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Design of the Built Environment and the Integration of Wheelchair Users in the Kingdom of Saudi Arabia: Commentary and Exploratory Study

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Abstract

Many people in the Kingdom of Saudi Arabia (KSA) are living with disability and severe accessibility limitations, especially those with physical disability who constitute nearly 33.7% of the Kingdom's total disabled population. Disability policy in KSA has a history of half a century, beginning with the Royal Decree No. 1219 in 1956 and ending with the Disability Code in 2000. However, Legislation of Disability in 1987 and the Disability Code of 2000 were more dedicated to challenge the inaccessibility problem and provide disabled people with equal rights to their peers. The aim of this article is to address the question of: how far the disability policy of KSA has contributed to the creation of accessible built environments in which wheelchair users can experience their lives independently. To answer the question, a random sample of 13 public buildings from a list of 130 buildings in the yellow pages, and six different roads from the Central Business District of Riyadh city, were selected for field observation. The mandate of KSA's laws and the Americans with Disabilities Act Accessibility Guidelines were used as a yard stick to measure the accessibility compliance standards of the chosen sample. Quantitative analysis of the field observation data revealed that the accessibility compliance of the sample in Riyadh was extremely limited in the sense that only three buildings had an overall compliance of more than 50% while none of the roads had reached 50% overall accessibility compliance. The results of the observations revealed that the disability law has failed in guaranteeing the equal rights of accessibility by wheelchair users in society. As such, it is safe to conclude that even mandate of the law associated with political will tends to be ineffective and cannot be taken for granted for solving the environmental accessibility problem in KSA.

This article consists of two main sections. Part I provides background and commentary about disability laws and regulations in the Kingdom of Saudi Arabia (KSA) in relation to other countries, including barriers to accessibility faced by people with disabilities – especially wheelchair users. Part II describes an exploratory study to evaluate accessibility for wheelchair users in KSA to buildings and roads.

Part I: Background and Commentary

Disability and Barriers to Accessibility in the Kingdom of Saudi Arabia

According to the United Nations Development Program (UNDP, 2014), disability affects hundreds of millions of families in developing countries. According to this report:

- 10 % of the total world's population lives with a disability.

The same report estimated that:

- 80% of disabled children over the next 30 years will be living in the developing countries.

The national census of the KSA also indicates that:

- nearly 135,000 of the total Saudi population has some sort of disability of which one third (33.7%) of the total disabled population have physical disability (Al-Jadid, 2013; The Economic Bureau, 2000).

Theoretically, disabled people, including wheelchair users, should have access to a barrier-free environment including education, employment, social activities, etc. (Barnes, 1998; Shakespeare, 2010). However, in practice the accessibility in KSA is extremely poor or absent as architectural barriers in the built environment are still restricting, and even hindering full participation of wheelchair users to social life. The situation of inaccessible environment remains unchanged despite the enactment of legislation provision during the past 59 years (since Royal Decree No. 1219, dated 9/7/1956). Despite the existence of disability law (see the section called Accessibility in KSA for details), people with disability in KSA, especially wheelchair users, whose number is unknown in the Kingdom, are facing serious accessibility problems which are denying them their basic rights.

This situation has broadened the concept of accessibility to reach beyond physical accessibility and calls for social integration. Accessibility as such is not restricted to space but includes the shared societal atmosphere as well. It ensures physical mobility as well as personal integration towards inclusion in every sphere of the life of disabled persons.

The problem addressed in this article is founded on the fact that there is an acute restriction of accessibility to public roads and buildings by wheelchair users in KSA leading to their social exclusion. Such acute problems, in addition to the individual impairment, are caused by several societal, environmental and political factors such as ineffective implementation of disability policies which has resulted into more restriction for people with disabilities, especially wheelchair users.

Accessibility in Theory and Practice

The theoretical basis of disability legislation is to provide physical, environmental and social accessibility to enable persons with disabilities to move freely and use all the available services on an equal basis with other members of society (United Nations [UN], 2008). The removal of all barriers from the surroundings leading to an accessible environment constitutes the key component of disability law and regulations in all communities. Theoretically, disability law and regulations in KSA are also trying to help persons with disabilities to achieve independence and participate actively in society by giving them access to a barrier-free environment. However, in practice there has been no achievement in giving equal rights to disabled people or helping them to experience an independent life which has resulted in their further isolation. Even in the area of services delivery, the Japan International Cooperation Agency Planning and Evaluation Department (JICAPED) stated that: "provision of institutionalized services or institutionalization" is a form of "social segregation," rather than "social integration" of persons with disability" (JICAPED, 2002, p. 19).

