7th INTERNATIONAL CONFERENCE ON MOBILITY AND TRANSPORT FOR ELDERLY AND DISABLED PEOPLE

7ème CONFÉRENCE INTERNATIONALE SUR LA MOBILITÉ ET LE TRANSPORT DES PERSONNES ÂGÉES OU À MOBILITÉ RÉDUITE

MOBILITY AND TRANSPORT FOR ELDERLY AND DISABLED PEOPLE

IDEAS INTO ACTION

Proceedings of the 7th International Conference
Reading, Berkshire, United Kingdom • 16-19 July 1995

English Version - Volume 2

Edited by

C G B (Kit) Mitchell
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Philip R Oxley

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British Library Cataloguing in Publication Data

Mobility and transport for elderly and disabled people
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I. Mitchell, C G B and Oxley, P R II. Great Britain
III. Cranfield University

ISBN 1 871315 51 4

Cranfield University Press
Building 33
Cranfield University
Bedford
MK43 0AL
UK

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MOBILITY OF VULNERABLE ROAD USERS IN CAIRO

by

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ABSTRACT

This research attempts to identify the most profound mobility difficulties and traffic safety problems that vulnerable road users (pedestrians, physically handicapped and visually impaired) face while walking on sidewalks and crossing roads in Cairo.

1. INTRODUCTION

In recent years many countries in the world are giving more attention to improving the safe and easy mobility of vulnerable road users. The road environment in many urban areas is relatively uncomfortable and sometimes even hazardous. Several factors can contribute to this situation such as:

* inadequate design and layout of roads, sidewalks and road furniture;
* poor condition of vehicles that travel on the roads;
* tendency among road users of non-abidance to traffic rules and regulations;
* deficiency in traffic legislations; and
* lack of serious enforcement.

This research attempts to identify the most profound mobility difficulties and traffic safety problems that vulnerable road users face while walking on sidewalks and crossing roads in Cairo (i.e. problems related to the road environment, drivers' behaviour, police enforcement).

The paper presents the results of surveys that took the form of 3 questionnaires that were specially designed with the purpose of identifying the perception of pedestrians, physically handicapped and visually impaired to pedestrian environment problems that they face in Cairo.

2. VULNERABLE ROAD USERS

Road users can be classified into two main groups, namely in-vehicle road users and vulnerable road users. In-vehicle road users include drivers and passengers who are relatively protected from road hazards and potential accidents.

On the other hand, vulnerable road users include motorcyclists, cyclists and pedestrians. Pedestrians can be further classified to include high risk pedestrians. These are people who are highly vulnerable to road hazards and accidents. These include: children, the elderly, and mobility handicapped people. An investigation of the traffic behaviour of children in Cairo as related to traffic safety was carried out by (Abbas et. al., 1994). In this research we are concerned with pedestrians as vulnerable road users as well as with the physically and visually handicapped as pedestrians at high risk.

3. BACKGROUND OF THE SURVEYS

A United Nations study identified six main locations in Cairo that are characterised by a dense pedestrian movement. Pedestrians were randomly selected and interviewed in these areas using a structured attitudinal questionnaire. The achieved final sample is 2613 pedestrians, see (UNECA, 1994). Respondents are mainly males falling within the age group of 20 to 30 years. The level of education of most of the respondents is higher education and the majority were students. Around 80 percent of the respondents do not own a private car.

Details of questionnaire surveys and sample representation pertaining to the mobility handicapped pedestrians were presented in (Abbas and Mabrouk, 1994) and (Mabrouk and Abbas, 1994). A sample of 314 mobility handicapped, of which 172 are physically handicapped and 142 are visually impaired, completed the questionnaires. The sample of mobility handicapped respondents was disaggregated according to socio-demographic data such as gender, level of education, employment, type of work, type of physical disability, current age and age at which disability occurred.

