Internet Based Study on Management of Functional Disabilities of Computer Users

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Abstracts: Introduction: Internet is one of the fastest growing media for Human Resources and Development (HRD). Computer has become an essential part of our Activities of Daily Livings (ADLs) at one hand and other hand, prolonged computer usage has increases the risk of occupational hazards. Prolonged Static work at computer system is a causative factor for poor postural ergonomic, structural derangements and dysfunction commonly at neck, shoulder and low back structures to develop functional limitation and progressively functional disabilities. The basic health education (HE) by means of ergonomic advises and exercise therapy may have efficacy to promote, prevent and cure for such FDs. However, internet itself can be a mode of HE system to be provided at workplace to cut the time & cost together. Purpose of Study: To find the efficacy of IBM for FDs of the computer users. Materials: Internet supported computer, web-site (www.ptmovements.com), web pages, basic health assessment form, Self Reported FD Questioners, Neck Disability Index (NDI) & Back Pain Functional Scale (BPFS), Study Design: Experimental Clinical Trial Methodology: 1256 computer users (M=867) participated online and assess for inclusive & exclusive criterions. Internet based self reported FDs questioners used to assess FDs in prior and post to two weeks of tailor made treatment program. Data Analysis: significance of FDs and impact of IBM on FDs was analyzed with SPSS -17, LOS set at 0.05 or CI 95 % Result: mild to moderate prevalence of FDs was higher neck & shoulder as compared to low back structures. The IBM has shown efficiency to reduce the level of FDs at NDI, and BPFS. Discussion: The internet based health education (IBHE) is well possible to deliver and to reduce the FDs. The advantage of time & cost effective approach in IBM has facilitated keen interest among computer users. Conclusion: The IBHE is well efficient and prospective to develop scopes of "workplace wellness" to promote, prevents, and cures for occupational diseases & disorders. E-health education has great prospectus in field of modern medicine. [Rathod P et al NJIRM 2011; 2(4) : 77-82]

Key Words: Internet Based Management (IBM), Functional Disability (FD), Computer Users

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Introduction: "Internet has changed the way we think and we live" Internet has a great efficacy in management (assessment and treatment) of FDs of the computer users.[1] The study has authenticated that "Connecting computer via internet has not only reduced the distance between persons but provided the health care system to every individual in the world".[2,3,4] The study has observed the internet as one of the most convenience method of HE approaching every individual at their door step. The study has observed the prolong usage of the computer is responsible for derangements / dysfunction of the neck, shoulder and low back structures to develop functional limitations and FDs (Fig. 1).[5,6,7] FD is a difficulty or limitation in performing ADLs.[8] Untreated and ignored such FDs may lead to pain and loss of function to seek immediate medical attention, increase the medical cost and loss of working hours. The internet has a great efficacy in finding compromised status of ADLs with the self-reported FD questioners.[9,10] The FD scores are redistributed in mild, moderate and severe levels of FDs to implements tailor made IBM.[1] A strategy of treatment by ergonomic advises and exercises therapy has efficient mode of the IBM.[11,12,13] The Statistical and Clinical significance in improvements in post treatment scores suggests efficiency of the IBM.[14]

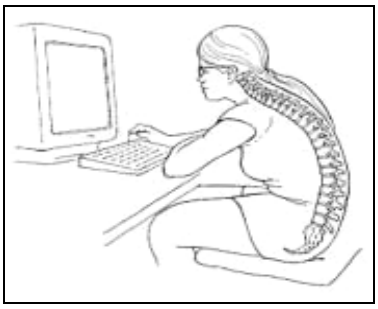


Fig: 1 suggesting impact of poor ergonomic on structural derangement and dysfunction

The study has revealed the Internet as a most successful tool of modern medicine for promotion, prevention and cure of the musculoskeletal disorders (MSDs).[15,16]The quality of Care (QOC) and the Quality of Life (QOL) to every individual at his/her doorstep will be the foresight motto of this study. The study has forwarded the internet as a mode of global approach and will put a millstone in the e-health care system (HCS) to empower the e-governance in favor of mankind.[17]

Aims of the study is to find the efficacy of the IBM of FDs of the computer users keeping in mind following objectives .

