IMPACT OF TELEMEDICINE ON RURAL WOMEN'S HEALTH

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Abstract: As defined by World's Health Organisation (WHO), Health is a state of complete physical, mental and social well being and not merely the absence of disease or infirmity. By this definition, WHO has expanded the scope of words "mental and social well being" and has enhanced the role and responsibility of healthcare professionals towards society. In India women face a lot of issues related to healthcare such as malnourishment, Maternal Health, female child mortality etc. and such problems are intrinsically linked to their status in society. Everyday approximately 1000 women die due to complications in pregnancy and childbirth-nearly all deaths are preventable if timely medical aid is made available. Moreover in recent decades there has been an alarming decrease in child sex ratio in India.

Various other challenges to access healthcare in India are: 70% of India's population lives in rural areas whereas approximately 75% of health infrastructure, medical manpower and healthcare resources are concentrated in urban areas where approximately 30% of population lives, lack of infrastructure , means to reach and use services such as transportation, lack of confidence in their ability to communicate with healthcare professionals if he is male gyanae as to consult him by a female is considered taboo in India, manpower shortfall, absentism, high maternal death, infant death, early neonatal death due to lack of emergency obstetric care, lack of diagnostic expertise for complicated illness and emergency health condition. Therefore, in such a situation , where there is scarcity of qualified healthcare personnel, the most optimal solution is distance healthcare via Telemedicine or teleconsulting where expert advice can be made available at some central point and accessed as and when required via telephone, internet or videoconferencing . Telemedicine is the use of telecommunication and Information technologies to provide clinic healthcare at a distance where distance is the critical factor. It helps to eliminate where distance is barrier and helps in improving healthcare services in rural areas. Thus Telemedicine is the bridge between rural-urban gap. The Indian government is working on national level Telemedicine projects to provide healthcare facilities to the rural parts of India. Like "Telemedicine Social Franchising in rural U.P" government of India launched "sehat" in september2015- A Telemedicine initiative in partnership with Apollo Hospitals .Under this programme people in rural areas can consult doctors online via video link and also order generic drugs. In this paper I am to discuss following: firstly, right to health of rural women. Secondly, challenges to access healthcare in rural India. Thirdly, impact Telemedicine in improving healthcare services to rural women and barriers in realisation of Telemedicine.

Key words: Rural women's health, Telemedicine, videoconferencing, healthcare professionals, telemedicine projects

Introduction: *Telehealth does not necessarily change the care providers give. Rather, it changes the communication channel between clinicians and patients to minimise geographic barriers and enhance delivery of service.*
-Dr. Bonnie Wakefeld, Associate Research Professor, Missouri University Sinclair School of Nursing, 2008.
As said by Nehru "the status of women defines the status of a country. Health of a women defines economic well being of a family as a unhealthy women will give birth to an unhealthy child and that means an unhealthy country as todays children are tomorrows youth. Women in rural India face a lot of health problems like reproductive health, malnourishment, unequal status of girls and boys, low nutritional status. To control the spread of diseases and reduce the growing rates of mortality due to lack of adequate health facilities, special attention needs to be given to the health care in rural areas. The key challenges in the healthcare sector are low quality of care, poor accountability, lack of awareness, and limited access to facilities. Various organizations are coming together for improvements in health care and technology plays a crucial role to facilitate this. Information and communications Technology provides hosts of solutions for successful implementation of these changes.Apollo Hospitals has opened India's first telemedicine centre in 2000 in Aragonda, Andhra Pradesh, which was inaugurated by Bill Clinton, the then president of the US, the company said. "Telemedicine can provide rural population access for basic, specialty and super specialty consultations. Since 80% of conditions do not require a doctor's physical presence immediately, they can be dealt with through telemedicine," said Sangita Reddy, joint managing director, Apollo Hospitals. "Most lifestyle and communicable diseases fall into this category."
Right to Health of Rural Women in India: Right to health is not directly guaranteed as fundamental right

