CHAPTER 2

REVIEW OF LITERATURE

Systematic synthesis of relevant literature regarding different aspects of Tuberculosis and various IEC materials, forms and strategies are presented with many findings from other similar studies in this chapter. A variety of information related to the topic has been collected from various secondary sources such as journals, books, research reports, review articles, news papers and web resources.

2.1 HEALTH COMMUNICATION

Health communication generally refers to the communication of information on health issues. It is a key strategy to inform the public about health concerns and to maintain important health issues on the public agenda. The use of mass and multimedia and other technological innovations to disseminate useful information to the public, increases awareness of specific aspects of individual and collective health as well as the importance of health in development (WHO 1998).

Health communication is a study and use of communication strategies to inform and influence individual and community decisions that enhance health. It is also the art and technique of influencing and motivating individuals or larger audiences about important health issues based on scientific and ethical considerations.
Health communication helps individuals become more aware of the health risks they face, understand preventive measures they can use to lower these risks, and identify avenues to obtain help when issues arise. Overall, the ability to communicate about health improves people’s attitudes toward their health (Doak & Doak 2007).

According to U.S Department of Health and Human Services, accuracy, consistency, reliability, wide reach of the relevant health information are some of the important attributes of effective health communication besides the cultural sensitivity of the concerned people. Availability of the communication and repetition of the messages for reinforcing the impact is also necessary for its success (USDHHS 2000). Besides public awareness of health related issues it establishes a level of health literacy in the communities.

### 2.1.1 Health Literacy

Health literacy is an important aspect of health communication. It is the capability to read, understand and act on health information. It can be defined as being able to apply literacy skills to health related materials such as prescriptions, appointment cards, medicine labels, and directions for home health care (Parker 1995). Literacy skills are a stronger predictor of health status than age, income, employment status, education level, or racial/ethnic group. Low health literacy is a public health emergency. While people with low health literacy may have access to health information, they often fail to use the information properly. A common reason for misunderstanding health instructions may be the patient’s low health literacy skills. Patients with limited health literacy are often considered noncompliant (Baker et al 1996), but this could have been due to lower health literacy levels.
Compared to people with proficient health literacy skills, people with low health literacy are more likely to fail to enroll in health insurance programmes and make certain that their dependents are covered. They make medication and treatment errors because they cannot understand or follow patient instructions. Seeking preventive health care such as immunizations may be neglected by people with low health literacy. These people are more likely to lose their benefits and make use of costly health services. When it comes to tuberculosis, many people are not aware that treatment for TB is free at the government hospitals and approach private practitioners at first (Institute of Medicine of the National Academies 2010).

Illiterate people should be given adequate amount of health information in accessible forms to become health literate. Not being able to read and write need not be a barrier to understanding health information. Health communication encompasses several areas including edutainment, interpersonal communication, social communication and media advocacy. It can take many forms from mass and multi-media communications to traditional to culture-specific communication such as storytelling and puppet shows and songs. It is important for all the people to become health literate. Health literacy is a key outcome from health education (Nutbeam 2000).

2.1.2 Health Education

Health education can be defined as any consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health (Agarwal et al 2005). According to Klein man (1983), health education is a process of motivating patients to adopt behaviour that is beneficial to health.
In health education, communication for a special purpose — to promote improvement or change in health through the modification of the factors that influence behaviour must pass through several stages as shown in Figure 2.1 below.

![Figure 2.1 Stages in Health Communication](image)

**Figure 2.1 Stages in Health communication**


The word education means to gain general knowledge and this may involve learning how to do any specific practical work, tasks or skills in many health contexts. Education also refers to a process of training or receiving tuition.

Teaching new skills and instructions to follow a particular treatment method are aspects of health education besides just giving health information. In the tuberculosis context, the individual patients and the
community at large have to be educated for a successful prevention and treatment programme. In those settings where high cure rates had already been achieved, community health education was observed to be highly relevant (Jaramillo 2001).

When a new idea on health behaviour is explained, including its strengths and weaknesses educative communication can be used. This approach is used when people are already aware of an issue, but need more information or clarification. In this context, interpersonal communication with individuals or small groups is the most appropriate way to communicate. The message can be reinforced by print materials such as books, pamphlets and other multimedia approaches (Health education ASM 2011). Educational aids as a complement to verbal communication could include instruction sheets, pamphlets, brochures, booklets or computer-assisted instructions (Boyd 1992).

2.2 INFORMATION, EDUCATION AND COMMUNICATION (IEC)

IEC means sharing information and ideas in a way that is culturally sensitive and acceptable to the community, using appropriate channels, messages and methods. It is broader than developing health education materials because it includes the process of communication and building social networks for communicating information (Zimbabwe family planning commission IEC reference manual 1998).

Information, education and communication (IEC) in health programmes aims to increase awareness, change attitudes and bring about a change in specific behaviors. IEC combines strategies, approaches and methods that enable individuals, families, groups, organizations and
IEC an important tool for creating environments and strengthening community, in addition to playing an important role in changing behavior, supportive environments and strengthening community action. It helps to speed up the process of change, to reinforce knowledge, and to ensure a continuous educational system for the community. IEC can also play an important role in promoting health services, building public opinion and shaping positive attitudes besides sharing information (Zimbabwe family planning commission IEC reference manual 1998).

Print materials such as posters, brochures, flyers, billboards, etc. that are intended to draw attention to information about disease or risks to health are often called “information, education, and communication” (IEC) materials. Some electronic media can be IEC-focused as well. Public service announcements (PSA) and radio, television, and video programs that disseminate information are also IEC materials. Most IEC materials do not aim to just draw attention to an issue. They aim to provide usable information and help the reader/viewer take some kind of action. The effectiveness of these materials depends on many things, and in the ideal situation, IEC materials would be 1) based on formative research suggesting that there is an informational gap that needs to be filled, and 2) pre-tested/piloted to ensure that the reader/viewer of these matter (pathfinder 2012).

Information component of the IEC refers to delivery of messages, facts, and statements. When it comes to mass media oriented communication/dissemination, it is one-way and without verification of reception, comprehension, and acceptance from the audience. Education aspect of IEC deals with instructive delivery of messages, facts, and
statements generally including practical application through training and role modeling.

Communication is a two-way exchange of opinions, attitudes, and beliefs about messages, facts, and statements with verification of reception, comprehension, and acceptance. Communication is about sharing information, ideas and knowledge. Communication is a process in which participants create and share information with one another in order to reach a mutual understanding (Kincaid 1979). Mutual understanding builds the foundation for mutual agreement, which in turn makes collective action possible. Effective communication begins with the audience and continues over time as a process of mutual understanding and convergence (Piotrow et al 1997).

