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Original Research Article

Usability of the Helmet during Various Seasons

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ABSTRACT

Introduction:
A motorcycle helmet is a type of helmet (Protective headgear) used by motorcycle riders. It is very difficult to wear helmets in the countries like India due to the discomfort they caused in tropical climatic conditions. Due to the discomfort caused by the present day helmets, people use to wear open face helmet which doesn't give more protection to the head and the face of the rider when compared to full face helmets.

Aim and objectives:

- To compare the usability of the helmet during various seasons.
- To compare the comfortability of the helmet during various seasons.

Methods:
Exploratory and causal study was conducted to compare the usability of the helmet during various seasons. One hundred and sixty helmet users were selected purposively. Self structured questionnaire was used as a study tool.

Results:
Majority of the respondents reported in convenience in using helmet. It can be inferred from the data that most of the users do not feel comfortable wearing a helmet in all the three seasons but they feel wearing a helmet is safe and according to disparate safety rules. It may also be noted that the users feel protected from winds due to helmet during all the three seasons.

Conclusion:
The users do not feel comfortable in wearing a helmet during summer season due to lack of ventilation and during winter and rainy seasons due to unclear vision.

Keywords: Comfort level of the helmet, Motorcycle helmet, Seasons, Users comfort.

INTRODUCTION

A motorcycle helmet is a type of helmet (Protective headgear) used by motorcycle riders. The primary goal of a motorcycle helmet is to protect the rider's head from injury or saving the rider's life. Some helmets provide additional conveniences, such as ventilation, face shields, ear protection, intercom etc.

It is very difficult to wear helmets in the countries like India due to the discomfort they caused in tropical climatic conditions.

According to the Indian motorcycle vehicle act, the wearing of motorcycle helmet is mandatory while riding. Due to the discomfort caused by the present day helmets, people use to wear open face helmet which doesn't give more protection to the head and the face of the rider when compared to full face helmets. Hence here is an essential requirement of motor cycle helmet with good thermal comfort, visibility, safety and adjustable interior head farm. Proper ventilation is an important criterion for the safety and the comfort of the rider. As the rider is exposed to the high speed stream of air, there should be proper heat transfer and air flow. A good helmet makes riding a motorcycle more fun, due to the comfort factor. It cuts down on wind noise on ears, windblast on face and eyes, and deflects bugs and other objects flying through the air. It even contributes to comfort from changing weather conditions and reduces rider fatigue. In recent times, due to rapidly growing population, traffic congestion and lack of parking space, two wheelers are the most popular mode of transportation. In the developing countries like India, it is very difficult to the middle class people to afford the luxury cars for daily needs. Hence the two wheeler motor cycles are very necessary for them. Due to this, the use of motorcycle is increasing steadily in India. In India most of the accidents includes the two wheelers, hence the safety of the motor cycle rider is most essential requirement. The two wheeler motorcycle rider is most likely to sustain serious injuries during the accidents.

Objectives

- To compare the usability of the helmet during various seasons.
- To compare the comfortability of the helmet during various seasons.

MATERIALS AND METHODS

This is an exploratory study done at Lucknow city of Uttar Pradesh, India. The study was carried out on helmet users above 21 years of age. Total of 160 helmet users were selected for the study. Functionality of helmets during various seasons was measured using self structured questionnaire. The functionality was measured in terms of comfort, safety and efficiency in use of helmets.

A self made interview schedule was used to collect general and specific information about the respondents.

RESULTS

Table No-1 Assessment of functionality of helmet according to various seasons.

Items	Summer		Winter		Rainy	
	Mean	SD	Mean	SD	Mean	SD
Comfortable with my helmet	1.04	0.19	2.75	0.60	2.42	0.62
I feel safe	2.91	0.31	2.85	0.40	2.86	0.39
I get protected from winds due to helmet	2.90	0.34	2.86	0.45	2.87	0.41
I wear helmet because it is compulsory to wear	1.73	0.93	2.19	2.31	1.73	0.93
Feel irritated using the helmet	1.17	0.49	2.44	0.72	2.34	0.70
Feel sweating when I wear helmet	1.09	0.29	2.89	0.33	2.09	0.53
Hair loss if I wear helmet	2.62	0.68	2.78	0.46	2.56	0.66
I can't see clearly when I wear helmet	1.64	0.77	1.48	0.73	1.60	0.80
I can't drive properly when I wear helmet	2.81	0.48	2.32	0.73	1.72	0.91
I feel suffocated	1.06	0.24	2.49	0.65	2.39	0.80
My neck pains, when I wear helmet	2.72	0.58	2.72	0.56	2.72	0.58
Helmet weight to be unbearable for me	2.32	0.81	2.32	0.81	2.32	0.81
I get irritated with the strap of the helmet	2.27	0.81	2.62	0.55	2.27	0.81
I can't drive wearing a helmet	2.92	0.38	2.83	0.51	2.92	0.38
Visibility is not clear due to fog	3.00	0.00	1.04	0.20	2.99	0.07
Visibility is not clear due to rain	1.97	0.69	2.17	0.51	1.06	0.23

