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Disability Management: A Comparative Study between USA, China and India

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Abstract

Medical Science, Assistive Technologies, Alternate Skill Development, concept of Barrier free environment etc have augmented the life of persons with all kinds and degrees of disabilities. This has given rise to a new concept of life management and persons are able to lead a productive and independent life even after moderate to severe disabilities. Steps are being taken across the world to utilize this modern concept of disability management. However there is a wide gap between the approach of developed and developing countries, resulting into wider gap in the quality of life of individuals with disabilities in USA & India.

Present paper analyses the difference in approach as well as policy framework by a comparative study and suggests the new approach in the larger interest of India.

Introduction:-

With commendable progress in the field of medical science, there is a sharp decline in the cases of congenital disabilities and disability at childhood but the overall percentage of population with disabilities is going up primarily due to change in lifestyle and other reasons. The number of accidents have gone up significantly. Organized armed conflicts have come down qualitatively as well as quantitatively but ethnic clashes, terrorist violence etc. have gone up. Natural calamities are continuing as usual. New diseases i.e. diabetes etc have given rise to large scale of amputation in various phases of life.

Social and economic scenario has also witnessed considerable change. Earlier joint family system used to be the biggest insurance for persons with disabilities in India. Joint ownership of family assets and occupation (in many cases) used to give shelter not only to the persons with disabilities but also to others i.e. widows, parentless children etc. With time joint family system is now nearly nonexistent even in rural India. Similarly average life expectancy is on the rise. Singh, J P (2015) states that the percentage of persons leading lonely life at old age coupled with disabilities from mild to severe one is on the rise.

Change in perspective:-

Earlier the cases of congenital disabilities i.e. small pox etc. used to be very large. Disability at childhood was also a common phenomena and diseases like polio used to cripple the life. There was hardly any arrangement of their higher education. These people were not expected to lead an economically productive life. Joint families used to give them shelter, food and other necessary amenities as per their available resources. Remaining used to depend on community homes, ashrams etc. and lead a passive life.

In due course above charity based approach changed. Particularly after French revolution society felt that the basic necessities of life are rights of person with disabilities. Apart from above many of these PWDs challenged their destinies and acquired higher education and played a useful role in the society. With this rights based perspective began (Status of Disability – 2000).

Inclusive education and accommodations in employment:-

The performance of above luminaries with disabilities in various walks of life beginning from literature to politics and sports to bravery (Mishra – 2001) persuaded the society to think about the need to educate this class in an

inclusive set up and enable them to earn their livelihood and maintain their self respect with some accommodations in job.

Growth in the field of assistive technologies:-

Like medical science, technology also witnessed a leap and began assisting the persons in case of disabilities. With this, a new branch of knowledge namely "Assistive Technology" emerged with time. As per American Assistive Technology Act 2004, **Assistive Technology is any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities**. This enabled the persons to acquire education after disabilities effectively even in inclusive set up. Technology largely contributed in making the tasks to be performed in offices, factories and even in open working fields easier. It enabled the persons with disabilities to do those operations with the use of devices which were earlier considered impossible for them.

Barrier free environment:-

Physical barriers disable all kinds of persons in life to some extent. These adversely affect the non PWDs also in a significant manner when they are in difficult circumstances i.e. serious injuries, bone fracture, pregnancy in women etc. The mobility as well as working capacity of the individuals with moderate to severe disabilities is substantially reduced by these.

Disability alone reduces the functional capacity of individual. Physical barrier reduces it further. This develops attitudinal barriers in the minds of others and persuades them to think that certain tasks/ responsibilities are impossible for them. This adversely affects the self esteem of the individual and also creates a social disbalance apart from economic hardships.

Alternate skill development:-

Some people continue to do the same job/ similar kind of job even after disability. However some have to acquire a new skill to continue in the same organization or in other organization i.e. after disability a soldier in a combat regiment cannot continue in the same assignment and has to change to logistics department or some office of the armed forces.

With time a number of new professions were identified where person with particular kinds, extents and degrees of disabilities can work. The alternate skills needed for these professions were also identified and steps were taken to enable the persons with different disabilities to acquire these with or without use of technologies. Barrier free environment in living and working areas further enabled the PWDs to acquire these skills and earn livelihood with dignity.

Efforts at international level:-

Considering the above facts and viewing the experiences, United Nations Convention for Rights of Persons with Disabilities was ratified by a large number of countries. India also signed the same in 2007. It had three specific clauses of Assistive technology and its use. With this there is a responsibility of all these countries including India to adopt measures to deliver the ATs as per the needs of the individual to avoid/ minimize his partial/ full exclusion from employment market and ensure a minimum standard of life.