under Indian Constitution.The constitution directs the state to take measures to provide healthcare to the citizens. They are outlined the Directive Principles of State Policy- Articles 38,39(e)42, and 47,48A outlined in Chapter IV, and are therefore non-justiciable. These following provisions directly or indirectly are related to public health but cannot be claimed if directives are not fulfilled. Therefore, the Hon'ble Supreme Court has brought the right to Health under preview of Art21.The Supreme Court, in *Paschim Banga Khetmazdoor Samity & Ors v. State of West Bengal & Ors*, (1996) 4 SCC 37) while widening the scope of art 21 and the government's responsibility to provide medical aid to every person in the country, held that in a welfare state, the primary duty of the government is to secure the welfare of the people. Providing adequate medical facilities for the people is an obligation undertaken by the government in a welfare state. The government discharges this obligation by providing medical care to the persons seeking to avail of those facilities. Article 21 imposes an obligation on the state to safeguard the right to life of every person. Preservation of human life is thus of paramount importance. The government hospitals run by the state are duty bound to extend medical assistance for preserving human life. Failure on the part of a government hospital to provide timely medical treatment to a person in need of such treatment, results in violation of his right to life guaranteed under Article21. The Court made certain additional direction in respect of serious medical cases:

1. Adequate facilities be provided at the public health centers where the patient can be given basic treatment and his condition stabilized.
2. Hospitals at the district and sub divisional level should be upgraded so that serious cases be treated there.
3. Facilities for given specialist treatment should be increased and having regard to the growing needs, it must be made available at the district and sub divisional level hospitals.
4. In order to ensure availability of bed in any emergency at State level hospitals, there should be a centralized communication system so that the patient can be sent immediately to the hospital where bed is available in respect of the treatment, which is required.
5. Proper arrangement of ambulance should be made for transport of a patient from the public health center to the State hospital.
6. Ambulance should be adequately provided with necessary equipments and medical personnel.

In *CESC Ltd. vs. Subash Chandra Bose (*AIR 1992 SC 573,585) the Supreme Court relied on international instruments and concluded that right to health is a fundamental right.

Challenges to Access Healthcare in Rural India:
Nearly 70% of India's population lives in rural areas where the condition of medical care facilities is deplorable and approximately 31% of population travels more than 30kms. Out of total 700 million population around 348.11 million are women. Sex ratio is very alarming in India. In 0-4 age group there are 975 females per 1000males, in 5-9 year age group there are 816 females per 1000 males. Reasons of this alarming sex ratio are social discrimination, neglect of female in the matter of health, preference of male child over female child. Nearly 12 million female children are born every year out of which about 1.5 million die before celebrating their first birthday and around one million. Approximately 9 million will be alive at the age of 15. Since maternal mortality rate is also very high many will die during child birth. Rural health centres are critically short of trained medical staff whether its qualified doctors, especially female doctors or nurses ,lab technicians ,pharmacist etc. poor healthcare infrastructure due to lack of investment incentives for the private sector and lack of implementation of government schemes there is gross inefficiency in public healthcare system in rural India. Lack of awareness regarding Health Insurance Schemes specially among females due to which they have to pay all their bills in cash and because of poverty often are unable to take healthcare services. Lack of confidence in their ability to communicate with medical professionals if the patient is not fluent in English or Hindi is another hurdle in seeking medical care services. Low health literacy is the extent to which patients understand basic healthcare information such as following instructions of medical professionals or not taking medicines as prescribed. Social stigma and privacy issues are barriers in accessing medical facilities. Women in rural areas may be hesitant to seek advice from a male gynecologist on issues regarding mental health, sexual health, pregnancy or chronic disease as to consult a male gyane by female is considered taboo in villages. There is also fear of disclosure of there vital health information as the doctors or nurses or other medical staff may be a local person. Travelling expenditure-patients have to travel long distances for specialized treatment. This puts burden on patients pockets .because of poverty , villagers have low income and to leave job to travel and bear the cost of travelling of relatives with patient also becomes a great difficulty to have access healthcare services.
Various other issues are:
Malnourishment: National family health survey -3 indicates that 35.6% of Indian women are chronically undernourished, with Body Mass Index (BMI) lesser than cut-off 18.5.Data from Bihar and Madhya Pradesh shows that girls represent upto 68% of the children admitted to programmes for the severely

malnourished. The main cause for malnutrition among rural ration Indian women is the tradition requiring women to eat last even during pregnancy and while lactating. This widespread malnutrition among women results in Inter-generation cycle of nutrition deprivation in families as malnourished women will give birth to malnourished children. And also leading to high maternal mortality rate and children are born with defects or are anemic.

