

While treating them, we can try eliciting about the hardship they are facing in their day-to-day activity. We can sensitize them about various provisions of the Act. A public movement can be generated where the elderly can raise their voices against the atrocities happening against them.

This can also help in preventing the fraud where children and relatives take the property in the name of caring and later abandon them. Fear of prosecution by law can prevent any type of abuses against the elderly. The Maintenance and Welfare of Parents and Senior Citizens Bill, 2007, makes it a legal obligation for children and heirs to provide sufficient maintenance to senior citizens and proposes to make provisions for state governments to establish old-age homes in every district.

Limitation

Legislations are in place, but the implementation is patchy. There is no awareness of the Act among the elderly. Furthermore, the parents are reluctant to take any legal action

against their children. The parents are more emotionally attached to their children than the children being attached to them. In addition, those who wish to fight against this injustice and file a case against them cannot do it due to the physical weakness. The long waiting list for admission in old-age homes speaks that when removed from the home they seek shelter in old-age homes rather than file a case against their children or relatives. Periodic sensitization such as organizing seminars, workshops, and training the officers for the implementation of Act is the need of the hour.

CONCLUSION

There are no data on poverty among the elderly population. However, with the announcement of the Maintenance and Welfare of Parents and Senior Citizens Act 2007, national old-age pension scheme and National Policy for health care of elderly 2011, the government drew attention to the concerns of this group of people. It raises the priority of poverty reductions among older people and provides for their health-care services. The legislative approach has its limitation, but it has the potential to arouse the social and ethical debates in the country to alleviate the dependent status of older persons. It is just a small beginning toward recognizing the problems of the elderly. A social change takes a long time to show its effect. This has necessitated the provision of the substitutive safety net and a provision of social services for elderly persons.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Updating the Kuppuswamy's socioeconomic status scale for the year 2019

The socioeconomic status (SES) is one of the vital components affecting the health status of an individual or a family. It is pertinent to develop scales utilizing few essential criteria that would best designate the SES of an individual/family, and this need has been felt since long. Composite scales are used generally to measure the SES which combines social and economic variables. There have been several scales which were developed and described in the literature that seek to assess SES of families in urban or rural settings.

Kuppuswamy scale, first proposed in 1976, is the most widely used scale for determining the SES of an individual or a family in urban areas. It measures the SES based on three variables: the level of education and occupation of head of the family along with the total income of the family in a month and classifies the study populations into high, middle, and low SES [Table 1].[1] Among these, the level of education and occupation of head of the family hardly change with time. However, inflation and resultant depreciation of currency demands periodic revision and updating of the income variable. The Consumer Price Index (CPI) was initially used by Kumar[2] to update income ranges of Prasad's scale. The revision of the Kuppuswamy scale using the CPI was done subsequently in the years 1998, 2007, 2010, and 2012.[3-7] Here, we present the revised and updated Kuppuswamy scale for the year 2019 using the latest value of CPI Numbers for Industrial Workers (CPI–IW). CPI-IW is released on the last working day of the succeeding month and is available on the same day on the website of the labor bureau.[8] This revision would make the scale more meaningful and relevant and would help in further updating of the scale in future.

Table 1: Original Kuppuswamy classification of socioeconomic status (1976)[1]

	Score
Education of the head	
Profession or honors	7
Graduate or postgraduate	6
Intermediate or posthigh school diploma	5
High school certificate	4
Middle school certificate	3
Primary school certificate	2
Illiterate	1
Occupation of the head	
Professional	10
Semi-professional	6
Clerical, shop owner	5
Skilled worker	4
Semiskilled worker	3
Unskilled worker	2
Unemployed	1
Family income per month (INR)	
≥2000	12
1000-1999	10
750-999	6
500-749	4
300-499	3
101-299	2
≤100	1
Socioeconomic class	
Upper (I)	26-29
Upper middle (II)	16-25
Lower middle (III)	11-15
Upper lower (IV)	5-10
Lower (V)	1-4

INR: International normalized ratio

CPI-IW values are interpreted to a particular base year. The previous base years were 1960, 1982, and 2001. We calculated the updated income ranges of the scale using the latest CPI (IW), i.e., for April 2019, taking the base year as 2001. A previous update of the Kuppuswamy scale by Patro *et al.*[6] has calculated the income ranges for the base years 1982 and 2001 by applying the appropriate multiplication factors on original scale. Similarly, Bairwa *et al.*[7] have updated the scale for the year 2012.