Review of literature :-

The status of life of persons with disabilities is witnessing a wide variation across the world. This depends upon a large number of variables i.e. age, poverty level, area of living etc. Table – 1 depicts a fair view of this.

Table 1

Percentage of different categories of PWDs in different parts of the globe

Population Subgroup	**Mild – moderate – severe All degrees of disability**			**Severe**		
Age group years	**Higher income countries**	**Lower income countries**	**All countries**	**Higher income countries**	**Lower income countries**	**All countries**
0 – 14	-	-	5.1	-	-	0.7
18 – 49	6.4	10.4	8.9	0.5	0.8	0.7
50 – 59	15.9	23.4	20.6	1.7	2.7	2.4
60 and above	29.5	43.4	38.1	4.4	9.1	7.4
Place of residence						
Urban	11.3	16.5	14.6	1.2	2.2	2.0
Rural	12.3	18.6	16.4	1.7	2.6	2.3
Income based	17.6	22.4	20.7	2.4	3.6	3.2
Q1 (Poorest)	13.2	19.7	17.4	1.8	2.5	2.3
Q2	11.6	18.3	15.9	1.1	2.1	1.8
Q3	8.8	16.2	13.2	0.8	2.3	1.7
Q4	6.5	13.3	11.0	0.5	1.6	1.2
Q5 (Richest)						
All groups	11.8	18.0	15.6	2.0	2.3	2.2

Note: Above data is based on WHO – World Bank study of 59 countries of various regions of world published in 2011.

With above it can be inferred that the disability is more prevalent in developing countries facing acute poverty.

Economic impact of disability:-

WHO – World Bank Report – 2011 further admitted that the economic cost of disability is significant but difficult to quantify accurately. However it plays an important role in making suitable investment in this direction. It has two major components, one reduction of income due to reduced productivity/ employability and other is increased expenditures in life. British Household Panel Survey done during 1991-98 indicates that the income of PWDs of working age is substantially lower (not less than 20%) than the same of non PWDs. Bardasi et al - 2000 has revealed that after disability Britishers loose job more than their counterparts of USA and Germany because of systems and policies. German employers are under obligation to fulfill an employment quota or else have to bear financial penalty which is utilized to run employment programs for PWDs. In USA special efforts are done to atleast make part time employment available.

US census 2006 reveals that the median earning of non PWDs is US$28000 while the same of PWDs is US$17000.

Additional costs of disability:-

Zaidi (2003) has inferred that overall extra costs of disabilities vary from 11% to 69% of the income of individual and most prominent variables are severity of disability and household type. Similarly Smith et al (2004) has concluded that the range of extra expenditures due to disability is from £389 to £1513 per week and variables are levels of need and types of impairment.

Due to above there is a wide gap between economic level of persons with disabilities across the world.

Loss to the nations:-

Apart from individuals, nations are also losing a lot due to disability. ILO has estimated this loss to be 3% of Chinese GDP and 7% of South African GDP where significant steps to mainstream the PWDs have already been taken. This loss is much higher in the countries like India where modern concepts of disability management are not adequately adopted.

Dichotomy in education and health sector:-

The significance of above problem increases sharply with reference to India. There is a wide gap between opportunities for rich and poor as well as urban and rural population. Desai (2008) and Balarajan (2011) have inferred that poor have least opportunities for education and healthcare as they have to depend upon primary health centers and government hospitals for health care and municipal schools and government colleges for education and both are ill equipped and hard pressed. On the other hand rich class has super specialty hospitals for health care and premier private educational institutions for education. The gap between rural poor and urban rich is much wider. There is a need to ensure that this gap does not increase further after sudden disability to avoid severe social imbalance.

Research objective:-

Above review of literature has persuaded to find answers of following research questions:

1. Whether the approach adopted to manage disability is same/ similar in USA, India and China?
2. What steps are needed to modify the approach adopted in India to come at par with first China and then USA?

Methodology:-

Steps taken in west are studied and their outcome is evaluated. Steps taken in China, a BRICS country which is in transition phase are also analyzed. At the end prevailing measures of disability management in India are studied and compared with the same of west and China. Results of comparison have been translated into conclusions and recommendations for approach and policy framework.

Results:-

Disability management in west:-

Western countries are since long time following social model of disability management where corrective action encompasses the individual as well as social environment. The individual gets medical treatment as well as ATs in an equitable manner and as a matter of right and social structure is made largely accessible for all persons including PWDs. Education system is made inclusive and accommodations are made in employment in favor of PWDs.

