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Research and Application on Traffic Safety Education to Migrant Workers

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Abstract

There are more and more migrant workers in the cities, which brings higher risks in urban transportation. This paper discusses what proper traffic safety education is for migrant workers. It describes the traffic safety awareness, knowledge and behavior of migrant workers by focus group and observation. With such kinds of survey, this paper analyzes the population characteristics and travel behavior of migrant workers, finds the cause of their travel behavior and what content and form of traffic safety education they need. Then these findings are put in practice. A traffic safety education activity for migrant workers is held in Shandong Province, which works well. The final results show that migrant workers have weak awareness of traffic safety, less knowledge of transportation and many bad travel behaviors. Migrant workers prefer education with real stories and pictures.

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1. Introduction

As the amount of migrant workers is increasing recent years, more and more migrant workers leave hometown and come into cities. In the new urban environment, migrant workers are lack of understanding of urban transport. With lower level of education migrant workers meet more risks of traffic accidents.

Migrant workers are those farmers who leave their land and come into city to work and live. According to the “Monitoring Report to the Survey of Chinese Migrant Workers in 2011” published by National Bureau of

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Statistics (2011), the number of Chinese migrant workers in 2011 is 252,780,000, which increases by 10,550,000 over previous year, an increase of 4.4%.

Xiaoping Guang and Changxi Ma (2007) counted traffic accidents data of peasants and migrant workers from 1998 to 2004. The specific statistical data is shown in Fig. 1 and Fig. 2. From the statistics, we can see that the traffic safety situation of migrant workers is rather grim. It is of great urgency for migrant workers to enhance their awareness of traffic safety, acquire knowledge of transportation and regulate their travel behaviors.

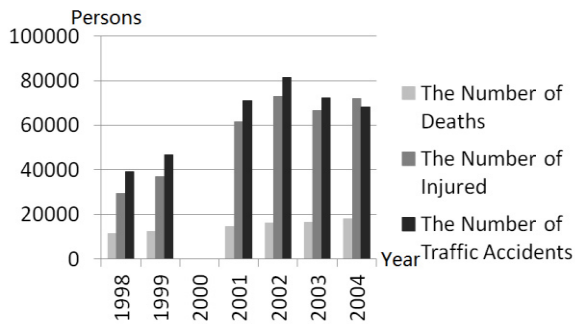


Fig.1 Statistics of traffic accidents caused by peasants and migrant workers in China

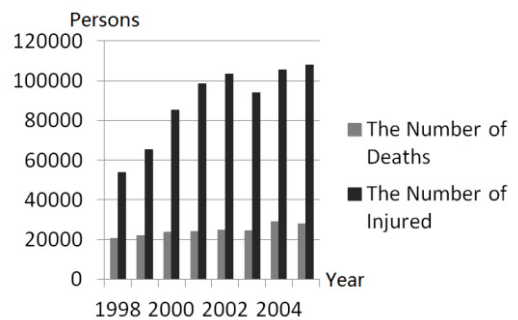


Fig.2 Statistics of deaths and injured number of peasants and migrant workers in China

According to "The world report on road traffic injury prevention" (2004), published by the World Health Organization and the World Bank, road traffic accidents and injuries can be prevented. Improved interventions can significantly reduce the incidence of road traffic injuries and adverse consequences.

After years of research and practice, scientists have proposed the "four E" scientific methods to prevent and reduce traffic accidents. The so-called "four E" is Engineering, Enforcement, Education and Emergency medical services. The four measures above construct a complete road traffic accident prevention system. This paper goes to discuss one of them "The Traffic Safety Education".

Traffic safety education in developed countries has conducted for a long time. It has formed a traffic safety system consisted with their countries' traffic environment. Their traffic safety education mainly includes two types of population: children (infants, primary and secondary school students) and drivers.

Domestic traffic safety education generally put all the drivers and pedestrians as a whole. There is less detailed analysis traffic safety education for migrant workers. The existing traffic safety publicity and education materials still have many problems, and there are no specific teaching materials for migrant workers. (Chuan Chen & Hui Cao, 2011)

Research on travel behavior began with Liepmann (1944). He used travel data of workers in the British, and analyzed travel behavior based on travel time and high occupancy vehicle.

Clifton (2001) proposed that focus group and other methods can help to refine various types of explanatory variables in investigations, provided support for the design of survey framework, or even informed the increase of high rate effective sample recycling survey method, in the survey design phase. When the investigation is completed, focus group analysis of survey results can help to answer the survey data results to the underlying reasons.

Susan (2003) described travel behavior of various types of quantitative analysis in the article. She thought that survey of travel behavior, attitude and willingness, focus group, case interview and observation are the main method of quantitative analysis. These methods can also be used to upgrade and improve the design and explanation of traditional research.

This paper analyzes the characteristics and behaviours of migrant workers and describes contents and forms of traffic safety education which they required by using focus group and observation. This paper is trying to find a suitable way of traffic safety education for migrant worker.

