IS IT LIVING IN ZAGREB REALLY A PRIVILEGE FOR PEOPLE WITH DISABILITY?

Urban adaptations for electric wheelchair users

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1. Context

To know what it really means to live with any kind of disability a regular person can never fully understand. If you have never spent a day in a wheelchair, or went to work blindfolded, or tried to eat your lunch without using your hands, you don’t know how valuable it is being able to walk, see or use your hands spontaneously and independently. Actually, you don’t even have to have a long-term disabling condition or a disease; it is enough to experience a couple of months with a fractured leg or arm, or to try to climb twenty stairs being eight months pregnant or get into a tram with a baby pram to see that doing everyday things, which used to be considered normal and automatic, get difficult and complicated to do.

It is not a coincidence that a most recent International Classification of Functioning, Disability and Health - ICF (a framework for measuring health and disability at both individual and population levels published by the World Health Organization\(^1\)), is based on assumption that active participation in needed and wanted everyday activities in natural environment of the person is prerequisite of achieving health. That assumption was explored in metaanalysis of twenty-two studies from the health and social sciences literature and the findings of these studies showed moderate to strong evidence that engaging into everyday occupations has an important influence on health and feeling of well-being (Law et al, 1998)\(^2\). Being able to do what we want, when we want and where we want it is an essential mediator of healthy adaptation and a vital source of joy and happiness in one’s daily life (Yerxa, 1998)\(^3\).

These findings are crucial for understanding that our perception of health and wellbeing are dependant on the place we live in and ability to move around freely and do things we want and need to do independently.

There is a number of theoretical models that are considering the need to change environments to fit the community needs, rather than trying to change individuals to fit environments (Law et al.,1996)\(^4\); for instance Healthy Communities conceptual model by Hancock (1993)\(^5\), Model of Person-Environment Compatibility (Kaplan, 1983)\(^6\) or the Person-Environment-Occupation Model (Law et al., 1996). Although unaware of the theory,
but using the private logic, it seems that persons with disability increasingly associate those concepts with looking at their own mobility and engagement into the life of the community. That is the reason why undertaking relevant measures to ensure accessibility for everyone and at every level (environment, communication and information, as well as public transportation and other public services) should be accepted way of planning urban development. Moreover, that statement is acknowledged by the United Nations Disability Rights Convention\(^7\) (2006, par. 8 and 9).

Beginning of the 21\(^{st}\) century is the time when European Union is declaring the age of equal opportunities. Social inclusion and independent living for people with disabilities are values that should be generally accepted and practically implemented. This is the time when politicians are saying that “Living in Zagreb is privilege for people with disability.” Is it really so, we will try to discuss in this article.

2. Rationale, aim and objectives

In the end of 2005, in the Republic of Croatia, the Ministry of environmental protection, physical planning and construction has published a *Regulatory Act of Ensuring the Accessibility of Buildings for Persons with Disability or Reduced Mobility* (NN, No. 151/2005). The regulations are covering recommendations for general urban architecture, public services and housing adaptations for mainly manual wheelchair users, but also for persons with sensory disability. That is indeed a praiseworthy project with tendency to be in tune with European standards and applicable on a local level. The question is raised: What is the real influence that the Act is having on changing the urban picture of Zagreb and provision of free access and mobility for all its citizens?

If you would be walking around centre of Zagreb, the first impression would be that recommendations from the Regulatory Act are being implemented. The street curbs are lowered, platform installed at the entrance into the post office, brand new trams with low entrance and accessibility labels. However, that would be your first impression because you are WALKING. If you would be moving in a wheelchair, especially electric wheelchair, that pretty picture would dramatically change: the street curb is still not low or wide enough for you to climb it independently, to use the platform you must wait for assistance and it is impossible for you to enter the tram, not even the new one.