The above activities are taken up on proactive basis and individuals as well as nation take advance action by creating an infrastructure of insurance with long term disability benefits and people/ their employers choose right insurance policies. The tickets of road, rail and air travel include the premium of insurance to take care of disability during accidents. Apart from group as well as individual insurance to mitigate the impact of employment injuries and family healthcare etc. a number of financial instruments i.e. credit cards, mutual funds with a component of insurance are also available to take care of disabilities as a result of other incidences like any disease, mishappening at playground etc.

The above is a market driven approach and accordingly a number of tools and methods are developed, first to assess the impact of disabilities and then to deal with the same, equipped with enough resources. World Health Organization (WHO) has come out with a new method of calculating the impact of disability based upon biopsychosocial discourse known as International Classification of Functioning (ICF). In order to measure the outcome of intervention quantitatively, assessment system of Quality of Life has been developed. To assess the impact of various kinds of diseases/ situations, the disease burden, Disability Life Adjusted Years, Quality Adjusted Life Years have been developed and the same are extensively used in west.

A number of scholars have evaluated the above tools as well. Dahl (2002) has found ICF as a promising input for future development of rehabilitation services and research. Cieza (2005) has found ICF a connecting framework between problem, interventions and outcome, facilitating the selection of the most appropriate measure. Earlier health status, functional status, well being etc were used and it was difficult to understand, interpret and compare the various outcome study results.

Although there are some anomalies in ICF and DALY but Mathers - 2010 concluded that disability, a complex and multifaced phenomena having its route in culture, cannot be collapsed into one indicator. In due course the design of exercise plan for stroke survivors to selection of wheelchairs began on the basis of ICF (Riemer 2010).

Contribution of Insurance sector in disability management in west:-
A number of studies have been undertaken to evaluate the role of insurance companies in disability management. CFA (2013) report revealed that the insurance companies are largely mitigating the woes of American PWDs and quite often they are able to avoid the situation like loss of shelter, dependence on spouse, children or community food assistance. This support also avoids their health conditions worsening. UNUM a leading insurance company spent US$9 billions as long term disability benefit in the year 2012.

Acceptability of new concept of life management after disability:-
As stated earlier the insurance companies are obliged to pay monthly annuity which is normally 50% of the salary in case the person remains unemployable after disability. This is a huge burden and lead to develop an institutional market of assistive technologies of various kinds to mitigate the physical and their economic hardships of persons with various kinds and extents of disability by improving productivity and employability. The government also began to create/ support suitable infrastructure for this to utilize the residual potential of this class and thereby reducing the burden of social security.

Spieler (2012) and Morris (2015) have attempted to evaluate correlation between impact of work related disabilities and compensation system and accordingly improve social security benefit in Britain and USA. Under this first the efforts are done to make the PWD employable and only on failure in this, extend sufficient social security benefit to lead life based on minimum comfortable standards as a matter of right. In view of above WHO – World Bank report – 2011 redefined the rehabilitation process as a cross sectional activities carried out by healthcare specialists, AT specialists in conjunction with education, employment specialist as well as community based rehabilitation workers to improve overall upgradation of quality of life.

Developments in the field of assistive technologies:-
Large institutional market developed by insurance sector stimulated the research, development and manufacturing activities of ATs. A number of scholars have attempted to assess the cost effectiveness of these devices. Bowes (2013) has concluded that ATs to facilitate formal care of persons with dementia at home i.e. memory support systems, monitoring telehealth and Global Positioning Systems, are effective and discomfort as well as cost at institutions can be significantly avoided. Cook (2011) has described that i-pods and i-pads are not only good for classrooms but even at home and these normalize the life of students with disabilities as they are able to complete most of their daily tasks in time.

Souza (2010) states that 22.5% of persons with multiple sclerosis become wheelchair bound in short term (<10 years) and 54 % in long terms (>10 years). 60% of them use manual wheelchairs and only 8% use powered wheelchair. Use of wheelchairs is positively correlated to the duration of disease and age.

Development of new concepts in use of prosthesis and wheelchairs:-
Large percentage (52% as NSSO – 2002 survey) of Indian PWDs are suffering from locomotor disability. Similar is the situation in west and the persons suffering from moderate to severe disability i.e. amputation, spinal injuries are forced to use prosthesis and wheelchairs in their daily life. Both these devices have witnessed phenomenal changes in technology level, quality standards and selection criteria.