2.2.1 **Audience/Target Group**

IEC materials are audience-specific and designed for the particular target group of people that the sender wants to reach.

The main purpose of segmenting the audience is to create smaller groups which share similar characteristics so that the targeting can be more effective. Audience segmentation is done by grouping of audiences on the basis of following factors:

1. Educational factors including the age and educational level of the audience are important. Teaching aids such as posters and brochures will work with uneducated sections of the community. Pictures and diagrams can be more effective for that audience. The words and the appeal of the text should be suitable for the chosen segment.
2. Socio-cultural factors are such as values, beliefs and views and opinions regarding the particular topic of communication under consideration.

3. Patterns of communication already existing in the community, the best time to conduct the health education sessions or the best place to put up the poster and the leadership patterns, the lifestyles and health status should be kept in mind (Health Education ACM 2011).

In the TB context the knowledge cannot simply be targeted at individuals. Households are the primary producers of health and constitute the primary actors of the health system which includes communities and health institutions, both public and private. Primary diagnosis and treatment are often made at the household level, as well as the decision to seek or refuse professional health care (Berman et al 1994). Parents, spouses, siblings, parents in-laws and other relatives constitute an important audience segmentation for the TB communication.

There are different types of vulnerable groups to be reached. Tribal, transgender, HIV affected people, slum dwellers and commercial sex workers need to be addressed differently.

2.2.2 Message

A message is a piece of information that contains a combination of ideas, facts, opinions, feelings or attitudes (Health Education ACM 2011d). Messages are central to the communication process. Messages are crucial to moving people to adopting healthy behaviors from unaware stages. Messages are designed on the basis of needs, concerns and the existing knowledge of the target audience.
Messages should be accurate, specific, clear, relevant and simple to understand. They should be culturally appropriate. They should use uncomplicated language and stress upon practical actions and possible solutions (USDHHS 2010).

Different ways in which content of the message is organized to persuade or convince people are called appeals. Logical, factual, humorous and fear arousing appeals could be used in messages. The messages can have emotional appeal to make an impact on the people. The type of appeals that could convince people varies for different audience group. Children might respond to the message differently from older people (Health Education ACM 2011).

2.2.3 Channels

A channel is the way a message is disseminated. It is important to know which channels can most effectively reach particular target populations. Health information can be communicated through many channels to increase awareness and assess the knowledge of different populations about various issues, products and behaviors (BCC for HIV/AIDS 2002).

Channels might include interpersonal communication such as individual discussions, counseling sessions or group discussions and community meetings and events.

To reach a larger audience mass media communication such as radio, television and other forms of one-way communication, such as brochures, leaflets and posters, visual and audio visual presentations and some forms of electronic communication are used.
Each medium has its own advantages and disadvantages. A particular medium can be preferred over others in a particular circumstance for communicating a certain message. For example, research has shown that mass media can raise awareness of specific facts, because the mass media are assumed to carry a certain authority and reliability (BCC for HIV/AIDS 2002). People in a closely-knit group will be more inclined to share information and opinions (Kau & Jung 2004). In a close knit community opinion leaders and elderly people can influence the opinions and behavior of the locals. Interpersonal communication becomes primary in such situations while the mass media play a supporting role.

It may be best to use several channels simultaneously. The integrated use of multiple channels increases the coverage, frequency and effectiveness of communication messages. The combination of these channels is often called the media mix.

Communication programs are more effective when consistent messages are conveyed through a mix of mass media and interpersonal communication. This approach helped emphasize and reinforce messages and enables the program to reach different sectors of the population, who may be more receptive to one form of communication over the other. This media mix technique was effectively used in Peru as an effective strategy in their Tuberculosis control programme. Similar approach was used by Vietnam to disseminate consistent messages through national television, radio, local radio stations, print materials, billboards, community gatherings, theater shows, video spots in clinics, and home visits (HC insights 2004).

Sometimes word-of-mouth can be an effective communication channel for acquiring knowledge and promoting desired changes in behavior. Educating the public through casual conversations by health personnel works better in some informal situations.
2.3 BEHAVIORAL CHANGE COMMUNICATION (BCC)

Educating people with a series of facts about TB is insufficient to induce widespread behaviour change. It has been realized that good knowledge and favorable attitudes are not sufficient to have preventive action in the individual and community. In health contexts, there is a need of changing behavior, which is directly related to change in bad practices. So, the communication should be such which can focus on behavior change and that is only possible with research-based, client-centered, benefit- oriented, service-linked, and professionally developed behavior change communication (Kishore 2010).

BCC is about changing specific behaviours – ‘well defined actions at the household, community and health service levels’. BCC approaches recognize that behaviour change is more about identifying the causes and barriers to behaviour change and overcoming the barriers. It is about understanding the communities, contexts and environments in which behaviours occur. BCC is about integrating new practices into long standing social, cultural and communication systems (Kapadia- Kundu 2008).

McKee et al (2002) sees BCC as a process of addressing knowledge, attitudes, and practices through identifying, analyzing, and segmenting audiences and participants in programs and by providing them with relevant information and motivation through well-defined strategies, using an appropriate mix of interpersonal, group and mass- media channels, including participatory methods.

The above definition of BCC by McKee is comprehensive and includes the role of assessment and analysis to guide the development of communication strategies with a mix of different media and channels.
IEC is based on the implicit assumption that awareness creation will automatically lead to behaviour change. Hence the emphasis of IEC is on ‘creating messages’, entertainment and media. The main difference between IEC and BCC is that while IEC is more one-way and focused on messages, BCC is more outcome ‘oriented’ and also includes the role of participatory methods and motivation in the behavior change process (Bertrand & Becker-Benton 2004). In the context of the Tuberculosis control, BCC is an essential part of a comprehensive IEC program. Behavior is a key issue in all TB control communication programs.

