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Managing Disability of Persons with Superior Attributes – A Few Cases from India

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Abstract: *Persons with different attributes i.e. age, education, skill level, have to face different magnitudes of economic and other losses due to same extent and degree of disability. Charity-based model in India, coupled with an incorrect policy framework leading to limited augmentation of the residual potential of individual, results into a huge loss of high-quality human resources after disability associated with various kinds of social and economic problems.*

Through a few cases, this paper highlights an approach to appropriately utilise the residual potential of (PWDs) Persons with Disabilities with the delivery of appropriate assistive technologies as per their attributes in a cost effective manner for ensuring long-term inclusive growth.

Keywords: *Persons with disabilities, Assistive technologies, Alternate skill, Decent work, Disability management*

I. Introduction

India is a large country with several diversities of various nature. As per the census 2011, 2.21% of the Indian population suffers from different kinds and levels of disabilities. But other estimates indicate this percentage is not less than 5-6% and that the total number of PWDs exceeds 70million (WHO World Bank - 2011)

As per 2009 estimates of the (ILO) International Labour Organisation, India suffers an economic loss to the tune of 3-7% of its Gross Domestic Product (GDP) due to the exclusion of PWDs from the job market or their underemployment, mainly in the unorganised sector. 50% of above PWD population is under the age of 30 years (census 2011), which can otherwise be converted into a useful asset for the nation. Although 55% of this category is illiterate, 36% just literate, and only 9% has education of the secondary level and above (Shenoy 2011), even then if 1% of the PWD population is graduate and above (professionally qualified or skilled), non/less utilisation of this magnitude of human resources is a serious blow to inclusive development. A study undertaken in the US indicates that work participation is correlated to education level and it is narrated in Table - 1.

Table – 1
Work participation and education level

Education level	PWDs %	Non PWDs
Less than high school	25%	66%
High school	36%	76%
Bachelor degree	55%	83%

Source: Disability and Economics - 2011

It is evident from the table above that the correlation factor between work participation and education is much higher in PWDs than in non-PWDs. Similarly, PWDs of lower age groups are likelier to get engaged in employment as they are more energetic and adaptable to new situations as compared to aged ones.

Role Of Assistive Technologies

Assistive Technologies (ATs) have a long history of development and use in India too. In the present day, these are available to the population even in rural/hilly/distant areas. The development of prosthesis (one of the prominent ATs), namely the Jaipur foot, in 1968 enabled a common Indian amputee to walk, sit cross-legged and work, even in the muddy farmland. This generated immense confidence not only in amputees but also in persons with other kinds of disabilities. While from 1968-1975 only 50 Jaipur foot could be fitted, with the organised efforts of Bhagwan Mahaveer Viklanga Sahayata Samiti (BMVSS) from 1975, this number increased to hundreds, then thousands, and now stands at 16,000 per year (Macke et al 2003).

The returns of the above attempt were tremendous. This persuaded the Government of India to establish and then expand the Artificial Limb Manufacturing Corporation of India (ALIMCO) to manufacture various kinds of devices for different disabilities. As a large majority of PWDs in India is extremely poor, the Government of India also launched "**Assistance to Disabled Persons**" (**ADIP**) programme to make these

devices available to poor and needy PWDs either free of cost or at concessional (50%) prices. Later, this scheme was specifically added to the Sarva Shiksha Abhiyan (Education for all) and was named the SSA–ADIP scheme. Under this scheme, school-going children also began to avail of ATs conveniently in school premises itself, enabling them to continue their education in an inclusive school set-up, avoiding huge expenditure of a segregated educational set-up for children with disabilities and other social barriers. With an increased work efficiency of PWDs, the government started reserving 3% vacancies in government departments and Public Sector Undertakings (PSUs) in designated posts (where PWDs can work) of C&D category since 1977.

Later Developments

Research and development activities in India in the field of ATs had been extremely poor, resulting in only 355 kinds of the low level of technologies manufactured by ALIMCO (Annual report - 2014) for a long time. Other local private manufacturers (mostly on a small scale) carried out their activities at a small scale. Even then, a large number of children with disabilities who acquired higher education/skill with or without the use of ATs reached various positions. Table – 2 depicts the number of employees with disabilities in government departments and PSUs.