Disability and Accessibility

The primary need for mobility is physical accessibility through effective legislation which in turn, can be a safe route to social inclusion. Disability has become an issue of humans seeking equal opportunity for all, and its combination with accessibility has recently been more in focus instead of being dealt with as a separate entity. In other words, disabled people are handicapped by barriers that impede their daily activities. The focus as such, is no longer on impairment and medical intervention; rather, disabled people should have access to a barrier-free environment for their daily life without limitation (Barnes, 1998).

However, a legislative framework that confers human and civil rights will not be effective for disabled people unless it also has entitlements to the "needs" in the context of social care and the nature of disabling environment

(Morris, 2004). If "needs" are not met then this can result in a denial of human and civil rights (Brisenden, 1989). The issue of inclusion versus exclusion can be argued within the context of accessibility for all areas of life, from early education at school through to employment (Barnes, Mercer, & Shakespeare, 1999). Gleeson, for example, states that despite the production of human rights legislation and its reassurance for creating accessible environment for all, "achieving the goals of human rights is still hampered by ineffective legislation and inaccessible design regardless of political concern" (Gleeson, 2001, p. 259).

Accessibility in the International Context

There are a number of countries that have initiated and implemented disability legislation with different levels of success. In the United Kingdom, for example, the Disability Discrimination Act (DDA) of 1995, gives several provisions for easy access to public places.

Similar attempts have been made for example, by the European Commission that views the social exclusion of people with disability as a multi-dimensional phenomenon which demands the understanding of several indicators of life quality (European Commission, 2000; 2006). Many of these countries applied the social model of disability as the basis for their disability legislation to curb the exclusion of disabled people (Nielsen & Nelson, 2005). This legislation recognizes the rights of disabled people and makes genuine efforts to eradicate discrimination (Finkelstein, 1993).

The Americans with Disabilities Act (ADA) of 1990, has many positive effects on the life of disabled American by prohibiting discrimination against disabled people. Disabled Americans however, continue to experience disproportionate high rates of unemployment (Cornell University, 2005; McClain, 2000). Similar findings are observed in the United Kingdom (Kumar, 1997) and other Middle East Arab Countries (Barghouti & Al-Dean, 1994). Like the failure of legislation in other countries, it seems that KSA's legislation has also failed in achieving its practical gains – either in employment or in social and civic participation.

However, since the enactment of the DDA in the United Kingdom and the ADA in the United States, there are a growing number of countries in the world including KSA, that were affected by the wave of ground-breaking domestic disability rights and disability legislation (Degener, 2005). This process reached its climax in December 2006 when the United Nations General Assembly decided to adopt the Convention on the Rights of Persons with Disabilities. The Convention stressed that people with disabilities have the same human rights as all other people. This convention was seen as a turning point for recognition of disabled people's rights (UN, 2008).

The legislation in Canada, Australia, New Zealand and Japan has also focused on anti-discrimination and the human rights approach. These countries have adopted even stronger legislation to achieve both recognition of full accessibility rights of disabled people and eradication of discrimination against them (Finkelstein, 1993). In Canada, The Accessibility for Ontarians with Disabilities Act of 2005, for example, aims to improve the process of identification, prevention and removal of the obstacles faced by people with disabilities (International Disability Network, 2005).

Accessibility in the Regional Context

The Middle East Arab countries including, United Arab Emirates, Yemen, Kuwait, Iraq, Qatar, Lebanon and KSA are different in political systems but similar in culture, religion and language. However, by visiting these countries, the researchers noticed that wheelchair users are facing similar problems of access to public places despite the existence of many laws and legislation that call for accessible environment for wheelchair users. A number of Arab countries' initiated legislation after the declaration of an "Arab Decade of Disabled People" in 2004 which was set for incorporating disability into the social and economic development of Arab states between 2004 and 2013 (UN, 2008).

The publication of "The Arab Human Development Report 2009" examined the deterioration of certain aspects of life in Arab countries, and their negative impact on disabled individuals. It was reported that the good initiative of the "Arab Decade of People

with Disabilities" and the attempts to make it a regional framework was hindered by lack of urgency to reflect the social and human rights approach to disability (UNDP, 2009). In line with "Convention on the Rights of Persons with Disabilities" (CRPD) and its advocacy to co-operate with regional stakeholders, the League of Arab States has also initiated practical steps towards amending the Arab Decade of People with Disabilities to promote the general principles of the CRPD (Alazzeh, 2009). However, the benefit of disability legislation and government-sponsored programs vary significantly among countries in the region.