2. Method and analysis of survey

2.1. Focus Group

This survey was conducted in Linyi City, Shandong Province in September 27, 2010. Migrant workers were interviewed in Lunan Pharmaceutical Company using focus group. By focus group is meant a trained moderator made a conversation with a group in a form of unstructured natural discussion.

The sample size of focus group was 20. First, the interviewee was inquired of their economic and social attributes including age, gender, education, occupation, income, time come to the city. Then, examined their awareness of traffic safety, knowledge of transportation, asking whether they had received traffic safety education, what kind of traffic safety education they had accepted and usually how their travel behaviors were, including walking behavior, behavior of crossing the road, behaviour of driving mopeds and so on. Finally, asked what kind of content and form of traffic safety education they prefer. The specific interview situation is showed on Fig. 3 and Fig. 4.



Fig. 3 First picture of focus group



Fig. 4 Second picture of focus group

According to the results of focus group, the population attributes of migrant workers are described as following.

- Gender
Migrant workers are predominantly male.
- Age
According to age, the majority of migrant workers are young and middle-aged adults. The population of elder migrant workers is increasing year by year. Married and older migrant workers are more intended to be employed nearby their hometown, since they are lack of competition and need to take care of their families.
- Education level
The average education level of migrant workers is relatively low. Most of them are graduated from junior high school. The education level of young migrant workers is higher than the others. It is consistent with the data of "Monitoring Report to the Survey of Chinese Migrant Workers in 2011".
- Economic income
Income of migrant workers is unstable. Their average income is generally below the national level. In recent years, the wages of migrant workers increased, but they can't keep up with the wages of urban workers. As

their income growth rate is behind the inflation rate, migrant workers who have limited income develop the habit of thrift.

- Social status
Migrant workers are at the bottom of society. They do dirty and dangerous work with long working hours, but get low pay. Their living conditions, medical insurance and schooling for their children are worse than urban residents. They belong to vulnerable groups.
- Types of work
Migrant workers are mainly engaged in the manufacturing, construction and service industries. Most of migrant workers do manual works which are in the bottom of the industry chain.

2.2. Observation

Making observation was also used in this survey. In the intersections near Lunan Pharmaceutical Company, migrant workers' travel behavior across the road was observed when they got off work. Six kinds of travel behavior across the road were observed to see whether migrant workers obey the traffic rule and have the traffic safety awareness.

- Stay at the correct position waiting to cross the road.
- Run the red light.
- Take the zebra crossing when crossing the road.
- Wear helmets when riding mopeds.
- Look left, look right and look left again when crossing the road.
- Have bad behavior when crossing the road such as running, chatting, and taking a mobile phone call.

According to the findings of observation, the majority of migrant workers take the zebra crossing when crossing the road, but they always go across the road when green lights haven't lit. Most migrant workers stand on the zebra crossing when waiting to cross the road. Most of them have the habit to look left and right when crossing the road, but the order of looking is usually wrong. The situation of running, chatting, and taking a mobile phone call when migrant workers are crossing the road is very common. Only a few of migrant workers wear helmets when riding and sitting on mopeds.

Migrant workers' violations of travel behavior at rush hour (5:30-6:30) are showed on Fig. 5 and Fig. 6.



Fig. 5 First picture of traffic violation



Fig. 6 Second picture of traffic violation

3. Important Findings

3.1. Population Characteristics

From the focus group and observation, the population characteristics of migrant workers are described as follows:

- **Weak awareness of traffic safety**
Most migrant workers live in rural areas where the education and road construction are relatively backward. Many of them don't know traffic rules and also don't form a good awareness of traffic safety. Especially, they don't have a good command of urban traffic status when they leave hometown and come into city. They are unclear about how to be safe when they are walking, crossing the road, riding mopeds and taking buses. In order to save money, they will buy scrap vehicles or unlicensed mopeds. These kinds of unsafe transport will lead migrant workers to huge risks.
- **Lack of traffic safety knowledge**
The majority of migrant workers haven't received traffic safety education. And they have less understanding of relevant traffic rules. Most of them are lack of the knowledge of traffic safety. They also haven't developed a good habit of obeying traffic rules. They do not know their violation of traffic rules could have serious consequences and some behavior may result in traffic accidents.
- **Poor performance of travel behavior**
It is very common that migrant workers violate the traffic rules, since their absence of awareness and knowledge of traffic safety. As they are lack of the sense of walking on sidewalk, migrant workers often walk in groups to seize the slow lane. And it is often seen that they run the red light and jaywalk. Due to the increase in income and the improvement of living standards, many migrant workers ride mopeds instead of bicycle. However, they don't wear helmets when riding. In addition, some travel behaviours such as unlicensed driving, fatigue driving and drunk driving are very common for migrant workers. These will bring potential threats to their traffic safety.

