

APPLICATION OF EHEALTH FOR PATIENT AWARENESS DURING DISASTER FANI: A GOVT. INITIATIVE

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ABSTRACT--Use of electronic media in ehealth technology for RCH patient awareness for their treatment to be done institutionalized during disaster play a significant role in terms of responsible and ethical coverage. The Govt. use TV and social media which as information broker and conduit of information in the affected region during the response and recovery phase. The govt. are expected to give accurate, professional, comprehensive and timely data when there are injuries, fatalities and RCH interventions are involved. The health management information system can also be used for outreach the probable RCH patients to provide them shelter, to provide them shelter, to provide them education regarding treatment and facility available in healthcare system, to reduce their stress and panic level. Here the author describes Ray Jone's Conceptual map and Lily model to propose her own conceptual model and relates different literature for disaster technology response and assess the RCH patient awareness and satisfaction level during their stay at Hospital during disaster Fani because of ehealth technology improving efficiency healthcare system.

Keywords: Initiative, Ehealth for Patient, Reduction programmes.

I INTRODUCTION

"During disasters, hospitals are the main facilities within the healthcare system that provide medical care to casualties, RCH patients. Disasters and crisis can occur at any time, causing pain ,human suffering and loss of life. So if the health system are not prepared to deal with a crisis, the vulnerability of both individuals and communities becomes even more pronounced. Thus preparing a health system for crisis is not optional task. Strengthening, implementing preparedness planning as continuous process planning with a multi hazard approach and establishing sustainable crisis management and health related risk reduction programmes."

• Objectives

- a. The authors has reviewed differed literatures related to application of ehealth in Hospitals in disaster periods and presented an abstract of it.
- b. The author has used statistical method to assess the significance of different determinants of proposed model by her combining the concept of 1.conceptual map of ehealth research. 2.Lily model.

II LITERATURE REVIEW

2.1.Introduction

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Tamer Salameh El Qadoud in his thesis “**Assessment of Health System Crisis and Disaster Preparedness among Governmental Hospitals in Gaza Strip, Palestine**” has elaborated as below:

"The health system is one of the important components of the society and the development of any country is measured by the health services provided and the life expectancy of it's people. Hospital as part of health system offer medical treatment to people in normal daily life and emergency events. Hospitals are complex and multidisciplinary, relying on support and supply from external resources and during a crisis event, an interruption of standard communications, external support services or supply delivery can disrupt essential functions and even a high no of casualties, emergency and sheltered RCH patients who need can make overcrowd in the hospital beyond it's capacity(WHO-2011)"

2.2. Scope of Hospital disaster Plan and preparedness using ehealth

Disasters are unexpected events that may occur with mass destruction and high no of casualties. Thus preparedness is one of the major step in health system plans and activities. Preparedness for disasters is dynamic and continuous process that is not tied with specific time, but should always be ready. Specifically the RCH patients need shelter before hand reduce the maternal and infant mortality in emergency period. The MCTS database can be used to approach the expected mother beforehand and Govt. can give them shelter and provide them right treatment at right time.

2.2.1 Hospital Disaster Plan

Being prepared to emergencies and disastrous events is an active role of any hospital administration. Each hospital should have written and applicable plan for emergency events and these plans should categorize emergency events in different levels according to nature of the events.

2.2.1.a. Pre –Disaster Phase

The pre-disaster phase involves the process of preparedness which is very important for effective response to disastrous events. For Hospitals, this phase involves planning for emergencies, staff education and training to improve their skills and ability to work under pressure with mass casualty events and high influx of victims with injuries

2.2.1.b. Disaster Phase

- **Activation phase-** during this phase the hospital incident commander is appointed. His role is to direct all hospital activities and operations (UNDP/GOI, 2002:26).
- **Operational phase-** in this phase, all the hospital operations for mass casualties are conducted in accordance with the EP.
- **Deactivation phase-** occurs when the flow of victims decreased and is not overwhelming the hospital resources and the EP is deactivated.