Perry (1993) has narrated that with static foot i.e. SACH foot even young adult traumatic amputee after spending 25% more energy are able to achieve 87% of normal velocity. Other weak/ aged amputees are able to achieve only 47%of normal velocity with normal energy. The ramps or uneven terrains pose a serious challenge before them. The use of new material and structural design in dynamic elastic response feet extend a feeling of buoyancy and with the use of less energy, amputee is able to ascend or descend the stairs/ ramps conveniently. Test walks revealed that dynamic response foot is far superior and put less influence on sound limb.

Dreier (2010) has described that while selecting the wheelchairs, issues related to stability, pressure distribution and carrying out everyday activities are to be essentially taken care of. Wheelchair should be selected in such a way that the individual is comfortably fitted in it. 10% of the user's weight can be borne by the armrests. Wheelchair should be flexible to take care of height of user.

Riemer (2010) has described the ways to optimize a wheelchair – user combination as under:

- Optimizing physical capacity and training of user

- Improving wheelchair – user interface i.e. interaction between the human system and the geometry of seating orientation and propulsion system mechanism aiming for a higher efficiency. This is operationalized as a better ratio of **internal power from the user** to the **external power required for propulsion**.
- Minimizing power loss of the **wheelchair-user system** by **reducing friction forces** and **optimizing the vehicle mechanics**.

The above is confirmed by Lin (2008) who has stressed on matching the critical chair dimension to users body dimensions, users' ability and intended use. With this wheelchair becomes an extension of user's body. With the above the selection criteria of ATs changed all together and focus is more on cost effectiveness instead of initial purchase price.

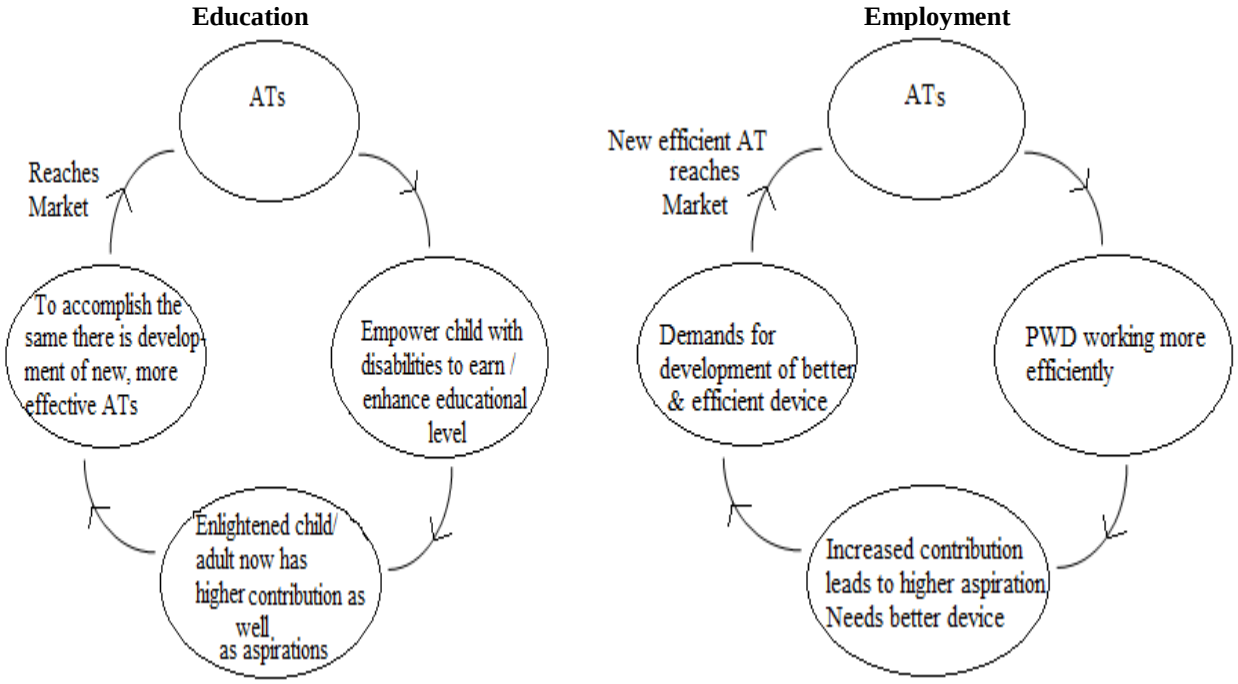
Quality standards and outcome measurements:-
Field of ATs is also a buyers driven market now and Lin (2008) has described the evaluation of titanium ultralight manual wheelchairs using standards developed by American National Standards Institute (ANSI) and Rehabilitation Engineering Society of North America (RESNA).

