This chapter serves to review the literature related to historical aspect, definition and classification of assistive technology, demographics, models, abandonment, subjective well-being, psychosocial issues and the factors influencing the psychosocial aspect of device usage. The related literatures were searched through computer (MEDLINE, PubMed, MD Consult, Science Direct, ProQuest, CINAHL, Cochrane Library, Google, Google Scholar, Online Journals) and manually from available related and cited books.

2.1 Assistive Technology - Descriptions

Various authors and agencies have proposed different definitions and descriptions for the term assistive technology. Some of them are as follows:

The Canadian Association of Occupational Therapy (2003) in its position statement on Assistive Technology and Occupational Therapy used a much simpler description “AT is any device or product that is useful for a person's enhanced functioning and participation”.

The World Health Organization (2004) provides the following definition, ‘AT is an umbrella term for any device or system that allows individuals to perform tasks they would otherwise be unable to do or increases the ease and safety with which tasks can be performed’. An AT service assists in the selection, acquisition, or the use of an AT device.

Kraskowsky and Finlayson (2001) in their study mentioned that the usage of the terms adaptive equipment, adaptive device, assistive device, and aid are used interchangeably, although subtle variations existed, but for the purpose of clarity, they defined it as “any object or tool that maximizes a person’s independence in activities of daily living”.

Peterson and Murray (2006) in their study mentioned another related terminology i.e. rehabilitation technology, and has been defined as the ‘systematic application of technologies, engineering methodologies, and scientific principles to meet the needs of, and address the barriers confronted by individuals with handicaps in areas which include education, rehabilitation, employment, transportation, independent living, and recreation’.

Scherer (1996) highlighted the fundamental difference between adaptive devices and rehabilitation technology. She described adapted devices as those that are designed for
general population but adapted in ways to be useful for people with disabilities and rehabilitation technologies as those that enhance and make possible the rehabilitation process for individuals.

Although different agency and individuals have given different expression of assistive technology, but they all are linked with a common understanding that AT is a promising option for individuals with functional limitations.

2.2 Assistive Technology - Historical Overview

According to Bryant and Bryant (as cited in Saladin, 2004) the history of AT may be divided into three distinct chronological sections:

a) Foundation period (dating prior to the 20th century)
b) Establishment period (from about 1900 into the early 1970’s), and
c) Empowerment period (from 1973 to present).

**Foundation Period**

Early AT of the Stone Age may have been sticks and other natural items used to assist people with continuing their daily activities after experiencing acute injuries or long-term physical disabilities, thus beginning the Foundation Period of Assistive Technology. Documentation of post surgical AT for maintaining daily life activities has been dated as early as 600 CE (Common Era).

In general, public health campaigns and increasing concern for the education for people with disabilities became an impetus for the development of AT. This was a time when people began to be concerned that people with disabilities were able to survive injuries, carry out activities of their daily life, and become educated. Around 1834, Louis Braille presented a method of reading for people who are blind which had been originally designed so French soldiers could read at night. In addition to changes in public opinion and broader technological innovations, soldiers returning from the American Civil War sparked keen interest in the development of wheelchairs and prosthetic devices. The Foundation Period can be summarized by noting that from early prehistoric documentation until the close of the nineteenth century, important steps were taken to lay the groundwork for more modern developments in AT.
Establishment Period

The Establishment period was much shorter in duration than the Foundation Period, lasting only from around 1900 to 1972, and marked the beginning of a change in attitudes about disabilities, from a medical perspective to a more psychosocial framework stated by Wright (as cited by Saladin, 2004). In 1918, US Congress passed the Smith-Sears Veterans Rehabilitation Act, P.L. 65-178 (Soldier Rehabilitation Act of 1918, 40 Stat. 617), which was implemented to assist war veterans with disabilities in regaining their functional life in the civilian world. The legislation marked a shift in focus from the disabling condition to the residual functioning of the individual and their specific attendant factors. The momentum of the Establishment Period continued to build up to the beginning of the Empowerment period.

Empowerment Period

Running from 1973 to present, the onset of the Empowerment Period was marked by the passage of key disability-related legislation The Rehabilitation Act of 1973, or P.L. 93-112. This 1973 law stated that all children regardless of disability receive a free and appropriate public education. The “appropriate education” section of the law sparked a rapid growth in AT for school-aged children with disabilities as schools scrambled to meet student needs and the letter and spirit of the law. The Architectural Barriers Act of 1986 and the 1988 Technology-Related Assistance for Individuals with Disabilities Act both addressed consideration of using AT for individuals with disabilities. In 1990, The Individuals with Disabilities Education Act (IDEA), further strengthened provision of AT to students with disabilities.

During the Empowerment Period the number of people and the average life expectancy of people with disabilities had risen significantly due in part to advancements in medicine and disability research. Thus, the main focus of the Empowerment period remained obtaining the education, disability rights, and AT to live and work in society. Increasingly, persons with disabilities enjoyed the same rights and responsibilities as any other citizen.

It was interesting to note that as the concept and practice of technological solution for functional limitation rolled through various time points, it gained strength and popularity through periodic wrapping of policies, experience, practices, initiatives and mistakes.
2.3 Assistive Technology - Classification

With the compounding growth in the field of assistive technology and the ever increasing range of products, agencies and researchers suggested for the categorization of assistive technology products for the clarity and consistency in communication and interpretation.

According to the comprehensive definition offered by Gitlin (as cited in Fuhrer et al., 2003) AT included the following items: (1) structural alterations (changes to the original structure of a physical environment, e.g., widening doors in a house); (2) special equipment (attachments to the original structure of the physical environment, e.g., handrails, grab bars, and stair glides in the home); (3) assistive devices (applied to or directly manipulated by a person; e.g., wheelchairs, reachers, voice-output communication aids, and hearing or vision aids); (4) material adjustment (alterations to nonpermanent features of the physical environment, e.g., clearing pathways, removing throw rugs, and adjusting lighting in the home); (5) environmentally-based behavioral modification (changes to a person’s interaction with the physical environment, e.g., conserving energy in particular activities and segmenting tasks to facilitate their execution).

The other important classifications to classify the wide variety of AT products as developed by NIDRR (Appendix 1). Abledata, Microsoft Windows and International Organization for Standardization (ISO) (Appendix 2). These categorizations lend different perspective to the understanding of wide variety of assistive technology. The commonly referred classification by NIDRR categorized the AT products as architectural elements, communication devices, telecommunications, sensory aids, computers, environmental controls, aids to daily living, mobility, orthotics and prosthetics, recreation, leisure, and sports, and modified furniture and furnishings.