4. PERCEPTION OF PEDESTRIANS TOWARDS SIDEWALK MOBILITY PROBLEMS

In terms of mobility of pedestrians on sidewalks, four main criteria governed the inclusion of factors thought to hinder the mobility of pedestrians movement on sidewalks. These are: the width, the physical condition, the clear space, and the lighting of sidewalks. These factors are mainly related to engineering design and maintenance of sidewalks as well as to the enforcement for clear space for pedestrians to move on sidewalks.

Pedestrians in Cairo perceive the **narrow width of sidewalks** as the most serious problem that they encounter when moving on sidewalks, see figure 1. This is followed in order of seriousness by:

* dirty sidewalks;
* vehicles parked and occupying sidewalks' space;
* open gutters and/or uncovered electric cables/wires;
* petty sellers and hawkers occupying sidewalks;
* unevenness of sidewalks;
* overcrowding of pedestrians on sidewalks; and finally
* lack of sufficient sidewalks' lighting.

It is obvious from the above that problems related to limited sidewalks' space as a result of narrow width of sidewalks combined with unlawful occupation of sidewalks by parked vehicles and hawkers, all in all, result in discomfort and inconvenience for pedestrians, thus hindering their mobility along sidewalks. This causes pedestrians at many times to leave the sidewalks and walk along the roads exposing themselves to the danger of being involved in traffic accidents.

5. PERCEPTION OF MOBILITY HANDICAPPED TOWARDS SIDEWALK MOBILITY PROBLEMS

In terms of mobility of handicapped on sidewalks, figure 2 shows that the physically handicapped perceive **unevenness of sidewalks** as the most serious problem that they encounter when moving on sidewalks. This is followed in order of seriousness by:

* narrow width of sidewalks;
* vehicles parked and occupying sidewalks' space;
* overcrowding of pedestrians on sidewalks;
* existence of obstacles on sidewalks; and finally
* lack of courtesy and concern of other pedestrians.

As for the visually impaired people, figure 3 demonstrates that **obstacles on sidewalks** is perceived as the most serious problem that they face whilst moving on sidewalks. This is followed in order of seriousness by:

* unevenness of sidewalks;
* opened electricity kiosks;
* narrow width of sidewalks;
* overcrowding of pedestrians on sidewalks; and finally
* lack of courtesy and concern of other pedestrians.

It can be concluded that the most serious mobility problems identified by the handicapped pedestrians are very much related to their type of disability. The unevenness of sidewalks creates a more hazardous situation for a physically handicapped pedestrian who already walks with difficulty. A visually impaired pedestrian would be obstructed by obstacles on sidewalks which he/she cannot sense and hence would be liable to stumble and fall.

6. PERCEPTION OF PEDESTRIANS TOWARDS PROBLEMS ENCOUNTERED WHILE CROSSING ROADS

In addition to mobility of pedestrians on sidewalks, the other component of pedestrian environment is concerned with the mobility and safety of pedestrians while crossing the roads. Factors thought to hinder and endanger pedestrians while crossing roads are related to the amount of pedestrians crossing facilities, drivers behaviour towards pedestrians and the level of exercised traffic police enforcement.

The questionnaire revealed that pedestrians in Cairo perceive the **high speed** of **approaching** vehicles as the most profound problem that hinders them when attempting to cross roads, see figure 4. This is followed in order of seriousness by:

* non-abidance of drivers to pedestrians' traffic rules;
* lack of enforcement;
* limited number of properly designed pedestrian crossings; and finally
* high level of kerbs.

It is obvious from the above results that pedestrians perceive factors related to drivers behaviour as the most serious in terms of hindering their mobility and endangering their safety whilst crossing roads. This research shows that few drivers are prepared to stop or even to slow down for pedestrians while crossing roads. Thus it could be true that pedestrians who totally depend on their traffic rights at crossing points can be at great risk because of drivers being less likely to stop or reduce speed for them to cross.

7. PERCEPTION OF MOBILITY HANDICAPPED TOWARDS PROBLEMS ENCOUNTERED WHILE CROSSING ROADS

The surveys revealed that the physically handicapped perceive the general **inadequacy of provision for pedestrian crossings** as the most profound problem that they face when attempting to cross streets in Cairo, see figure 5. The figure shows that this problem is followed in order of seriousness by:

* high level of kerbs;
* high speed of approaching vehicles;
* lack of concern of drivers; and finally
* wide streets to cross.