2.2.1.c. Post –disaster Plan

As part of the planning process, post disaster phase should be integrated in the EP. This phase involves evaluation and feedback for all the activities of the pre-disaster and disaster phases, and define actions for improvement in the future (Chimenya, 2011).

2.3.E-health in disaster

SimaAjami and Parisa Lamochi“**Use of telemedicine in disaster and remote places has elaborated in their article”** the importance of ehealth in disaster period.

"E-health describes the use of medical information exchanged from one site to another via electronic communications to improve patients' health status and care.Using new technologies to manage and organize events and disaster can be very useful by using the telemedicine management rules. Crisis management in disaster should reduce the harmful effects of accidents, deaths and damaged by using a planned program of preparation and mobilization. Despite of a lot of experience in crisis management, it has limited use of the telemedicine in disaster. Use of the telemedicine in disaster management is the main issue to save lives of accident victims. According to the devastation created in the health services infrastructure has become an""important point, the existence and utilization of the telemedicine technology and according to continuously improvement in electronic technology, communication to deliver health services in remote areas.The E-health is one of the latest developments in information technology and communications. Change is an efficient tool in providing quality health care to individuals, especially in critical situations. British Association of Telemedicine: The telemedicine is, delivering health services, where distance and time is an important factor by professional using information and communication technology for accurate information regarding diagnosis, treatment and prevention of diseases and research, using the latest achievements in the field of health services in order to provide more health."

2.3.1The ehealth/ telemedicine applications are divided into four groups, include:

1. Tele-consultation that can happen through various means such as telephone, E-mail, or video conferencing.
2. Tele-education today in the world, it has been proved that every scientific development requires specialized training groups.
3. Medical emergency and assistance to victims: In critical situations and disasters access to medical emergencies is difficult; the telemedicine can be a short way and take place more quickly.
4. Tele-surgery in the telemedicine has great social and economic benefits that highlight the need of this technology. The main advantages of this system include: Reduce costs, reduce waiting time, reduce travelling, improve consulting, etc.

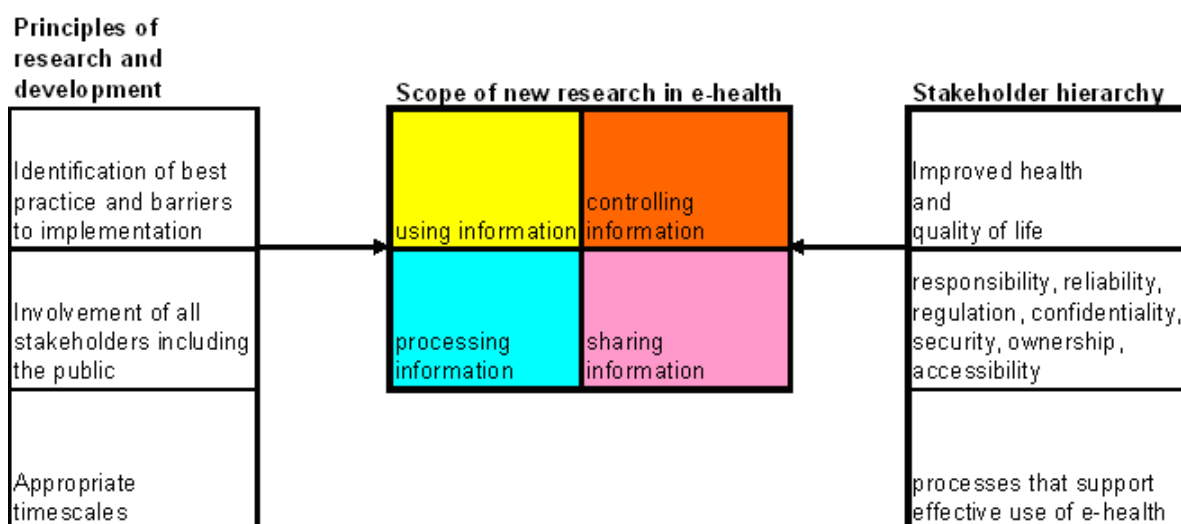
2.3.2.Disaster Incident Management

1. Before the incident: The most important activity is the emphasis on prevention and preparation phases of disaster;
2. After the incident: Hour to weeks after the accident;
3. Rehabilitation: After the incident may remain accident-induced effects for months and years. They can include, physical and mental effects in society.

