Adaptability of helmets in India: Its Barriers, Thrust and expected strategies to overcome the barriers

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ABSTRACT

Road accidents in India are increasing significantly and are being turned as the biggest challenge for government. With the advancement in Automobile Industry and civilization in our society, the connectivity has been improved a lot. But the road accidents and fatalities have marked significant.

After a rigorous study "Why people not suing helmets while driving two-wheeler", it demanded for a well landscape search for the very purpose. We conducted a landscape search for finding the gray areas that have highest contribution on the problem statement. A survey was conducted through E-mail during month of August 2018-2019. A questionnaire comprising of few objective and descriptive type question have been mailed to five hundred people across Uttar Pradesh. Out of which, response of 101 people have been marked on the provided tool. The data was evaluated and concluded carefully based on paper statistics. as presented in findings and discussions to make harmonically balance and minimum biasing during analysis.

Statistical tools like frequency and percentage were used to make correct interpretation. A survey involving questionnaires as instrument was undertaken in the month of August 2018. Data collection was made through emails.

The outcome revealed five major gray areas of problem statement which are: i- cost related issue, ii- carrying problem, iii- visor related problem, iv- heavy weight fatigue and v- casual behavior of people.

The improvement in existing helmets resulted in introduction of wide visors, double visors, anti glare and night vision visors. The quick removal system has been introduced. Helmets design has been improved being more aerodynamic. But these improvements caused expensive cost related to the features. Research is going on the advancement of helmet materials. Light weighed materials have been introduced with sustainable excellent mechanical properties that can effectively reduce seriousness of impact of road accidents.

New researches in helmets have advanced the old concept of solid helmets in the foldable helmets. A new helmet concept has been designed and tested successfully called air bag helmets. It has multiple sensors that sense parameters like acceleration, lean angle and many more. Based on these, the helmets, inflates just before an impact or clash takes place, in less than 100 milliseconds to be precise. These helmets at

present have been sold for just bicycles. For motor cycle this is just a concept that has a great potential in innovation towards counteracting with the above barriers for countries like India.

INTRODUCTION

India signed Beasillia declaration in 2015, committing itself to reducing road accidents and fatalities by half. But in 2017, road crashes declined by 3.27% only. And fatalities even reduced lesser, just 1.9%. Deaths arising out of two-wheeler users not wearing helmets were 10,135 in 2016 which increased up to 36000 in 2017. The highest number of deaths due to lack of safety gears on two-wheeler was reported in Tamil Nadu with 5,211 casualties in two-wheeler related accidents, 42% were pillion riders. Gujarat happened to have reported more pillion deaths than riders without helmets. In spite of this truth rider of two-wheeler mostly avoid wearing helmet.

In 2017, a whopping 1.47 lakh people died in road deaths in India, which is equivalent to the entire population of Shillong, the capital of Meghalaya. Every year, over a lakh die as a result of road crashes and the proportion of those who get injured in nearly three to four times higher.

Taking road safety as a serious issue, in 2015, India signed the Brasilia declaration and committed to reducing road accidents and fatalities by half. So far, the fall n road accident has not been substantial. In 2017, road accidents in India decreased by merely 3.27% with 4,64,910 road crashes as against 4,80,652 in 2016. Fatalities resulting from these accidents saw a even smaller drop, just 1.9%. As many as 1,47,913 persons died in road crashes in 2017 against 1,50,785 in 2016. This not so encouraging data is further marred by road fatalities figures of the first quarter of 2018 which show a 1.68% rise over the corresponding previous quarter. It is young lives that are snuffed out the most due to road accidents in India. In 2016, a staggering 60% of people who lost their lives in road accidents were in the age group of 18-35 years.

But who is to be blamed? Road-users might come first in mind. Driving at high speeds, under the influence of alcohol or drugs, tiredness or without a helmet are indeed responsible for high number of deaths in road crashes figures for 2016 suggests that around 10,135 people were killed on road crashes due to not wearing helmet. But what is probably the reason people not wearing helmet even after knowing its importance. This is a big question. There are a lot of reasons but

we have to conquer over its main causes such that we can decrease this figure of fatalities, if possible, resulting these deaths figure due to not wearing helmet. And this has made us to construct our problem statement. To do landscape research for finding gray areas for people not wearing helmet during two wheeler driving.

MATERIAL AND METHODS

Analysis of secondary data reveals that in India helmets are available in large range that starts from ₹100 to as high as in lakh costing for one piece of helmet. This range difference is due to quality and repute of company. So called local helmets are available in ₹100 only. But, this cannot provide any safety from collision or any fatalities. But due to unawareness, avoiding traffic police and casual nature of people, these helmets are in high demand. A huge population of people in India just wear helmet from the fear of police. These gray areas call from the versatile need of improvement in existing design. Some researches are going on the path of improvement in existing design, while some are evolving the whole new concept of helmets.

The study was conducted in Ghaziabad, referred to as “Gateway of UP” and a part of National capital region of Delhi. It is largest and planned industrial city, with a population of 2.866384 million, well connected by roads and railways. Road transport is the predominate mode of travel and the city has total 540 km of roads. About half of the city road network is fairly in good condition and many daily trips are undertaken by means of motorcycle, bicycle, tricycle, car, buses and trucks.