3.2. The contents of traffic safety education required

Traffic safety education to migrant workers should be targeted and require their needs. Urban road conditions are more complicated than rural road for migrant workers. They are lack of knowledge of urban traffic status. Traffic safety rules and common sense need to be introduced to migrant workers. These can help them to break the habit such as jaywalking, speeding and overloading, and then gradually adapt to the urban traffic, know how to protect themselves and reduce traffic accidents. Specifically, the contents of traffic safety education which migrant workers required are as the following.

- **The status of urban traffic**
Migrant workers haven't adapted to the urban traffic conditions when they first come to city. Compared with rural roads, urban roads are more complex. Vehicle flow and pedestrian flow are more in city than in countryside. Therefore, migrant workers' traffic safety education is required to start on the status of urban traffic. It can enhance their understanding of the traffic in city.
- **Basic knowledge of traffic safety laws and regulations**
It is necessary for migrant workers to receive the knowledge of traffic safety laws and regulations such as no drunk driving, no fatigue driving, no overloading, no speeding, wearing helmets when riding motorcycles and so on. With the understanding of basic traffic rules, migrant workers will know what kind of behavior is a traffic violation.
- **Common Sense of traffic safety**
Some common sense of traffic safety needs to be introduced to migrant workers such as the knowledge of traffic lights and signs. This will help migrant workers to obey traffic rules. Also it is necessary for migrant workers to develop the awareness of walking on sidewalk and the awareness of "look left, look right and look left again" when crossing the road. This will help them far from traffic accidents.

- **Self-protection skills**
Case studies and other techniques are used to make migrant workers be aware of different intensity of vehicle collision under different speed. This kind of education can remind them to protect themselves, consciously regulate their traffic behavior, timely forecasts danger and prevent themselves from travel accidents.
- **Hazards of traffic violations**
The reason of frequent traffic accidents lies in the less attention to consequences of traffic violations. Also, there is no in-depth understanding of the dangers of traffic violations. Therefore, the detailed instructions to the hazards of traffic violations need to be explained to migrant workers.
- **Approaches to traffic accidents**
In case of sudden traffic accidents, migrant workers need to learn some emergency approaches including call the Traffic Accident Hotline and call an ambulance if casualties. In case the vehicle driver escape, record the number and colour of vehicle and provide detailed information about traffic accidents.

3.3. The forms of traffic safety education required

- **The main form of education**
The main forms of traffic safety education to migrant workers are traffic story broadcast, accident case board display, practical items donated, mass media guide, and internet communication etc.
- **The main channel of education**
The main channels to disseminate traffic safety knowledge to migrant workers are the enterprises and places of residence where they are gathered.
- **The main carrier of education**
The main carriers of traffic safety education to migrant workers are traffic safety cartoon books, traffic story videos, practical products with traffic safety slogans or signs printed and so on.

4. Application

According to the findings above, a traffic safety education activity to migrant workers was hold in Binwei Textile Mill in Binzhou City, Shandong Province on December 30, 2010. There were 20 migrant workers participated in this activity. The activity was showed on Fig. 7 and Fig. 8.



Fig. 7 First picture of traffic safety education activity



Fig. 8 Second picture of traffic safety education activity

This activity used interaction instead of teaching to do traffic safety education and got good effects. The activity is divided into four parts.

The first part was a game of drunk drinking reaction test, using body reaction tester to test participants' speed of reaction before and after drinking. The results showed the facts that the speed of reaction would slow down after drinking. This game attracted the interests of participants.

At the second part, the participants watched two videos that described the true story of traffic accidents. The accident story impressed them the serious consequence of traffic violation.

At the third part, six points of traffic safety knowledge was described to participants with pictures and texts. The six points are showed as following. 1. Do not drunk driving. 2. Wear helmet when riding mopeds. 3. Never speeding. 4. Do not climb road fences. 5. Do not run the red light. 6. Pay attention to the blind spot when driving.

The fourth part is a quiz of traffic safety knowledge. Eight questions were prepared for the quiz. If participants could give a correct answer with right reason, they would get a small gift.

Finally, a cartoon book of traffic safety to migrant workers was distributed to every participant. They could get more traffic safety knowledge from it and also share it to their families and friends.

The activity ended with a lively atmosphere and got good effects. It not only enabled participants to gain knowledge of traffic safety, but also stimulated their interests to disseminate knowledge to their families and friends. A measurement survey to the activity was added after it. The results showed that more than 95% participants were satisfied with the contents and forms of education. More than 80% participants had good commands of knowledge of traffic safety that was taught in the activity. They had deeper understanding of traffic safety than before. They also improved their awareness of traffic safety and their judgment on travel behavior.

5. Conclusions

Migrant workers have the weak awareness of traffic safety, less knowledge of transportation and many violations of travel behaviour. They prefer case education of traffic safety with true story. They like to read traffic safety books with pictures, especially cartoon books. Some small practical gifts which painted traffic safety slogans or signs are also popular to migrant workers.

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