2.4 Assistive Technology - Demographics

The facts and figures about assistive technology both in the developed countries and developing countries helps us in developing a perspective on the extent of reach and the kind of inroads that it has made in disability sector and the distance that it has to travel to make a more equitable society.
Chapter 2

According to the National Center for Health Statistics of 1994, an estimated 7.4 million persons in the U.S. household population used assistive technology devices for mobility impairments (as cited in Russell, Hendershot, LeClere, Howie, & Adler, 1997). In a report by Scherer and Galvin (1996) more people use assistive technologies related to mobility (6.4 million) than any other general type of assistive technology. Evans, Neophytou, DeSouza and Frank (2007) mentioned that as per the Audit Commission 2000 report it is estimated that 1.2 million WC users live in England with 57, 600 WC users in the UK under the age of 19 years.

Jutai, Fuhrer, Demers, Scherer, and DeRuyter (2005) stated that ATDs embrace an enormous range of devices. In the United States alone, there are more than 40,000 types of assistive device that have been cataloged. When customizations are factored in, the number of different devices approaches infinity. LaPlante, Hendershot and Moss (1992) reported that 13.1 million or 5.3% of Americans used some sort of assistive device to accommodate a physical disability. The large majority of these people used devices such as canes or walking sticks (4.4 million), hearing aids (3.3 million), walkers (1.7 million), wheelchairs (1.4 million) and back braces (1.2 million). Jones and Sanford (as cited in Buning, Angelo & Schmeler, 2000) in their study reported that approximately one lakh powered WC and 60,000 scooter user live in the US compared with 1.4 million full time manual wheelchair users. Priebe et al. (2007) in their study found that the most common home modifications for people with SCI were building ramps (83%), widening doors (57%), and remodeling bathrooms (46%) or other rooms in the house (43%).

Baker, Cahill, and Teeple-Low (2003) reported in a survey by Bureau of Industry and Security that majority of the assistive technology devices belonged in the domain locomotor disability, with devices to aid mobility, 20.7%; orthotics/prosthetics, 12.2%; and aids to daily living, 12%. It was also reported that the AT industry in United States, was highly fragmented and included as many as 2,700 companies, most of them small, having annual sales of less than $10 million annually.

The AT scenario in the developing world is far complicated and constrained. According to the estimated numbers above, the efforts to start workshops and distribute
donated WCs have cumulatively provided less than half a million WCs to developing countries over the past several decades. In 1990, an estimated 1 million WCs per year were needed if the supply of WCs was going to meet the demand by the year 2020. Fourteen years after this estimate, there is still a staggering and growing need for WCs. Pearlman et al. (2006) stated that the problem of WC provisions in developing countries is enormous. Behring (2003) mentioned that there are 100 million to 130 million people worldwide who need a WC, but cannot afford one.

Some related literature suggesting facts and findings in Indian scenario…

In Indian context the available database of AT is not very inclusive and representative. Zutshi (2004) reported that in India about 60% disabled persons can function without aid/appliances, while 13% cannot function even with aid and appliance and another 17% can take self care with the help of aid and appliance. Significantly 10% disabled have neither tried nor have access to aids and appliance and hence cannot take self-care. However, the proportion of severely disabled who cannot function even with the help of aid/appliance have come down from 25% in 1991 to 13.1% in 2002 in rural areas and from 20.4% in 1991 to 14% in 2002 in urban areas. This indicates extent of disability has shown declining trends probably due to immediate support and healthcare provided to the disabled.

It is estimated that nearly 8 million people need wheelchairs in India (Pearlman, Jefferds, Nagai, Chhabra, & Cooper, 2007). And production was only 33,813 units as per ALIMCO Director’s Report 2011-12. As per the same report the total tricycle production was 50,867 units, crutches was 25, 171, orthotic lower limb was 24,780 unit and a total turnover of around INR 81.83 crores. More discouraging was that the above estimate of half a million wheelchair did not take into account the lifecycle of a wheelchair, which is estimated to be five years. In another report of 2000-2001 by Ministry of Social Justice and Empowerment, Govt. of India, it has been mentioned that for the said year a total of 16,789 aids and appliances were distributed through all District Rehabilitation Centers (DRCs). The total amount of ₹291 million was spent on aids &appliances through 147 NGOs.

Chaturvedi and Ramesh (2005) reported in the India Country Report as part Disabled People in Development project that in India there are 650 organizations receiving grants in aid
from the Ministry of Social Justice and Empowerment, and at least four times as many that are not. The number of NGOs in the disability sector and an absence of coordination within the sector, can limit effective participation.

2.5 Assistive Technology - Models of Practice

Waldron and Layton (2008) in their article mentioned about a number of published theoretical models of practice applicable to AT interventions, although no individual model has yet been adopted universally in the field of AT. These include:


All these models, despite differing terms, encompass the same elements within their constructs, namely the individual, the task or occupation, device or intervention, and the environment or milieu. The holistic nature of these models supports the contention that best practice in AT requires multifactorial assessment of AT user and of the AT itself: thus encompassing hard and soft technology elements. Among these models, the two popular models are the MPT model and HAAT model.

**Matching Person and Technology (MPT) Model (Scherer & Galvin, 1996)**

The MPT model and assessment instruments have been developed to allow consumers to prioritize their own outcomes in relation to measurable changes in the perceived quality of life as opposed to the absence of disease or sickness or functional ability. As in these other measures, the MPT is a multi-dimensional instrument that taps domains related to overall impact on quality of life. Three domains are included in the MPT. The *Milieu* dimension assesses characteristics of the environment and psychosocial setting in which the assistive technology is to be used. The *Personality* dimension focuses on the individual's personality, temperament and preferences. Finally, the *technology* component addresses characteristics of the assistive technology itself. The multi-dimensional nature of the MPT makes it possible to separate influences of the technology, environment and personal preferences.
Human Activity Assistive Technology (HAAT) Model (Cook & Hussey, 1995)

This framework is useful in placing the various outcome measures described in an overall structure. This model is a framework for studying human performance in tasks involving technology, and it is typically employed to describe the performance of a human operator in a given task (activity) within a given situation (context). Human factors engineers and psychologists have developed this model to assist in the design and application of technology in a wide range of areas, including computers, telecommunications equipment, industrial process, and vocational tasks. This model is most valuable in the design of mass produced, commercially available devices that are intended for use by able-bodied persons.

It is very important to note that the models give us a theoretical framework and restores consistency in approach. It is observed that all models emphasize on establishing a connect between the individual and the technology and is of far greater consequence as compared to the device’s physical usage.