Maternal Health: India's Maternal Mortality Rate (MMR) i.e. the number 100,000 live birth, stands at 190. As a result, India accounts for maximum number of maternal deaths- 17% or nearly 50,000 of 2.98 lakh women who died as a result of complications due to pregnancy or childbearing in 2013. The main causes of such deaths are hamoerhage, sepsis, abortion, hypersensitive disorders, obstructed labour, anaemia, lack of specialist medical person at the hospital.

Female Child Mortality is slightly higher in India than male infant mortality because of various reasons like preference to boy child, neglect of girl child, high maternal mortality, female Infanticide and female foeticide, low economic status, early age of marriage, poor hygeiene and sanitation, poor healthcare facilities.

Impact Of Telemedicine In Improving Healthcare Services To Rural Women.

Meaning of Telemedicine: Telemedicine is often used interchangeably with telehealth/ cybermedicine/E-health/E-medicine. Telemedicine is the use of telecommunication and information technologies in order to provide clinical health care at a distance. It helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities. It is also used to save lives in critical care and emergency situations. Although there were distant precursors to telemedicine, it is essentially a product of 20th century telecommunication and information technologies. These technologies permit communications between patient and medical staff with both convenience and fidelity, as well as the transmission of medical, imaging and health informatics data from one site to another.Telemedicine is the delivery of health care and the exchange of health-care information across distances. It is not a technology or a separate or new branch of medicine. Telemedicine episodes may be classified on the basis of: (1) the interaction between the client and the expert (i.e. real time or prerecorded), and (2) the type of information being transmitted (e.g. text, audio, video). Much of the telemedicine which is now practised is performed in industrialized countries, such as the USA, but there is increasing interest in the use of telemedicine in developing nations.

Definition of Telemedicine: Telemedicine is defined by the Telemedicine Information Exchange (1997) as the "use of electronic signals to transfer medical data (photographs, x-ray images, audio, patient records, videoconferences, etc.) from one site to another via the Internet, Intranets, PCs, satellites, or videoconferencing telephone equipment in order to improve access to health care." Reid (1996) defines telemedicine as "the use of advanced telecommunications technologies to exchange health information and provide health care services across geographic, time, social, and cultural barriers."

According to American Telemedicine Association, telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status. Telemedicine includes a growing variety of applications and services using two-way video, e-mail, smart phones, wireless tools and other forms of telecommunications technology.

The World Health Organization (WHO) defines Telemedicine as, "The delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities." Thus, Telemedicine could also be as straight forward as two health professionals discussing a case over the phone to phone, or as advanced as victimisation satellite technology and video-conferencing instrumentation to conduct a time period consultation between medical specialists in two completely different countries.

Various Telemedicine programmes in India: Over last fourteen years several initiatives have been taking place to adopt various e-health services such as GRAMSAT (rural satellite) programme started by ISRO (Indian Research Organisation) deploying telemedicine nodes in various states. It also linked Andaman and Nicober Islands and Lakshadweep Islands to mainland speciality hospitals through satellite connectivity. Through this programme it became possible for rural tribal women to have access to healthcare facilities.

A report presented at the Rajya Sabha (the House of States, or Upper House) of the Parliament of India suggested that the initial results of India's telemedicine initiative are encouraging. The report states that several telemedicine projects in India have been successfully interlinked for Example: In Himachal Pradesh 19 health centers at district, block and tehsil headquarters connected with Indira Gandhi Medical College, Shimla and Postgraduate Institute of Medical Education & Research

Chandigarh through ISDN link. All India Institute of Medical Sciences (AIIMS), New Delhi connected with Jammu & Kashmir, Haryana, Orissa, North East states network and PGIMER, Chandigarh connected with Punjab and Himachal state network and Sri Ramachandra Medical College and Research Institute, Chennai connected with Andaman & Nicobar Island Hospital, Amritha Institute of Medical Sciences, Kochi connected with Lakshwadeep Island, Tata Memorial Hospital, Mumbai, Christian Medical College, Vellore are involved actively in Telemedicine. This network has enabled thousands of patients in remote places such as Jammu and Kashmir, Andaman and Nicobar Islands, the Lakshadweep Islands, and tribal areas of the central and northeastern regions of India to gain access to consultations with experts in super-specialty medical institutions. ISRO has also provided connectivity for mobile telemedicine units in villages, particularly in the areas of community health and ophthalmology .

