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CASE STUDY AND REPORT

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Role of Inforamtion Communication Technology and its Impact on Health Sector

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Abstract This paper discusses different effects of ICT (Information and communication technology) on health care, in particular on health education, placing them in the context of rural and urban areas. Due to these modern technologies, the rapid transmissions of health knowledge have catalyzed achievements and opportunities, but also challenges and risks. Health care, including disease prevention and adopting a healthy lifestyle, has profited greatly by the development of ICT, advancing the best use of information and management systems for the betterment of the citizen. "A hypothesis testing is usually considered as the principal instrument in research. Its main function is to suggest new experiments and observations. In fact, many, experiments are carried out with the object of testing hypotheses. The null hypothesis, H0, represents a theory that has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved". It demonstrates how ICT can improve the distribution of health information, knowledge, comprising the male and female views on different health care questions.

Keywords: component Health education, ICT, Globalization, Informatics systems, Health knowledge.

I. INTRODUCTION

Globalization and rapid technological change have made knowledge a critical determinant of competitiveness in the world. ICT promotes the acquisition and absorption of knowledge and information. Health professionals agree that ICT are of tremendous importance to the future of education in the health domain. Health is profoundly affected by the application of ICT, which change the way people can access knowledge and the way they communicate with one another in daily behavior. Health is general condition of a person in all aspects. It is also a level of functional and metabolic efficiency of a human being.

A. Globalization

Globalization is a process of interaction and integration among the people, companies, and governments of different nations, a process that is an inevitable phenomenon in human history that's been bringing the world closer through information, knowledge, culture and exchange of goods. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world. Among many forms of globalization there is information and knowledge access and sharing.

Globalization and global health draw attention to the complexity of the movement of ideas, and people through time and space and the direct and indirect impact that it is having on people's health.[1]

B. 1.2 Health Education

Promoting good health, preventing illness and communicating about health issues are important aspects of effective health care. Increasingly, health communication is moving from a simple one-way delivery of messages to a more interactive dialogue that engages people in the issues, helps them find acceptable and appropriate solutions to health problems and encourages people and communities to play a vital role in protecting their own health.

Information and communication technologies have been seen as new and powerful tools in efforts to improve health information dissemination. [2]

C. Information and Communication Technologies (ICT)

ICT, in the globalization context, is all about global knowledge, access, participation and governance in the information age. Satellite Internet connectivity and other wireless technologies eliminate the need for telephones for dial-up access, thus Internet connectivity has expanded strongly.

Both the falling cost of computers and the explosive growth of the Internet as a communications and information resource have increased awareness of the potential for information technology to be a tool for disseminating information.

D. ICT and Health Care

Modern Information and Communication Technologies (ICT) now offer new possibilities for improving almost every aspect of health care, their implementation is a very relevant and fast accelerating process around India and internationally. The processes themselves vary greatly from scattered single initiatives of various IT solutions to large national programmes. Often treated as purely technical in nature, ICT

implementation in health care should gravitate towards the "softer/complex" i.e. people related issues end of the change.

Innovative ICT solutions in theses areas may be based on advancements towards ubiquitous and personalized network access and the miniaturization and connectivity of devices. New or improved equipment might be used for enhancing healthcare, such as miniaturized and cheaper electronics and sensors, high-density memory, micro-electromechanical systems, and novel combinations of existing devices. The decreasing cost and size of sensors, monitors and other equipment enables both novel uses for existing technologies and applications of completely new technologies. [3]

E. Goal of ICT in Health Care System

The goals for health systems, according to the World Health Report 2000 - Health systems: improving performance (WHO, 2000), are good health, responsiveness to the expectations of the population, and fair financial contribution. Duckett (2004) proposed a two dimensional approach to evaluation of health care systems: quality, efficiency and acceptability on one dimension and equity on another. Health care systems are designed to meet the health care needs of target populations. There are a wide variety of health care systems around the world. In some countries, the health care system planning is distributed among market participants, whereas in others planning is made more centrally among governments, trade unions, charities, religious, or other coordinates bodies to deliver planned health care services targeted to the populations they serve. However, health care planning has often been evolutionary rather than revolutionary. ICT helps to improve the knowledge base of Healthcare professionals via Internet Search, discussion, simulation techniques, improve presentation techniques for conferences and meetings and improve record keeping process of patients. [4]

II. ICT AND ITS IMPACT

A. Health Knowledge, a Critical Determinant

Globalization itself was fueled by new developments in information and communication technologies. Advances in ICT, knowledge and information sharing have transformed globalization process making the world a "global village".