Table 2
Percentage of employees with disabilities

Sector	Total number of post	Posts held by PWDs and their percentage in ()
Ministries & Departments	2698762	9975 (0.37%)
Public Sector Undertakings	4527293	20053 (0.44%)

Source: NCPEPD - 1999

With the passages of Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995, a number of NGOs used it for affirmative action and the Supreme Court of India directed vide its verdict no. 7541 dated 08-10-2013 to fill the backlog of vacancies (approximately 15000) by March 2016. This verdict gave a mandate to all government departments and PSUs to recruit 3% of their manpower strengths in all cadres.

Apart from the above, a small section of PWDs (nearly 1%) was engaged in mainstream employment i.e. private sector and multinational companies (MNCs). This number is likely to grow further although 87% of the PWDs population (uneducated and under educated) remained unemployed or underemployed in the informal sector. (Disability & Economics - 2011)

Disability In Mid-Career

With a large growth in education sector in the post-Independence era, the number of professionally qualified and skilled persons grew at a faster pace. But some of them acquired a disability mid-career due to an increased rate of road/ rail accidents, violence during riots, ethnic clashes, Naxalite operations, etc. This is confirmed by data from the Union Ministry of Road Transport and the National Crime Record Bureau released from time to time. Sudden disabilities faced by qualified/skilled persons, i.e. soldiers/officers of the Indian armed forces or paramilitary forces, railway personnel, etc., created economic loss along with serious psychological and other social problems. The above generated a need to devise a new strategy.

Post liberalisation era

This era witnessed the entry of MNCs in various sectors of the economy and an increased use of technologies in offices/factories/other commercial establishments. **While technology (communication means, computerisation and automation) made the common person's life easier, it also possible for PWDs to perform tasks which were earlier considered impossible i.e. computerisation in banks.** The technology coming in from the western countries was essentially disabled-friendly; with this, the concept of a barrier-free environment entered India. Starting from airports and metro railways, even large railway stations and bus stands became barrier-free. MNC offices, super-specialty hospitals, premier educational institutions, malls, etc. also became accessible to all kinds of PWDs, enabling a greater use of their residual potential.

In the above period, a few MNCs, i.e. Ottobock, Endolite etc., dealing in the field of high-tech ATs (using microprocessors, sensors, batteries, the latest light but strong material) also entered India purely with an economic motive. While a few of them registered as Indian companies, some like Ossur tied up with local organisations. In the first phase, their delivery centres were opened in metro cities and then in other cities/big towns as well. These companies started importing AT kits from abroad, delivering them after assembling them as per the actual requirement of the user, keeping in view the local environment.

Modern Concepts – Higher Return

The above devices were quite suitable for a barrier-free environment largely available in the West. The AT professionals engaged by these companies took the measurements of PWDs as per the International Classification of Functioning (ICF) based upon the bio-psychosocial discourse and prescribed the device as per body function/structures and level of activities, along with personal factors i.e. age, gender, work environment, lifestyle, kind of activities being performed/likely to be performed by the individual after evaluating the remaining ability in existing circumstances. The devices are assembled using high-quality standards and delivered after appropriate training about their use and post-sales maintenance. With this, persons with even moderate to severe disabilities began availing better opportunities. The qualitative and quantitative growth of these companies indicates that these are quite useful and cost effective in Indian circumstances, particularly in cities. These companies have high business prospects as NSSO–2002 reveals that the life of 17% of the PWDs can be managed better with the use of appropriate ATs and 9% of them have no awareness about these. Rajan, Anita (2014) has assessed the market potential of these kinds of devices in India to the order of US$750 million.

Availability Of Multiple Options With Higher Level Of Technology

With the above high level ATs having entered the market, even better ones have made the lives of PWDs better. These have better characteristics i.e. dorsiflexion, abduction and adduction, eversion and inversion, pronation and supination, which are required for squatting, sitting cross-legged, walking on uneven ground, and barefoot walking, apart from achieving near normal gait. This is done with the use of springs, etc., in an appropriate manner, and made with light but durable material. These energy-efficient feet enable users to walk/work more and barriers in society are easily overcome. Of course, the cost of these are significantly higher (i.e. 3-8 times) currently due to reasons that will be explained later.