Tripura Vision Centre: Individuals, especially women and children found it difficult both physically and economically to travel such long distances, besides having to wait long hours for their turn. The Government of Tripura setup Vision Centers (VC) in various locations throughout the state equipped with basic ophthalmic equipments and manned by a trained ophthalmic assistant. The Vision Centers were connected to the central hospital at Agartala, though a wireless network. An ophthalmologist sitting at the central hospital could attend to a remote patient in the Vision Center using a Communication Platform using Audio and Video. The sessions could be recorded for archive, training and audit purposes. This tele- ophthalmology platform now caters to a population of 3,432,000 spread over 40 administrative units in the State of Tripura and has reduced travel for primary eye screening by over 70%. Eye screening ratio for women has increased by over 50% due to easier access of screening services

Telemedicine Social Franchising in Rural Uttar Pradesh: World Health Partners (WHP) established 116 telemedicine clinics (SKY Clinics) providing health services to 1293 villages with an estimated population in excess of 6 million people primarily to provide health services mostly to reproductive age women. Through live streaming audio/video internet connections, the villagers consulted with physicians located elsewhere in India and experienced greater access to quality health services and contraception. The SKY Clinics were operated as a social franchise by female rural health practitioners (RHP) who profited from the consultation fees and drug sales. Using Remedi (TM) software, the RHPs measured blood pressure, temperature, heart rate, respiratory rate, and could assess EKGs with the results directly transmitted to the physician. Access to quality reproductive health services and contraception dramatically increased among the 6 million Uttar Pradesh villagers as a result of these social franchised telemedicine clinics which connected villagers to doctors elsewhere in India through live, audio/video internet connections.

Sehat –telemedicine initiative by government: To provide healthcare facilities in rural areas, the government launched a telemedicine initiative in collaboration with Apollo Hospitals under which people can consult doctors through video link.

As part of the service named 'Sehat', people in rural areas can consult doctors online and also order generic drugs.

Barriers in realization of Telemedicine in Rural India are:

1. Lack of privacy protection in Telemedicine network

Since each of the searcher has different aims of research on the vast amount of health and personal information available on the information highway, there is vast likelihood of breach in privacy, for Example-millions of patients records are scrutinized each year by pharmaceutical benefit management (PBM) companies that have overt financial interest in manipulating prescribing practices. Patients are usually not told that these entities have access to their records. A recent survey suggests that they would object, if this was brought to their knowledge. Moreover, Electronic mails in the medical context raises serious questions about privacy, confidentiality and authenticity of authorship and patient consent as they can be interrupted through unsecured e-mail route as anyone having access to doctor's e-mail can access, alter and even respond to e-mails. In Telemedicine network, the invasion of privacy can be done through sharing patient identification number through telemedicine networks without consent.

In Raghunath Raheja vs. Maharashtra Medical Council, 1996 the Bombay High Court declared that when a patient or his relative demands case papers from the hospital or the doctor it is mandatory for the hospital authorities and the doctors concerned to furnish copies of case papers when demanded. The hospitals or the doctors could not claim any confidentiality or secrecy concerning such papers. In this judgement, there is a potential for patient privacy violations, as the High Court treats the patient and his/ her near relatives in the same vein. The High Court has failed to account for the ability of a near relative to demand records from the hospital without the permission and authorization of the patient.

The Delhi High Court in the case of Secretary General, Supreme Court of India v. Subhash Chandra Agarwal, 2009 held that "personal information including tax returns, medical records, etc. cannot be

disclosed in view of Section 8(1)(j) of the RTI Act." The Court, however, maintained that if it can be shown that sufficient public interest is involved in disclosure, the bar (preventing disclosure) would be lifted and after duly notifying the third party (i.e. the individual concerned with the information or whose records are sought) and after considering his views, the authority can disclose it. The Court also stated that in the case of private individuals, the degree of protection afforded (to their privacy) is greater; in the case of public servants, the degree of protection can be lower, depending on what is at stake. This is so because a public servant is expected to act for the public good in the discharge of his duties and is accountable for them.