1. To evaluate the FDs among the computer users.
2. To evaluate the efficacy of the IBM of FDs of the computer users.
3. To emphasis on the analysis of the effects of the IBM on FDs.
4. To evaluate the effectiveness of IBM at workplaces.

Significance of the Study : The experimental clinical study was designed for the IBHE for management of FDs of the computer users. The outcome of the study is to extend efficiency of the IBHEs in HCS. The role model of this study will extend the scope of IBHE to improve the QOC and the QOL of the human beings. The study will be a pilot for those researchers and scientists looking to establish the internet based modern HCS for every individual and at doorstep. [1,10,18,19,20,21,22, 23,24.25,26,27,28]

Review of Related Literature : Corcoran TB[15] has observed the internet as one of the most convenience method of HCS approaching every individual for their health care system. Jay M. Bernhardt[22] has observed "Health Education" is the process to educate people regarding the health.[1,4] It can be defined as the principle by which individual and groups of people learn to behave in a manner of conducive for the promotion, maintenance, and restoration of health".[20]

Method of the Health Education: Cruz-Correia[22] has observed that the Face-to-Face HE has a great impact on learning and training as compared to other methods of the HEs. The IBHE is less popular method; however, it has shown a great potentiality in last few years among the medicos, health care workers etc… following to major growth in the internet users and its usage in last decade. Ramesh Farzanfar[24] has found information & communication technologies has facilitate collaborative symptom based management and could potentially increase the reach of such interventions to those who are unable to attend the Face-to-Face health Education or consultation.[23,30]

Health Education for Computer Users: Shah PB[27] believed that the computer was improving the quality of health care systems as well as the efficiency of the workers on one hand but on the other hand, as one uses computer for many hours continuously, s/he would notice increasing common symptoms of aches and pains in overused structures of neck, shoulder, wrist, and low back. Demur B[4] has admitted that the computer related health problems must be classified under occupational hazards. In last few years significant increase of the computer usage has raised the prevalence of occupational hazards to compromise functional and professional skills.[31-34]

Computer Related Health Disorders: Choudhary S Bathiar[17,35,36] has specified that computer related health problems depend on the posture and soft issues related changes and injuries. Hakala PT[37] has observed postural integrity depends on structural stability and functional mobility. Prolong usage of computer can compromise the structural stability and functional mobility.[5,34,26,38] Functional overuse factors are responsible to derange the physiological and anatomical properties of soft tissues including muscles, tendons, ligaments, joints capsule, etc…[7,8,10,12]

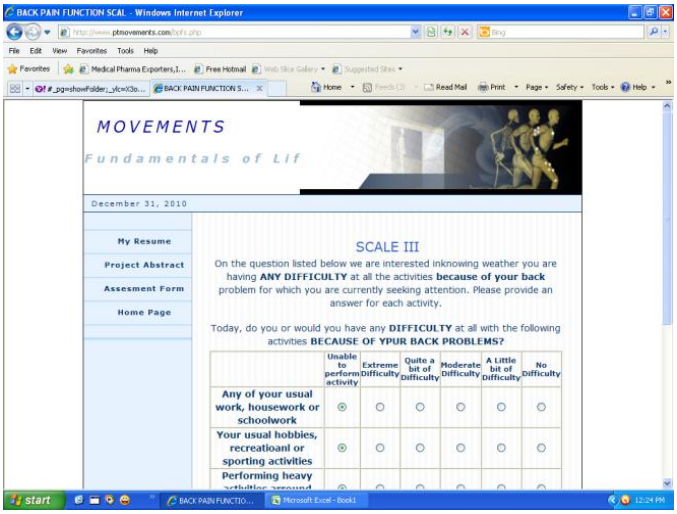
Functional Disability: Ludeke C[7] have closely observed progression of MSDs among prolong computer users to develop residual FDs to lead serious circumstance.[7,9,39] Prevalence of FDs among the computer users are significantly increasing following to prolong usage, poor posture and ergonomic.[8,13]

The IBM of FDs of the Computer Users: Stratford PW[39] and Vernon[40] have developed various self reported FD assessment scales and questioners.