Accessibility in KSA

According to the United Nations, no part of the built environment should be designed in a manner that excludes certain groups of people on the basis of their disability. Disability policies in the KSA also claim to be focused on the rights of people with disability to access all services and live with dignity (JICAPE, 2002; Ministry of Health Care, 2010).

The medical approach to disability in KSA has been paramount and has played a pivotal role in a number of pieces of legislation for half a century, since the Royal Decree No. 1219/1956. Even the call of Nation Development Plans such as the Sixth (1995-2000) and the Seventh Development Plans (2001-2005) was for intensification and the follow-up of provision of only health care instead of focusing on the social inclusion of disabled people. For example, the 4th International Conference of Disability and Rehabilitation, which was held in Riyadh between October 19 and 21, 2014, proves that the focus of KSA's authorizes still was on medical rather than social model of disability. The authors of this article who attended the conference suggested the title for the future conference to be "Disability and Integration" in order to divert the focus and attention of the future participants of the conference toward social model of disability rather than just focusing on care and welfare.

However, the legislation in KSA received a boost from the International Year of Disabled Persons and the subsequent United Nations Decade of Disabled People leading to the provision of the Legislation of Disability (LD) passed in 1987 followed by the advanced Disability Code of 2000; both called for equal opportunities and assurance to disabled people for equal rights to their peers in society (Ministry of Health Care, 2010). The KSA's LD of 1987, for example, calls for "freedom of movement and safely" for disabled people. This principle also laid the ground for the provision of the Saudi Building Code (SBC) in 2007.

It is worth noting that the SBC is the only code that governs all buildings' activities in the country and was expected to revolutionize the environmental accessibility. However, it gave only a general subjective statement affirming that: "Buildings and facilities shall be designed and constructed to be accessible in accordance with this code requirements and the International Code Council (ICC) A117.1" without giving any measurement standards or achieving any noticeable effect on the ground. The code also reads:

> …minimum requirements to be considered in public and residential buildings as well as public facilities to enable easy and smooth access by the disabled. This code contains the general requirements of design of new buildings and the requirements to be satisfied in existing buildings and outside space to facilitate free access by the disabled. (SBC, 2007, Chapter 9, p. 4)

The provision no. 7/h/1402 (dated 21/01/1402, Islamic calendar; 18/11/1981, Gregorian calendar) states that:

> All departments are obliged to provide disabled people with all necessary services by observing the construction condition for accessibility when issuing construction permits….[These services will include internal and external] ramps, parking, paths, roads and routes, public facilities that exist at the public and private buildings such as doors, windows, lifts, pass ways and any other equipments. (Riyadh Municipality, 2007, p. 16)

There is however, little or no information about the success or failure of these policies except a report that 100,000 disabled people are unemployed and looking for an employment position (Trenwith, 2013**)**. This was the major drawback. However, this drawback is common in developing countries and not restricted to KSA.

Our argument is that the provision of law and regulation per se cannot be taken for granted to meet the need of people with disability without efficient implementation**.** Even if the law worked perfectly still there is a long way to achieve what was stated in the disability-related provision, policies and legislation in KSA. This might be due to the negative attitude (World Health Organization, 2006)**,** inadequacy of design, and ineffective implementation (Trenwith, 2013**)**. The law is more apparent on paper than in reality which constitutes the most inappropriate form of disability provision.

The outcome of many existing laws and regulations was poor which implies that accessibility cannot be achieved unless the societal concept of disability in KSA is changed and the suggested solutions be diverted away from the traditional individualistic (medical model) approaches towards those founded on the social model. The KSA's Legislation of Disability of 1987 as such, is the first law that diverted the attention from medical approach to what has been called a social model of disability. This model focuses on social solutions rather than individual solutions (Barnes, 1991; Barton & Oliver, 1997; Crow 1996; Lunt & Thornton, 1994; Oliver, 1990, 1996; Turmusani, 1999).

