International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Impact Factor (2012): 3.358

Subjective Evaluation of the Helmet Users Regarding Comfort Features of The Helmet

Deepika Gautam[1], U.V. Kiran[2]

[1]Student, Department of Human Development and Family Studies School of Home Sciences, Babasaheb Bhim Rao Ambedkar Central University Lucknow, India

[2]Assistant Professor, Department of Human Development and Family Studies School of Home Sciences, Babasaheb Bhim Rao Ambedkar Central University Lucknow, India

Abstract: ***A motorcycle helmet is a necessary safety feature for every rider and passenger on a motorcycle, just like a seat belt in a car. A helmet is the best protective gear you can wear while riding a motorcycle. 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 (Wikipedia). Objectives: To conduct subjective evaluation of the helmet users regarding comfort features of the helmet and To assess the features to be changed in helmet according to users. Setting and Participants: One hundred and sixty helmet users were selected for the study who have a user experience of above 2 hours per day, in the Lucknow district of Uttar Pradesh. Methodology: The time taken for the study was one year that is July2013 to May 2014. In the present study, exploratory and causal research design was used to obtain and analyze the data. For selection of the respondents, purposive sampling technique was adopted. Self made questionnaire was used to investigate the prevalence of subjective evaluation of the helmet users regarding comfort features of the helmet. Statistical Analysis: SPSS 20.0 software was used for statistical processing. The levels of features to be changed in helmet according to users were also calculated with the help of frequency and ANOVA. Results and Discussion: The findings of ANOVA test revealed a significant difference between the features to be considered while purchasing helmet and changed in helmet according to helmet users on various age in motorcycle helmets. Conclusion: From the study, it can be concluded that the clearly indicates that users follow the changing trends of fashion. Majority of users use helmet for less than 2 hours followed by 2-4 hours. It may also be noted that majority of the users wear helmet, as they feel it safe and some wear it because it is compulsory. For maximum head protection, the helmet must be of proper size. Select the helmet size which is closest to the head size. If the size of the helmet is too large, it may slip off form the head in case of an accident thus defeating the very purpose of wearing a helmet. If the helmet is too small for the head, it may not be comfortable to wear.***

Keywords: Comfort, Models of helmet, Users safety, Users perception, Users efficiency

1. Introduction

A motorcycle helmet is a necessary safety feature for every rider and passenger on a motorcycle, just like a seat belt in a car. A helmet is the best protective gear you can wear while riding a motorcycle. A beginner or experienced rider, dual-spotter, racer, long distance touring rider or hardcore adventures, have to wear a helmet for proper protection [1]. Now-a-days, motorcycles are becoming more popular. This is because of its ability to navigate through traffic faster than other vehicles, it is cheaper and it can be stored easily. These are the reasons why a lot of people to decide to buy one. The first thing that needs to be considered is safety while purchasing a helmet. Motorcycle helmets are the primary safety gear that you need [3].

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 [5].

2. Objectives

Keeping in view the significance of the problems, the present study was taken up to conduct subjective evaluation of the helmet users regarding comfort features of the helmet and to assess the features to be changed in helmet according to users.

3. Materials and Methods

Study design: Exploratory and causal research design

Sampling technique: For selection of the respondents, purposive sampling technique was adopted.

A purposive sample of 160 were taken after giving due consideration to inclusive criteria. The data was collected by General assessment form and general questionnaires. Self made questionnaire was used to investigate the subjective evaluation of the helmet users regarding comfort features of the helmet and to assess the features to be changed in helmet according to users.

Statistical analysis

SPSS 20.0 software was used for statistical processing. The levels of subjective evaluation of the helmet users regarding comfort features of the helmet and assessment of the

features to be changed in helmet according to users were calculated with the help of frequency percentage, mean, standard deviation and ANOVA.