2.6 Assistive Technology - Outcome Measures

Even though assistive devices have been used as obvious tools in rehabilitation programs all over the world for many decades, the interest in outcomes of assistive device is a relatively recent phenomenon (Samuelsson & Wressle, 2008). Assistive devices, especially mobility devices offer a great deal of options for physical activity and participation, and is increasingly recognized as an important lifestyle behaviour for recovery from a broad range of conditions. Burke and Utley (2013) stated that the physical activity experiences of people with an illness or disability requires targeted research in order to better understand the role of physical activity in facilitating psychosocial recovery. The available literature on outcome studies in the field of assistive technology encompasses several issues that are pertinent to the utilization of devices.

Outcomes measures that assesses the impact of AT have become an area of interest for both users and providers, who have become more concerned with costs, support systems and abandonment of technology. The relationship between AT use and these variables has not been adequately investigated. In the field of AT a wide range of outcome data needs to be collected, thus, will reflect the true meaning of the device as assigned by the user.
Chapter 2

There are several tools to measure different aspects of AT, but specific to user’s perspective there are limited tools like Psychosocial Impact of Assistive Device Scale (PIADS) (Day & Jutai, 1996) that measures user’s psychological well being in the context of psychosocial interactions, Quebec User Evaluation of Satisfaction with Assistive Technology Scale (QUEST) (Demers, Weiss-Lambrou, & Ska, 2002) that assesses user’s satisfaction with an ATD and the related services, AT Device Predisposition Assessment (ATDPA) (Fuhrer, 2003) enquires into the consumer’s subjective satisfaction with current achievements in a variety of functional areas. Besides this there are literature suggesting of usage of other tools adapted to capture useful information in the context of device usage, like Functional Independence Measure (Keith, Granger, Hamilton, & Sherwin, 1987) for measuring the improvement of health status upon device usage and Ladder Scale (Andrews, 1976) for measuring the improvement in life satisfaction upon device usage.

According to Smith (1996), the Assistive Technology Outcomes Measurement (ATOMS) Project states that there are many key stakeholders in the AT field including consumers, service delivery professionals, developers, researchers, and funders; all whom need better AT outcomes instruments, methods of measurement, and access to outcomes results. A principal theme addressed by all project activities targets the improved understanding of causative factors of AT device abandonment and better compliance.

As per the proposed Consortium for Assistive Technology Outcome Research (CATOR) Taxonomy of ATD Outcomes (Jutai et al., 2005), the five domains of outcome are identified as follows- care-giving is the amount of supervision required by the caregiver; cost is the value of resources consumed in providing ATDs and related services; residential settings is the placement in the home versus a long-term care facility such as a nursing home; service utilization is the consumption of service sector resources (educational, health, vocational, etc) in terms of assistive technology; and device utilization includes categories such as the frequency of use by individual users, the duration of use, and the manner of use (i.e., the extent to which an ATD is used appropriately).

Cook and Hussey (2002) reported that user satisfaction also is the perception of the degree to which the assistive technology system achieves the desired goal(s). This is a
multidimensional phenomenon that requires qualitative measures. In addition, general user satisfaction scales are global, and they do not take into account various factors that affect a person's use or non-use of assistive technologies. In the study to conceptualize and propose the significance of AT usability and its measurement in entirety from a human factor perspective, Arthanat, Bauer, Lenker, Nochajski and Wu (2007) mentioned that the generic variables including self-perceived factors of device use and abandonment, satisfaction, and well being are highly multidimensional.

Andrews and Withey (as cited in Brown, Bowling & Flynn, 2004) suggested that subjective, or emotional well-being consists of people’s own evaluations of their lives, either cognitively (e.g. specific or overall life satisfaction) or affective (e.g. feelings of joy). Self-reported well-being measures reflect at least four factors: circumstances, aspirations, comparisons with others, and a person’s baseline happiness or disposition. Self-reported well-being measures consist of individual’s assessment of their lifetime.

Jutai et al. (2005), in their study on taxonomy of assistive technology device outcomes commented that components of subjective well-being are those most applicable to the evaluation of ATD outcomes. Consistent with the construct of subjective well-being, it includes users’ cognitive and affective evaluations of how ATDs have affected their lives. The cognitive appraisal of ATDs includes satisfaction and a number of other dimensions, including its effect on functional independence. A principal domain that has been identified for subjective well-being is satisfaction. The user (and caregiver, when applicable) may be more or less satisfied with the device (and related service) itself, or effects of the device on particular life domains (such as those specified by the ICF), or on life in general (global subjective well-being).

William (2000) described life satisfaction as a psychological state that may be broadly associated with psychological well-being. Lund et al. (2007) in a study to determine the relationship between perceived participation, problems in participation and life satisfaction in spinal cord injury patients found that the domains for perceived participation were all positively correlated with satisfaction with life as a whole and decreased satisfaction corresponded with greater number of reported severe problems with participation.
Consumer satisfaction is an outcome that is critical to the measurement of device and service delivery effectiveness. Knowledge of consumer satisfaction can predict the likelihood of device retention and abandonment. In a study by Stickel, Ryan, Rigby and Jutai (2002) to compare the views of electronic aids to daily living (EADL) users, based on interviews twice at an interval of 6 months. They found that overall consumers were quite satisfied with the devices and the level of satisfaction was relatively stable over time.

In a study by Craddock (2006), the characteristics of students with range of disabilities and their subjective preferences, referred of a supportive or unsupportive environment within society. Environmental issues that are part of an unsupported environment clearly had repercussions on AT use. A non-responsive environment included problems such as inaccessibility due to lack of ramps or lifts, inaccessible lecture halls, toilets and other facilities, lack awareness of disability amongst college staff.

As we are discussing the issue of user’s satisfaction, quality of life (QoL) is a very pertinent aspect in the context of this section. According to Brown et al. (2004) QoL is a multi-level and amorphous concept, typically determined by a host of subjective, social, and economic indicators. It has been operationally defined by measures of life satisfaction, well being, adaptive functioning, environmental mastery, and socioeconomic indices but there is no widely accepted or supported theory or measurement instrument of QoL.

According to Day, Jutai and Campbell (2002) the most important perspective on how an AD affects quality of life is the perspective of the device user. Quality of life impact is the effect of the device on, ‘the degree to which a person enjoys the important possibilities of his/her life’. An assistive device should promote good quality of life for the user to the extent to which it makes the user feel competent, confident, and inclined (or motivated) to exploit life’s possibilities. Lenker et al. (2005) also stated that QoL impact is perhaps the most important outcomes indicator from the ATD user's perspective. One could make the case that all outcomes variables are, in fact, indicative of some slice of life quality.