Therefore, objectives of this study would include:

- Explanation of differences between mobility capability of manual and electric power wheelchair users
- Analysis of barriers in public transportation, and other public services that seem to be adapted, but are still not accessible for electric wheelchair
- Presentation of examples of proper and improper usage of Regulatory act recommendations in Zagreb
- Photos of good examples and solutions in other cities for encouraging urban accessibility for all

The main aim of this presentation is to show what could be done to make living for people with disability in Zagreb truly a privilege.

3. Methods and results

This research has been done in a form of a case study with presentation of one day life of a person using electric wheelchair for mobility. Instruments that have been used to document findings are video and photo-cameras in combination with simple frequency counting and measuring with a tape-line. The camera was used by a subject of this case study (an electric wheelchair user) and his assistant.

Intention of this method was to document accessibility of the streets in the centre of the city of Zagreb by following a subject through activities planned for that particular day.

The timetable was as follows:

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00 - 10.00</td>
<td>Meeting a friend to make next week’s travel arrangements</td>
<td>A coffee-shop at Kvaternik Square</td>
</tr>
<tr>
<td>10.30 - 13.30</td>
<td>Buy a pair of trousers</td>
<td>Vlaška street</td>
</tr>
<tr>
<td>14.30</td>
<td>Take the money from a cash machine</td>
<td>Ban Jelačić Square</td>
</tr>
<tr>
<td>14.40</td>
<td>Meet a friend for a lunch</td>
<td>Jurišićeva street McDonald’s</td>
</tr>
<tr>
<td>16.00</td>
<td>Buy a train ticket</td>
<td>Main train station King Tomislav square</td>
</tr>
<tr>
<td>17.00</td>
<td>See an exhibition</td>
<td>Mimara</td>
</tr>
<tr>
<td>20.00</td>
<td>See a movie</td>
<td>“CInestar” Branimir’s street</td>
</tr>
<tr>
<td>22.00</td>
<td>Coffee or a beer</td>
<td></td>
</tr>
</tbody>
</table>

3.1. Mobility capability of manual and electric wheelchair users

Users of electric powered wheelchair are persons with different kinds of physically disabling conditions, like cerebral palsy, muscular dystrophy or high spinal cord lesions. In the city of Zagreb there are 2409 persons with a disability. Persons, who are using wheelchairs for mobility, use two different types of wheelchairs: manual and / or electric wheelchairs. Those two kinds of wheelchair are different in its size, weight, manoeuvring potential, turning radius and functional abilities of its users.

Using electric wheelchair does not require physical strength and coordination of upper extremities as manual wheelchair using does. On the other hand, it requires cognitive capacity for space orientation and comprehension of controller functions. However, minimum strength is needed for operating a joystick on a controller, but many other input devices can be used if the user lacks coordination or the use of the hands or fingers, such as chin controls and puff/sip scanners for people with C2-3 spinal cord lesions or head injuries (the user blows into a tube located near the mouth, which powers the movement of the
Having that in mind, it is obvious that electrically powered wheelchair is much less vertically manoeuvrable than the manual one. For example, the experience of trying to help a person in light manual wheelchair (8-11 kg) and a person in heavy electric wheelchair (65-75 kg) to climb a stair or enter a tram is very different.

3.2. Analysis of encountered architectural barriers for electric wheelchairs

3.2.1. Tram stations and tram entrances

In the city of Zagreb it is very difficult for manual wheelchair users to enter a tram or a bus by themselves and for a person who is in an electric wheelchair is practically impossible to use almost any mean of public transportation.

In spite of the new trams of the Zagreb Municipal Transit System (ZET) which were presented for the first time two years ago, it is not possible to enter these trams because of the difference in height between the tram station and the tram entrance. Even bigger problem is distance of the trams from the curbs. Although there are a couple of good examples of the busses in Zagreb which do have manual ramps for accessible entrance, these busses are quite infrequent, so they can not be considered as a really usable solution in public transportation for wheelchair users in Zagreb.

The real solution for public transportation in the city of Zagreb for disabled people who are wheelchair users, are trams and busses with ramps. Partial solution would mean manual ramps, although the best solution would be hydraulic ramps.