Information is the basis of a well-functioning health system. Knowledge is the key agent for transforming both our global society and local communities. Sharing and strengthening health knowledge can be enhanced by ensuring equitable access to information for educational, scientific activities, leading to a strong public health domain of information.

ICT have clearly made an impact on health care also by improving dissemination of public health information, by facilitating collaboration and cooperation among health professionals (including sharing of learning and training approaches) and by supporting more effective health research and the dissemination and access to research findings. The flow of medical information and knowledge is shifting with increased access to the Internet, mobile phones, and data retrieval systems and that leads to adaptations in behavior. [5]

B. Achievements and Opportunities

When applied to health education, disease prevention and prophylaxis, ICT can provide considerable benefits and capabilities. Tremendous developments in health information technology have been recorded in recent years in the context of globalization. Sharing and comparing health information, increasing communication through the Internet have brought opportunities for enhancing the quality of life by increasing access of medical knowledge and for broadening the availability of quality education materials. The interactivity and global reach of ICT allows customized sharing of knowledge, materials, and databases, quickly and cheaply over long geographic distances.

ICT can provide new and innovative means to bring information and educational opportunities to greater numbers of people of all ages, including those who have historically been excluded, such as populations in rural areas and women facing social barriers.

C. Challenges

The challenges of globalization necessitate that countries develop their information and communication infrastructure and create an enabling environment for information and knowledge sharing. From a health communication perspective, it is access to health content that is important, not access to a computer. As a result, the number of people with indirect access to the information and resources available on the Internet is even larger. For every person who can directly access information or support provided by the Internet, it was assumed that he talks about what he finds or actively seeks information for at least one other person such as a family member or friend. The availability of informatics products in health domain and user-friendly interfaces should be ensured for everyone interested.

The wide and rapid implementation of ICT is associated with and accelerates the globalization process. It is vital that from these new technologies benefit health education and every person in the world interested in improving his own knowledge and state of health. Similarly, there is a need to prevent the potential adverse effects of such new technologies, such as inappropriate health information and stress caused by the lack of training in the use of the ICT.

D. Risks

Computer has steadily emerged as a tool for efficient educational and dissemination purposes; a larger convergence of all technologies and applications related to communication has increased the potential role of ICT in education. However the main problem facing the issue of ICT in health education is not the scarcity of ICT infrastructure, rather gross underutilization of the available ICT facilities by health professionals and citizens alike.

Ideally, health informatics systems will motivate or mobilize audiences to use an ICT application, but ultimately, it is only active information-seekers with at least a minimal knowledge about the health behavior that will use an ICT application. People need a reason to use a website and they need to know where to find it. The design and development of ICT applications should focus on providing an immediate benefit to those in search of information or support.

Health information offered might be incomplete, inaccurate and not timely or of poor quality so there is a danger that the use of ICT may expedite the dissemination of it because once entered in the computer and disseminated through the Internet, this information of "doubtful quality" will be automatically transformed to truth. [6]

III. STUDY CASE: STATISTICAL T- TEST

A. Method

We calculate the weighted mean of every value and at last added all these values. After calculated the total mean of

each category we calculated the standard deviation of each group and after calculated the standard deviation we calculated the standard error. The standard error is calculated as.

$$SE = SD/SQRT(N)$$

In the above formulae of calculating standard error the terms is described as :

SD = STANDERD DEVIATION
SQRT = SQUARE ROOT
N = TOTAL NUMBER OF TERMS IN EACH CATEGORY

Aft er calculating the standard error we put these values in the main't'-test calculating formula. By putting these values in the't'-test formulae we get the't'-value. The formulae for calculating the't'-test as under

$$t = \frac{MeanX - MeanY}{\sqrt{(SEX)^2 + (SEY)^2}}$$

MeanX = Mean of 1st Group of t-test
MeanY = Mean of 2nd Group of t-test
SEX = Standard Error of 1st Group of t-test
SEY = Standard Error of 2nd Group of t-test

In the t-test we included the error significant level at 5% and the degree of freedom is calculated by the total number of terms included in the questionnaire. So, for whole table the degree of freedom is calculated as

$$DF = N1 + N2 - 2$$

Where

N1 = NUMBER OF TERMS IN 1ST GROUP
N2 = NUMBER OF TERMS IN 2ND GROUP

B. Results

When a mass of data has been assembled, it becomes necessary for the researcher to arrange the same in some kind of concise and logical order. This procedure is referred to as tabulation. Tabulation is the process of summarizing raw data and displaying the same in compact form that is in the form of statistical tables for further analysis.