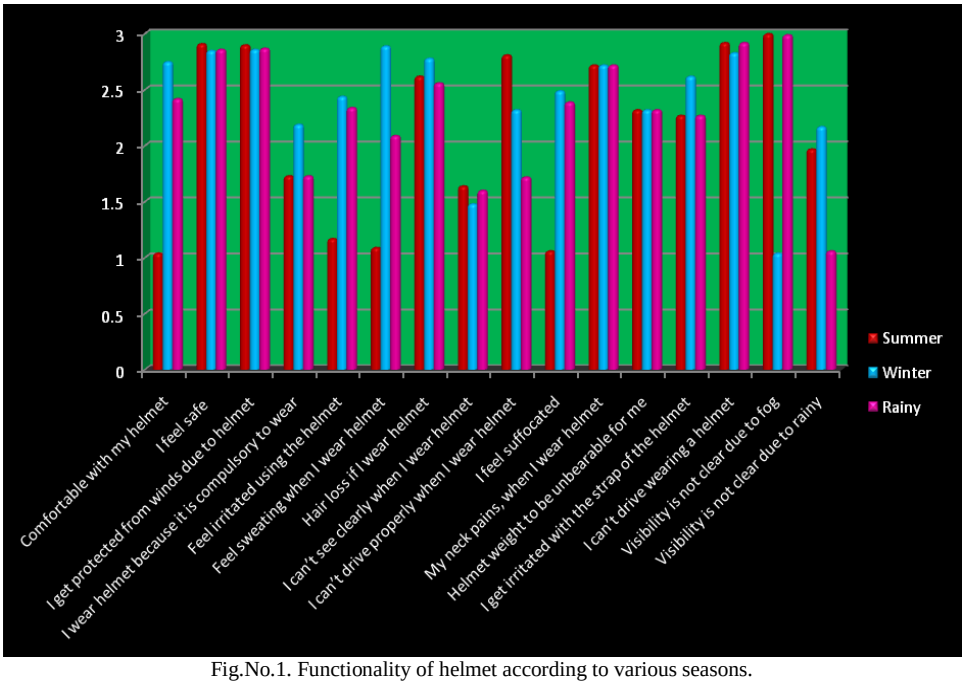

Fig.No.1. Functionality of helmet according to various seasons.

Table No-2 Assessment of comfort ability of helmet during to various seasons.

Level of significant	Summer	Winter	Rainy	Total
Highly comfortable	96 (24.55)	151 (38.61)	144 (36.82)	391
Moderate comfortable	64 (71.91)	9 (10.11)	16 (17.97)	89
Least comfortable	0 (0)	0 (0)	0 (0)	00
Grand total	160	160	160	480

χ^2 (tab) (0.05) = 15.50, χ^2 (cal) (0.01)= 20.09

χ^2 (cal) = 91.14**

DISCUSSION

The data in the above table 1 shows that total majority (μ=1.17) of the users feel irritated using the helmet especially during summer season followed by winter and rainy season. They also feel maximum sweating during summer (μ=1.09) in comparison to other seasons. Majority of the users complained of blurred season especially during winter (μ=1.64) and rainy (μ=1.60) seasons and they also complained of not able to drive properly when they wear helmets.

Suffocation was also reported by majority of the users during summer season (μ=1.06) followed by rainy and winter season. Majority of the users complained of neck pain due to unbearable weight of helmet. The strap of the helmet also is a reason of in convenience during summer seasons. They also reported unclear vision due to fog and rains during winter and rainy season while wearing helmet.

The above table shows that there is a significant effect of season on helmet comfort ability among helmet users.

It is depicted from the above table that 38.61 percent users are highly comfortable with their helmet in winter season as they stated that winter season is cool, similarly 36.82 percent, and 24.55 percent users are highly comfortable in rainy and summer season, respectively.

It is also concluded that 71.91 percent users are moderately comfortable with their helmet in summer season because

summer season is very hot so users who wear helmet feel suffocated and irritating. Similarly 17.97 percent, 10.11 percent users are moderately comfortable in rainy and winter season respectively.

CONCLUSION

The users do not feel comfortable in wearing a helmet during summer season due to lack of ventilation and during winter and rainy seasons due to unclear vision.

Usability of helmet during various seasons was studied in terms of its comfort, safety and efficiency. It can be concluded from the data that most of the users do not feel comfortable wearing a helmet in all the three seasons but they feel wearing a helmet is safe and accordingly important as per safety rules. It may also be noted that the users feel protected from winds due to helmet during all the three season.

Recommendations for helmet users:

- Wearing a helmet will give you protection and safety.
- Ensure that your helmet outer shell does not come in contact with any petroleum product.
- Never hang your helmet on the mirror/handle bar of the two-wheeler.
- Do not repaint helmet. Repainting of helmet can reduce impact absorption capacity.
- Never use dark/tinted visor in poor visibility conditions.
- Do not modify the helmet by drilling holes in the outer shell. Never replace/remove any of the original parts of helmet.

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