As for the visually impaired, figure 6 demonstrates that they also perceive the general **inadequacy of provision for pedestrian crossings** as the most significant problem that they confront whilst attempting to cross streets in Cairo. The figure further shows that this problem is followed in order of seriousness by:

* lack of concern of drivers;
* lack of safety barriers around opened gutters/potholes;
* high level of kerbs; and finally
* wide streets to cross.

Provision of more properly designed pedestrian crossings is perceived by the mobility handicapped as the most important solution that can facilitate their crossing of roads in Cairo.

8. CONCLUSION

In an attempt to identify the perception of vulnerable road users towards the seriousness of pedestrian environment problems that they encounter, questionnaires were designed to serve this purpose. A sample, including 2613 pedestrians, 172 physically handicapped and 142 visually impaired was interviewed. The following represent a point summary of the main findings and conclusions of the research.

* Pedestrians in Cairo perceive the **narrow width of sidewalks** as the most serious problem that they encounter when moving on sidewalks. This is followed in order of seriousness by: dirty sidewalks; vehicles parked and occupying sidewalks' space; open gutters and/or uncovered electric cables/wires; petty sellers and hawkers occupying sidewalks; unevenness of sidewalks; overcrowding of pedestrians on sidewalks; and finally lack of sufficient sidewalks' lighting.

* Problems related to limited sidewalks' space as a result of narrow width of sidewalks combined with illegal occupation of sidewalks by parked vehicles and hawkers, all in all, result in discomfort and inconvenience for pedestrians, thus hindering their mobility along sidewalks. This causes many pedestrians to leave the sidewalks and walk along the roads exposing themselves to the danger of being involved in traffic accidents.

* Physically handicapped perceive **unevenness of sidewalks** as the most serious problem that they encounter when moving on sidewalks. This is followed in order of seriousness by: narrow width of sidewalks; vehicles parked and occupying sidewalks' space; overcrowding of pedestrians on sidewalks; existence of obstacles on sidewalks; and finally lack of courtesy and concern of other pedestrians.

* As for the visually impaired pedestrians, **obstacles on sidewalks** is perceived as the most serious problem that they face whilst moving on sidewalks. This is followed in order of seriousness by: unevenness of sidewalks; opened electricity kiosks; narrow width of sidewalks; overcrowding of pedestrians on sidewalks; and finally lack of courtesy and concern of other pedestrians.

* The most serious mobility problems identified by the handicapped pedestrians are very much related to their type of disability. The unevenness of sidewalks creates a more hazardous situation for a physically handicapped pedestrian who already walks with difficulty. A visually impaired pedestrian would be obstructed by obstacles on sidewalks which he/she cannot sense and hence would be liable to stumble and fall.

* Pedestrians in Cairo perceive the **high speed of approaching vehicles** as the most profound problem that hinders their mobility and endangers their safety when attempting to cross roads. This is followed in order of seriousness by: non-abidance of drivers to pedestrians' traffic rules; lack of enforcement; limited number of properly designed pedestrian crossings; and finally high level of kerbs.

* Pedestrians perceive factors related to drivers behaviour as the most serious in terms of hindering their mobility and endangering their safety whilst crossing roads. This research shows that few drivers are prepared to stop or even to slow down for pedestrians while crossing roads. Thus it could be true that pedestrians who totally depend on their traffic rights at crossing points can be at great risk because of drivers being less likely to stop or reduce speed for them to stop.

* Physically handicapped perceive the general **inadequacy** of provision for pedestrian crossing as the most profound problem that they face when attempting to cross streets in Cairo. This is followed in order of seriousness by: high level of kerbs; high speed of approaching vehicles; lack of concern of drivers; and wide streets to cross.

* As for the visually impaired, the general **inadequacy of provision** for pedestrian crossing is also perceived as the most significant problem that they confront whilst attempting to cross streets in Cairo. This is followed in order of seriousness by: lack of concern of drivers; lack of safety barriers around opened gutters/potholes; high level of kerbs; and wide streets to cross.