Macke et al 2003 states that the new imported prosthetic feet are much lighter (the weight being a half to one-quarter) than the Jaipur foot and SACH foot. These can bear greater weight of the individual as well as his activities while reducing the wear and tear. There is a provision of heel height adjustment as well under the warranty, which is not available in the case of Jaipur feet. The average working life is also more.

The above prosthetic feet are based upon ISO 10328 standard and CE marked while the Jaipur foot only follows India's internal standards without any international mark. The users of the modern prosthetic foot can conveniently drive a car, ride a bike, walk on uneven ground, run, etc. For higher activity levels, these are more functional and comfortable. One can use them for a longer duration and work more efficiently without much fatigue.

In contrast, the devices manufactured by ALIMCO and other local organisations continue to be based on low-level technology and indigenous material usually heavy and less durable, which is suitable only for lower activity level or for persons with mild disabilities, and often delivered in camps/government hospitals where there is huge rush and an acute shortage of time. The disability certificate, which indicates only disability and its percentage based on old biomedical discourse, is the yardstick for this delivery. Due to this, there is no/little/inadequate benefit to persons, particularly those with moderate to severe disabilities.

Steps Taken By Some Government Departments

Although the high-tech devices offered by MNCs are costly and beyond the reach of even the upper middle class if purchased from the open market due to low, scattered and fragmented demands, these appear to be quite cost effective for persons with superior attributes or higher (more remunerative) activity level having moderate to severe disabilities. As per the PWD Act, 1995, it is not possible now to retrench the employee due to disability acquired during service. All government departments and PSUs have to strictly follow this. On the other hand, many employees began functioning in an extraordinary manner using their creativity and innovative approach, qualities which PWDs earn while combating disability. As a result, the Artificial Limb Centre, Pune, (belongs to the Indian Army) and the Railway Rehabilitation Centre, New Delhi, (belongs to the Indian Railways) started procuring kits from the above companies on the basis of competitive bidding and delivering the same to their employees after assembling in the clinic established in their premises as per their exact needs assessed on the basis of ICF. This gave the benefit of institutional buying at right prices (usually 20%-30% lower than the open market price) and other advantages i.e. appropriate device, right quality, correct fitting, after-sales services at convenient point, etc. Subsequently, the Government of India also made a provision of reimbursing the cost of these devices under the Central Government Health Scheme (CGHS) considering the fact that non/less utilisation of high-salaried qualified and skilled manpower is costlier than the cost of hi-tech ATs.

In view of there is a need to evaluate these attempts and amend the present approach to ensure proper utilisation of highly active human resources with superior attributes even after moderate to severe disabilities in other sectors of economy and ensure better quality of life of this segment of society. With this country will further move towards inclusive growth.

II. Literature Review

Approach In The West

For a long time, Western countries have followed the social model of disability management wherein corrective action encompasses the individual as well as the social environment. The individual gets medical treatment as well as ATs in an equitable manner, as a right, and the social structure is made largely accessible for all persons, including PWDs. The education system is made inclusive and accommodations are made in employment.

The above activities are taken up on a proactive basis and individuals as well as nations take advanced action by creating an infrastructure of insurance with long-term disability benefits and people/their employers choose the right insurance policies. 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, a number of financial instruments, i.e. credit cards and mutual funds having a component of insurance cover, are also available to take care of disabilities occurring as a result of disease, a mishap at the playground, etc.

CFA (2013) report revealed that insurance companies are largely mitigating the woes of PWDs and quite often they are able to avoid a situation like the loss of shelter, dependence on spouse or children, or community food assistance. The support also prevents their health condition from worsening. The UNUM, a leading insurance company, spent US$9 billion as long-term disability benefit in 2012. Similarly, Signa Insurance designed a policy to deliver appropriate prosthesis to amputees strictly as per their needs to avoid the heavy burden of monthly annuity by making them employable to maximum extent.

Charity-based perspective in India

While ATs are considered a mean/investment to augment the residual potential to avail maximum return to individual as well as nation across the world, in India these are still made available under a cost limit (irrespective of need) as charity, to only the poor PWDs; and persons earning beyond a limit are not eligible for any support. Their attributes are largely ignored.