2.4.1. Scope of ehealth Information

Ray Jones and his team in their research paper “**What Is e-Health (5):A Research Agenda for e-Health Through Stakeholder Consultation and Policy Context Review**” studied the "basics of e-health, study design, the parallel methods of stakeholders consultation and policy review, policy context, synthesis and conceptual mapping, study of principles of research and development of e-health research. According to them there are basically 12 groups of stakeholders i.e NHS e-Health innovators and implementers, University researchers in health informatics, NHS staff in primary care, NHS staff in secondary care, NHS primary care trust managerial staff, NHS acute trust managerial staff, Suppliers of ICT to the NHS, Professional organizations and royal colleges, Informatics trainers, Governance and other regulators, Charities and other information providers, Other NHS managers. the researcher group followed 2 parallel strand method and they conducted many focus group interviews where 37 health professionals representing the above mentioned 12 stakeholders group.15 themes were developed using content theme analysis and level hierarchy of themes developed. Paralleley, they developed a “schema” for interviewing 26 policy makers and 95 documents reviewed.32 recommendations developed and taking the view of stakeholders all the themes regrouped in to six themes which reformulated in to conceptual map of e-health research. The research concludes as follows: The scope of e-Health research (using, processing, sharing, controlling information) derived empirically from this study corresponds with “textbook” descriptions of informatics. Stakeholders would like e-Health research to include outcomes such as improved health or quality of life, but such research may be long term while changes in information technology are rapid. Longer-term research questions need to be concerned with human behaviour and our use of information, rather than particular technologies. In some cases, “modelling” longer-term costs and benefits (in terms of health) may be desirable."

2.4.2 CONCEPTUAL MAP OF E-HEALTH RESEARCH



2.4.3. CONCEPTUAL MAP OF E-HEALTH RESEARCH

The researcher Ray Jones, Ray Rogers in their research paper “ E-health stakeholder consultation and policy context review ”August 2004 edition has elaborated the 4 process of information as stated below:

- i. Using information- Information is used in decision support and the organisation of services as well as for reassurance of professionals and patients, and in therapy (such as cognitive behavioural therapy). A number of research recommendations arising from the policy context review concerned use of information in decision support.
- ii. Sharing information- Both policy context review and stakeholders identified sharing information as having a large number of research questions including both how information should be shared across sites (including hospital to home), across sectors (for example, between social services and NHS) or between different professional (and patient) groups (for example, between doctors, nurses, dentists, patients).
- iii. Controlling information- This is the group of concerns ranked second by stakeholders. It is slightly 'wider' than control, incorporating issues of accessibility as well as reliability, confidentiality, security, ownership and regulation, but we have yet to find a better term.
- iv. Processing information- This covers a wide range of topics from how best to present information (should it be tailored?), to where to present it (should it be 'pushed' to the user, or should it wait until the user 'pulls' it?), to how best to integrate information from a variety of sources and what services are required (for example, in electronic ordering and home delivery of medicines).

2.4.4. STAKEHOLDERS HEIRARCHY & RECOMMENDATION

1. Technology meeting needs and improving health and quality of life

- i. To review the costs and benefits of a range of recent e-health applications, including the modelling of new forms of care made possible by information and communication technology (ICT) support.
- ii. Further, to present those examples of e-health applications shown to have a demonstrable effect on improved health and quality of life to professional and public stakeholders to obtain their views as to the nature of the most appropriate investment in e-health.