The concept of QoL, viewed from the vantage of subjective well-being, refers to how ATDs are appraised and felt to influence the quality of life of the individual user. Flanagan (as
cited in Jutai, et. al., 2005) described the realm of possibilities along five dimensions: physical and material well-being; relations with other people; social, community, and civic activities; personal development and fulfillment; and recreation. Evaluation across these five dimensions is used to assess individuals’ personal satisfaction and happiness.

When devices are not perceived to enhance QoL, and those around them have come to expect much less from life, their world shrinks and they stop using devices. It has been observed that factors contributing to AT rejection, non-medical psychosocial factors appear to underlie why many people do not use, or quit using, their AT devices.

Psychosocial adaptation to disability has been viewed as being composed of both global (e.g. QoL) and disability specific indicators. Jutai and Day (2002) in their study on the description of ‘Psychosocial Impact of Assistive Devices Scale’ referred to ‘psychosocial’ as both factors within the person and factors attributable to the environment that affect the psychological adjustment of individuals who have a disability.

Day, Jutai, Woolrich and Strong (2001) in a study interviewed subjects using eye glasses, twice over the course of a year and found that the positive psychosocial impact remained stable over the first year. There is evidence that the impact of the device on psychosocial factors plays a significant role. The adopter may be satisfied with its function but unhappy with its appearance, its need for complex maintenance, or the effect it may have on feelings of self-esteem and sense of control. These non-functional criteria are related to personal and psychosocial factors such as motivation, perceived and desired roles, and the amount of effort expended to use the device compared with the rewards experienced in using it. These psychosocial constructs which might be critical components of the user perspective have been identified as factors in the construct of QoL.

In a study, Atherton and Robertson (2006) studied the prevalence of psychological morbidity on patients who had undergone lower limb amputation and using prosthesis. All participants wore prosthesis on a daily basis. Results indicated that people who exhibited high public self-consciousness were more likely to be distressed and were more likely to have psychosocial adjustment difficulties. This concurs with theory: people high in public self-
Chapter 2  

Review of Literature  

consciousness are keener to avoid disapproval and rejection, are more concerned about their physical appearance and thus more likely to be disturbed if their appearance does not conform to a model endorsed by society. An individual must adjust to changed appearance, becoming used to a body both with and without prosthesis.

Gallagher, Horgan, Franchignoni, Giordano, and MacLachlan (2007) in their study on amputee with prosthesis stated that there are a number of images for the person who has experienced an amputation to adjust to: the ‘complete or familiar body before the limb loss, the traumatized body, the healing body, and the extended body (i.e., a body supplemented with prosthetic devices and, if necessary, mobility aids).

_Psychosocial adaptation or acceptance_ of AT device for health populations have been found to take years in some cases, due to the emotional adaptation that takes place, often involving new body image. Hersh (2010) stated that it is useful to both evaluate AT products throughout the life cycle and evaluate the outcomes of their use by particular end-users or groups of end-users. In speaking of WC use specifically, Lupton and Seymour (2000) identified positive aspects such as increased mobility and increased social interaction, as well as negative aspects such as the WC being seen as a signifier of disability, detracting attention away from identity and individuality of the user. Genuine acceptance of mobility device usage often comes with seeing the need for the device, testing it out, and seeing the benefits such as the expanding of the user’s spatial boundaries and maintaining independence, which preserves self-integrity and self-identity. Barker, Reid and Cott (2004) did a study to gain understanding of the lived experience of stroke survivors using wheelchair (WC) and found that the categories of acceptance of WC were identified as reluctant acceptance, grateful acceptance and internal acceptance.

Craddock (2006) investigated the quantitative and qualitative impact of AT on QoL, self-esteem and satisfaction of AT usage on students with disabilities. A dynamic relation was found within the three domains of environment, AT, and personal characteristics. The positive changes occurred within family relationships and the student’s ‘connective’ social relations. They had a positive perception of themselves as equal participants within their relationships and society and found they excelled with this added support. There was an evidence of dynamic relation between
technology use, temperament, personal characteristics and QoL. The student’s self-esteem increased as they had the means to demonstrate what they could achieve.

Carin-Levy and Jones (2006) in a qualitative study investigated the psychosocial benefits of scuba diving on WC bound volunteers, found that the participants carrying out the activity in a buoyant environment made it challenging, enjoyable, enhancement of QoL through enriched social experiences and improved self-concept and feeling of equality derived from momentarily being able to abandon the WC and take part in the activity like any non-disabled person does.

Amosun, Volmink and Rosin (2005) in a study to document the experiences of undergraduate medical student physically confined to WC found that some of the individuals they interacted with treated them as if they were different, needy, unable and tragic. These perceptions resulted in feelings of inferiority, directly affecting their self-esteem. It is believed that persons with disabilities face an array of psychological and environmental barriers which may negatively impact successful adjustment. In a study by Wu and Chan (2007) to examine the psychosocial adjustment patterns of spinal cord injury patients and found that there was difficulty in psychosocial and vocational adjustment after returning to the communities.

Polgar (2006) stated that if a device is to be an enabler of occupation, it must be incorporated into the life of the consumer. Many different factors influence whether assistive technology will serve as an enabler or barrier to occupational performance. The two main categories are the person and their social/institutional environment. Person factors include the individual's preference for completing an occupation, one's perception of assistive technology, and the stigma associated with assistive technology use. The social/institutional elements include the paradox of tool use, models that influence our understanding and concept of disability, and the influence of individuals in the social environment, including health care professionals, peers, family, and others.

Polgar (2006) also reported that braces and other corrective devices emotionally upset the cerebral palsied child. Many question whether the corrective value is enough to offset the stigma of wearing a brace. Many seek concealment by wearing long trousers to cover the
brace. Assistive technology viewed in this manner is seen as a symbol of disability; recognition that life has changed because of trauma or chronic condition. The paradox of technology was discussed whereby the use of technology by persons with disabilities was not given the same acceptance as the use of technology in the daily activities of persons without disabilities.

Literature suggests that rehabilitation professionals have expertise in the assessments related to assistive technology selection and knowledge of the available products. However, they typically do not have the lived experience of using assistive devices, with the implication being that the ultimate decision resided with the client. Peers seem to be the strongest influence with respect to the use of AT.

2.7 Assistive Technology - Factors influencing device acceptance and usage

The AT outcomes from the perspectives of the users with locomotor disability has been found to be influenced by various set of factors. These factors encompass the entire psychosocial experience as perceived by a person with locomotor disability using devices. For the convenience of assessment and interpretation the various factors have been grouped as socio-demographic, condition specific and device specific factors.