ADIP scheme

Mishra and Bhanushali (2012) concluded that the coverage of ADIP scheme is extremely inadequate, hardly 1% of PWDs population, i.e. 0.3 million. The benefit of ATs extended is non-uniform, i.e. not as per specific needs, and the criterion used for delivery is irrational. The scheme is largely run by local administration or Non Government Organizations (NGOs) and fails badly in areas disturbed by extremists, Naxalites, etc.

Low-cost devices such as sticks, crutches, etc., needed by persons with mild disabilities are more distributed in the scheme as compared to prosthesis, wheelchairs, etc., which require more efforts in delivery, i.e. taking measurements and then customizing, and needed by persons with moderate to severe disabilities resulting in non-equity at a large scale.

In a report in December 2013, the Planning Commission of India confirmed the above findings using different methodology and stated that financial performance of scheme was just 46.2% while physical performance was US$38 only, highly inadequate for quality devices like prosthesis and wheelchairs needed by persons with moderate disabilities. Due to incorrect criteria, the scheme largely serves the uneducated/ undereducated population, either unemployed or underemployed. The quality of devices is very poor although the scheme claims the devices are manufactured by a PSU and based upon the Bureau of Indian Standards. While devices like manual wheelchairs are not suitable for hilly/uneven areas (Uttarakhand, Jharkhand), many were found to be damaged at the time of distribution itself. Recipients don't have the knowledge or resources to maintain or get their prosthesis etc. repaired, which results in their abandonment, leading to the wastage of public resources and a loss of faith in technology.

Only 49.9% of recipients experienced a decrease in dependence on others with the use of these devices i.e. an insignificant increase in the quality of life. There was insignificant change in their employment/income status.

Present health and educational model

Desai (2008) and Balarajan (2011) inferred that India is currently witnessing health as well as education models in which the poor have limited opportunities of treatment for self and family in primary health centres and government hospitals and education in government schools and colleges, and face an acute shortage of infrastructure and heavy rush. On the other hand, the rich have a wider range of opportunities in super-specialty hospitals and premier private educational institutions. Similarly, there is a difference in opportunities in rural and urban areas. The level of difference between the rural poor and the urban rich is larger. These wide differences create a lasting effect not only on individuals but their family/future generations as well.

In case the work efficiency of the individual after sudden disability is not sufficiently restored (above the threshold level i.e. different in different cases) and he/she is deprived of alternate skills required to continue

his/her livelihood, he/she would be under tremendous stress, both financially and otherwise. In the absence of an adequate ability to participate in sports and recreation, his/her level of mental stress will be higher, leading to depression, which could be followed by other physical and mental diseases. This could further adversely affect his/her residual potential; in turn, an employer facing stiff market competition and in dire need of creativity and innovative ways normally adopted by employees will also suffer a lot, economically and otherwise, resulting in strained employer-employee relations.

Mishra (2014) elaborated that in general, employers at present avoid recruiting PWDs due to attitudinal barriers despite marginal financial incentives extended by the government, barring a few stray cases. If adequate attempts are not undertaken by appropriate policy framework as initiated by the Indian Army and the Indian Railways, the status of this segment of society may further deteriorate and result in a huge GDP loss.

Research objectives

Upon reviewing the above literature, the present research has been undertaken to examine the impact of attempts undertaken by the Army Rehabilitation Centre, Pune, and the Railway Rehabilitation Centre, New Delhi, and visualise the differential impact of high and low level technology in various aspects of appropriate life management of PWDs

III. Methodology

Case studies have been undertaken from cases of the Railway Rehabilitation Centre (RRC) to qualitatively analyse the increased impact of higher level of ATs in combating disabilities in society. The various aspects of life after use of higher-level ATs are studied in-depth, including alternate skill development, sports, exercises, yoga, impact of barriers, and marriage prospects/continuation of pleasant marital life.