2. Reliability, Regulation, Accessibility, Confidentiality, security, ownership Responsibility

- i. To investigate how health professionals and patients discriminate between reliable and unreliable health-related information.
- ii. To examine the circumstances in which regulation of information provision and use is necessary and further when education and empowerment of professionals or patients is a more effective option. Additionally, what are health professional and patient attitudes towards the regulation of health information?
- iii. To investigate the extent to which health professionals advise patients as to reliable sources of information on the Internet, television and other media.
- iv. Further, to examine the level of preparation and support health professionals require to provide such advice and, additionally, patients' expectations of this advice.
- v. To determine the subject of responsibility if health-care errors are made as a result of information transfer.
- vi. To explore how social organisation and different technologies can be used to help prevent inequity of access to information for both patients and professionals.

- vii. Further, to identify initiatives where groups traditionally considered to have restricted access have successfully achieved training and access to new technologies. To explore health professional and patient attitudes towards ownership and sharing of data.

III E-HEALTH LITERACY-LILY MODEL

Cameron D Norman(1) and Harvey A Skinner(2) in their article “ **eHealth Literacy: Essential Skills for Consumer Health in a Networked World**” has elaborated about ehealth literacy ,the lily model.”

2.5.1.The e-health literacy Model- Lily Model

"Eng (2001) defines eHealth as “the use of emerging information and communication technology, especially the Internet, to improve or enable health and health care . Specifically, eHealth literacy is defined as the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem. Unlike other distinct forms of literacy, eHealth literacy combines facets of different literacy skills and applies them to eHealth promotion and care. At its heart are six core skills (or literacies): traditional literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy. The relationship of these individual skills to each other is depicted in fig-2. Using the metaphor of a lily, the petals (literacies) feed the pistil (eHealth literacy), and yet the pistil overlaps the petals, tying them together. Within the lily model, the six literacy’s are organized into two central types: *analytic* (traditional, media, information) and *context-specific* (computer, scientific, health). The analytic component involves skills that are applicable to a broad range of information sources irrespective of the topic or context, while the context-specific component relies on more situation-specific skills. eHealth literacy is influenced by a person’s presenting health issue, educational background, health status at the time of the eHealth encounter, motivation for seeking the information, and the technologies used."

2.5.2.Six Literacy Categories

1. Traditional Literacy

This concept is most familiar to the public and encompasses basic (or prose) literacy skills such as the ability to read text, understand written passages, and speak and write a language coherently. Technologies such as the World Wide Web are still text dominant, despite the potential use of sound and visual images on websites.

2. Information Literacy

The American Library Association suggests that an information literate person knows “how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them” . An information literate person knows what potential resources to consult to find information on a specific topic, can develop appropriate search strategies, and can filter results to extract relevant knowledge

3. Media Literacy

Media literacy is a means of critically thinking about media content and is defined as a process to “develop metacognitive reflective strategies by means of study” about media content and context. Media literacy is a skill

that enables people to place information in a social and political context and to consider issues such as the marketplace, audience relations, and how media forms in themselves shape the message that gets conveyed.

3. Health Literacy

The health literacy pertains to the skills required to interact with the health system and engage in appropriate self-care. The American Medical Association considers a health literate person as having “a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment. Patients with adequate health literacy can read, understand, and act on health care information” .