4. Results

Table 1: Assessment of use of helmet according to age of respondent

Items	Age				
	20-30	31-40	41-50	51-60	Total
Always use helmet	73 (45.62)	37 (23.12)	33 (20.62)	3 (1.87)	146 (91.25)
Difference in local & branded helmet	76 (47.5)	18 (11.25)	19 (11.87)	3 (1.87)	116 (72.5)
Experience of use	(N=87)	(N=37)	(N=33)	(N=3)	(N=160)
1 year	11 (12.6)	3 (8.1)	2 (6.1)	-	16 (10)
1-3 year	45 (51.7)	2 (5.4)	3 (9.1)	-	50 (31.25)
3-5 year	12 (10.3)	9 (24.3)	4 (12.1)	-	22 (13.75)
>5 year	22 (25.3)	23 (62.2)	24 (72.7)	3 (100.0)	72 (45)
Duration of changing helmet	(N=87)	(N=37)	(N=33)	(N=3)	(N=160)
6 months	2 (2.3)	-	1 (3.0)	-	3 (1.87)
Within 1year	11 (12.6)	-	1 (3.0)	-	12 (7.5)
lose it	50 (57.5)	9 (24.3)	11 (33.3)	-	70 (43.75)
When broken	20 (23.0)	28 (75.7)	16 (48.5)	-	64 (40)
Gets discoloured	4 (4.6)	-	4 (12.1)	3 (100.0)	11 (6.87)
Hours of driving/days	(N=87)	(N=37)	(N=33)	(N=3)	(N=160)
<2 hours	53 (60.9)	24 (64.9)	16 (48.5)	2 (66.7)	92 (57.5)
2-4 hours	30 (34.5)	9 (24.3)	16 (48.5)	1 (33.3)	56 (35)
>6 hours	4 (4.6)	4 (10.8)	1 (3.0)	-	9 (5.62)
Reasons for buying helmet	(N=87)	(N=37)	(N=33)	(N=3)	(N=160)
Useful	7 (8.0)	3 (8.1)	4 (12.1)	-	14 (8.75)
Safe	68 (78.2)	25 (67.6)	22 (66.7)	3 (100.0)	118 (73.75)
Waste of money	-	-	-	-	-
Compulsory	12 (13.8)	9 (24.3)	6 (18.2)	-	27 (16.87)
Others	-	-	1 (3.0)	-	1 (0.62)
Status symbol	50 (31.25)	16 (10)	19 (11.87)	2 (1.25)	87 (54.37)
Everybody should wear helmet	83(54.37)	37(23.1)	33(20.6)	3(1.87)	156(97.5)

(Figures in parenthesis in indicates percentage)

Table 2: Assessment of features considered while purchasing helmet

Features	Not considered	Least considered	Moderately considered	Highly considered	Very high considered	Total
Brand	-	5(3.1)	18(11.3)	30(18.8)	107(66.9)	160(100)
Comfort	1(.6)	1(.6)	11(6.9)	33(20.6)	114(71.3)	160(100)
Design	4(2.5)	1(.6)	48(30.0)	40(25.0)	67(41.9)	160(100)
Style	5(3.1)	7(4.4)	51(31.9)	26(16.3)	71(44.4)	160(100)
Price	4(2.5)	11(6.9)	38(23.8)	47(29.4)	60(37.5)	160(100)
Utility	3(1.9)	-	24(15.0)	29(18.1)	100(62.5)	160(100)
Features	3(1.9)	1(.6)	17(10.6)	26(16.3)	113(70.6)	160(100)
Visibility	1(.6)	2(1.3)	10(6.3)	19(11.9)	128(80.0)	160(100)
Weight	1(.6)	5(3.1)	19(11.9)	21(13.1)	114(71.3)	160(100)
Safety	1(.6)	4(2.5)	7(4.4)	22(13.8)	126(78.8)	160(100)
Shape	4(2.5)	1(.6)	25(15.6)	27(16.9)	103(64.4)	160(100)
Color	3(1.9)	3(1.9)	40(25.0)	36(22.5)	78(48.8)	160(100)