2.3.1 Behavioral goals for IEC strategy

Three basic essential behavioral goals of RNTCP (2012) are explained below.

a. Treatment-seeking

General awareness of TB symptoms and knowledge are necessary for treatment-seeking behavior during the early stages of disease. TB symptomatic people should report to the TB centers voluntarily through self-reporting by the people. Lack of knowledge about the symptoms and other aspects of the disease can delay the treatment seeking behavior. Stigma, low education and local care-seeking practices largely account for longer delays in getting diagnosed at DOTS clinics.

b. Timely detection

Treatment-seeking leads the person with symptoms into contact with the health system. A number of studies have found a correlation between
knowledge and delayed diagnosis. TB suspects should offer sputum for testing on their own. The earlier the correct diagnosis is established, the sooner the treatment can begin and the patient ceases to be a potential source of infection.

c. **Completion of treatment**

The treatment for TB is long and must be completed for a patient to be cured. After one or two months of treatment, the symptoms of TB subside and this often leads to a shift in the patient’s priorities. Earning a living, family responsibilities or job compulsions are seen as more compelling than going to health centre for poor patients. Many other factors like side effects during this initial period, stigma and ignorance about the treatment may also deter a patient from continuing with treatment.

Success in TB detection and treatment requires specific behaviors from patients and health care providers within contexts that facilitate those practices (Waisboard 2005).

**2.3.2 A Framework for BCC design**

Figure 2.2 is based on the prevailing models and theories of behavior change such as Behavior Change Continuum (World Bank), Diffusion of Innovations model (Everett Rogers), the Stages of Change model (Prochaska, DiClemente and Norcross), the Self-Efficacy model (Bandura).
The individual and the communities go through many stages while changing behavior across this continuum as shown in the model. It could happen sometimes moving forward or backward and sometimes skipping stages. It is important to understand at which stage is the majority of target audience before designing a behavioral change intervention. Different channels have been shown to be more effective at different stages of the continuum and for achieving different goals. When an individual or community is motivated to attempt new behaviours, the larger social environment become more important whereas mass media can be effective for influencing positive attitudes through reach of correct information (BCC for HIV/AIDS 2002).

2.3.3 Behavioral Barriers to be addressed in BCC Programs

The barriers which hinder the process of communication and behaviour change have been discussed below. Identifying and understanding
them will help overcome the communication gaps and social distance between
service providers, patients and communities.

- Gender, stigma, urban/rural residence, knowledge about TB
care and cure, and socio-economic factors.
- Socio-cultural issues (e.g. care-seeking practices, medical
beliefs)
- Factors related to health care system such as poor training and
supervision of health community workers, lack of flexibility
for treatment supervisors, inadequate supplies for treatment
centers, centralized treatment delivery.
- Low awareness, low individual and social risk perception, and
external constraints (e.g. distance, transportation, economic
limitations) account for delayed care-seeking and diagnosis.
- Conventional care-seeking behaviors (e.g. consulting
traditional healers, pharmacists, and other private providers)

The matrix below provides an example with target groups to be
addressed, barriers, key messages that will be communicated and support
services that would be needed to achieve these changes for effective
Tuberculosis control (Table-2.1).
Table 2.1  Communication approaches to address the barriers to TB treatment

<table>
<thead>
<tr>
<th>Target groups</th>
<th>Barriers</th>
<th>Key Messages</th>
<th>Support Services</th>
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<tbody>
<tr>
<td><strong>Primary target group</strong></td>
<td>• Low awareness about TB&lt;br&gt;• Low risk perception&lt;br&gt;• Misconceptions about cure and treatment&lt;br&gt;• Fear of TB&lt;br&gt;• Stigma and discrimination&lt;br&gt;• Accessibility to services&lt;br&gt;• Cost of services and treatment&lt;br&gt;• Attitude of service providers&lt;br&gt;• Treatment process and time taken</td>
<td>• A cough that lasts for more than three weeks could be TB&lt;br&gt;• There is a sure cure for TB through DOTS&lt;br&gt;• Availability of free diagnosis and treatment through PHCs</td>
<td>• Provision of and access to user friendly health services&lt;br&gt;• Counselling services&lt;br&gt;• Testing facilities&lt;br&gt;• Treatment facilities</td>
</tr>
<tr>
<td>TB patients&lt;br&gt;Potential TB patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Primary target group</strong></td>
<td>• Low awareness about TB&lt;br&gt;• Low risk perception&lt;br&gt;• Misconceptions about cure and treatment&lt;br&gt;• Fear of TB&lt;br&gt;• Stigma and discrimination&lt;br&gt;• Accessibility to services&lt;br&gt;• Cost of services and treatment</td>
<td>• There is a sure cure for TB through DOTS&lt;br&gt;• Save somebody’s life by convincing them to take the full treatment for TB</td>
<td>• Provision and access to health services&lt;br&gt;• Counselling services&lt;br&gt;• Information services</td>
</tr>
<tr>
<td>Families&lt;br&gt;Neighbours&lt;br&gt;General public</td>
<td></td>
<td></td>
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<tr>
<td><strong>Secondary target group</strong></td>
<td>• Inability to communicate effectively&lt;br&gt;• Lack of relevant information&lt;br&gt;• Lack of counselling skills</td>
<td>• Today there is a sure cure for TB but your support is needed to make it fully effective</td>
<td>• Provision or access to health services&lt;br&gt;• Education services&lt;br&gt;• Counselling services&lt;br&gt;• Information services</td>
</tr>
<tr>
<td>Doctors&lt;br&gt;RMPs&lt;br&gt;Clinic operators&lt;br&gt;Medical students&lt;br&gt;DOT providers&lt;br&gt;Local leaders&lt;br&gt;ANMs/AWVs&lt;br&gt;SHGs/GDOs&lt;br&gt;NGOs</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: A health communication strategy of RNTCP, 2005

2.4  FORM AND CHARACTERISTICS OF IEC MATERIALS

Besides the content the physical attributes or form of the IEC printed material like posters, leaflets and booklets contribute to the readability of them. Factors such as color lay out, technical jargons, use of pictures, illustrations and photographs, use of bullets and other symbols make the materials user friendly and easy to use. Shape and quality of the print materials also affect the attractiveness of the materials.

A study by Campbell et al (2004) has shown that the use of pictures in health information improves learner understanding, especially when
information about spatial relationships is presented. In a study on the impact of illustrations on public understanding of cancer screening, the illustrations to supplement written information resulted in a significant improvement in understanding (Brotherstone et al 2006).

Ailinger et al (2010) and Dick & Lombard (1997) recommend that the information about the disease could be more easily adopted by patients through cognitive stimulation if they are in the form of pictures or photographs. All patients can benefit from seeing pictures, but those most likely to benefit are the patients with low literacy skills (Houts et al 2006).

According to the studies conducted by Clark et al (2007), information could be illustrated in question and answer or points to note formats to enhance the readability of the booklet. Booklets should be written in simple and clear manner.