Nevertheless, the social model seems to be reflected in the KSA's inclusive education programme. The efforts for inclusive education has begun under "special education" or "mainstreaming" topics which reached an acceptable success in the enactment of the Provision Code for Persons with Disabilities in the Kingdom in the year 2000. This law ensures the rights of students with disabilities in all aspects of life, including a free appropriate public education. This programme for example, has been gradually moving away from segregated settings to a more inclusive environment (Al-Mousa, 2008a, 2008b; Kavale, 1979, 2002; Stout & Huston, 2007). Prior to the effects of the social model, there was a high rate of repetition, drop-out and leaving school with minimal education benefit among disabled children. The article nevertheless advocates that considering other methods such as the universal design and its techniques, can help lead to the "… necessary changes in the social relations of development and design processes" that disabled people aspire to (Imrie and Hall, 2001, p. 18).

Factors Affecting Accessibility

There is a combination of physical, environmental and social barriers that continue to exclude disabled people in general and wheelchair-users in particular from mainstream society. The key factors causing the exclusion of disabled people from the built environment as the literature suggests are: (a) the attitudinal barriers which frequently encountered by disabled people, especially wheelchair users, in all areas of their lives such as access to education, employment and public services (Zarb, 1995); (b) professionals' ideology and values influenced by societal negative attitude and who are involved in decision making, design and practices of construction processes (Hall & Imrie, 1999, p. 409); and (c) the role that architects and designers play during the process of design and development of the built environment –the key factor that discriminates between inhabitants (Giddens, 1993). These barriers continue to exclude wheelchair-users from mainstream society (Oliver, 1990). However, removing all barriers and obstacles, and achieving accessibility in all life aspects for all types of disabilities remains huge and pervasive.

Knowledge of Disability and its Impact on Accessibility

Knowledge is power, and inadequacy of knowledge on the side of designers and architects coupled with the negative attitude of society have a diverse effect in the creation of inaccessible built environment (Goldsmith, 1997; Hall & Imrie, 1999; Willis, 1990). Design experience in the United Kingdom, for example, indicates that a lack of knowledge about disabled people's needs by both tutors and students at architectural schools has resulted in more restricted accessibility (Goldsmith, 1997). Research findings in the United Kingdom's architectural schools reported by Holmes-Siedle (1997) show that more than fifty percent (56%), of the students of architecture were unable to address the needs of disabled people due to a limited or lack of their teachers' awareness. Similar findings were also reported by other studies carried out in Scotland (Imrie, 1999), Sweden (Fange, Iwarson, & Persson, 2002), and developing countries (Miles, 1995).

The Role of Professionals' Ideology in Accessibility

Many disability researchers believe that the oppression of disabled people in the built environment is caused by design impacted by social construction (Barnes, 1991; Giddens, 1993; Imrie, 1996, 1997). Much of the built environment designed traditionally, focuses on the majority of the able bodied sector of society with little or no consideration for the people with disability (Barnes et al., 1999; Holmes-Siedle, 1997; Russell, 1999).

A study by Hall and Imrie (1999) has also blamed the role and attitude of professionals towards disabled people and their spatial requirements. They point out that "architects are key actors or agents in the production of the built environment and their conceptions of different user groups are important … in contributing to the content of design processes" (p. 423).

Imrie (1996) further notes that designers and architects are part of the wider socio-cultural and political processes. As such the influence of their ideas in design practices is characterized by:

> ideological assertion of the aesthetic or prioritizing the idea of building form over use, the professionalization of architectural and other design practices, thus creating a new technical "expert" elite, and the rise of the corporate economy as the dominant clientele. (p. 76).

Inadequacy of Design

Designers, as mentioned above, tend to undermine their role and be misled by holding the assumption that they are "passive, as an instrument of the client, or elevated to a position of supreme control" (Imrie, 1996, p. 74). If this assumption remains unaltered, designers may have inevitable negative effects on the social oppression experienced by disabled people and their quest for accessibility and inclusion within main stream society (Weisman, 1992). The views and needs of end users should be paramount for designers in order to create an adequate and successful design in which all members of society, including disabled people, have equal accessibility to goods and services (Harker & Eason, 1984). Consulting end users in the decision making and during design process would help large numbers of the population to use the final product, which in turn would bring greater inclusion.

However, during the 1960s, attitudes towards designing the environment began to change. This was mainly attributed to Goldsmith (1997) whose way of designing for disabled people was instrumental. In his book "Designing for the Disabled," Goldsmith observed that:

"… buildings always have been, and always will be, geared to suit two-legged able-bodied people and not people rolling about in chairs on wheels" (Goldsmith, 1997, p. 16).