Lenker (2005) has described that the outcome of ATs depends upon device, practitioner, treatment setting, reimbursement context, treatment practices and presence of concurrent interventions i.e. physiotherapy etc. Similarly Demers (2001) narrated that AT intervention brings user satisfaction, clinical results, functional improvements, upgradation of quality of life and a measurable cost. The tools like QUEST (Quebec User Evaluation of Satisfaction with Assistive Technology) measures these with large accuracy and help in decision making.

Accommodation in social structure:-
Western society began accommodation in social structure so that neither a child nor an adult with disabilities is deprived of education/ skill development and they are extended full opportunities of career development. Reed et al (2005) confirmed that ATs compensate for lack of some abilities and contribute in inclusive education. Efforts were done to improve this situation and Dave Edyburn (2003) assessed that 3.8 million AT user students of USA need further strengthening of referral, evaluation and delivery system of ATs.

Job opportunities for PWDs in all areas:-
Innumerous attempts had been made to engage the PWDs in urban areas and the same are quite successful. Willcomm (2001) has narrated that under AgrAbility project the direct financial assistance is delivered to farmers for ATs, worksite modifications and independent living. Grisso et al (2010) has described that concept of AT design and implementation process in agriculture to improve the work participation of PWDs. The above steps created a paradigm shift in the area of employment for PWDs even in rural areas.

Relation between ATs and Life Management in West:-
The above approach leads to a continuous cycle of development and upgradation of ATs together with contribution of PWDs in various walks of life.



The continuous development and use of ATs lead to growth of a large number of companies in the field of AT i.e. Ottobock, Endolite, Ossur etc. who have now become multinationals.

Efforts done in other BRICS countries:-

Li, Mankui (2009) described that the transition of command economy to market economy as well as agricultural economy to industrial economy in China lead to large scale accidents due to sudden deployment of rural, migrant unskilled labor to industrial sites without adequate training and safety measures. This resulted into publically administered work injury insurance as a part of social insurance program run by Government of China in the year 2004. However it was concluded that the same was complex, imperfect and quite often contradictory. Barth (2007) concluded that this system is far inferior than the same of west where it has matured.

Chinese Government while realizing the above, enacted Social Insurance Law in 2010 and standardized national social security framework which delivers five types of social insurance benefits/ coverage i.e. pension, medical insurance, work related injuries insurance, unemployment insurance and maternity insurance. With this in case of severe disability also there is a provision of monthly income in proportion to income before onset of disability.

The above gave confidence to Chinese workers and social insurance created an institutional demand for ATs which lead to better infrastructure for ATs. The corporates like M/S Ottobock and NGOs like Motivation – UK established wheelchair plants in China and Chinese PWDs began to avail better devices. China also began to export wheelchairs and other devices manufactured by these companies.

The above lead to assessment of detailed data and specific needs of PWDs and lead the Government to plan accordingly. Some of them are as under:

Table – 2
Situation of PWDs in China

S.No.	Issues	Status
1	Income per capita of families	
	(a) With PWDs in urban areas	Yuan 4864
	(b) With PWDs in rural areas	Yuan 2260
	(c) National average in urban areas	Yuan 11321
	(d) National average in rural areas	Yuan 4631
2	Percentage of families having PWD member much below the poverty line i.e. earning less than Yuan 683	12.95%
3	Percentage of families having PWD member below the poverty line but better than extremely poor i.e. having income between Yuan 684 to Yuan 944	7.96%
4	(a) Percentage of PWDs who need extra medical treatment and medical assistance	72.78%
	(b) Percentage of PWDs actually receiving the extra medical treatment and medical assistance	35.6%
	(c) Percentage of PWDs who need for financial assistance and support	67.78%
	(d) Percentage of PWDs actually receiving financial assistance and support	
	(e) Percentage of PWDs who need for rehabilitation training	12.53%
	(f) Percentage of PWDs actually receive the rehabilitation training	
	(g) Percentage of PWDs need assistive devices	27.69%
	(h) Percentage of PWDs actually receiving assistive devices	8.45%
		38.56%
		7.31%
5	Percentage of PWDs enjoying minimum income protection	
	(a) in Urban areas	13.28%
	(b) in Rural areas	5.12%
6	Coverage of social insurance schemes for pension, medical facilities, work injuries and employment	Very poor in 2006

Source: Chinese data from Second National Survey on PWDs in 2006

The above social insurance contributed in assessment of situation and accurate demand. The gap between demand and delivery was also assessed in China. Accordingly the efforts increased. The productivity and employability of PWDs increased and expenditures of social security decreased as an outcome of new approach. With this the GDP of China improved and nation has now sufficient resources for social security and infrastructure for better healthcare and education. With this it is evident that the situation of PWDs in China is little worse than that of USA.