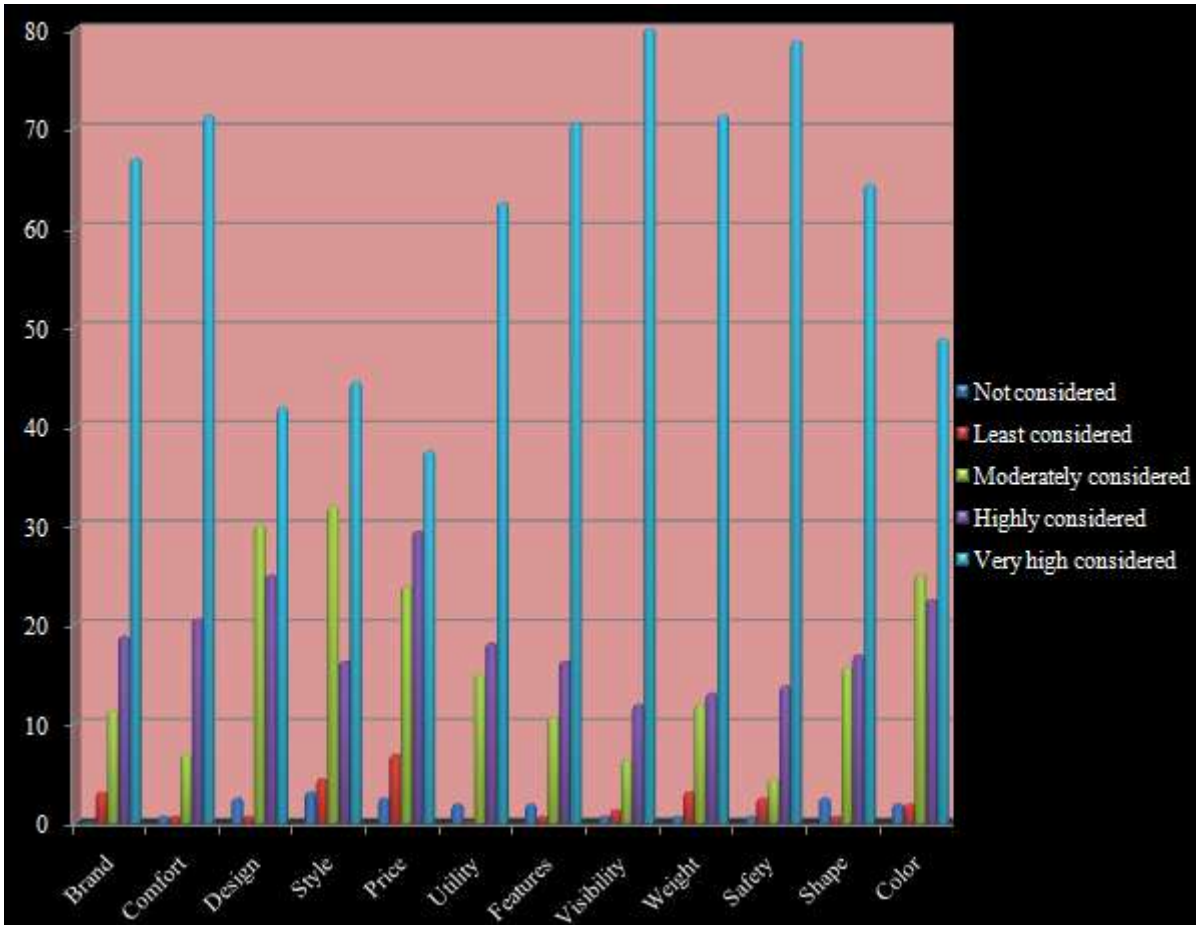

Figure 1: Features considered while purchasing helmet

Table 3: Features to be changed in helmet according to users.