4. Computer Literacy

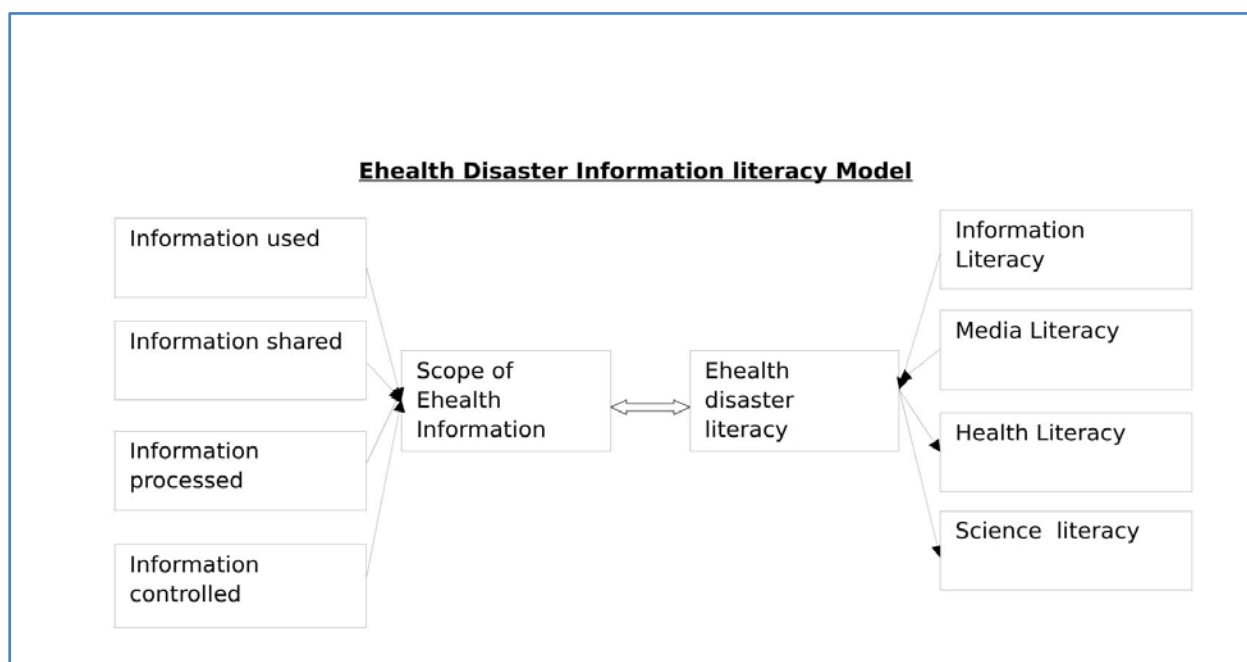
"Computer literacy is the ability to use computers to solve problems. Given the relative ubiquity of computers in our society, it is often assumed that people know how to use them. Yet, computer literacy is nearly impossible without quality access to computers and current information technology. Computer literacy includes the ability to adapt to new technologies and software and includes both absolute and relative access to eHealth resources."

5. Scientific Literacy

This is broadly conceived as an understanding of the nature, aims, methods, application, limitations, and politics of creating knowledge in a systematic manner . The latter-mentioned political and sociological aspects of science are in response to earlier conceptions of science as a value-free enterprise, a position that has been vigorously challenged.

IV MATERIALS & METHODOLOGY

4. Proposed Model



4.1.a. Description regarding the proposed Model

The author has tried to establish a relation between 2 models derived from 2 different literature as mentioned in the literature review 1. Conceptual map of ehealth research and 2. Lily –ehealth literacy model. The proposed model shows there is relation between different type of information component and different categories of literacy of Lily model.

4.2. Sample Design-The author have used a random sampling of 53 respondents of Capital Hospital, Bhubaneswar of 2nd, 3rd and 4th May (Pre-disaster, disaster and Post –disaster) when disaster Fani (3rd May) occurred at Bhubaneswar. The questionnaires were collected by telephonic interview and 33 respondents were tabulated (11 responses of each day).

4.2 Research Design-The 5 point likert scale is used to assess the responses, i.e. very good (5), moderately good (4), neutral/no idea (3), little bit good (2), Not at all good (1). The author used one way Anova method to verify the significance of science, information, health and media literacy during disaster Fani. If the F score is more than the F –table value, then there is significance of the literacy component exists.