Research questions emerged with reference to India:-

Study of approach and steps taken in USA and China inferred that generally earning of PWDs is around 40-50% of common man and sufficient to maintain the reasonable standard of living for families of PWDs. Apart from above educational facilities, health facilities etc. are also made available in west and BRICS countries i.e. China from infrastructure developed by government as well as insurance setup which avoids lasting adverse effect on coming generation. There is a rich infrastructure of manufacturing/ delivery of ATs for all kinds and degrees of disabilities at appropriate and competitive prices to common PWDs as per needs.

The PWDs and their family members also have enough opportunities to grow and contribute towards society and nation. Above leads to following research questions:

1. Whether the instruments to extend compensation/ contributing in disability management in India are able to maintain the reasonable standard of living for the PWDs and their dependents in short and long run?
2. Whether adequate infrastructure for ATs for various kinds and degrees of disability and a delivery system to render the same in an equitable manner at appropriate prices to common PWDs is available?
3. Whether the PWDs and their family members/ dependents have enough opportunities to grow and contribute towards society and nation.
4. How the contribution of Indian PWDs towards nation and society can improve further?

Policies and systems of India:-

Reactive approach is still largely adopted in India in case of disability. Unorganized sector is totally deprived of from support and security in case of diseases and accidents occurred during employment or otherwise. Even organized sector has wide variations in this regard. Low paid (less than Rs 15000 per month emolument at present) employees are covered generally in Employees State Insurance (ESI) schemes. These employees get a monthly annuity in case of disability. The same is revised from time to time. At present the maximum monthly compensation in case of 100% disability is little above of Rs.10,000 per month. There is a provision of delivery of ATs as well to restore the functional capacity of the individual to some extent. However Verma - 2012 has inferred that this scheme needs major improvement in services to become popular and at present large number of organizations do not opt for ESI scheme even in case of low paid employees and look for alternatives.

Medium and highly paid employees of organized industrial and commercial establishments have different coverages. Some are covered under medical insurance having different financial limits but without long term disability benefits as available in USA and other western countries. They have no/ negligible pension in case of disability leading to unemployment. Others are covered under medical rules having wide variations where there is an arrangement of medical treatment/ reimbursement of medical expenses (indoor as well as outdoor) and delivery of assistive technologies partially or fully. The remaining deficit is covered by compensation calculated based upon Workmen Compensation Act 1923 in which one time financial compensation is delivered having little rationality as per age and attributes of individuals are not accounted for at all.

Central Government employees are covered under Central Government Health Scheme (CGHS) in which apart from medical treatment, now a better delivery of ATs is also available. Old employees are availing pension but the new/ young employees are deprived off the same and in case of disability they do not have regular, sufficient income source. The amount disbursed as pension linked with contributory provident fund is too little (fraction of minimum wages) for minimum life standard.

Approach towards Assistive Technologies:-

Before 1968, a common Indian amputee was forced to depend on crutches or wooden trolley only and generally considered unemployable. Similar was the situation in case of other disabilities. This is the reason, the constitution makers made several provisions including education, employment for various weaker sections i.e. scheduled castes and tribes but nothing of this kind was done for physically handicapped. An orthopedic surgeon **Dr. P.K. Sethi** developed an artificial foot called "**Jaipur foot**" which was considerably different from SACH foot developed abroad and quite costly in Indian environment. (Status of Disability - 2000)

Jaipur foot was quite suitable for Indian environment and local material was used in it's manufacturing, resulting into cost effectiveness. Dr. Sethi could sell only 50 such feet to needy amputees till 1975 and then another orthopedic surgeon **Dr. D.R. Mehta** on experiencing a serious leg injury during a car accident adopted this by establishing **Bhagwan Mahaveer Viklang Seva Samiti (BMVSS)** which fitted 10583 such Jaipur foot during the period 1975 to 1982 to needy individuals and they started performing various tasks. When Sudha Chandran after amputation used this prosthesis and returned to dance floor, film titled "**Mayuri**" in Telegu and then "**Nache Mayuri**" in Hindi were produced which made this Jaipur foot extremely popular. Time magazine considered Jaipur foot **one of the most important 50 inventions** of 20th century. BMVSS kept on generating funds for research and development to improve as well as fitting the same at a large scale and as on today 17000 – 20000 limbs are being fitted every year. The activities of the samiti are spread in 20 countries including war torn Afghanistan, Sri Lanka etc. (Macke - 2003) Dr. CK Prahlad in his book titled "**Fortune at the Bottom of Pyramid**" elaborated its contribution in nation building.