Another option is special transportation service in a form of ZET mini vans, which is an existing mean for transportation for people with disability in Zagreb for quite a few years. Unfortunately, there are only 5 mini vans for the whole Zagreb population that are in function (at the time of writing this text) which is absolutely not enough and has no practical function for everyday life.

8 http://en.wikipedia.org/wiki/Wheelchair
Photos 1 to 4. Inaccessibility of new ZET’s trams for wheelchair and electric wheelchair users. Cost of the trams is more than 300 million Euros.

Photos 5 to 8. Inaccessibility of ZET’s busses with “low floor” for wheelchair and electric wheelchair users, despite the accessibility labels.
Photos 9 and 10. A good example of accessible tram with a hydraulic ramp (the best possible solution). Photos taken in Bremen (Germany).

Photo 11.
Analogous principle of hydraulic ramp which lowers the floor of a tram. In this way every tram station becomes accessible and architectural dimensions are not important; there is no need for adaptation of tram stations.
Photo taken in Graz (Austria).

Accessibility of a bus with a manual ramp for an electric wheelchair user. Photos taken in Zadar (Croatia).
Photos 14. and 15.  Accessibility of a buss with a manual ramp for a wheelchair user. Photos taken in München (Germany).

Photo 16. Partially accessible coffee shop near the Kvaternik Square: Meeting a friend to make next week’s travel arrangements.

Photo 17. Jurišićeva Street – Mc Donald’s: Meeting a friend for a lunch. Although it is possible to have a meal (depth of the table less than 50 cm), there is no possibility to use a toilet for a wheelchair user.

Photos 18 and 19.  Main train station King Tomislav square. Buying a train ticket was possible, but the square is quite inaccessible for wheelchair users.
3.2.2. Street curb heights on the crossroads

According to the Regulatory Act of the Ministry of environmental protection, physical planning and construction in the Republic of Croatia, street curb height on the crossroads is tolerable when is between 2 and 4 cm. For electric wheelchair user, if he or she doesn’t have quite strong arms or another person as a helper it is impossible to climb such a curb. Even for manual wheelchair user many of such curbs are almost impossible to climb. Most of the street curbs in the city of Zagreb, even those built by the standards of this Regulatory Act, are very problematic, unpleasant and even dangerous.

It is interesting that in the city of Zadar many or most of the street curbs are built at the height of 0 cm or 1 cm which is much better solution, more accessible, less dangerous and damaging of wheelchair is less. Also, it is much more pleasant and “normal” to cross the street with such curbs.

Another good example is the curbs in the city of Ljubljana (Slovenia) and München (Germany) which are built at the standard height of 0 to 1 cm. We believe that the standard for building lowered curbs at street crossings should be 0 cm; not only for obvious reason - for disabled people who are using wheelchair, but also for parents with baby prams and bicycle riders.

The sign for the street curb for blind people who are using a walking white stick should be made on the ground in a way useful for them but not as a barrier for others.

Photos 20 to 23. Examples of inadequate street curbs, 3 - 4 cm in height. Photos taken in Vlaška Street (Zagreb, Croatia).
3.2.3. Public toilet

If a person with disability comes to the centre of Zagreb and maybe needs a toilet, there are few theoretical possibilities for that. The only public toilet in the centre of town for wheelchair users is in Vlaška Street near the main Square of Ban Josip Jelačić. It is built underground but the elevator is provided. Trying to use this toilet, we encountered two noticeable details; one good and one that needs improvement.

The good example is the height of a light switch. Because of the lowered position of the light switch on the wall (80 cm from the ground), it is possible for both, non disabled and very disabled people to turn on and off the light in the toilet. This principle and height standard should be used at the street crossings for height of the traffic light buttons.

The other example from the public toilet is the position of the toilet itself. Because of the architectural design (found also in Regulatory Act pic. 16, par. 18), the corner of the room is not at the angle of 90 degrees and the toilet is placed in the corner, it is much more difficult to make the lateral transfer from the wheelchair to the toilet seat.