The numerical description of such scales make easy to distinguish various levels of FDs as well as severity of symptoms of pain and loss of function. Smith MJ[38] has suggested various methods of postural correction and ergonomic changes for prevention of such FDs. Life style modification is one of the essential fragments of treatment program for prevention and cure of FD. Chiu TT[2] has concluded that prescription of the internet based exercises with diagram and audio-video techniques is well feasible and mode of treatment to gain structural stability and functional mobility. The Face-to-Face education delivery system remains the choice of method, however, the IBHE has an advantage of approaching large population without any constrains of infrastructures, skilled manpower, cost, time, and distance. Moreover, the IBHE system can provide advantage in saving loss of thousands of working hours; cost of health care; meet the deficiency of skilled health care worker, facilitating primary HCS at door-step.[22,30]

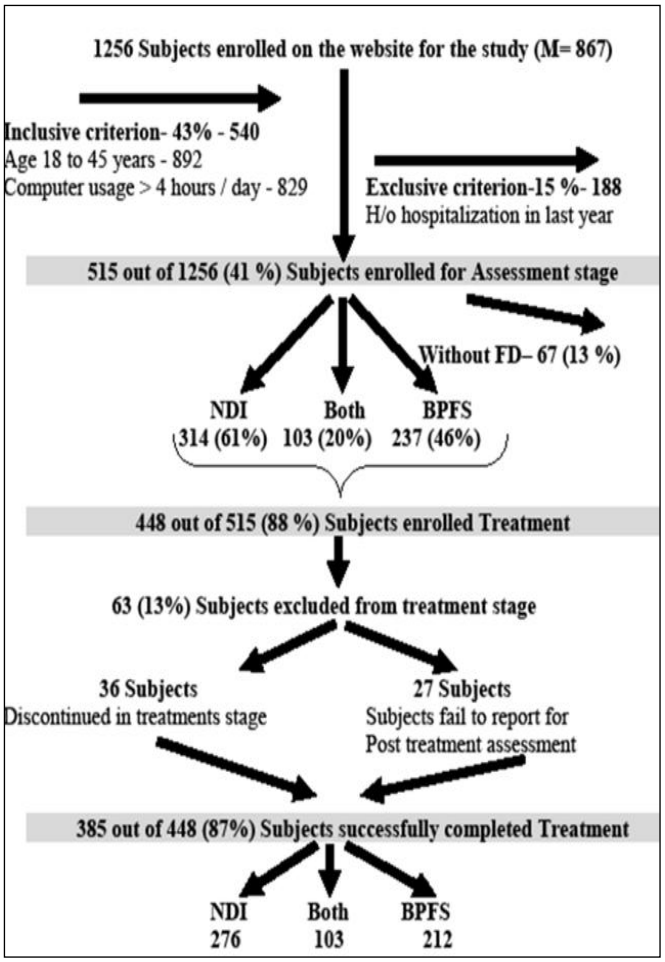
Material and Methods: The Experimental Clinical Trial is implemented by user friendly website. The website www.ptmovements.com was introduced to worldwide computer users by approaching international professional, institutes, universities, colleges, share-markets agencies, professional associations, communities, computer / software industries, as well as placing on the search engines, e-mails, blogs, facebook, Orkut etc.[16,19,20] The Objectives of the study was well explained on webpage.

Fig: 2 suggesting a webpage of BPFS



The website access was constructed with guidelines for voluntary participation for the study includes basic health assessment form, self reported health questioners, feedback forms and treatment procedures etc…[18,30] subjects were selected at two stages at (1) The Internet Based Health Assessment Procedure and (2) The Internet Based Treatment Procedure. (Flow chart 1)

Flow Chart-1 : Data Collection and Result during Assessment and treatment procedure



The Internet Based Health Assessment Procedure of FDs: Basic health assessment form includes basic health information about the subjects including and exclusive criterions. The Subject must complete the basic health information form and meet the selection criterions to proceed for the Self reported FD questionnaires of neck and shoulder - Neck Disability Index (NDI)[9,40,41,42] and low back structures - Back Pain Functional Scale (BPFS)[13,39,43] Activity specific FD questionnaires sub-classify all the Subjects in different levels of FDs.