4.3. Survey Instrument tool-The author used a questions having 20 questions of 4 groups, i.e. Information used (4 que), information shared (5 que), information process (5 que) and information controlled (6 que). The questions are related to science (4 que-1,4,14,16), information (8 que-2,3,9,11,12,13,15,19), health (5 que-5,6,7,8,10), media (3 que-17,18,20) of Lily model. The traditional and computer literacy were ignored for convenience. The traditional and computer literacy were ignored because of non-significance related to survey as per field observation and related literature. (questionnaire attached as annexure-1).

4.4. Research Methodology-One way-ANOVA is used for assessing the significance level of categories of different literacy on scope of information regarding ehealth disaster literacy model. If the calculated F value is more than table –F value then that literacy category has positive significance in ehealth disaster literacy.

- First step- Mean of all samples calculated.
- Second step- Grand Mean calculated by Mean/sample no
- Third step- Sum of Squares (SS) is calculated by multiply the (n-1) to square of (Mean- Grand Mean)
- Fourth Step- SS between (SS.b) = sum of all SS
- Fifth step- Mean Square between (MS.b) is calculated by dividing degree of freedom between of groups (SS.b/k-1)
- Sixth step- SS within
- A. Square of standard deviation of each sample calculated.
- B. Multiply (n-1) by square of standard deviation.
- C. SS .w is sum of (n-1)*ST DEV square
- Seventh Step- MS within –SS.w/(N-K)
- Where N is total no of items in the sample
- Where n is no items in the group.
- K is the sample no.
- Eight Step- Calculate $F = \text{MS bet} / \text{MS within}$

4.5. Result

SI No	Values	Science	Information	Health	Media
1	Grand Mean	4.136	4.204545	4.127273	4.040404
2	SS BETWEEN	1386.934	791.4771	59.78182	50.55892
3	MS BETWEEN	43.3417	24.73366	1.868182	1.579966
4	SS WITHIN	5151.6	216	151.6	42
5	MS WITHIN	31.22182	0.935065	1.148485	0.63636
6	F=MS.b/MS w	1.38819	26.45127	1.626649	2.482804
7	Table F value	2.27607	1.92692	2.14223	2.48872
		Insignificant	Significant	Insignificant	Significant

- From the One way ANOVA test, the author tested the significance level of science, information, health, media. The Information literacy has strong positive significant influence on ehealth disaster literacy. The Media literacy has narrow but positive significant influence on ehealth disaster literacy.

SI No	Values	Info. Used	Info shared	Info.Processed	Info Controlled
1	Grand Mean	4.424242	3.890909	4.224242	4.111112
2	SS BETWEEN	62.80682	62.42909	22.00242	48.51852
3	MS BETWEEN	1.962713	1.950909	0.687576	1.516204
4	SS WITHIN	47.84889	164	133.2	137.3333
5	MS WITHIN	0.478489	1.242424	1.009091	0.832323
6	F=MS.b/MS w	4.101899	1.570244	0.681381	1.821653
7	Table F value	2.27607	2.14223	2.14223	2.04925
		Significant	Insignificant	Insignificant	Insignificant

- From the One way ANOVA test, the author tested the significance level of information used, shared, processed and controlled. The Information used component has positive significance on scope of information and ehealth information literacy. This information can be used massively and scientifically to get better outcome in patient awareness.

V CONCLUSION

Though the author found positive significant influence of information literacy and media literacy on ehealth disaster literacy and ehealth information scope, there is long way to go. Other literacies may be improved by Govt. support as science literacy amongst healthcare professionals and health education literacy by Ashas. The information used has positive significance in scope of information and can be used massively. But other components have to be significantly designed for better influence.