IV. Results

The following case studies were undertaken on a few recipients of RRC i.e. Railway employees and their dependents. These are as under:

Case Study I
(Housewife)

Sarita, 38 years, is a graduate and the wife of a railway employee, used to visit her parental village often as she can avail the facility of railway passes. Her village was near a small railway station, where she had to cross railway lines to reach the platform (a common phenomenon in India) to board the train. While crossing a railway line once, her saree got stuck at a crossing. A motorised trolley coming from the opposite direction badly injured her leg, resulting in an amputation from below the knee. In a railway hospital, she recovered from her injuries and then reached the RRC, where she was fitted with a Jaipur foot in 2007. Her mobility was restored to some extent and she was able to do some of her household activities **but unable to go to the distant market and other places** without conveyance; the same was not only expensive but quite often unavailable since her railway colony was situated in a semi-urban area away from the city, and connecting roads were pretty uneven**.** She used to **get tired early while going upstairs and quite often felt irritated** after the **use of the prosthesis for 2-3 hours continuously** and had to take it out, after which her mobility was totally restricted. Her life was confined to the house, leading to a loss of appetite, an increase in body weight, irritation of mind, and strained married and social life.

The life of **Jaipur foot is less**. After two years, she started facing maintenance problems and as she was now **habituated to using the prosthesis**, it was difficult **for her to use crutches and do household activities for a long time**.

By the end of 2009, her prosthesis was totally out of order and she approached the RRC for a new one. This time, a hi-tech prosthesis was delivered, which was **more comfortable,** and her **functional capacity increased manifold**. She was able to go to the market and other places. The quantum of assistance rendered by her husband and children **reduced considerably** and their time was utilised in other productive activities. Expenses of **hiring rickshaws decreased by 50%-70%**. She started morning and evening walks in her backyards having uneven surface, resulting in an increase in pleasure of marital and social life. She was also able to go to her home village by the same train, which gave her **immense satisfaction**.

Case Study II
Student

Rajat, 19 years old, met with a serious road accident when he was just 14. As his father was a Railways employee, he was treated in a Railway hospital where, after infection, one of his legs was amputated from below

the knee. At RRC, Rajat was fitted with a prosthesis consisting of the SACH foot, with which he started going to school after a few months and resumed study.

However, his father or elder brother had to accompany him in the beginning. He was unable to board a crowded bus and had to hire rickshaws, which was unaffordable as his father was a class 3 employee of the Indian Railways. His father even had to sell their gold ornaments during Rajat's treatment. The family was apprehensive of his financial future.

In school, Rajat was unable to participate in extracurricular activities. He was persuaded to take up arts/commerce after high school as it was considered difficult for him to reach science laboratories located upstairs and he would have to stand in labs for long duration and do experiments, even though he was keen to join engineering.

Meanwhile, his prosthesis became old and worn-out. In Delhi for a new one, he was fitted with a hi-tech one. This was lighter as well as energy efficient. He was able **to walk for a longer distance** and do experiments **while standing**. He also started **participating in extracurricular activities,** including **light sports, and began a couple of yogasans**. This gave him sufficient confidence and improved his health.

After finishing his intermediate studies, Rajat was admitted to a government engineering college under the quota of **physically-handicapped candidates**. He is now leading an independent life in the hostel. At the time of onset of his disability, it was nearly impossible **to think about his marriage**. But with a nearly-normal gait, Rajat is **dreaming to have a good life partner**.

Case Study III
(Retired Life)

Ramesh, 62, met with a rail accident when he was on duty with the Indian Railways at the age of 56. He was treated in a Railways hospital for months, consuming all his sick and special leaves. He joined duty after being fitted with a SACH foot.

The lane and then road on which he had to walk to reach his workplace were full of uneven surfaces and wide drains, making it difficult for him to reach the office. His usual duty was tough and he had to request his senior for a **lighter assignment**. This embarrassed him a lot. Later, he was **not assigned any work as lighter work was unavailable** and due to shortage of staff, his **colleagues were assigned that extra work,** resulting in **unnecessary remarks**.

Frustrated, Ramesh was planning a premature retirement. His domestic life was also not normal as his daughter-in-law persuaded his son to live separately. His wife was not keeping well due to a chronic kidney disease and had to be taken for dialysis twice a week to a distant hospital. After dialysis, she needed more care and support. It was difficult for him to manage household activities without any support as he was unable to walk much with load.

But when he approached the RRC in 2011, he was fitted with a new prosthesis with dynamic feet. With this energy-efficient prosthesis, he started **managing his official as well as household activities better; even** his wife could get **better care and support** as he was able to walk and even pull the wheelchair himself. Immediately after retirement, he started **sitting at a shop counter** and worked as a **cashier** using the skill of computer operator he had acquired in his service after disability, which eased his **financial life**. This was possible only because of hi-tech prosthesis.