2.7.1 Socio-Demographic Factors

The following literatures represent the perception and findings of researchers in the context of the influence of various socio-demographic factors, on the usage of assistive technology. These include age, gender, type of organization, local support, migration towards the facility, social support, working status, educational status, living situation, and socio-economic status. Research has shown that participation, life satisfaction, and a person’s subjective experience of contentment with his or her life, are affected in people with disabilities.

Berges, Ottenbacher, Smith, Smith, and Ostir (2006) described that patient satisfaction was recognized as important to the field of medical rehabilitation. The general conclusion from these studies was that socio-demographic characteristics (age, gender, ethnicity, and marital and socioeconomic status) were at best weak predictors of patient satisfaction.

Lenker et al. (2005) reported in their study that social role performance is regarded to be an aspect of QoL, and measures of social role participation include activity patterns,
location of residence, employment, education, user’s overall goals and unmet needs. Therefore multi-stakeholder dialogue is needed to identify appropriate objective indicators of role performance that might vary with AT usage.

Van der Mei et al. (2007) in a study described the social participation on patients who had undergone kidney transplantation. The social participation was operationalized as patient’s actual involvement in society as a result of interaction between individuals or social functioning in a group. Social participation was divided in activities with obligatory characteristics (employment, education, etc) and leisure activities (unpaid work, sports and socializing etc). This has been in accordance with the new approach for studying life after any form of impairment is the concept of participation introduced by WHO and is outlined in the ICF.

Pierce and Hanks (2006) in a study to determine life satisfaction after traumatic brain injury, the findings indicated that participation was the strongest predictor, activities were a weaker predictor and body function and structure did not add to the prediction of life satisfaction. In contrast, community integration (an element of participation) has demonstrated significant associations with life satisfaction, although there is some evidence that quality of social support and changes in psychosocial status explain more of the variance in life satisfaction than community integration alone.

Similar to adult, children’s participation also is potentially affected not only by their functional abilities, skills, interests, and family culture but also by factors within their physical, social, and institutional environments. The social participation of children with disabilities is enhanced when communities have a greater number of accessible and accommodating facilities. Attitudinal factors and a lack of social support are relatively potent barriers to participation for children with physical disabilities (Law, Petrenchik, King & Hurley, 2007). Raja (2006) in her study on compliance with walking aid use in children with cerebral palsy in India stated that the ability to ambulate is an urgent and insistent necessity in the case of a child in India. Recreational activities for the child using a wheelchair for mobility are all but non-existent. After an initial period of consistent usage, children and their parents prefer to use hand-holding assistance or assistance of furniture/walls and other immovable articles instead of the prescribed devices. Reasons cited for this are cosmesis and the fact that walking aids are cumbersome and difficult to carry around in public.
Nguyen, Page, Aggarwal and Henke (2007) in their study stated that *cultural variables* can affect attitudes toward and interactions with people who have major disabilities, and they can also influence family and community support structures. Such cultural variables may include religion, education, employment, and family unit structure and size, as well as culture specific ideologies concerning health and illness, caring for the disabled, and costs of care and institutional care. It is difficult to measure all the dynamic cultural variables that may be of relevance.

The *gender*, as per a report by Public Health Agency of Canada (2004), on young Canadian students, life satisfaction was consistently higher for boys than for girls across all grade levels, while life satisfaction decreased progressively across grades. In addition, adolescents who were satisfied with their lives tended to have higher levels of self-esteem. The strongest influence on life satisfaction was students' relationship with parents. *Families* may act as a foundation for experience in the social world through providing a sense of security and by encouraging an adolescent to develop a strong sense of identity. Rekkedal (2012) in her study explored factors pertaining to children’s use of and attitudes toward hearing technologies and the results suggested that *males* view hearing technology more positively than do females.

As regards *education*, Craddock (2010) studied on students in their final year of secondary school, requiring a significant amount of technology and other services and supports to take their second level exams and proceed on to third level education. The findings indicated that AT played a critical role in augmenting participation of the students at both a social and educational level. In particular the students reported that the AT gave them the opportunity to show that they had the ability and the skills that they knew they had but had not previously the means to demonstrate this. In general the students reported that AT increased their skills, their ability and communication. They were able to work better and faster and cover more of the curriculum. They felt with the technology they had a chance to complete their education on an equal status with their peers.

In regards to *socio-economic status* as a factor, Lupton and Seymour (2000) in their account stated that the development and marketing of new technologies are bound to an economy privileging profit rather than an economy of need. These technologies, therefore, are
far more accessible to the socioeconomically privileged in society. This was an issue raised by most of the participants when discussing the use of technology. Aggarwal et al. (2005) in their study to develop a new tool for measuring the socio-economic status, stated that socio-economic status also influences the accessibility, affordability, acceptability and actual utilization of various available health facilities.

In a study by Ebenso et al. (2007) to explore the perception of people affected by leprosy regarding impact of socio-economic rehabilitation (SER) on stigma reduction. The study revealed that majority of SER participants reported that SER resulted in a range of improvements including: i) personal and family happiness and joy, ii) ability to meet family needs, iii) ability to sustain or manage a business, iv) acceptance and integrating, and v) improved standard of living. A majority of participants claimed that SER improved their dignity by: a) acceptance in society, b) ability to meet family needs, c) ability to work like others in society.

Research on social support has grown exponentially over the last two decades, which identified social support as an important factor in the prevention of and susceptibility to illness and disease. Stemming from this work, researchers from an array of disciplines have found positive relationships between social support and a variety of outcomes typically associated with health, well being, and coping. Kutner (1987) mentioned in his study that social ties can be particularly useful to disabled people. This study investigated social ties, perceived support, received support, and perceived health status in a sample of disabled persons and found that perceived support from family was high for all respondents.

In a review study on social support by Chronister, Johnson, and Berven (2006), they identified three distinct dimensions of social support - structural, functional, and perceptual. Structural dimension focuses on a person’s connection with his or her personal network including the quantity (size, frequency of contacts) and characteristics (composition, density, homogeneity and multiplexity) of social ties in the network. Functional dimension include emotional (expressing affection and concern, listening, sharing a task), instrumental (tangible aid, financial and physical assistance), and informational (advice, guidance, feedback). Perceptual dimension targets an individual’s subjective, evaluative assessment of his or her social support network.
The employment of disabled persons is of considerable importance to modern societies (Ville & Winance, 2006). In the area of rehabilitation, work is generally considered as a means to accomplish many of the goals which are identified as offering personal satisfaction, i.e. socioeconomic status, interpersonal relationships, psychological well-being, security and satisfaction of needs. They in their study to understand the employment of severely disabled who have been using wheelchairs on a permanent basis, found that having one or more activities is essential to a proper psychological balance, due to both the activity itself and to the personal contact which is generally involved. Work, along with associative and/or leisure activities are generally considered to achieve both aspects. Work must provide a minimum level of interest and satisfaction. Yet for some of them, achievement of such a role becomes a challenge which is mainly that of identity. William (2000) found the positive influence of employment on life satisfaction, even persons employed part time were found to perceive more control, experience less handicap, and perceive more satisfaction with life.