Annexure-I

	Information used				
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1	1	What is JSSK beneficiaries perception about the clinicians who are using decision support system rather than those who are not using it.	very better	Moderately better	Neutral/ No idea	Little bit better	Not at all better
2	2	Ask whether the JSSK beneficiaries aware of disaster management protocol and database to get shelter in hospital.	Very aware	Moderately aware	Neutral/ No idea	Little bit aware	Not all aware
3	3	Ask to jsskbeneficiary whether they are aware about labour room record,birthregsiter and MCTS registraion.	Very aware	Moderately aware	Neutral/ No idea	Little bit aware	Not at all aware
4	4	Ask JSSK beneficiaries how much pateint calling system,mobileservice,tele consultation effective for pateint service.	Very effective	Moderately effective	Neutral/ No idea	Little bit effective	Not at all effective
		Information said					
5	1	Ask to JSSK beneficiaries whether they are informed by NHM staff ,Ashas and othe education providers to take shelter in Hospital on the basis of MCTS registration and they they benefitted out of it.	Very well informed	Moderately informed	Neutral/ No idea	Little bit informed	Not at all informed
6	2	about their attitude towards information shared in TV,mobileetc.,mobilekilkari app for their awareness by administration	Very flexible	Moderately flexible	Neutral/ No idea	Little bit flexible	Not at all flexible
7	3	about their expectation level for speedy delivery of service regarding e-registration and pateint calling system and overall healthcare service	Very good	Moderately good	Neutral/ No idea	Little bit good	Not at all good
8	4	Ask to JSSK beneficiaries about their perception regarding capability of ASHAs of convincing them for taking consent for getting admitted in hospital involving their risk of treatment.	Very good	Moderately good	Neutral/ No idea	Little bit good	Not at all good
9	5	Ask to JSSK benefciaries whether they are confident on safety measures provided by Hospital which is promised by District Administration.	Very confident	Moderately confident	Neutral/ No Idea	Little bit confident	Not at all confident
		Information processed					
10	1	whether they got benefitted by the information provided to them through TVs,VCs,mobiles.	To very good extent	To moderate extent	Neutral/ No idea	To little bit extent	To no extent
11	2	whether they got the service for free such as information gathering ,MCTS card registration	To very good	To moderate	Neutral/ No idea	To little bit extent	To no extent

		during pre-fani period.	extent	extent			
12	3	whether they are well aware to register their MCTS card ,access the web to know their MCTS no.	To very good extent	To moderate extent	Neutral/ No idea	To little bit extent	To no extent
13	4	whether they know how to use MCTS no to get health information from their family doctor or any other source.	To very good extent	To moderate extent	Neutral/ No idea	To little bit extent	To no extent
14	5	Ask to JSSK beneficiaries whether the mobile apps,messages,e-learning and e-consultation are enough to support seriously ill mother and children and provide just in time information.	To very good extent	To moderate extent	Neutral/ No idea	To little bit extent	To no extent
		Information controled					
15	1	Ask to JSSK beneficiaries whether they aware what is reliable and what is unreliable information.	Very aware	Moderately aware	Neutral/ No idea	Little bit aware	Not at all reliable
16	2	about their perception regarding advice and treatment supported by healthcare professionals regarding their maternal careinfani to maximum possible extent.	Very good	Moderately good	Neutral/ No idea	Little bit good	Not at all good
17	3	Ask to JSSKbeneficiariesabout their perception regarding knowledge level of ASHAs and other social organizations regarding ehealth are adequet and at par with that of healthcare professionals.	very adequete	Moderately adequete	Neutral/ No idea	Little bit adequete	Not at all adequete
18	4	Ask to JSSK beneficiaries whether the information regarding healthcare service is cost effective or not.	Very cost effective	Moderately cost effective	Neutral/ No idea	Little bit cost effective	Not at all cost effective
19	5	Ask to JSSK beneficiaries regarding their knowledge level and views on confidentiality of their data(MCTS,e-registration,e-diagnosis) and how to use it.	To very extent	To Moderate extent	Neutral/ No Idea	To Little bit extent	To No extent
20	6	Ask to JSSK beneficiaries whether they rely on media more thaAshas.	To very extent	To Moderate extent	Neutral/ No Idea	To Little bit extent	To No extent

VI BIBLIOGRAPHY

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