* Provision of more properly designed pedestrian crossings is perceived by the mobility handicapped as the most important solution that can facilitate their crossing of roads in Cairo.

REFERENCES

Abbas K. A., and Mabrouk I. (1994) **Physically Handicapped and Visually Impaired: Trip Characteristics and Transport Problems in Cairo.** Proceedings of the 22nd Planning and Transport Research and Computation (PTRC) European Transport Forum, Seminar F, Provision for Accessible Transport Services, Warwick, U.K. pp. 43-59.

Abbas K. A., Mabrouk I., and Al-Araby A. K. (1994) **Traffic Behaviour of School Children in Cairo: Implications for Road Safety.** Proceedings of the 22nd Planning and Transport Research and Computation (PTRC) European Transport Forum, Seminar J, Traffic Management and Road Safety, Warwick, U.K. pp. 83-99.

Mabrouk I.,and Abbas K. (1994) **Pedestrian Environment Problems Encountered by the Mobility Handicapped in Cairo.** Proceedings of the 22nd Planning and Transport Research and Computation (PTRC) European Transport Forum, Seminar J, Traffic Management and Road Safety, Warwick, U.K. pp. 101-111.

United Nations Economic Commission for Africa (UNECA) (1994) **Improvement of Pedestrian and Child Safety in Urban Areas.** A Transport, Communications and Tourism Division (TCTD) Report for the Ad Hoc Experts Group Meeting on the Development of Urban Transport in Africa, December 1994, Addis Ababa, Ethiopia. (UNECA/TCTD/TRANS/PCSUA/94-03)