2.7.2 Condition Specific Factor

The following literatures represent the perception and findings of researchers in the context of the influence of various condition specific factor or relevant clinical factor, as considered in current study, on the usage of assistive technology. The factors included functional status, severity of condition, diagnosis, age of onset, duration of the problem.

Functional independence or functional status itself is regarded as a self-evident goal for AT users and is part of an overall sense of well-being. It is linked to both successful functional outcomes and viewed as a prerequisite to successful participation. Lenker et al. (2005) suggested that functional independence domain included indices bearing on discharge destination, functional status, capacity, assistance, independence, hours without assistance, and productive activity.

Davel and Smith (1996) in their study demonstrated the significance of using assistive technology in the outcomes of patients with stroke. The independent variable included a number of demographic variables, Functional Independence Measure (FIM) and the use of assistive technology devices. This study collected the environment free data (performance across functional areas without assistive technology) and environment assisted data (with
technology). The use of double scoring procedures at discharge allowed for teasing out the use of AT.

In a study by Berges et al. (2006) to examine the association between pain and satisfaction with medical rehabilitation, the finding of functional status, generated with the help of FIM instrument, related to patient satisfaction and thus was an objective means to track and possibly improve patient satisfaction. The finding that functional status was related to patient satisfaction was important as it gave providers of rehabilitation services an objective means to track and possibly improve patient satisfaction.

The best time to measure aspects of disability was defined as the point at which a steady state was reached, i.e. when further functional improvement was ceased. Currens and Coats (2000) in a study to define the best time at which to measure disability following trauma, assessed trauma patients at 3, 6, 12, 24 months after injury. They stated that the disability measurements should be performed 12 months after the injury, when patients have reached a steady state. This time of measurement should be adopted as the standard for trauma databases and outcome studies.

Wu and Chan (2007) in their study reported of literatures discussing the issue of psychosocial adjustment processes being influenced by injury-related variables (e.g., level of lesion, age of onset, time since onset, sexuality). In regards to assess the influence of severity of the clinical condition, Pierce and Hanks (2006) reported that a growing body of research has evaluated various individual and injury characteristics that affect life satisfaction in persons with traumatic brain injury (TBI). The findings concerning the effect of severity of initial injury on life satisfaction are conflicting, showing either no effect or the counter intuitive finding that increased severity predicts enhanced life satisfaction. In a retrospective study by Gokal et al. (1987), they found the life satisfaction of patients on dialysis by Cantril’s Ladder Scale, a standardized self-report questionnaire. Overall, life satisfaction of dialysis patients showed no significant difference compared to a normal population.

This is in reference to the influence of duration of exposure post involvement with the locomotor disability. In a study by Corley, Elswick, Sargeant and Scott (2000), they
assessed the quality of life of living kidney donors as compared to other healthy individuals, with the length of time post donation ranged from several months to 25 years. The Cantril QoL scores tended to be quite positive, with the average lowest at the time of donation and only slightly higher at the time of the study. William (2000) found that the duration of disability was positively related with acceptance of disability and life satisfaction in persons with spinal cord injury-related paralysis.

2.7.3 Device Specific Factor

The following literature represents the perception of researchers in the context of the influence of various device specific factor, as considered in current study, on the usage of assistive technology. Some of the relevant device related factors as cited in literatures on AT services, user’s involvement, waiting period, AT training and maintenance, information and instructions, prescription, funding, and AT usage frequency.

Measuring the outcomes of the AT services will continue to be in the forefront of AT service delivery. The effectiveness of assistive technology systems in meeting the need of consumers is related to many factors. Sackett (as cited in Cook & Hussey, 2002) identifies four types of evaluation to consider: effectiveness, efficacy, availability, and efficiency. Scherer, Sax, Vanbiervliet, Cushman, and Scherer (2005) in their study to validate AT baseline and outcome measures stated that there are limited fiscal and personal resources for meeting the growing number of consumers with widely varying needs; therefore, the better the match of AT and user, the more effective is the use of these limited resources.

Scherer (1996) stated while providers of AT services are very responsive to the physical needs of individuals with disabilities, there is frequently less attention given to the psychological and social aspects of assistive device use. Until this issue is explored and addressed, the potential of many individuals with disabilities for a high quality of life will go unrealized.

In a study by Jutai et al. (1996) to understand AT services within the contexts of the total rehabilitation, the authors stated that the delivery of AT services is no different from the delivery of other forms of rehabilitation services. AT service providers have in common the
belief that what they do makes a real difference to the lives of AT users. Whether service providers have an opportunity to effectively examine the outcomes of their labors will often depend on the culture of the institution in which they practice, regardless of their personal commitment to the cause.

In a study by Heaton and Bamford (2001) collecting information about the outcomes of equipment and adaptations, a range of desired effects of service delivery, or service process outcomes, has been identified. These include users being respected and valued; services that fit with and support life choices (including cultural and religious preferences). User satisfaction is not determined simply by the impact of the services provided, but is also related strongly to the way the services are delivered. Morris, Dudgeon, & Yorkston (2013) reported that effective patient-provider communication and positive patient-provider relationship is associated with increased patient satisfaction.

To facilitate client-centered practice in which the occupational therapist acknowledges the client’s experiences and knowledge and needs to involve them in the decision making process for obtaining devices. In a study by Mortenson and Miller (2008), exploring the intricacies of the procurement process of wheelchairs from the perspectives of clients, one important theme that emerged was “Who decides?” describing varying degrees of client involvement in the procurement process. Scherer et al. (2005), remarked that from the perspective of consumers it is important to be able to create an optimal match of person and technology at the outset and involve the consumer in AT selection. The process of matching person and technology remains complex because people’s expectations of and reactions to technologies are complex.

Delays were another major concern for the respondents. The time between referral and obtaining the equipment (waiting period) has always assumed critical importance. For many with progressive neurological illnesses, a delay can mean that the equipment provided is unusable due to a change in condition.