Information should be written in simple language without medical jargons so that facts concerning the disease can be delivered to patients of all education background (Ailinger et al 2010). User-friendly and easy-to-read materials provide repetition and help rephrase the information for better understanding.

Booklets and brochures tend to have a lot of detailed information than posters and fliers. Use of boxes can be used for highlighting certain key messages at some pages to lessen the effect of text heaviness and too much information. The design of the booklet should provide motivational support to patients as recommended by Ailinger et al (2010) and Dick et al (1997) with the aid of a positive proverb or slogan, so that patients could be motivated to adhere to treatment and follow up on it.
Photonovelas could be used for those with low literacy skills. A photo novella is a health education item that is formatted like a comic book, but contains photographs instead of drawings. Stories are narrated through photographs. It is a popular form of entertainment literature in Central and South America (Nimmon 2007). Involving patients in the writing and designing of photonovelas result in an enriching experience for patients. Other community members can also identify with the messages as they reflect their beliefs (Cornett 2009). The form of comic documentary books which are popular among college students can also be adopted for communicating Tuberculosis facts through stories.

Integrated Communication Strategy developed for a sanitation and hygiene project in Tamil Nadu recommends the inclusion of a symbol of uniform branding and design in consultation with the community and standardized, pre-tested messages in order to maximize its impact (Arulchevan & Uma Maheshwari 2013).

2.5 THE IMPORTANCE OF TB KNOWLEDGE

TB is a communicable and infectious disease. It is transmitted by proximity, but also by ignorance. The information and knowledge gaps existing between service providers, patients and communities should be filled by TB knowledge about all aspects of the tuberculosis and useful information to achieve a better control over TB.

In places where the TB programme has been successful and the prevalence is less it has been found that the knowledge levels are high among the public about the disease. Thus knowledge about the disease becomes critical for prevention and treatment. This correlation between the knowledge, awareness and the treatment seeking behavior has been confirmed by a number of studies in the past across various communities.
Poor awareness on all aspects of TB, including symptoms suggestive of TB, availability of free diagnosis and treatment facilities in the community might adversely affect the programme performance. The TB messages should contain the following essentials: Knowledge of TB symptoms, transmission mode, curability of the disease, free TB treatment. The knowledge that potential TB cases should seek professional care and active TB cases should adhere to treatment regimen should be stressed in the messages.

Merely providing factual messages like ‘Go for sputum test if coughing persists for more than three weeks’ may be insufficient to stimulate people to follow the advice. People may dismiss the symptoms as that of severe cold and consider them as non serious. Therefore, the message must be packaged in such a way that it challenges this perception. Programmes, which take into account local realities when identifying key behavioural determinants, are much more likely to be effective (HCS- RNTCP 2005).

Information about the nearest DOTS centers, TB hospitals, free diagnostic centers and contact help line numbers are also essential.

2.6 INCREASING CASE DETECTION THROUGH KNOWLEDGE AND INFORMATION

Case detection is an important component of a TB control program. Effective control requires case finding at an early stage of illness. Early detection without any delay is good for the welfare of the patient and this will also minimize the further spread of the disease and development of drug resistance. People with symptoms of the disease should come to the health centers on their own and report. Only awareness and knowledge of the disease and the free health services can aid TB case detection through self-reporting.
A number of studies have found a correlation between knowledge and delayed diagnosis. Knowledge includes the ability to recognize symptoms, identify causes and transmission routes, and familiarity with the availability of cure.

A study done in Manila suggests that health communication is an important supporting factor in TB case detection, both general information about TB and individual health communication in health facilities (Christian et al 2000).

A study by Sreeramareddy et al (2009) has highlighted that longer patient delays may be due to lack of awareness about TB symptoms among the population. Knowledge about TB symptoms, modes of transmission of TB, and misconceptions about TB transmission among the general public may have an impact on health-care seeking behavior (Suganthi et al 2008).

An educational intervention of audio visual presentation and distribution of pamphlets to school children done in Vellore in South Indian had an increase in awareness levels about TB and its diagnosis aspects. It significantly changed the way they perceived the disease and its treatment (Vijayprasad et al 2010).

In one controlled study in Western India with school children it was observed that their illiterate parents could gather health information from their 11-15 year old wards which the conventional methods of education could not achieve. There was an appreciable change in the knowledge of the parents who said that their children were the source of knowledge (Bhore et al 1992).

Sreeramareddy et al (2013) states in his study on prevalence of self reported TB that prevention of TB transmission in the general population of India is less likely since people did not know the correct mode of TB
transmission and people had misconceptions about it. The RNTCP has published pamphlets containing the message ‘TB is spread through coughing or sneezing of a TB patient’. This fact about TB transmission has to be reinforced with other means for effective reach.

Therefore, TB control programs have recognized the importance of providing information and education to improve the knowledge about TB and to influence change in health-care seeking behavior among both TB patients and the general public.

Sharma et al (2005) in his study on the impact of IEC campaign in New Delhi found that the IEC messages had less influence on the poor and disadvantaged populations of the city. This differential influence of health education was also observed in a study conducted with TB patients in Vietnam (Hoa 2004). These most vulnerable groups have a greater need for effective IEC. It appears that use of interpersonal methods may have a better reach in these groups. An audio visual medium like television appears to be effective for target illiterate groups.

2.7 REMOVING STIGMA THROUGH IEC

Tuberculosis is a stigmatized disease in Indian society. This stems from lack of proper understanding about the disease in all its aspects, especially about the mode of transmission. Fear of the disease being infectious and fatal is also an important reason for the stigma among the people. Information itself is not sufficient to de-stigmatize TB. The IEC messages should address the emotional aspects of the stigma at the community level. Outdated societal practices such as isolating patients in a secluded sanatorium are also one of the causes of the stigma.
Stigma is a feeling; it comprises fear, guilt and shame (Hardon et al 2001). Enacted stigma is the consequence of social inferiority. Dodor (2009) found in his study that the main reason for stigma is fear of infection. Stigma and discrimination associated with TB are among the greatest barriers to disease prevention, adequate care, support and treatment (Jaramillo 1999).

Studies repeatedly demonstrate that stigma deters people from seeking care and diagnosis, and that women bear the highest burden of stigmatizing behaviors (Waisboard 2005).

Because of the stigma attached to TB, patients often refuse to acknowledge the signs and symptoms of the disease, and attribute them to non-stigmatizing conditions, such as, common cold or malaria, just to reduce the contempt of others (Cambanis et al 2005).