Issues Emerged After Above Qualitative Analysis

After disease or accident, there is immediate heavy financial load on the individual/ family even if treatment is done in government hospital as a lot of indirect expenditure occurs. The victim or family has to largely depend on old savings and sometimes sell assets like ornaments as well to meet expenses or take loans at uncomfortable terms.

A disability disables the person from working and earning his livelihood as per its degree and quantum. For example, immediately after an accident, a person can't attend to his duty and his regular working/earning is severely affected. In some cases, it may fully stop. Even the employer is adversely affected.

Productivity Less And Expenditure High

Slowly, a disabled person recovers after treatment and joins office. However, his efficiency is quite low and his extra expenses are very high.

Recovery From Above

With the use of low-level ATs, i.e. prosthesis or wheelchair, his efficiency goes up and extra expenditures decrease to some extent.

Productivity Improves Further And Expenditures Reduce Considerably

With better or more appropriate technologies designed, developed and fitted as per ICF, efficiency goes up and extra expenditure comes down.

Even low-level technology contributes, but quite often, it does not succeed in enabling the person to cross the required threshold and he is deprived of opportunities in education, employment, and other areas of life, particularly in case of moderate to severe disability. Here, hi-tech devices play a **critical role**.

Impact of New Scenario

With the liberalisation of economy, various opportunities are not only available but increasing. However, competition in the job sector is tough. A disabled person normally faces economic loss because of change of assignment, salary/perks reduction, and loss of avenues in promotion, etc. PWDs may have to face discontinuance of job due to extremely adverse situation like poor accessibility and safety risk after severe disability. Better and appropriate ATs help significantly.

Better and appropriate ATs contribute in household activities, making careers, getting admissions, etc. by overcoming complexities as well as in present jobs, including getting promotions, etc. It also helps in regaining employment after retirement and leading a financially comfortable and independent life.

More Sensitive To Attributes

Better and appropriate ATs enable people to regain their old levels to maximum extent; in younger people, the immediate and cumulative gain is very high as activity levels are more. Users also get an economic return as per their attributes such as educational and skill levels.

Relief To Surrogates

After disability, the surrogates, i.e. parents, wife, children, feel stressed and have to devote more time. With the disintegration of the joint family system and a new culture where both husband and wife work, this issue becomes more critical. Children face serious difficulties during studies. Low-tech devices reduce this. Hi-tech devices further reduce the same and a person is able to save expenditure considerably. The nation utilises this human resource in more useful manner

Improved Quality Of Life For Self As Well As Family Members

ATs also contribute to upgrading the quality of life by helping in getting **higher education, training, skill, participation in sports, recreation, etc.** as experienced during above case studies. ATs, i.e. prosthesis, can also contribute in normalising gait that helps in **choosing a life partner** as well. This prevents a lonely life and possibility of sexual abuse in case of women. Less dependence on surrogates also gives them psychological relief.

Upgraded ATs contribute in maintaining the family's economic status and family members are **not deprived of opportunities** due to **prevailing education and health model of India** as described during literature review.

Role Of Barriers

There are some physical, attitudinal, and social barriers in society. Better and appropriate devices not only contribute in restoring the old position but also reduce the impact of barriers. A person is able to go upstairs without help. He/she can cover longer distances, including uneven terrains without much discomfort. In case of women, safety from sexual harassment can be better ensured.

Overall Outcomes Of The Use Of Hi-Tech Devices As Compared To Low Tech Devices Are As Under:

Hi-tech devices contribute more to study/training/skill development
Hi-tech devices contribute more to sports and recreation
Hi-tech devices contribute more in getting a life partner
Hi-tech devices are less disabled by environmental barriers
The above identified issues affect the individual and nation in following manner:

V. Skill Development

The Australian Bureau of Statistics (2004) indicates that in sectors like manufacturing, retail trade, property and business trades, health care and community services, the performance/contribution of PWDs is not only significant but almost at par with non PWDs. Many of them work as professionals, associate professionals, trade persons, intermediate clerical, sales, service workers, etc. With extraordinary efforts, 85% of Chinese PWDs are now employed. In industrialised nations, there is little difference in employment rates as well as income between PWDs & non PWDs having superior attributes (Disability & Economics - 2011).