Privacy protection, data protection, data security, cyber security, confidentiality maintenance etc. in telemedicine are not governed by much dedicated laws. Though e-governance & e-commerce related aspects of telemedicine and all electronic contraventions & violations pertaining to e-health and telemedicine can be regulated by various provisions of Information Technology Act .Medico-legal Implications like registration, licensing Insurance, quality of healthcare need to be dealt by specific laws which is lacking in India. No laws to define physician patient relationship & standard of care to be taken while doing consultations via telemedicine network.

2.   The Electronic Medical Record: Privacy

The legal risks relating to the disclosure of inaccurate or confidential medical information are significant. Such disclosure may result in defamation claims by the patient whose record is disclosed. Moreover, if case records are accidentally disclosed and a patient who is suffering from tuberculosis is accidentally labelled as a malignancy may make a world of a difference in terms of employment and rehabilitation. An individual who is HIV positive may suffer social ostracism if his status is accidentally revealed. This becomes more pertinent in an era when the media is more interested in sensationalism of news than pragmatism. Therefore, patients' consent to disclosure of information is a very important part of the agreement between the doctor or his institution and the patient.

1. Liability for patient injuries: Government sponsored Telemedicine programs in India have laid down guidelines for Tele-consultation between two licensed medical practitioners. Local physicians bear consequences, therefore, they are resistant to use it.
2. State regulations: Health is a state subject, No state in India has developed law or guidelines.
3. Security of patient Health Information is yet debated, no consensus reached yet.
4. Reimbursement system does not exist.

5. The foreign doctors can't provide any web based consultation to Indian patients directly without involving any Indian registered practitioner.
6. The question relate to jurisdiction in which a lawsuit may be filed may also arise, as in transboundary consultations the question of jurisdiction becomes important.
7. Underdeveloped Infrastructure
8. Lack of technical expertise
9. Lack of understanding of the technology due to illiteracy and language problems

Suggestions

- To pass an Indian Telemedicine act like HIPPA(Health Information Portability and Accountability Act,1996) in USA to deal with important issues like "privacy protection of medical records", "to facilitate insurance schemes in Telemedicine healthcare sector", "to ensure inter-operability of data and information between different users of the system", "to ensure intellectual property rights in health system, "to recognise Telemedicine participants', "make use of Digital signatures", "to safeguard copyrights of the equipment manufacturer", "to deal with security of data communication against hacking and viruses which may cause loss of life to the patients".
- In many cases of tele health consultancy patient may be in a critical condition and sometimes none of his kith and kin available for consent. In such cases should it be left to the discretion of the attending doctor to act on behalf of the patient including waving the privacy rights of the individual?
- To standardize, certify, authenticate and register telemedicine units so that minimum safe standards are universally adopted.
- There is lack of infrastructure in rural areas, also there is lack of computer knowledge and are not aware about telemedicine technology. Even medical staff, doctors is not aware of this technology.
- No current provision in healthcare insurance policies about telemedicine practice. To include provisions of healthcare insurance in Telemedicine
- Need for determination of duties of referring doctor and expert doctor advising via Telemedicine and Doctor Relationship.
- In 2003, DIT defined Telemedicine Practice Standards & Legal Issues addressing guidelines for service delivery & qualifying service giver credentials but were not enacted into law. Government made policy guidelines for adoption of Information & communication Technology in health in 5 year plan 2013-2017 but no attempt made towards framing legal and ethical guidelines

Conclusion: Significant population of India resides in inaccessible and rural areas whereas about 75% of doctors reside in urban areas. This rural population does not have physical access to quality preventive and curative medical services are rare, and access to experts is difficult because of its cost. Thus, there are geographical and economic barriers to health care services. Telemedicine is an attempt to bridge the gap created by economic and geographical barrier by intergrating the practice of medicine with communication technology.

Telemedicine is boom for Indian health care sector especially in rural and remote areas. It is a tool to improve rural women's health in India. This can change the rural health care practices by using such a developed technology to provide medical facilities to the rural women. Through this technology rural urban gap in healthcare care services can be bridged. Apart from these some other benefits are as follows: Telemedicine is cheap. Anyone can afford such facilities. It is also used even having fewer resources too. It helps in providing services in rural areas. It helps in exchanging of knowledge among medical professionals. It helps in education of medical professionals. It helps in saving the life of people in war, floods, earthquake etc. It also helps in improving coordination among healthcare professionals.

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