The shame associated with the disease could cause delays in health seeking and poor adherence of the long treatment. The association of TB with HIV-AIDS tends to increase the existing stigma.

Sharma et al (2008) in a study done in New Delhi suggests that IEC messages focus upon removing such myths and superstitions and in bringing about a paradigm shift in society's attitude towards tuberculosis.

When there is incorrect information about the diseases given by the influential people, opinion leaders and health professionals in the community, it results in sensational stories which might reinforce the prevalent misconceptions and myths.

The portrayal of the TB patients in the media especially in film and television should be fair and correct. Sometimes patients are shown vomiting and coughing blood in movies and television serials. Such exaggerated media
depiction of the disease can shape cultural meanings attached to the disease, with damaging consequences for those affected by TB in society (Lawrence et al 2008).

This stereotypic conception of the disease as a threat conveys a devalued social identity about the patients, and underlies the beliefs, thoughts, and actions of the whole society when interacting with the patients (Dodor 2009).

The health officials should clarify on any inaccuracies in the TB issues, facts and stories published in the media to deepen the societal understanding of the disease (Migliori et al 2007). In India TB reporting is poor, and only around the World TB day on March 24th every year TB related stories get published in the newspapers.

A study in South India finds that TB is more associated with cough, and other cardinal symptoms do not seem to be known, especially among women. The cause of TB was attributed more to smoking, alcohol, stamping of sputum and airborne transmission did not seem to be expressed (Sudha et al 2008). The incorrect and wrong perceptions of Tuberculosis prevalent among people need to be addressed repeatedly in the IEC materials.

Stigma particularly affects women because social pressures and status often make them especially vulnerable to marginalization and discrimination with the consequences of contracting TB sometimes leading to divorce, desertion and separation from their children (Stop TB 2005).

The stigma of TB is more visible in women than in men when it comes to the issue of marriage. It was generally felt that it was easier for men infected or treated with TB to get married as compared to women (Sudha et al 2008). Unmarried women may be worried about chances of marriage and
married women concerned and anxious about rejection by husbands, harassment by in-laws.

Prejudice, lack of understanding of the disease and mode of spread, fear of illness and death, lack of access to diagnosis and treatment and irresponsible reporting of the press are important factors which trigger the discrimination and stigma of TB.

Public education and awareness raising programmes designed to counteract myths and to encourage greater inclusion of people who have TB are an essential element of any effort to combat stigma associated with TB (WHO 2006).

Misinformation or a lack of information with fear and misconceptions of the disease leads to stigmatization of TB. The messages such as ‘TB is not hereditary’ and ‘TB is curable’ have to be registered in the minds of public for the removal of stigma from society. Only education and correct information can bring about a change in the perceptions with regard to stigma.

2.8 EMPOWERING TB PATIENTS

Empowerment of the TB patients can be defined as the patient’s ability to (1) better control his or her health and life; (2) assist other TB patients in improving their life and (3) support the TB control programme and healthcare professionals (Macq et al 2007).

Knowledge is power. Correct and deep knowledge about all aspects of the disease can empower TB patients. IEC materials for the target audience of patients can provide useful and practical information regarding the disease with their needs and perspectives in mind. Such interventions using specific
information tools have been used in many other countries and in India to motivate the patient to adhere and take an active part in his/her own treatment (Datta & Nichter 2006). The information given to TB patients was expected to help them to better know their disease, to better control the treatment process, and eventually interact with healthcare providers confidently.

Empowering TB patients can be done through forming of associations or clubs. In Ethiopia and Nicaragua, TB clubs act as self-help groups (Getahun 1998, Macq et al 2004).

In Mumbai, India, the TB programme organized meetings with TB patients to enable them to share their experience and ask questions about their diagnosis and treatment (Rangan et al 2003). In Mongolia, in a context of TB stigma and low case detection, TB clubs involved both cured TB patients and those under treatment, and community leaders (He et al 2005). These meetings can help them to take responsibility for their own health and increase their TB advocacy skills. Stigma associated with the disease can itself be a great barrier to empowerment along with other factor like poor access to TB services and social determinants.

A study done in Cambodia by Natpratan (2005) shows that the frequent meetings and creating a patients network resulted in less discrimination by hospital staff and better attendance at the hospitals.

Effective inclusion of patients (TB, TB-HIV, MDR-TB) and affected communities in TB control can boost their morale and motivate them. In Ndola (Zambia), former TB patients created health education committees holding debates about TB, thereby reducing the stigma linked to TB (Harries et al. 2001). In Peru, group therapy sessions have been established for multi-drug-resistant tuberculosis (MDR-TB) patients. Former patients continue to
participate in these by providing testimony to others who are still under treatment (Shin et al 2004).

A more patient centered approach could also help the patients feel important and part of the TB programme. This focuses more upon TB patient’s needs and capacities. An important element of this approach is the interaction of patient and health provider. So the interpersonal communication aspects play a significant role in these meetings improving treatment adherence.

The communities could also be involved in the empowering process. For example, in India, the ‘trialogue’ approach has been identified to be particularly important in the inter-personal communication between providers, patients and community. This is a strategy aimed at changing community attitudes and behavior through active participation in the TB patient care, as well as in open and honest discussions regarding fears and prejudice faced by TB patients (Raye et al 2005).

Worldwide, NGOs and patient activists promoted a ‘TB Patient Charter’ intended to empower people with TB and included as a key component in the Stop TB strategy (Stop TB Partnership & WHO 2006). It emphasizes on the rights and responsibilities of the patients and makes the relationship with healthcare providers a mutually beneficial one (Case 2006). RNTCP has adopted it and made this a part of its IEC resources. It is about the rights and responsibilities of the patients (TBC India 2012).

Advocacy programmer using prominent TB patients and former patients can also be a form of empowerment. Training programmes for patients to become community TB educators, monitors and advocates could be part of the empowerment strategy.
Contemporary health communication strategies are increasingly preoccupied with providing spaces and channels, particularly through the media, where people affected by health issues can make their voices heard, engage in dialogue and debate (Stop TB 2006). TB disease and its related issues can also achieve greater visibility and profile as people with important perspectives.

An important lesson from other health emergencies, particularly HIV/AIDS, is that greater the inclusion of those most affected in the response to these crises, the greater the impact such responses are likely to achieve and sustain (Scalway 2002).