The above is significant in the Indian context as in the post-liberalisation era the recruitment in government jobs and PSUs reduced drastically and reservation benefits which were extended to A & B category jobs as well since 1997 became redundant. Modern industries and commercial establishment began to face stiff competition in maintaining high quality and price competitiveness in jobs and need skilled manpower. Honesty and loyalty are other essential parameters largely needed. Some PWDs can continue in the same job with the same skill despite a sudden disability while others need new skills for which a rich infrastructure is now available in India, being further augmented by the Government of India (Shenoy 2011) in collaboration with the corporate sector on a large scale keeping in view the huge requirement of highly skilled manpower under the **Make in India** campaign, where foreign investors/industrialists/NRIs are being invited to bring new technology and capital. (BCG-CII-2014).

Thirty high-growth sectors need manpower having high qualifications (graduation and above) and high level skills. Twenty high-growth sectors of India have been identified for which special efforts are being made for skill development. Of these, areas like banking and finance services, education and skill development services, electronics and hardware, food processing, gems and jewelry, healthcare, handloom and handicraft, ITES/ BPO, software services/ products, leather and leather goods, organized retail, garments, travel trade, packing, etc, are quite convenient to persons with mild to moderate disabilities and even with severe one. Most of the above areas including food processing, herbal drugs, etc. are quite convenient for PWDs living and working in different parts of India, including rural, hilly and distant areas, where presently job opportunities are few. Some PWDs can acquire skills straightaway by training while others can acquire the same with an increase in mobility, vision or hearing power which can be significantly augmented by appropriate ATs. It is now evident that better/hi-tech ATs can contribute more to skill development.

At present, Indian industries and commercial establishments are witnessing a high attrition rate. From the experiences of companies like Shell, Aegis Computers, Lemon Tree Hotels, Titan, etc. employers are now reframing human resource policy. Seeing less attrition, high productivity and loyalty towards organisation, others are also looking for a heterogeneous workforce, including PWDs at various levels. (Kalpa & Shenoy 2012)

Sports/ exercises/ yoga

Life today is generally full of various kinds of stress. The stress levels of PWDs are generally higher as they face several physical and attitudinal barriers in life. This can be reduced by various sports, exercises and yoga, but considered difficult/nearly impossible for PWDs facing moderate to severe disabilities. These activities, particularly yoga, are inexpensive and popular and enhance the quality of life. It has been observed that in case of disabilities, sometimes these activities need augmented movement, vision or hearing power with the use of ATs. (Mishra, Viklanga Swastha Va Atmanirbhar Kaise Bane-2003).

Barriers in life

Many barriers, particularly physical ones, disable the use/effectiveness of ATs i.e. wheelchair, or sometimes prosthesis on various occasions/places. While there is also a need to reduce various kinds of barriers (physical as well as attitudinal), there is a need to develop rugged but efficient ATs that can overcome such barriers. It is evident that scientifically designed devices customised as per the ICF can easily overcome many barriers. (Accessibility for All-2007)

Need for life partner

Every human being needs a suitable life partner. In case of PWDs, this need is more for adequate physical as well as mental support. A disability adversely affects the personality of an individual and in turn their marriage prospects are considerably reduced. In case of a mid-life disability, there is a possibility of a discontinued marriage. Studies indicate that only 73% PWDs leada married life. This causes loneliness, mental stress and other evils, particularly in women who face serious sexual assaults. ATs can recover the level of personality apart from other contributions in life, and can significantly improve the possibility of choosing a suitable match and continuation of married life even after disability.

VI. Conclusions And Recommendations

In today's social and economic scenario, there is a need to treat the expenditure in ATs as investment and should be done as per attributes of the individuals. This is also cost-effective as the benefit to cost ratio is higher in case of superior attributes.

Hence, there is a need to replicate the infrastructure developed at the Army Rehabilitation Centre and the Railways Rehabilitation Centre in other organisations like the Central Reserve Police Force, Seema Suraksha Bal, etc. where the possibility of catastrophes during service is very high.

At the same time, the approach of the ADIP scheme should also be changed and delivery of devices should be made need-based and not charity-based having irrational limits for cost of devices and income of recipients.

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