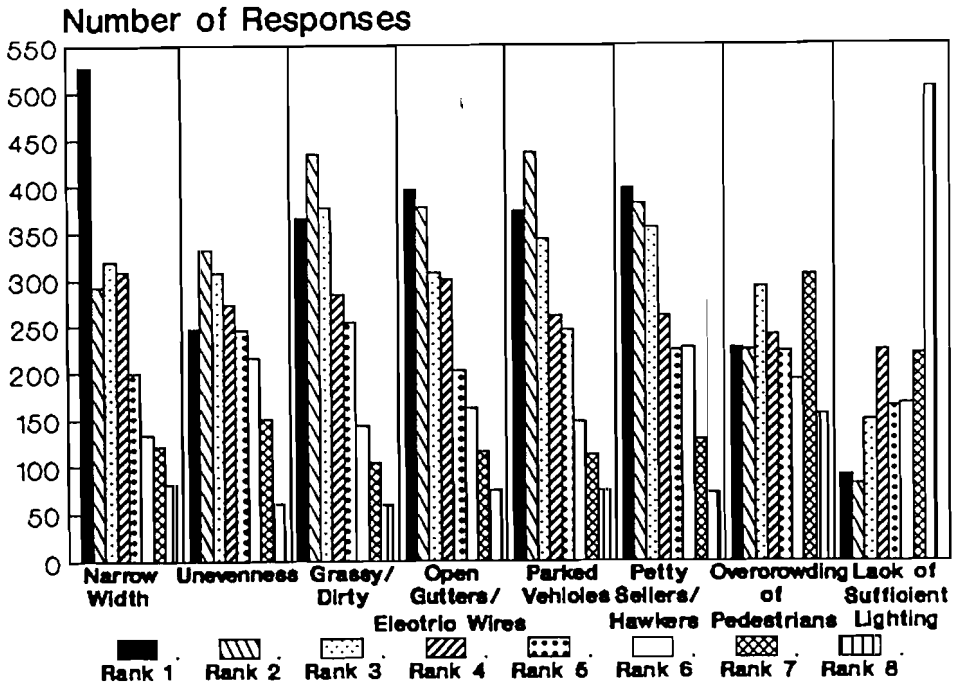

Figure 1: Ranking of problems hindering mobility of pedestrians in Cairo

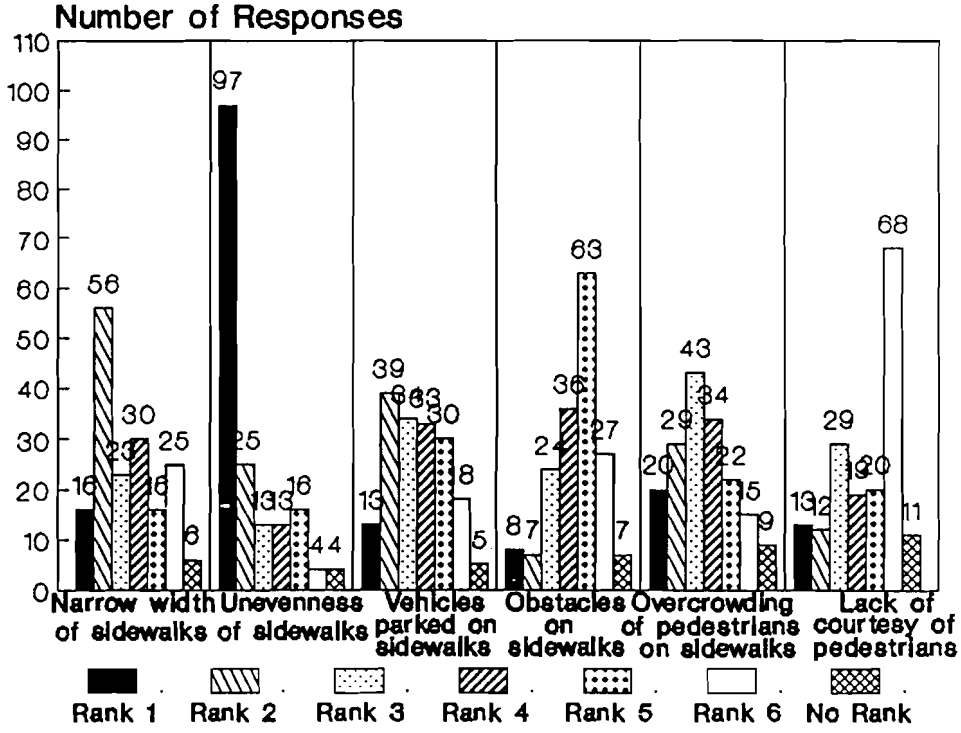

Figure 2: Ranking of problems hindering mobility of physically handicapped pedestrians in Cairo