In KSA, despite the implementation of disability laws and establishing the Saudi Building Code which obliged designers and builders to ensure reasonable access for disabled people, people in wheelchairs, according to the co-author's self experience (as a wheelchair user), still encounter access problems in the KSA's built environment. To borrow from Imrie (2003), this lack of accessibility might be due to the inadequately designed environment caused by designers' shortfall in knowledge and a lack of understanding.

The Social Model of Disability

The social model of disability has undergone tremendous changes throughout the world in the last century (Barnes. 1991; Finkelstein, 1975; Oliver. 1990). The social model puts disability issues on the top agenda of human rights, seeking equal opportunity for all. According to the social model of disability, it is the social negative attitudes which create inaccessible built environments (Oliver, 2009). Unlike the medical model, the social model of disability focuses on the change of social attitude approach rather than individual rehabilitation solutions. The key assumption is that the social model approach will help in broadening the limited concept of physical "accessibility" to cover the social inclusion of disabled people. Accessibility therefore, is not restricted to space but rather includes the shared societal atmosphere as well.

Universal Design

The term "universal design" by Mace and colleagues describes the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life (Mace, Hardie, & Place, 1990). It was developed by a group of architects, product designers, engineers, and environmental design researchers (Christophersen, 2002) and is linked to a set of seven principles that offers guidance for designers to better combine features that meet the needs of as many users as possible. The seven principles are:

(1) "Equitable use;

(2) Flexibility in use

(3) Simple and intuitive use

(4) Perceptible information

(5) Tolerance for error

(6) Low physical effort, and

(7) Size and space for approach and use" (Calkins, Sanford, & Profitt, 2001, p. 7).

Applying the concepts of "universal design," "design for all" or "inclusive design," is a step forward towards removing the barriers imposed on built environment by the societal negative attitudes, as suggested by social mode and creating accessible built environment.

Design for all and inclusive design are terms and concepts used by different experts to explain their views of developing a sort of design in which the users are placed at the fulcrum of the design process rather than in the margin. The emphasis is "working with people rather than for them," allowing the users to "… have the ability to take control of their environments" (Hatch, 1984, p. 4). Inclusive design is, for example, challenging the technical, social and institutional relations of the design and building process, by prioritizing users' views, rather than being an "add on" to existing knowledge or a theoretical response to the needs of disabled people (Imrie & Hall, 2001).

Casserley and Ormerod (2003) consider environmental design as the legal driver for curbing discriminatory situations by removing barriers. They state that: "Inclusive design avoids institutional aesthetics, instead favouring simplicity, and elegant solutions that work for everyone equally" (Casserley & Ormerod, 2003, p. 153). The European Commission (1996) stated that: "to ensure equal chances of participation in social and economic activities, everyone of any age, with or without any disability, must be able to enter and use any part of the built environment as independently as possible" (European Commission, 1996, p. 7).

Disability and Inclusion in KSA

Having introduced the social model of disability and universal design, it is worth noting that these instrumental techniques are almost absent from the KSA's legislation as the disability law and regulations are mostly focused on the medical approach of disability which is offering very little scope for integrating of people with disability. The reported success (Al-Mousa, 2010) of the inclusive education programme in KSA indicates that utilizing the idea of education mainstreaming should also considered for integrating disabled people into mainstream society in KSA. In the other words, there will be a genuine change in the perception and attitude of general public towards disability if law and regulation be diverted from a caring perspective towards human rights and development perspective. However, the global movement towards a more inclusive society still requires dedicated efforts in the Arab region, including KSA. Nevertheless, there has been no genuine effort to apply the concept of inclusion for the society at large. Therefore, applying the concept of "universal design," or "design for all" and "inclusive design," is a step forward for creating an accessible built environment which will contribute to achieving the objectives of the social model of disability. In other words, KSA's new legislation should not focus only on care and welfare services such as community-based rehabilitation program, vocational training, sheltered workshop, and special education. Rather the integration and social inclusion of disabled people into mainstream society also must be targeted.

The Accessibility Compliance of Surveyed Roads and Buildings

Based on the accepted view that "physical manifestation is the agent of ideology," Part II of this paper focuses on the condition of physical accessibility to public roads and public buildings that are used by wheelchair users for their daily needs. According to Haywood et al. (1995), the extensive accessibility measures that required to be included for accessible buildings are toilets with changing facilities, wide entrance and inside opening doors, ramps, lifts, wide car parking bays, handrails on ramps, lever taps on wash basins, automatic doors and non-slip floors etc. The required data regarding accessibility and facilities in the public roads and buildings was intended to be collected based on the principles of KSA's laws and standards of the ADAAG.