In Ghaziabad release of challan by traffic police and fatal road accidents particularly with motorcycle and other two-wheeler is very common. Hence it was obviously appropriate to conduct survey for generation of suitable data over here. The present study involved development of survey tool to generate primary data, mining of relevant data available in public domain to extract secondary analysis, tabulation of data, statistical calculation and interpretation on the basis of collected/ generated information. Hierarchic methodology adopted are to analyze the information are as below.

1. Development of survey tool

It was developed in the form of questionnaire which included information related to the problems that people face while using helmet during two wheel drive.

2. Mining secondary data

Data already available in public domain related to road safety, fatality and helmet issues in India was downloaded through different internet browsers including Google and others.

3. Tabulation of Data

Data gathered/generated with survey based primary efforts and net based secondary efforts were arranged in tabular form based on various characters and observations. Questionnaire was distributed through e-mail to 500 people. Out of which response of 101 people has been marked. Data were evaluated, edited and entries were made in Ms excel, and descriptive statistical analysis was extensively carried out.

RESULTS

The study sampled 500 motorcycle users. A questionnaire was distributed through e-mails. Out of which responses of 101 people has been marked. 6% were female while 94%were male motorcycle users. Survey OR analyzed data is printed- table: 1.

From the analysis of data, it was evident that factors that are commonly assumed to influence non use of helmet have different impact on non use of helmet. On these factors the most devastating (with 23.8%) is “sweating and its cause like unhygienic and irritation problem during summer”.

Table: 1 Descriptive analysis of factors associated with not using helmet while driving Two-Wheelers

S.No.	Reasons for not using helmet	Response in frequency	Response in Percentage (%)
1	Suffocation	36	17.9
2	Too heavy	32	15.9
3	Difficult in carrying while not driving	12	5.97
4	It ruins fashion	13	6.46
5	Vision related problems: glare, insufficient night vision, inappropriate side vision. Crete havoc while its raining.	40	19.9
6	Unable to hear properly while using helmet.	10	4.97
7	Very irritable and unhygienic during summers. Cause a lot of sweating.	48	23.8
8	For short distance driving, helmet is useless.	1	0.498
9	No option to pick important phone calls.	9	4.47
		Total=101	100

The other factor responded with high percentage was the vision related problems. People found it very problematic to use helmet because of glare, insufficient night vision and inappropriate side vision. About 17.9% reported the suffocation as barrier in using helmet. 15.9% people found helmet too heavy to use. Few factors that with little percentage were difficulty in carrying when not in use (5.97%), ruins fashion (6.46%). About 4.97% mentioned a factor of poor hearing capability while using helmet and 4.47% mentioned no option to pick important calls. One more factor that comes into the picture after complete analysis was, “helmet is useless for short distance driving” with about 0.498%.

CONCLUSION

The two main sources of all gray areas that comes out from the analysis were firstly, the compatibility of helmet is not comforting people pointing towards vigorous need of the change in design of helmet. And secondly, people attitude that works as barrier in using helmet. Due to this attitude they usually escape using helmet or use a cheapest local helmet, that are of no use due to very weak reliability of preventing injuries during a crash. These cheap helmets are in great fashion nowadays. People wear helmets because of the fear of police. Fear being negative incentive is the potential barrier in spreading awareness among people of actual necessity of using helmets. What about branded helmet? Why people do not go for them knowing all its capabilities?? Some factors that came out from the study revealed that these branded helmets are not at all compatible for comforting people.

From the analysis of data as shown in Table 1, it is evident that factors that are commonly assumed to influence non-use of helmet have different impact on non-use of helmet. About 23.8% found it very hard to use helmet during summers. The respondents said that wearing helmet is quite sweaty, the foam absorbs the sweat making it bad odor and unhygienic and smelly to wear. This is associated with a lot of incompatible and uncomfortable effects. One more problem come into frame with 19.9% is of vision problem. The visor of helmet needs to get a lot of improvement. The helmet glass is not at all suitable for night vision and Suring rainy season. Opening helmet glass during rain is not a wise choice. So modification and innovations should be done for the visor of helmet to make it compatible hence more adaptive among people. In study, some factors with very less %age like, “short distance driving do not need helmet” (0.498%) have very less gravity. These can be removed with technological interventions and by the strict action and good awareness programme of government.

Hence, public health interventions on helmet use should be tailored to surmount the perceived barriers to the use of helmet. That is, concerns headache and discomfort resulting from helmet use would need urgent attention if public educations on helmet use are to be successful. Road safety education campaigns can promote the facilitators to motorcycle helmet use by highlighting the benefits and protective efficacy of helmet. Increased presence of road traffic police and strong enforcement of helmet use legislation would also be germane to improvising road safety behavior of motorcyclist. Also a step should be taken by the innovators of motorcycle helmet in the direction of evolving those technologies that can do needed improvements in the existing

helmets so that the factors that are revealed from the study can be minimized or can be removed. The technologies like fold-able helmet, air bags helmet should be focused more so that a helmet with best features, with all that factors that have popped up from the study nullified, can be made available in affordable cost for everyone.

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