Photos 24 and 25. Accessible light switch and inaccessible toilet in the public restroom in Vlaška Street.

Photos 26. and 27. Inaccessible traffic light switches. There is not one street crossing in Zagreb with lowered traffic light switches.
3.2.4. Cash machine

There are several cash machines around the main Square, and neither one is accessible.

Photos 28 and 29. A cash machine at the Ban Jelačić Square: obviously impossible to use without assistance.

3.2.5. Entrance into shops, cinema, gallery

Buying a pair of trousers project was more demanding than it was expected. In Vlaška Street there are more than 150 shops but only few (approximately 5) of them accessible for wheelchairs or electric wheelchairs. Likewise, there are around 250 different kinds of shops in Ilica Street and most of them inaccessible for electric wheelchair users. The steps at the entrance are mostly too high, doors are heavy to open, inside of a shop is to narrow, changing rooms are not accessible.

Finally, the subject was able to buy a pair of trousers in a shopping mall “Importanne” in Vlaška Street which has accessible entrance and elevator.

Gallery has a ramp that is too steep and inaccessible stairs inside the building.

Cinema in Branimir Centre is accessible, but does not have a marked place reserved for wheelchair users.

Although our subject managed to do all the things he planned for that day that was possible only with the help of assistant.

To conclude this chapter, in the table below you will find most frequently misused recommendations from the Regulatory Act which have been noticed in this research.

<table>
<thead>
<tr>
<th>Regulatory Act of Ensuring the Accessibility of Buildings for Persons with Disability or Reduced Mobility recommendations</th>
<th>Accessibility for manual wheelchair users</th>
<th>Accessibility for electric wheelchair users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street curb height: 2-4 cm</td>
<td>Accessible</td>
<td>Not accessible (required 0-1 cm)</td>
</tr>
<tr>
<td>Door step: ≤ 2 cm (par.16)</td>
<td>Accessible</td>
<td>Not accessible (required 0-1 cm)</td>
</tr>
<tr>
<td>Height of the step at the entrance of the</td>
<td>Hardly accessible</td>
<td>Not accessible (required 0-1 cm)</td>
</tr>
</tbody>
</table>
4. Supplementary solutions in other cities for encouraging urban accessibility

Good examples of wheelchair accessible curbs from the city of Zadar, Ljubljana, München:

Photos 30 and 31. Very nice lowered street curbs, 0 cm. Photo taken in Ljubljana (Slovenia)

Photos 32 and 33. Nice examples lowered street curbs, 0 cm. Photo taken in München (Germany).
Photos 34 and 35. Nice examples of lowered street curbs, 0 cm. Photo taken in Zadar (Croatia).

5. Conclusion

There is no better time than now to start thinking that people are not the ones who should be adapting to the environment; it should be other way around. We, the people, are creators of urban development and we should be the ones who will design our surroundings in a way that it improves the quality of life for every one of us. Zagreb is the city of enormous potential for developing a community of acceptance, appreciation and equal opportunities for all its citizens. That is why this is not just the story about one electric wheelchair user. Adapting the environment for electric wheelchair automatically means absolute accessibility for any other mobility aid user, including push chairs, baby-prams and bicycles.

Considering the fact of actually non existing accessible public transportation in the city of Zagreb for wheelchair users and especially electric wheelchair users, it has the most negative impact on chances for independent life. Changes that should be made are not dramatic, but it will have dramatic influence on all wheelchair users that today don’t dare to go out in the town to have a cup of coffee with a friend, because of the too high curbs or inaccessible public transportation. Zagreb should not be the last capital city in Europe that embraces a person with a disability as a counsellor in urban planning teams.

We would like to see more of happy wheelchair users on the streets of Zagreb. We would like to see more bicycle riders as well. And elderly with walking aids. And parents with their babies... This could be a healthy city for everyone.