The Aim of The Exploratory Study

The aim of this article is to investigate the KSA's disability law and its effectiveness, or otherwise, in creating an accessible built environment. For this reason and in line with the widely accepted view that "physical manifestation is the agent of the ideology," this article applied the method of field observation to assess the accessibility of public roads and buildings in the capital city of Riyadh. We therefore evaluated the accessibility of public roads and buildings in KSA to find out how far the disability policy based on Islamic principles (as claimed by the law) was successful in designing and creating an accessible built environment in which wheelchair users (the focus of this study) could physically be enabled to perform their daily duties independently and be socially integrated. To address this research question, we investigated the accessibility compliance of a random sample of public roads and buildings in Riyadh city in an exploratory study.

PART II: EXPLORATORY STUDY

Method

Riyadh city was chosen for investigating the accessibility compliance of public roads and buildings in relation to requirements of KSA's Legislation of Disability, the Saudi Building Code, and the international standards of the Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG, 2010). The Access Board of the Americans with Disabilities Act (ADA) of 1990 developed the ADAAG in 1998 to assist with implementation of the ADA. Quantitative data were collected for a randomly selected sample of 13 public buildings from a list of 130 public buildings compiled from the yellow pages, as well as six different roads from the CBD in Riyadh city. The researchers did not have a chance to enter any building with accessibility measurement tools due to the strict security policy in Saudi Arabia. Furthermore, the researchers had no choice but to base their investigation on external observation of roads and buildings by taking pictures from locations that did not raise any concern. To record the internal condition of buildings, researchers just relied on eye scanning and taking notes. The internally and externally recorded data was then measured against the ADAAG standards and analyzed to find out the level of accessibility compliance of roads and buildings. The research process and field observation, therefore, were carried out under quite abnormal conditions due to the time limitation and security restriction that was not expected.

The percentage of compliance of roads and public buildings was calculated by dividing the number of available accessible facilities of each road or building by the total required number of such facilities multiplied by 100 (accessibility compliance = available/required x 100). For example, if 10 accessible parking spaces are required by the ADAAG standards for a particular place but only one space was available then the compliance percentage of parking in the given location is 10%. If the site lacked any accessible parking then the building in terms of accessible parking compliance was recorded as zero – or non-compliant. The same procedures were used to measure other areas of accessibility in terms of dropped curb and width or routes, paths and entrance doors.

However, due to the security limitation there was no permission to take picture or measure the facilities inside the public buildings, and even taking picture from outside of the premises and roads resulted in a one day detention in the local police station for one of the research-

ers. The main purpose was to examine to what extent, disability-related policies and regulations are implemented on the ground and what steps are being taken to facilitate the availability of services and accessibility to public sphere for persons with disabilities. The photos for this research were collected in September and October of 2014.

Results

The results of this study are summarized in Table 1. Typical examples of roads and buildings that present barriers to wheelchairs are given in Figures 1 to 13 (on the following pages).

Public and private buildings. The field observations show that:

- The majority of private and public buildings including those newly constructed in Riyadh city do not comply with the accessibility standards dictated by KSA's law, the Saudi Building Code, and the ADAAG.
- None of the observed buildings had a standard ramp or designated standard disabled parking.
- Despite the serious consideration of mainstreaming education by the KSA's government however, the findings show that in most cases, the condition of educational buildings including schools (Figure 1) and university (Figure 2) were not adapted to ease the mobility of students with impairment.
- The overall situation of physical accessibility at the workplace (Figures 3 and 4) is quite

Table 1: The Accessibility/Compliance of Observed Roads and Buildings (Percent)

Name of Roads and Buildings	*Year of Construction*	*Parking*	*Ramp*	*Lift*	*Entrance*	*Phone*	*Route*	*Toilet*	*Pedestrian Crossing*	*Dropped Curb*	*Average Percent Compliance*
Bank	2003	0	30	50	50	–	–	0	–	–	26
Housing complex	1998	0	0	40	70	0	30	0	–	–	20
Hospital	2009	10	60	50	40	0	30	0	–	–	20
Hotel	2007	60	70	80	70	0	40	45	–	–	52
Mosque	1971	30	10	–	50	0	40	0	–	–	21
Public park	2012	50	80	–	70	0	80	60	–	–	56
Post office	2002	10	50	–	60	0	40	0	–	–	26
Primary school	2000	0	0	–	60	0	0	0	–	–	10
Restaurant	1999	40	20	–	70	–	0	40	–	–	34
Secondary school	1993	0	0	0	60	0	40	30	–	–	19
Shop	1996	0	0	–	60	–	0	0	–	–	15
Shopping mall	2005	60	90	80	70	0	70	60	–	–	62
University	1999	0	40	50	70	70	60	40	–	–	47
Main road1	n/a	20	50	–	–	30	–	0	40	60	33
Main road2	n/a	10	30	–	–	20	–	0	40	40	21
Secondary road1	n/a	0	0	–	–	0	–	0	20	30	9
Secondary road2	n/a	0	0	–	–	0	–	0	10	20	5
Tertiary road1	n/a	0	0	–	–	0	–	50	0	0	8
Tertiary road2	n/a	50	40	–	–	0	–	30	0	0	20