Zimmerman (as cited in Polgar, 2006) advocated for introduction of the devices early in rehabilitation so that the individual was able to see their worth. The judicious introduction
of useful devices was key in showing individuals how they can return to desired occupations. In a survey study by Cowan and Turner-Smith (1999) about the experiences of the people with physical disabilities, the **time between referral and getting** the powered wheelchair varied from a few weeks to 4 years. The mean wait for a funded powered wheelchair was 5.4 months, charities 7.3 months and privately funded chairs 2.3 months.

In an audit study by Wilson, McCracken and Cummings (1999) on **waiting time of AT**, the audit was conducted over an 18 month period and patients with rheumatic disease. The first audit showed that patients waited an average of 39 days for an assistive device and second audit for 21 days. Prompt provision of an assistive device was a central component of a patient training program that improved compliance. The Fife Rheumatic Diseases Unit (FRDU) was established in 1994, brought out a standard of 3 weeks. The FRDU occupational therapists felt that the speed of the supply did not match patient need.

The **training and maintenance** of the equipment is an important part of the provision process because it gives the user and caregiver’s confidence in their equipment. In a survey study by Cowan and Turner-Smith (1999), they stated that the training given for powered wheelchair operation varied. Some of them indicated that they did not receive sufficient training and many that they received no training at all. This was also found to be the case in an earlier survey of wheelchair users. According to Fliess-Douer, Vanlandewijck, and Vander Woude (2013) approximately 80% of the persons with SCI will remain dependent on a wheelchair for the rest of their lives and acquiring wheelchair skills has to be considered as an important part of SCI rehabilitation.

Riemer-Reiss and Wacker (2000) in a survey to identify factors closely associated with assistive technology device discontinuance among individuals with disabilities demonstrated that, individuals with disabilities are not often given the **opportunity to try out assistive technology** devices prior to purchasing them. Theoretically, and pragmatically, trialability has been noted as an effective means to prevent technological discontinuance and promote ongoing use. It has not, however been fully incorporated into the process of distributing technology to individuals with disabilities. In a study on safe use of disability equipment and manual handling by Mandelstam (2001), it was reported that the risks can be
reduced through encouraging defect reporting by patients, by regular inspection of potentially hazardous equipment, requires maintenance and sometimes condemnation.

In an exploratory study by Lupton and Seymour (2000), the participants pointed out that when breakdown in technology occurs, it can be difficult for some people with disabilities to deal with the problem. Breakdown or failure of technology place the individual in predicament: the feelings of autonomy, self control, independence and normality that have been painstakingly achieved are challenged and disrupted.

Cowan and Turner-Smith (1999) reported that disuse of equipment or problems with usage could be attributed to another area of concern highlighted by respondents, that is, the availability of information. The respondents either did not know whom to contact regarding any problem or could not get a satisfactory result.

*Information* and *instructions* are critical to safe usage of ATDs. Lack of adequate information and instruction may make the devices unsafe to use. In a study to explore the experience of disabled person living in the community, Pain and Wiles (2006) reported that the availability of information on AT was mixed. Acquiring information from a professional is usually the preferred avenue, probably because they are seen as objective, and that they know the individual’s needs. Information from company representatives can also be patchy, and perceived as being with a view to achieve a sale. Sprigle, Lenker, & Searcy (2012) identified four categories of services: pre-delivery, during delivery, follow-up and other.

Cook and Hussey (2002) reported that the factor of easy device procurement and poor device performance are critical to device abandonment. The “easy device procurement” factor refers to the situation in which a consumer obtains a device from a supplier without an evaluation; the consumer just goes into a store and buys a device. In a study on users of rollators and wheelchairs by Samuelsson and Wressle (2008), it was found that the prescriber’s consideration for needs, wishes and demands of the user during the prescribing process did influence the level of user’s satisfaction.
Cowan and Turner-Smith (1999) reported that funding was by far the largest problem encountered by the respondents. Many individuals fund equipment themselves due to unavailability of funds or non-provision of an item by the service in their area.

Arthanat et al. (2007) stated that usage frequency is one of the observable attributes of generic outcomes of usability, comfort, satisfaction, perceived independence and quality of life. Lenker et al. (2005) in a study on analysis of the outcome research, reported that ‘frequency of use’ can be measured in terms of number of days per week or per month. ‘Duration of use’ can be measured in terms of minutes or hours per day. Cowan & Turner-Smith (1999) in their study reported that 94% of the devices were used by the respondents daily and only 6% of the devices were used rarely.

2.8 Assistive Technology - Retention and Rejection

Assistive technology can assist individuals with disabilities to achieve optimal function and independence and has become an increasingly accepted intervention. However, there are numerous reports of dissatisfaction and nonuse of technology by consumers. Device abandonment is a critical part and is considered to be a grey area in the entire domain of AT. In spite of technological availability, studies have showed that there is minimal use of assistive technology by people with physical disabilities (Dijcks, De Witte, Gelderblom, Wessels & Soede, 2006; Philips & Zhao, 1993). Peterson and Murray (2006) reported of literatures suggesting that on average, about one third of all devices provided to customers end up stored in closet, basement, or drawer. And such a rate of AT nonuse, discontinuance, abandonment and non-adherence is unacceptably high for both the consumer of such services and the provider funding such services.

According to Rogers' theory of diffusion (as cited in Riemer-Reiss & Wacker, 2000), discontinuance is a decision to discard an innovation after previously accepting it. The two types of discontinuance are replacement (rejection of an innovation for an improved one) and disenchantment (rejection of an innovation due to dissatisfaction). The definitions of non-use vary in the literature, for example: no use at all, no full - time use, non-use at the time of the study, no frequent use, low average use, no correct use, non-use for the activities it was prescribed (Dijcks et al., 2006).
Technology abandonment can have serious repercussions. For individuals, non-use of a device may lead to decrease in functional abilities, freedom, and independence, and increase in monetary expenses. These costs could spiral as the number of people with disabilities, particularly those with severe disabilities, continues to increase. A better understanding of how and why technology users decide to accept or reject a specific device is critically needed to improve the effectiveness of assistive technology interventions and enhance consumers’ satisfaction with devices (Dijcks et al., 2006; Philips & Zhao, 1993).

In a review article by Wessels, Dijcks, Soede, Gelderblom and De Witte (2003), they identified a range of factors correlating with non-use of AT. These factors can be clustered into user-related, device-related and environmental factors. Personal factors include age and diagnosis, client and family expectations; emotional maturity of client; whether the disability is acquired suddenly, progresses slowly, or is congenital. Device-related factors are noted to be device quality, appearance, availability of choice between devices, portability, weight, ease of use, and the presence of multiple devices. Factors related to the environment are social support; suitability of physical environment to device; opportunities within environment for use and, finally, issues related to the device market such as trial, training, delivery, supply and support.