The patient centered mobilization approach in Peru showed the unequal power equation between patients and providers initially. The process of organizing the patients into groups and network, and creating space for exchange of information and sharing concerns helped to relieve the sense of isolation and exclusion. This coming together of patients empowered the poor and marginalized TB patients into demanding their rights. Their presence and growing voice created citizenship awareness about the complexity of TB and garnered further support for the cause (Llanos-Zavalga et al 2004).

2.9 TREATMENT ADHERENCE

Haynes (1979) defines adherence as the extent to which a person’s behaviour such as taking medication, following a diet, and executing lifestyle changes corresponds with agreed recommendations.

In terms of TB control, adherence to treatment may be defined as the extent to which the patient’s history of therapeutic drug-taking coincides with the prescribed treatment (Urquhart 1996) from a health care provider.
Tuberculosis is a communicable disease requiring prolonged treatment, and poor adherence to a prescribed treatment increases the risk of morbidity, mortality and spread of disease in the community (Jaggarajamma & Sudha 2007). The DOTS course for TB is from six to eight months. This treatment period could extend up to 18 to 24 months for MDR TB patients. Because of the long duration of standard TB treatment there is a risk of treatment default (Jakubowiah et al 2009).

Due to various reasons patients do not adhere to the treatment regimen. This non compliance to the prescribed treatment course may lead to relapse, drug resistance and prolonged infectiousness (Volmink & Garner 2006). In a qualitative study Watkins (2004) found that TB patients had a poor understanding of the longer treatment period. This lack of knowledge could lead to non compliance and this should be reinforced in the IEC materials meant for patients.

Though RNTCP has achieved a cure rate of 85%, a large numbers of patients are to be cured considering the prevalence rate and the population of our country. Successful treatment completion of patients is an important goal of all TB control programs. Communication is also seen as having an important role in improving treatment adherence. Communication and mobilization programmes ensuring patient education, combined with broader community support and empowerment initiatives, are essential if cure rates are to improve and be sustained (Stop TB 2005).

Lack of adequate information plays a key role as one of the major barriers to treatment compliance (Werf 1990). A Study conducted by Leifooghe et al (1999) suggested that important information about the diagnosis of the disease and the treatment regimen should be provided to patients so that misconception about the disease can be minimized.
The treatment adherence rate of patients receiving health education counseling and booklet containing health information was significantly higher than those patients receiving no intervention (Dick et al 2004).

Clark et al’s study (2007) found significantly higher rate of attendance at follow up and general treatment adherence among patients receiving oral and written health education by pharmacists as well as routine nursing and medical care when compared with patients receiving only routine nursing and medical care.

A study done in India during 2007 cites lack of awareness about the treatment regimen and the importance of the full treatment as some of the main reasons for interrupting the treatment (Mittal 2011). This study recommends that explaining the treatment plan before the start of treatment and periodic treatment through personal counseling could improve the adherence rate.

A cross sectional study conducted by Ailinger et al (2010) shows that culture-specific health education and culturally relevant education material increases the adherence rate in intervention group compared to those who received no intervention.

One study on adherence to TB in children reported that non-adherent patients had little information on TB as a disease, but were very aware of the potential adverse effects caused by treatment (Sansebastian & Bothamley 2000).

White et al 2002 suggests that providing information concerning possible adverse effect of the medication such as vomiting, nausea and drug induced skin itchiness would help the patients continue the treatment to its full course. They should be taught the interventions to deal with the side
effects. This could make them to seek medical help instead of defaulting from the treatment.

Patients have to stay motivated to complete the full treatment course. They need to be encouraged and supported by the health workers. Based on social learning theory, nurses can provide emotional support to patients by sharing expectations of treatment and offering reinforcement. (Nyamathi et al 2006)

The attitudes of others, particularly health professionals, towards individuals with TB may affect adherence to TB treatment. A study conducted at the Effia-Nkwanta regional hospital in Ghana showed that one factor that motivated patients to complete TB treatment was the encouragement they received from health professionals (Dodor & Afenyadu 2005).

2.10 ROLE OF HEALTH WORKERS

Health workers have a good understanding of the TB patients as they interact with them on a regular basis. Their service is one of the key elements of any TB control programme. Health workers are expected to perform successfully a number of actions, including offering sputum smear examination to patients, conducting tests adequately, monitoring medicine intake, counseling and follow up.

According to a study done in Ethiopia by Dodor (2009), the majority of health staff expressed feeling of fear when interacting with TB patients. They were afraid of getting infected with TB. The study showed that most health workers, particularly, those working in non-TB units preferred to avoid interacting with TB patients. When attitudes of health professionals are improved this may help to reduce the stigma attached to the disease in society.
A study by Steyn also suggested that one of the causes of TB patients disengaging from treatment is healthcare professional’s failure to listen and response to patient’s misconceptions of the TB treatment and the disease (Steyn et al 1997). Maltreatment by providers such as scolding a patient for missing appointments can also lead to non-adherence (Jaiswal et al 2003).

Patient’s relationship with health worker has a key influence on the medication adherence and the other aspect of the disease. Many treatment supervisors and health visitors follow up on the defaulting patients through phones and home visits. Poor follow up by the providers has a negative impact on the treatment (Nair et al 1997). Increased provider-patient contact can have a positive impact on the treatment completion (Menegoni 1996)

Dick & Lombard (1997) recommends providing emotional support to patient during health education intervention to improve the treatment programme. Emotional support should be delivered to patients by means of reinforcement through counseling.

Personal motivation of the patients could be an important factor in treatment adherence (Coleman et al 1998). Providing emotional support and motivation are very important functions of a TB health worker. Good interpersonal skills, empathy and genuine care are necessary for a health worker (Grange 1999).

Research shows that patient satisfaction with care is linked to trust with the health worker that is established through continuous care(Kao et al 1998). During the treatment period continuity of health care provider is important Same health workers should attend to the TB patients to maintain the initial rapport between them.
The inappropriate health education messages by some health professionals also contribute to the stigmatization of TB patients in society (Khan et al 2000). Updating the health workers about the latest facts and diagnostic facilities, and training those in interpersonal and counseling skills are crucial for an effective TB control programme. The lack of trained health workers is a major factor for the implementation of DOTS program (Volminik & Garner 2007).

Providing essential facts to staffs can strengthen their knowledge about the disease (White et al 2005). Health-care workers in rural areas were themselves less aware of contact screening and preventive therapy in young children, and their awareness level about immediate family members of the patients being more susceptible to infection was significantly lower according to a newspaper health report published in Chennai (The Hindu 2013).