Figure 1. Lack of ramp in a school

Figure 2. Lack of disabled parking in a university

similar to that of observed in the educational environment. In general, health, workplace, recreation and government buildings were found inaccessible by wheelchair users.

Accessibility to parking was so bad that in King Khalid Hospital, for example, there were only two substandard spaces designated for disabled parking which were occupied by non-disabled cars (pictures taken were deleted by the hospital security after detention). Similar condition found in other health centers (Figures 5 and 6). The parking spaces were also located far more than maximum standard of 50m away from the main building. Furthermore, even an access-

Figure 3. Lack of ramp in a residential building

Figure 4. Lack of ramp in a workplace


Figures 5 and 6. Cars, chain and traffic barriers block disabled parking lot at a hospital.



Figures 7, 8, and 9. Sidewalks blocked by planted or broken trees

Figures 10 and 11. Sidewalks blocked by parked cars putting people's life at risk.

Figures 12 and 13 : Main roads lacking any safe pedestrian crossing

ible parking with a disabled signpost could not guarantee the rights of disabled people to access as it might be occupied by non-disabled. This means that there are no sufficient parking spaces available for disabled people in KSA.

Based on the co-researcher's experience (as a wheelchair user) in a number of public buildings in KSA, parking areas could not be differentiated from walking paths as disabled parking lots were occupied by the non-disabled (Figure 5) or there was no sign or symbol of disability posted (Figure 6). In short, observation showed that the surveyed public roads and buildings even mosques were non-compliant with all the standards required by ADAAG or KSA's law and the Saudi Building Code which is based on The International Code Council. Building regulations seem to be either absent or ill defined with regard to accessibility for people with disabilities.

Public roads and sidewalks. The sidewalks and pedestrian crossings in the capital city were no better than its public building conditions. Most if not all the sidewalks of main and secondary roads were inaccessible and were blocked either by planted trees (Figures 7, 8, and 9) or parked cars – pushing people into the main roads and putting their life at risk of car accident. The width of the walkways in the newly constructed areas were too narrow to accommodate two pedestrians let alone a person with wheelchair, or blocked by parked cars (Figures 10 and 11).

The main streets were too wide to be crossed safely by elderly and disabled people as they lacked any zebra crossing to help people cross the road without being hit by speeding cars (Figures 12 and 13). The outcomes of these hazardous roads was that the road fatal accidents in KSA (2.6%) was eight times more than that of the United States (0.313) in a period of six years (1971–1977). The number of people who died or were injured in this period were 564,762 – equivalent to 3.5% of the total population of KSA. According to Ansari et al. (2000) road accidents in KSA were mounting to one person killed and four injured every hour.

Discussion

A growing number of studies are investigating the compliance of legislation with accessibility to public roads and buildings in different localities. Most, if not all, of these studies indicate that there is no compliance between built environment accessibility and the disability legislations that call for making the environment accessible. The Disability Act in Zimbabwe, for instance, prohibits denial of disabled persons access to public premises, services and amenities. The act, nevertheless, does not enforce local authorities to act against architectural obstacles (Useh, Moyo, & Munyonga, 2001). This lack of enforcement has led to poor compliance of accessibility. A similar situation was observed in the United Arab

Emirates (Rivano-Fisher, 2004) where public buildings were still inaccessible, especially for wheelchair users.

Lack of law enforcement acted as a barrier that has negatively affected the accessibility of public buildings. For example, under article 10 of the 63rd Royal Decree of the Sultanate of Oman, it is mandatory for both government and private buildings to include facilities that make them accessible to people with disability. However, the design of many buildings makes it difficult – if not impossible – for wheelchair users to enter them (Christopher, 2012).