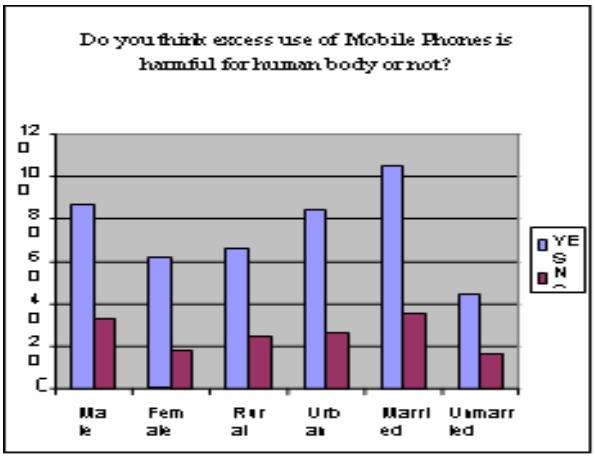

Figure 1. Use of mobile phone

Table I: Use of mobile phone

Do you think excess use of Mobile Phones is harmful for human body or not?							
		Sex		**Area**		**Marital Status**	
	Total	**Male**	**Female**	**Rural**	**Urban**	**Married**	**Un-married**
Options	200	120	80	90	110	140	60
1. yes	30	22	8	12	18	20	10
2. no	108	56	52	48	60	74	34

IV. CONCLUSIONS

The present research may prove beneficial to the further and large scale research in future. The findings from this research can bring patterns which may suggest alternative ways for treating patients making better use of resources. The research work include four classification, as geographical, it include the kaithal district, as chronological 6 months of time for the research, as Qualitative, it include sex, area and marital status, as Quantitative sampling is done in total of 200 people of Kaithal district including its tehsil as pundari, guhla, klayat, rajound and its villages. The questionnaire consisted of twenty questions(multiple choice type questions wherever possible) targeted to test the Impact of ICT in health care on the basis of sex, designation, area and marital status. In the given questionnaire we see that in many questions. To find out the Impact of ICT in health care with respect to the sex, designation, areas and marital status, t-test was applied on the data.

Table and fig 1.1 depict that 22 male, 8 female, 12 rural, 18 urban, 20 married and 10 unmarried people think that excess use of mobile phones is harmful for human body and 56 male, 52 female, 48 rural, 60 urban, 74 married and 34 unmarried people think that excess use of mobile phones is not harmful for human body.

On the query of software use in hospital 55 male, 30 female, 35 rural, 50 urban, 58 married and 27 unmarried people satisfactory with the software use in hospital and health clinic. 20 male, 15 female, 20 rural, 15 urban, 23 married and

12 unmarried unsatisfactory with the software use in hospital and health clinic.

On the question of quality of technology 55 male, 40 female, 39 rural, 56 urban, 66 married and 29 unmarried people said that quality of technology very important for health care system.20 male, 19 female, 28 rural, 11 urban, 25 married and 14 unmarried said that quality of technology not important for the health care.

On the query of cost of terms of h/w, s/w, training and education 57 male, 38 female, 38 rural, 57 urban, 70 married and 25 unmarried people said that cost in terms of h/w, s/w, training and education is very important.20 male, 19 female, 27 rural, 12 urban, 23 married and 16 unmarried said that cost in terms of h/w, s/w, training and education is not important. On the query of limited staff skill in using technology 52 male, 38 female, 40 rural, 50 urban, 73 married and 17 unmarried people said that it is very important to use limited staff skill in using technology.21 male, 12 female, 19 rural, 14 urban, 18 married and 15 unmarried said that it is not important to use limited staff skill in using technology.

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VI. REFERECES

[1] Maud Huynen, Pim Martens, Henk BM Hilderink, The health impacts of globalisation: a conceptual framework, Globalization and Health, Vol. 1, 2005.

[2] Adriana Alexandru, Marilena Ianculescu, Monica Parvan, Elena Jitaru "ICT and Its Impact upon the Globalization and Accessibility of the Education in the Health Domain",

[3] Milon Gupta, "ICT and Healthcare – Challenges and Opportunities", Eurescom GmbH Publication, 2006.

[4] S.B Gogia "ICT and Healthcare".

[5] Carol Dalglish, from globalization to the 'global village', Global Change, Peace & Security, Volume 18 Issue 2, 2006

[6] eEurope 2002: Quality Criteria for Health related Websites, COMMISSION OF THE EUROPEAN COMMUNITIES, Brussels, COM (2002) 667 final.

[7] C.R.Kothari, Research Methodology