The **initial success of Jaipur foot** paved the way for education as well as large scale employment of PWDs with the use of ATs as now many children/ grown up people started walking and working more efficiently in various jobs. This lead to issuance of an executive order by Janata Party Government in 1977 to reserve 3% vacancies of C&D categories of selected posts where PWDs can work. With this a very small section of PWDs started working in government and Public Sector Undertaking (PSU) sector. Others kept on depending upon the old savings and shelter of joint family system.

Appreciating the success of Jaipur foot, a PSU named "**Artificial Limbs Manufacturing Corporation of India**" was established in 1970s for large scale manufacturing and distribution of various kinds of ATs at a reasonable and

affordable price. To supplement the delivery of ATs to extremely poor section of PWDs either free of cost or concessional price **Assistance to Disabled Persons** (ADIP) program was launched.

With this there was a beginning of life with dignity for PWDs atleast to some extent. Thousands of persons with disabilities were employed in Government jobs and PSU sector at lower level.

Impact of various developments in post liberalization era on disability:-
Mixed economy was changed to open economy in 1990s. The reservation for PWDs became meaningless as Government started reducing its fleet of employees and there was no or little expansion of PSUs. Private sector began flourishing.

In post liberalization era some sectors of economy enjoyed significant growth. However unorganized sectors started facing severe marginalization. **Dr Arjun Sengupta chairman National Commission for enterprises in the unorganized sector** concluded that there are 83.6 crores workers in India who have to live on an income of less than Rs.20 a day. (www.infochangeindia.org). This is 77% of Indian population. Large portion of weaker sections come under this bracket i.e. 87% dalit, 80% OBCs and 84% Muslims. Although report does not account for PWDs but it can be assessed that more than 90% of PWDs also come under this, as world bank report 2007 for India states that there are little livelihood opportunities for PWDs in India.

Shift in social, political and legal structure in India:-
India society witnessed paradigm shift in family system. Joint family system is now nearly nonexistent even in rural areas. On the contrary there is a rising trend of lonely life at old age.

The life expectancy is also on the rise. During 20th century life expectancy has witnessed more than 50% hike (National Health Policy 2015). It is likely to increase further. This increased the gravity of problem significantly.

Persons with disabilities (Equal opportunities, Protection of Rights and Full Participation) Act 1995 has several provision for education, employment, accessibility, social security etc. Although in the beginning it was felt that there is no/ little use of this enactment as it is full of flaws and the provisions are with riders, but later on positive minded persons and organizations began its use in right spirit and there was a significant reform in education, employment and accessibility front. Judiciary also gave a series of judgments for increasing the participation of PWDs in society. Judgment of Supreme Court dt 8-10-2013 is a landmark in this direction which will ensure filling up of backlog of vacancies in Government departments and PSUs in a time bound manner.

With liberalization of economy media has catapulted to the centrestage as an effective and powerful instrument for ventilating the grievances of the PWDs. The news regarding disability and success stories of PWDs are invariably finding place in all kinds of media. This began development of positive feeling about disability in society.

Disability in mid career/ life:-
Although authentic studies are not available but there is a rising trend in disability during midlife or career. The various kinds of accidents are on the rise. According to latest data released by National Crime Records Bureau (NCRB), in 2014, there were over 2,400 victims of political violence, while 2000 people were injured or killed in communal riots. Similarly Ministry of surface transport report indicates that 1,69,107 persons lost their life and 4,81,739 became injured in 2014. Although details about disabilities are not adequately available but it can be inferred that the disability due to these reasons is on continuous rise.

Increased impact of disability:-
As evident from literature review the economic impact of disability is much higher in case of persons with younger age, higher education and skill level. In post independence era and particularly in post liberalization era the number of doctors, engineers, chartered accountants, company secretaries, teachers in higher education witnessed exponential rise. In case of sudden disability during the mid career there is a need for different strategies to deal with the problem.

Insurance sector in India:-
Although insurance sector has been opened up in India for private sector since last two decades, but insurance policies with long term disability benefits are still not available. In the event of disability, the victim gets only one

time benefit which is largely spent in treatment (treatment cost in private super-specialty hospitals is very high), first time procurement of ATs and other incidental expenses. Rest of life is lead under severe hardships. At the same time there is no/ little institutional market for ATs as insurance companies are not under pressure of restoring the productivity or employability.