The Subjects with incomplete assessment forms and without the FDs were excluded from the study. The Self reported questionnaires are designed to obtain the information to assess how the neck, shoulder and low back pain have affected functional ability of the Subjects to manage ADLs. The NDI consists of 10 functional activities; each functional activity is scored on a 6-point scale (0-5). Higher score represents more disability. Total score can vary from 0 to 50. The BPFS consists of 12 functional activities; each functional activity is scored on a 6-point scale (0-5). The total BPFS score can vary from 0, the lowest functional level, to 60, the heights functional level.

The Internet Based Treatment Procedure of FDs. Computer users were distributed as per the different levels (mild, moderate and sever) of FDs from the scores of NDI, BPFS and both.[2] Every Subject was provided tailor made treatment program through the e-mail, which includes Ergonomic Advise[5,8,13] and Exercises Prescription.[24,25,38,43.] The website preserves all the data and re-assess with NDI and BPFS after 15 days of the treatment program to find the changes.[21]

Analysis of Data: SPSS ver.17 was utilized for descriptive data analysis. Student Paired Sample T Test was used to compare the difference of FDs score within and between the two FD Scales (NDI and BPFS). Level of significance set at 0.05 and CI 95 %. Data analysis has done at the following two different stages of the study (1) The Internet Based Health Assessment Procedure of FDs (2) The Internet Based Treatment and Post Treatment Assessment Procedures of FDs

Result and Discussion:

Objective I - The (FD) among the computer users: The computer users (38 %) are statistically and clinically fall in mild to moderate level of neck and low back FDs, however, Neck related FDs were significantly higher than low back.

Objective II - Efficacy of IBM of the FDs of the computer users : Total 515 out of 1256 subjects (41%) were qualified for the study, however, 385 out of 515 subjects (75 %) had successfully completed the treatment sessions (Flow Chart I) suggesting, Reaching every individual at their workstation / doorstep for health care system Identifying activity specific pain and functional loss with Self Reported FD questioners

Objective III - Analysis of the effects of IBM of FD of the computer users: The Statistical analysis has shown significant impact of management (assessment and treatment) on FDs. Significant improvement in FD scores of NDI and BPFS. However, the Subjects with FDs at NDI have shown significantly higher improvement as compared to BPFS.

Objective IV - Effectiveness of IBM at Workplaces
The IBM at workstation / doorstep has shown significant and prospective outcomes for HCS : Right treatment at Right place has greater effectiveness in IBM. We have observed great affordability in implementation of IBM with Ergonomic advises and Exercise therapy at workplace. Time conserved from visiting or travelling to health care center was well utilized to perform more precise exercises at workstation.

Summary : The HE is an essential component of primary health care center (PHC) system of every country to maintain the quality of care and the quality of life of every individual. However, the prevalence of the occupational diseases and the disorders are significantly increased in last decade challenging the efficiency of the HCS of every country. Due to scarcity of skilled health care workers, health care centers, cost of transportation, loss of working hours of health workers (and patients) are causative factors challenging “HE”. It has been observed that “Internet based HCS will be the promising tool in the era of the modern medicine”.

Conclusion :

1. The high prevalence of FDs among the computer users has shown serious consequence in personal and professional activities of daily livings (ADLs).
2. The workplace wellness and Life style modification must be taken into consideration for promotion, prevention, and cure of FDs.
3. The ergonomic advises and the exercises therapies are precise modes of the internet

based prescription for FDs. However, the outcome remains prospective if executed at workplace.

4. The scope of the IBM has extended the prospectus of the telemedicine by constructing large "data-bank" for meta-analysis for the Evidence Based Practice (EBP) and Clinical Reasoning (CR) for improving the QOC and QOL of every individual.

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