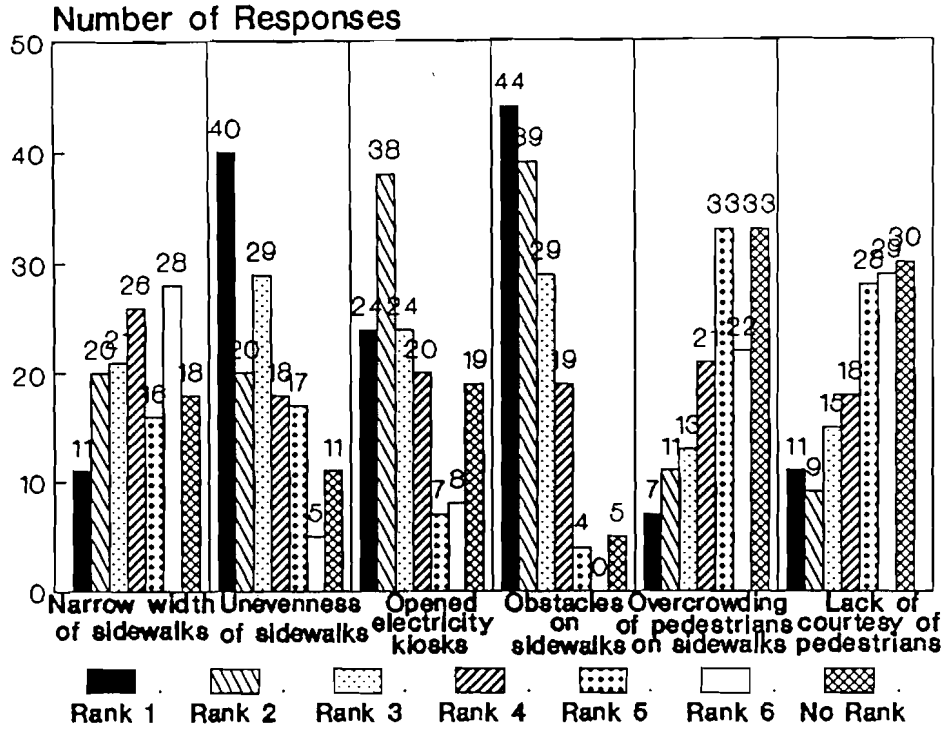

Figure 3: Ranking of problems hindering mobility of visually impaired pedestrians in Cairo

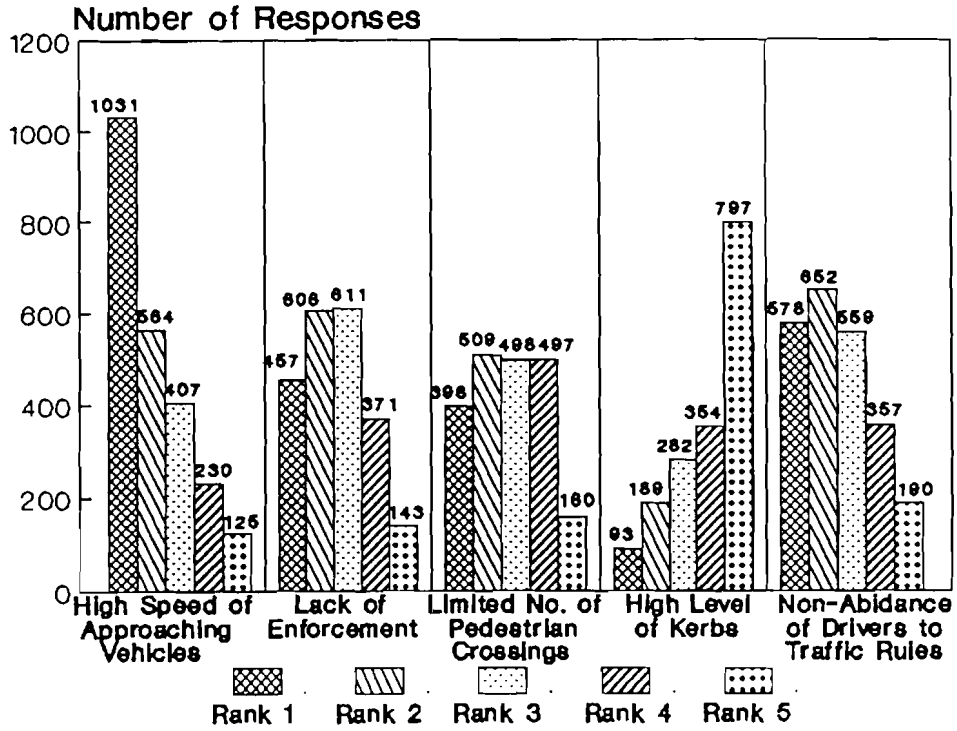

Figure 4: Ranking of problems encountered by pedestrians while crossing roads in Cairo