Due to above system, the component of insurance coverage offered together with credit cards, mutual funds etc also delivers onetime benefit and there is no recurring financial relief i.e. monthly annuity. In the event of rail/ road accidents or other mishappening i.e. communal riots, terrorists violence etc. the situation is similar.

Negligible Social Security:-
Government of India as well as various state governments had been offering few schemes of social security i.e. Disability Pension, Old age Pension in the range of Rs.400-800 per month with a maximum of Rs.1500 per month in Delhi uniformly to persons suffering from 40% and above disability. These are delivered on the basis of disability certificate based upon old biomedical discourse indicating only the kind and percentage of disability and attempt of enabling them to earn livelihood with or without use of ATs, alternate skill development etc are not accounted for. With this there is no pressure on government to develop infrastructure of development, manufacturing and delivery of ATs using latest technologies in a cost effective manner.

Segmented market for ATs:-
Due to above reason there are two market segments for ATs. One segment caters extremely low technologies to poor people capable of restoring disabilities in a limited manner. Another segment delivers high tech devices capable of augmenting the life of PWD in a significant manner but at a very high price primarily due to lower, scattered demand.

Lack of alternate skill development:-
Shenoy (2011) has described the opportunities of skill development for PWDs in India for skill development to face the challenges of labor market. The paper states, the infrastructure of ITIs and polytechniques in India apart from other skill development centers and other educational institutions has a 3% reservation in seats. However lack of appropriate ATs and other physical and social barriers persuade PWDs particularly females to opt for arts and commerce streams and they remain unemployed and underemployed.

Lack of barrier free environment:-
Physical and attitudinal barriers in society compound the barriers created due to disability. Although the airports, railway stations, bus stands, metro railways, malls, super specialty hospitals constructed as per international norms have delivered the examples of barrier free environment in urban India but the rural areas and even semi urban areas are still full of barriers compounded with attitudinal barriers.

Discussion:-

Above data and information clearly infer that **number of professionals, qualified persons earning reasonably good income in India is on rise**. This is further confirmed by increased number of income tax payers which has reached to a figure of **3.373 crores in the year 2010 – 11**. (http://pibmumbai.gov.in). **This population along with other poor and uneducated ones** is facing a serious risk of disability in its day to day life due to rail / road accidents, terror / naxalite operations etc. Many of them do face disability in their mid life resulting into huge economic impact to the individual as well as nation. At the same time due to **globalization of economy, the competition among enterprises has become stiff**. Quite often it is not possible for the organization to retain PWD in job or at some other job without regaining the productivity.

In addition to above, due to better concept of education i.e. inclusive education, right to education, reservation in higher education, the number of children who became **victims of disability in early childhood are getting good education and many of them are acquiring higher qualifications to become professionals**. Therefore primary issue is that **these along with those who face disability in their midlife should be able to contribute fully to the society and in no case move away from mainstream of society**.

At present PWDs particularly of lower and middle income groups facing moderate to severe disabilities are still depending more on conventional methods of disability management i.e. old Workmen compensation Act 1923 (in its moderately revised form), Railway accidents and untoward incident rules 1997, Disability Pension, Income tax

rebate etc. Government of India in collaboration with state governments is running a series of welfare and poverty alleviation schemes in which efforts are done to provide employment, self employment or shelter etc. but Mishra (2014) has concluded that the financial performance of these schemes is extremely poor (around 1%) in case of PWDs.

Basic infrastructure of insurance and other instruments such as credit cards, mutual funds etc linked with insurance benefits is available along with delivery system of high level ATs in all cities but due to non availability of long term disability benefit, ATs sector particularly high tech one is not witnessing significant improvement.

Conclusions & Recommendations:-

Hence there is need of new policies and effective system framework to avoid enormous economic loss to nation due to unemployment or underemployment of PWDs. In case there is a reform in insurance sector and long term disability benefit is added in insurance policies then there will be pressure on these companies to deliver the appropriate ATs as per need of the individual and the residual potential of PWDs shall be utilized maximum. Only in case of profound disabilities monthly relief shall be delivered by insurance company. Similarly reform in social security benefits will improve the situation. A sufficient disability pension equivalent to minimum wage will put pressure on Government to create and infrastructure of ATs and alternate skill development. This will increase the GDP and nation will have more funds for infrastructure of health and education in long run.

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