2.11 INTERPERSONAL COMMUNICATION (IPC)

Hartley (1993) defines interpersonal communication as a face-to-face meeting between two people and stresses the importance of creation of meaning besides the exchange of messages. Effective interpersonal communication (IPC) between health care provider and patient is an important element for improving patient satisfaction, treatment compliance, and health outcomes (Improving IPC 1999). Effective communication can help patients disclose critical information about their health problems thereby helping the health personnel diagnose and treat accurately.

Effective IPC can also lead to a commitment by both patient and provider to fulfill their responsibilities during treatment and follow-up care (De Negri 1997) in addition to positive rapport between them. Feelings of confidence in the care being provided between patients and providers can be influenced positively by IPC skills (Mechanic 1998).
A health worker should personalize the IPC content depending upon the patient’s educational level and ability to understand medical information. TB health workers should encourage a two way dialogue to establish a partnership for a lasting relationship. They can help the patient to apply the relevant information to his or her own life. Interpersonal communication does not simply mean the exchange of messages between two people. Showing empathy, understanding, respect, and honesty are also part of the interpersonal communication.

Using appropriate vocabulary, visual aids, and printed materials while informing patients of the diagnosis and treatment is important. Avoiding jargon or technical language when speaking with patients is essential for improving interpersonal communication with patients. Provider-patient communication has been linked to patient satisfaction, recall of information, compliance with therapeutic regimens, and appointment keeping (DiMatteo 1994).

Home visits, face-to-face communication with family members of the patients, training, group discussions, and counseling are some of the interpersonal channels used in the TB control context. Interpersonal messages can be linked to messages in the mass media for effective reinforcement and wider reach.

In Peru’s TB control programme, health staff trained in interpersonal communication and counseling was encouraged to reach out to all visitors at the health facility focusing on health workers’ first contact with patients. Health staff organized home visits to strengthen the link between the clinic and households in the locality. House visits included educational messages about TB, case detection and treatment, and follow-up (HC insights Peru 2004).
Non-verbal communication using body position, gestures and facial expression, often referred to as ‘body language’, can communicate as much as words. It is often through such body language that our attitudes towards an issue, a person or a person's behavior are expressed. Improved interpersonal skills of health centre staff and co-ordination between the private doctors and the health centers may substantially improve services for TB patients (Christian et al 2000).

Trialogue approach is an effective inter-personal communication (IPC) approach used by the RNTCP in India. This is a community-based activity. The trialogue approach reduces the gap between patients, providers and the community through informal, interactive meetings. The participants spend a whole day together, sitting on a mat and eating from common plates having honest discussions regarding fears, prejudice and problems concerning TB (HCE-RNTCP 2006).

2.11.1 Counselling

Counselling is a helping process where the health worker helps a patient to make decisions and gives them the confidence to put their decisions into practice. This is a one to one communication and goes beyond merely giving information and educating the patients.

Many TB patients need emotional support to complete the long treatment course. The intense medication phase in the beginning of the DOTS could be a problem because of the side effects such as nausea and vomiting. This is a period where they need counseling and encouragement to stick to the treatment plan. Patient’s relationship with the health provider has a bearing on the treatment adherence (Ellis et al 1997).
A good counselor should have empathy, maintain confidentiality and keep a good relationship with patients. Interpersonal communication creates a rapport between nurse and patient in counselling. When TB health workers have to interact with the HIV patients co-infected with TB empathic, sensitive approach towards them will make the treatment successful. The goals for patient centeredness are to encourage the patients to express concerns, to help them to be more active in the consultation and to let them say what information they require (Rollnick et al 2002).

A study in South Africa found that the crucial factors in terms of acceptability of a health facility are the empathic dimensions like friendliness, good communication, encouraging, listening (Westaway & Wolmarans 1993). Full utilization of the health services depends on the friendly attitudes of the health personnel.

A good counselor is compassionate and non-judgmental, is aware of verbal and non-verbal communication skills. Patient centeredness in counseling is achieved by using open questions, listening and encouraging with paraphrasing and repeating, clarifying, summarizing and reflective listening (Improving IPC 1999). Nonverbal components such as the way we sit, eye contact, staring or shifting gaze, facial expression, bodily contact and movements are also part of patient centeredness in counseling.

When counseling on behavioral changes, the use of motivational interviewing with an exchange of information and helping the patient to weigh up the pros and cons for change may work (Eva Drevenhorn 2006). In Vietnam, pre-treatment counseling helped the patients realize the importance of adhering to the treatment regimen reducing default rate among the patients. Counseling was considered a critical need before and during treatment. Everyone involved in the TB program received counseling skills training. The program paid special attention to developing health workers’ counseling
capacity (HC insights Peru 2003). Counseling can help patients cope with the sudden change in their present life styles.

Peer counselors have also been effective in influencing positive health behaviors of patients. People of the same age and equal social standing to the recipient are generally chosen as peer counselors. At the University of Iowa, after the implementation of peer counselor programme, completion of TB treatment among students increased by around 60% (McCue & Afifi 1995). When counseling female teens on the use of oral contraceptives, peer counselors significantly increased adolescent adherence when compared with nurses (Jay et al 1984).

2.12 COMMUNITY DOTS PROVIDERS

Community participation and contribution to health system is recognized as an essential element of public health interventions and primary health care (WHO 2008). Community DOTS is one of the community-based initiatives practiced in a few countries.

RNTCP has a huge network of senior treatment supervisors (STS), senior lab technician supervisors (SLTS), health visitors and doctors across India for case detection, diagnosis and treatment. Besides these staff there are volunteers from the local communities to strengthen the control programme. These community DOTS providers supervise the DOTS medication regularly from their places and follow up on the defaulting patients. They also refer the people with symptoms to nearby health centers. Many cured patients from the local community serve as volunteers. Chemists, school teachers, grocery shop owners, tailors and ward councilors provide this service in their locality. They are given a small incentive by RNTCP.
Similar programmes involving the local community members are very popular in other countries as well. In year 2004, the Government of Ethiopia launched a community-based initiative under health extension programme (HEP) with an emphasis to establish reflective and responsive health delivery system to the people living in rural areas. HEP programme focuses on promoting health and providing preventive and selected curative services to improving Tuberculosis Control in Ethiopia (Daniel 2011).