With the exception of western countries where the law and regulation regarding disability and accessibility are enforced effectively, there is no difference between developing countries when it comes to the built environment accessibility for wheelchair users. Examples above mentioned from developing countries imply that the legislations addressing accessibility are either ineffective or not enforced at all and, as suggested by the literature, this problem seems to be common among developing countries including KSA (Alazzeh, 2009; Al-Jadid, 2013; Rivono-Fisher 2004; Turmusani, 1999). Regardless of the economic status of these countries, the exclusion of wheelchair users from public buildings is multiple and complex, and yet is linked to the policies, practices, values and knowledge of professionals involved in design and construction processes (Hall & Imrie, 1999).

Although KSA's disability laws have been in place for long time, however, the struggles to deliver what was promised by the law tend to be unsuccessful. The King Salman Center for Disability Research (KSCDR) supported by King Salman is considered as the pioneering institution of disability research in KSA and its mission (as stated in their website) was "to improve the quality of life for the disabled through [their] research." The Center is attempting to enforce the application of universal design principles for creating accessible built environment for all in the kingdom (KSCDR, 2014). However, there has been no actual accessibility project implemented on the ground by this Center to provide wheelchair users with accessible parking even in its own main building. This condition in general is explained by Gleeson (2001) where he stated that despite the production of human rights legislation and its reassurance for creating inclusive environments for all people: "achieving the goals of human rights is still hampered by ineffective legislation and inaccessible design regardless of political concern" (Gleeson, 2001, p. 259).

In short, accessibility is a pre-requisite for integration of disabled people. As such no legislative process can endorse disabled peoples' request for a fully inclusive and accessible lifestyle unless designers and decision makers take into account the wider socio-cultural, socioeconomic, and socio-political context surrounding the built environment.

Conclusions

In this research, it is revealed that human culture has a profound influence on the construction of built environments and the lack of accessibility. Creating the built environment as such, is a key variable in enabling or disabling impaired people with regard to access to public space.

The social model of disability has also blamed human attitude and culture for having a profound influence on the construction of built environments. The lack of, or poor accessibility to, public roads and buildings as such have resulted from the societal negative attitudes, inadequacy of: either the design, law, regulation shortfall, or ineffective implementation. The research finding once again proves that the requirements by the law do not safeguard the accessibility and inclusion as intended.

The low compliance of roads and buildings indicate that the disability laws and regulations in KSA not only falls short of giving the right standards and required accessible environment but also reveals that authorities have failed to deliver what they promised due to ineffective implementation. Accessibility however, will not be achieved by developing law and regulations per se; rather, it must be associated with a change in the societal attitudes making designers and decision makers understand and accept the disabled person's culture and involve them in the design process.

In short, to achieve an accessible built environment, one would need to remove the imperfections, and to remove imperfections means

correcting the underlying social forces which institutionalize the negative attitude towards disabled people. Although law enforcement is one way of addressing lack of accessibility to public roads and buildings, the priority should be making the general public aware of laws and regulations and of the great difficulties that people with physical disabilities and/or in wheel chairs continue to have with accessibility issues. Such activities are needed to change the culture and attitudes in society in order to lay the groundwork for easy acceptance of such laws. This would mean that dictating norms and regulations which have no cultural basis, inevitably, cannot be taken for granted to be effective. The clear message of this statement remind us of the old Arabic adage that says: "al-nefoos qablel-al-nesoos" – that is, a change of mind takes precedence over the provision of law.

In line with a social model that provides a method for arguing against societal exclusion, an inclusive method also emphasizes categorically that the end user is a central theme and should be an essential component within the design process. This process would promote inclusivity for all sectors of society regardless of age, race, gender or disability.

Key Messages From This Article

People with disabilities. The integration of people with disabilities into main stream society will require a genuine change in the perception and attitude of the general public towards disability. To achieve this target and provide the wheelchair users with full accessibility, the concept of disability and the suggested solutions in KSA should be diverted away from the traditional individualistic (medical model) approaches towards those founded on the social model. It is achievable by educating friends and family, and by advocating professionals and policymakers for changes that would help.

Professionals and policymakers. Professionals including decision makers (policymakers), architects and designers should also change their attitudes towards disabled people and the way they design to utilize inclusive methodologies. By doing so their decisions and design will inevitably affect the world differently and oppressive and discriminatory traits will begin to fade away with the assistance of the use of good design practice. They should consider the participation of end users (wheelchair users) during the design process.

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