The monthly income of the family (in rupees) for 1976 was calculated according to the base year 1960 = 100 (using the price index for 1976 as 296), and this rose to 490 in the year 1982.[4,8] Mishra firstly revised the Kuppuswamy index in 1998 as per the price index year 1998 (using the price index for 1998 as 405) using the base year 1982 = 100, which was again later revised by Kumar *et al.* by keeping 2001 (price index 458) as the base year according to the 1982 base.[3,4]

We obtained the conversion factor to update the scale for the year 2019 by dividing the latest available CPI (IW) value available from the website of labor bureau by 100 (CPI value at the base year 2001 = 100).[8] The income ranges of the scale of 2001 were then multiplied with this conversion factor to finally update the scale for the year 2019. As the CPI-IW value was 312 in April 2019,[8] the conversion factor obtained was 312/100 = 3.12. After multiplying the income ranges of the scale in the year 2001 with this

Table 2: Updated income ranges in the Kuppuswamy's scale as per the Consumer Price Index Numbers for Industrial Workers values

Family income per month in Rs (1982)	Family income per month in Rs (2001)	Family income per month in Rs (2012)	Family income per month in Rs (April, 2019)	Score
≥3319	≥15,197	≥31,507	≥47,414	12
1659-3318	7595-15,196	15,754-31,506	23,693-47,411	10
1244-1658	5694-7594	11,817-15,753	17763-23,693	6
829-1243	3793-5693	7878-11,816	11,832-17,762	4
497-828	2273-3792	4728-7877	7090-11,831	3
167-496	761-2272	1590-4726	2372-7089	2
≤166	≤760	≤1589	≤2371	1

First and second column of the table are adapted from reference no.6 and third column from reference no.7

conversion factor, we finally obtained the updated income ranges [Table 2].

However, the updated scale suffers from some limitations. The revision of education and occupation should also be performed using suitable survey methods.[3] The total family income used in the scale does not take into consideration the family size, which is an important determinant of SES. A small family with the same income level as a large family will certainly have better living standards.

The current update of the scale will help the researchers in ascertaining the true SES of an individual based on the latest available CPI (IW) value. Further, the researchers should take note of regular update of the CPI values before exercising socioeconomic classification of their study population as per the Kuppuswamy scale.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Submitted: 22-Jun-2019 **Revised:** 22-Jul-2019
Accepted: 05-Sep-2019 **Published:** 19-Dec-2019

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Access this article online	
Quick Response Code:	Website: http://www.ijcfm.org
	DOI: 10.4103/IJCFM.IJCFM_50_19

How to cite this article: Bashar MA. Updating the Kuppuswamy's socioeconomic status scale for year 2019. Indian J Community Fam Med 2019;5:162-3.

Reviewers, 2019

We gratefully acknowledge the services of following experts who have given their valuable time and cooperation for reviewing the manuscripts:

Abhiruchi Galhotra
Akhil Dhanesh Goel
Alok Ranjan
Anindo Majumdar
Anita S Acharya
Anjali Pal
Anjan Giri
Ankur Joshi
Anmol Gupta
Archana S
Arun M Kokane
Arvind Kumar Singh
Binod Kumar Patro
Binod Kumar Behera
Chaitanya Patil
Debjyoti Mohapatra
Durgesh Prasad Sahoo
E Rao
Geeta Gathwala
Manish Kumar Singh
Manish Taywade
Neeraj Agarwal
Neeti Rustagi
Pankaj Bhardwaj
Pragya Kumar
Prajna Paramita Giri
Preetam C
Preetam Mahajan
Preeti PS
Prem Sagar Panda
Priyamadhaba Behera
Rajeev Ranjan
Rama Shankar Rath
Ranjeeta Nayak
Rizwan SA
Sanjay Pandey
S Ali
Sarika Palepu
Sonu H Subba
Soumya Swaroop Sahoo
Subrat Baidya
Swaroop Sahu
Vartika Saxena

Forthcoming Events

1. 8th Annual Conference of **Indian Health Economics and Policy Association January** 23-24, 2020 at National Institute of Science Education and Research (NISER), Bhubaneswar, Odisha.

2. 47th National Conference of **Indian Association of Preventive & Social Medicine** from 28th–30th January 2020 organised by Institute of Community Medicine, Madras Medical College, Chennai.

3. 64th Annual National Conference of **Indian Public Health Association (IPHACON 2020)** is being organized by the Centre for Community Medicine, AIIMS, New Delhi and IPHA Delhi State Branch from 29 February to 2 March 2020.

4. **International course on public health approaches to non-communicable diseases** (6th edition) 17th to 21st March-2020, AIIMS, New Delhi.

5. **World Public Health Nutrition Congress**. Brisbane, Australia. 31 March-3 April 2020. Details can be accessed from https://10times.com/wphn

6. **WONCA Asia Pacific Regional Conference** 23-26 April 2020, Aotearoa, New Zealand. Details can be accessed from https://www.globalfamilydoctor.com/News/AsiaPacificregionconference in NewZealand in 2020. Aspx

7. **International Conference on Urban Health** 18th-19th June, 2020 Vienna, Austria

8. WCE 2020. **World Congress of Epidemiology**. 13-16 September 2020. Melbourne, Australia. Details can be accessed from http://wce2020.org/

9. AAFP Family Medicine Experience 13th to 17th October 2020, Chicago U.S.A.

10. 15th **Global Conference on Ageing**. Niagara, Canada. 1-3 November 2020. Details can be accessed from https://www.ifa-fiv.org/

11. Safety 2020. **14th World Conference on Injury Prevention and Safety Promotion**. 8th-11th November 2020 Adelaide, Australia

12. 23rd WONCA **World Conference of Family Doctors. 26th-29th November**, Abu Dhabi, U.A.E.

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