A former TB patient with considerable influence in the local community can advise TB suspects regarding knowledge of TB and health care seeking (Jhoansan & Long 2000). They can act as a link between the community and the program centre. This is very similar to what the DOTS volunteers are doing in India. RNTCP has appointed many former patients as DOTS providers in several areas to supplement the role of a health worker at the DOTS centers. These kind of Health extension programmes involving former patients can ensure equitable access to the community in disease prevention and control, family health service, hygiene and environmental sanitation, and health education and communication as a cross cutting issue (Argaw 2007). Community DOTs providers are responsible to provide health education, identify and refer TB suspects, trace defaulters and ensure treatment adherence.

2.13 MEDIA FOR TB COMMUNICATION

Communication programmes are more effective when consistent messages are conveyed through a mix of communication channels. This approach helps emphasize and reinforce messages, and enables the program to reach different sectors of the population, who may be more receptive to one form of communication over the other. In Peru’s TB communication programme, the slogan “Treatment of one is prevention for all” motivated the community to become involved with the programme. Peru’s national
Tuberculosis control programme disseminated consistent messages through national television, radio, local radio stations, print materials, billboards, community gatherings, theatre shows, video spots in clinics and home visits (HC insights Peru 2004).

Multiple approaches are likely to achieve the goals of any health communication programme, especially in rural areas with limited availability of communication channels. A study done by Rajeswari et al (2006) in south India finds that dandora, loudspeakers, wall posters could be effective in rural areas. This study also shows that in rural south India, television is the main source of information and this channel of communication may meet the challenge of reaching the ‘interior pockets’ of rural India.

Mass media has a good reach amongst urban audiences, providers and the target groups for advocacy – policy-makers, influencers, NGOs, the media, the corporate sector and opinion leaders. It helps in generating positive word-of-mouth opinion, which can be an extremely powerful medium (Agarwal et al 2005).

A study done in New Delhi by Sharma et al (2005) shows that the majority of the patients in all the areas were in favour of television being a source of IEC. Door-to-door campaigns were favoured by those residing in slum and rural areas, re-settlement colonies and walled city. In the same study, the majority of DOTS providers felt that having IEC material in the clinics in the form of pamphlets, handbills and handouts would be very beneficial.

In the city of Mumbai, a pilot attempt by Rangan et al (2003), which included adoption of area specific IEC strategies, has shown a favorable impact on programme indicators.
2.13.1 Collateral Media

Commercial items and commodities of value are used for carrying the printed messages on them. The targeted audiences are motivated to read the messages on the item because of its attractiveness and the value they attach to it. The collateral media can contain only a short message though it has high visibility.

Educating the public through tagging TB messages on utility products like pens, bags, key chains, T-shirts, umbrellas, cups and drinks can be effective. Some of these materials are used and distributed during rallies, campaign days and world TB day celebrations. State unit of TB, Tamilnadu has distributed calendars with printed messages of Tuberculosis on each page. Some NGOs working for TB cause provide information on TB by tagging messages on the buses, taxis, boats etc.

2.13.2 Other IEC Activities

Public events such as rallies, marathons, parades, fairs and photo exhibitions can also be used effectively to reach a large number of people. Forming human chain, celebrating world TB day, conducting quiz programmes and games for the public and schools also come under IEC activities. These functions are necessary for maintaining the visibility of the Tuberculosis disease among the public and promoting advocacy with the policy makers, local leaders. Cultural programmes like folk performances and musical concerts supported by the local communities provide a sense of ownership to the people.
2.14 THE ROLE OF MOBILE PHONES IN TUBERCULOSIS CONTROL

Among the many popular and affordable ICT tools, mobile phones are the most widely used devices by all sections of the society in India and across the world. The World Health Organization and UNAIDS have deemed that stepping up telecommunications technology in resource-constrained healthcare settings is a priority (UNAIDS 2011).

All over the world health promotion programmes make use of SMS text facility of the mobile phones. In Britain, women received text-message reminders to take their birth-control pills (Medical news today 2007).

According to a study done during 2006 on the mobile initiative project at Cape Town in South Africa using cell phones is more effective than conventional means. It also saves the health system and patients both time and money (Kaufman 2009).

Mobile phones have a greater potential in the treatment of Tuberculosis patients. They can play an important role in medication adherence. TB health workers and DOTS providers are supposed to monitor the patients regularly, and it is unrealistic to expect health workers to do this job on a daily basis. Health workers can follow up on the defaulting patients through mobiles, and remind them about the DOTS medication. It is an easy and cost effective way to communicate with and monitor hard-to-reach patients in remote locations. Short message services (SMS) texts can be used as reminders to take their regular medications. Patients can be motivated to adhere to the treatment course and their doubts can be cleared through the phones (Barclay 2009).
The TB medication adherence rate in Western Cape, South Africa, increased from approximately 40% to more than 90% with the use of the SMS reminders (Singer 2009). A mobile phone biometric device technology was recently initiated in India to monitor 3000 TB patients in New Delhi region (Pharma biz 2012).

Because of the strong stigma associated with the disease some patients do not want neighbours in the community to know about their TB status, so they prefer talking on mobile phones to health workers visiting their houses. Some patients give false addresses to avoid visits by the health personnel. Mobile communication can be used in such cases. Mobile phones have many advantages. They can overcome barriers such as stigma, privacy loss and transportation limitations associated with the traditional interventions (Shet et al 2011).

The first phase of the DOTS course may cause side effects like nausea and vomiting in some patients, and this may discourage the patients to continue with the medication. Patients can clear their doubts regarding side effects, food and other aspects of the disease through mobiles immediately. Health workers can give counseling to patients at a convenient time. ICTs can be very effective vessels for the creation and consumption of persuasive and motive content (Ramachandran et al 2010). Educating family members of the patients through mobiles about the infection can help prevent further infection within the family and the community.

The alarm feature can be used as reminders to take the drugs by the patients. Mobile phones are used to track the new patients when they are on the move and when they give incorrect address. The other features of the mobiles such as FM radio, voice mail, internet has a huge potential in health communication.
About 19 million new subscribers were added each month during the first four months of 2010 alone according to supply mobile industry forecasts (Jagdish Rebello 2010). The wide mobile phone penetration with this rapid increase rate can be used effectively in TB communication and control efforts.

The importance of IEC in improving treatment seeking behaviour, self-reporting and treatment adherence among people and TB patients has been highlighted through various studies done in different parts of the world. This chapter also explained the positive effects of the IEC messages and appropriate channels related to many aspects of the Tuberculosis disease through ACSM strategies, IPC and counseling by health workers and mobile phones. The role of information and knowledge in empowering TB patients and promoting behaviour change is also stressed upon with citations from many research studies.