Scherer (1996) reported of the following factors that are most frequently associated with abandonment:

- Changes in consumer functional abilities or activities.
- Lack of consumer motivation to use the device or do the task.
- Lack of meaningful training on how to use the device.
- Ineffective device performance.
- Environmental obstacles to use, such as narrow doorways, etc.
- No need for the device or minimal need for it.
- Device aesthetics, weight, size and appearance.

Biddiss and Chau (2007) in their study commented that prosthesis use and abandonment is a complex function of variables defining the contextualized individual. They in their review study found that personal and contextual factors are critical determinants of prosthesis acceptance. While the influence of some factors (i.e. lifestyle, level of limb loss), is
strongly supported in the literature, the impact of others (i.e., age of fitting, efficacy of training protocols), remain controversial.

Scherer and Galvin (1996) reviewed several papers studying technology abandonment. They reported abandonment rates between 8% and 75%, with an average of one third of all assistive devices being abandoned by users. Most abandonment occurs within the first three months of use. The use of today’s technologies ranges from those people who use technologies regularly and with great satisfaction to those who use them infrequently and with reluctance. It is presumed that there is a linear relationship between AT use and QoL. Further, this dynamic interactive relationship among functional capabilities, technology use, and QoL changes over time.

Cushman and Scherer (1996) in a study participants with multiple disabilities, 128 devices were prescribed and at 3 month follow up, 86 devices were still used and 42 rejected. The four types of devices most frequently abandoned were adapted grooming aid (55%), quads cane (43%), walkers (36%), and manual wheelchairs (36%). The most frequent reasons for non-use were that the device was no longer needed. Although wheelchairs are sometimes abandoned because of the changing needs of an individual or availability of mobility alternatives, lack of client involvement in the wheelchair-procurement process has been suggested as another important explanation. Second, enhanced understanding of the procurement process may facilitate improved outcomes for wheelchair users. In addition, wheelchair-related accidents are a serious concern (Mortenson et al., 2005).

Phillips and Zhao (1993) reported in a national survey that 29% of prescribed and delivered devices were eventually abandoned. Abandonment rates were highest during the first year, and then rose again after five years of use. They reported four factors significantly related to abandonment: (1) lack of consideration of user opinion; (2) difficulty of device procurement; (3) poor device performance; and (4) change in user needs or priorities. This study was based upon 1732 devices. The most commonly used devices in this study were wheelchairs, bathtub chairs, canes, walkers, and long handled reachers.

In a study on college students with various disabilities, Riemer-Reiss and Wacker (1999) found that a total of 51 devices were abandoned across all domains, and this rate of
rejection has been considered a high rate. Mann, Ottenbacher, Hurren and Tomita (1995) in
their study reported of findings from the work of other authors with 50% to 54% rejection rate
of assistive device. Contrary to these findings they also reported of another study where
rejection rate was reported at only 18%.

De Craen, Westendorp, Willems, Buskens and Gussekloo (2006) evaluated the current
situation regarding ownership and use of assistive devices amongst Dutch community-
dwelling 85-year-olds in their own homes. Of the total number of 591 assistive devices, 74
(13%) were not in use. Dijcks et al. (2006), to obtain an insight into the prevalence of the non-
use of AT in The Netherlands, performed a study among a stratified sample of users of
devices, and found that 92% of the respondents at the time of survey were using their devices.

In a consensus building process by Batavia and Hammer (1990), it has been
mentioned about 12 experienced technology users with sensory and mobility impairments
identified and rank - ordered 17 criteria for making technology purchasing decisions, the four
most important criteria were: 1) effectiveness- how well the device enhances the user’s
functional capability; 2) affordability - how much it costs to purchase, maintain, and repair the
device; 3) operability - how easy the device is to operate, and 4) dependability- how long the
device operates without reduced performance. They concluded that the assistive devices that
are effective, easy to operate, affordable, and dependable are less likely to be abandoned.

In a major review of factors influencing the abandonment of assistive technologies,
Pape, Kim and Weiner (2002) concluded that successful integration of assistive technology
into daily lives requires potential device users to explore: 1. the meanings they assign to
devices; 2. their expectations of assistive technology; 3. the anticipated social costs; and 4.
ways to understand that disability is one, but not the defining, feature of one’s identity. Vash
(1983) reported a variety of personal issues that affect device use and acceptance such as
disability acceptance, motivation, perceived life tasks, and effort - reward balance. She
concluded that disability acceptance and goal directedness are related to positive attitudes
toward devices. Devices that enable the user to complete important tasks are more likely to be
used. Wright (as cited in Saladin, 2004) stated that individuals who recognize the difficulties
of their disability, but focus on managing them are more likely to use assistive devices.
Brooks and Hoyer (as cited in Philips & Zhao, 1993) found that those who reported themselves adjusted to their disability were less likely to use personal care, housekeeping, transportation, or mobility devices. They hypothesized that because these device types require repeated, intimate use, they may signify dependency to the well adjusted user. This finding suggests that a consumer’s personal concept of independence may influence assistive devices acceptance and use.

Shepherd, Stewart and Murchland (2007) examined the perspectives of mothers using hoist in the home to assist in the care of child with severe physical disability and found that the reasons postulated for the non-use include the increased time involved in lifting, decreased physical contact with the child, initial cost, and the space the hoist takes up in the home.

Garber and Gregorio (1990) in a study on upper extremity assistive devices prescribed to quadriplegic patients reported that 35% of all devices prescribed during rehabilitation were still in use at the end of 2 years. In a retrospective audit of a random sample of 100 service users by Chamberlain, Evans, Neighbour and Hughes (2001), the clearest finding was that the majority (83%) of the equipment and adaptations issued between 18 months and 2 years previously were still being used at the time of this audit, with 69% being used on a daily basis. This suggested that the equipment and adaptations provided were being used as an integral part of daily life and that they had been prescribed appropriately. If a seemingly well-chosen device is ultimately going to get rejected it raises serious concern and thus puts a serious question on the appropriateness of every single step of the device disbursement and also for all those involved in the process. As suggested by the outcome of the literatures in this section, device rejection is the biggest curse and challenge in the field of AT.

2.9 Conclusion

The review of literature reflects upon various aspects of assistive technology and its services. It orients us to the disparities that exists in the field of AT. This section made an attempt to profile the device rejection rates, issues on device related outcome studies, influence of AT on subjective well-being, life satisfaction and psychosocial impact; also the various factors that can influence the device related psychosocial outcomes to the extent that the device reaches a defining point where the device will either be retained or rejected.