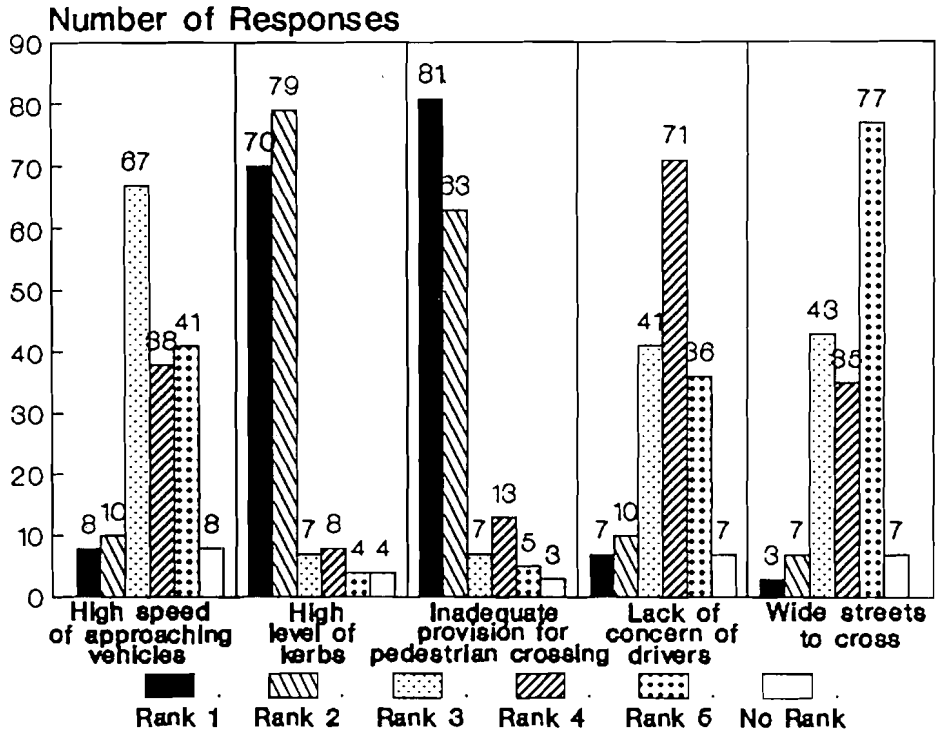

Figure 5: Ranking of problems encountered by physically handicapped pedestrians while crossing roads in Cairo

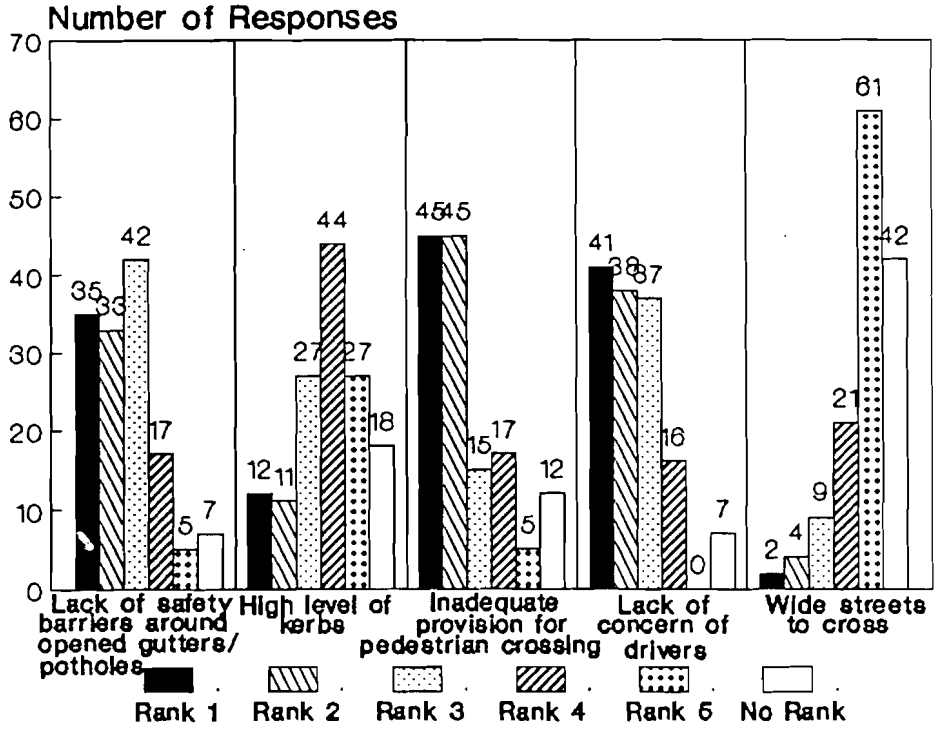

Figure 6: Ranking of problems encountered by visually impaired pedestrians while crossing roads in Cairo