Items	20-30		31-40		41-50		51-60		F	P
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Light weighted	0.03	0.18	0.03	0.16	0.94	0.24	0.67	0.57	178.56**	0.00
Suffocation	0.97	0.18	0.97	0.16	0.91	0.29	1.00	0.00	0.76	0.51
Wiper	0.98	0.15	0.97	0.16	0.97	0.17	1.00	0.00	0.04	0.98
Improve mirror quality	0.97	0.18	1.00	0.00	1.00	0.00	1.00	0.00	0.84	0.47
Good soul	0.07	0.25	0.05	0.22	0.91	0.29	0.67	0.57	91.48**	0.00
Washable	0.03	0.18	0.03	0.16	0.91	0.29	0.67	0.57	147.73**	0.00
Folding system	0.97	0.18	0.97	0.16	0.09	0.29	0.33	0.57	147.73**	0.00
Smell free	0.98	0.15	1.00	0.00	1.00	0.00	1.00	0.00	0.55	0.64
Strap	0.99	0.10	0.97	0.16	0.97	0.17	1.00	0.00	0.22	0.88
Air passing system	0.97	0.18	0.97	0.16	0.97	0.17	1.00	0.00	0.04	0.98
Shape	0.97	0.18	0.97	0.16	0.09	0.29	0.33	0.57	147.73**	0.00
Change in upper body	0.97	0.18	0.97	0.16	0.09	0.29	0.33	0.57	147.73**	0.00
Open part	0.98	0.15	1.00	0.00	0.94	0.24	1.00	0.00	0.91	0.43
Safety	0.99	0.10	1.00	0.00	0.94	0.24	1.00	0.00	1.38	0.24
Design	0.97	0.18	1.00	0.00	0.12	0.33	0.33	0.57	144.69**	0.00
Scratch free	0.98	0.15	0.97	0.16	0.97	0.17	1.00	0.00	0.04	0.98
Colour	0.97	0.18	0.97	0.16	0.12	0.33	0.33	0.57	124.60**	0.00
Look	0.94	0.23	0.97	0.16	0.12	0.33	0.33	0.57	97.89**	0.00

** Highly Significant (Significant at 0.01 levels)

5. Discussion

The above table shows that the users in age group of 41-50 ($\mu = 0.94$), years like light weighted in comparison to other age groups. The respondents belonging to age group between 20-30 and 31-40 years requires least change in weight of helmet. The data clearly shows that the helmet users, especially in the age group of 51-60 years reported suffocation while wearing a helmet, more in comparison to other age groups.

The above table shows that the helmet users, especially in the age group of 51-60 years reported wiper facility and improve mirror quality include in helmet, more in comparison to other age groups. The respondents belonging to age group between 31-40 years requires least change in mirror quality.

It is observed from the above table that the helmet users, especially in the age group of 41-50 years reported good soul quality improve in helmet, more in comparison to other age groups. The data clearly shows that the helmet users, especially in the age group of 41-50 years reported helmet should be washable, more in comparison to other age groups.

The users in age group of 20-30 and 31-40 years like folding system in helmet , comparison to other age groups because new generation very fashionable and extra ordinary so this feature should be include in helmet. The data clearly shows that the helmet users should be smell free helmet, same demand all age groups.

The above table data clearly shows that the helmet users, especially in the age group of 51-60 and 20-30 years reported strap quality comfortable in helmet more in comparison to other age groups. the data clearly shows that the helmet users, especially in the age group of 51-60 years reported air passing system improve in a helmet, more in comparison to other age groups.

The above table shows that the helmet users, especially in the age group of 20-30 and31-40 years reported change helmet shape according to users head, more in comparison to other age groups. The data also be noted the age group of 20-30 and31-40 years equal mean (μ=0.97) indicating that change in upper body of helmet than other age groups.

The data also be noted the approximately all age group mean indicating that open part and safety features of helmet. The data clearly shows that the helmet users, especially in the age group of 31-40 years reported change design in helmet, more in helmet, more in comparison to other age groups.

It is depicted from the above table that the helmet users, especially in the age group of 51-60 years reported scratch free model while wearing a helmet, more in comparison to other age groups. The data clearly shows that the helmet users especially in the age group of 20-30 and 31-40 years reported colour according to users, more in comparison to other age groups.

The data clearly shows that the helmet users, especially in the age group of 31-40 years reported look of helmet, more in comparison to other age groups. It is also observed from the above table that highly significant effect of features to be changed in helmet according to users because users comfort is very important than features change according to users.

6. Conclusion

The present study conducted on subjective evaluation of the helmet users regarding comfort features of the helmet and to assess the features to be changed in helmet according to users.

From the study, it can be concluded that the clearly indicates that users follow the changing trends of fashion. Majority of users use helmet for less than 2 hours followed by 2-4 hours. It may also be noted that majority of the users wear helmet, as they feel it safe and some wear it because it is compulsory. For maximum head protection, the helmet must be of proper size. Select the helmet size which is closest to the head size. If the size of the helmet is too large, it may slip off form the head in case of an accident thus defeating the very purpose of wearing a helmet. If the helmet is too small for the head, it may not be comfortable to wear.

The study can be further being replicated with elaborate and sound research design and can be extended to larger sample size. The further study should include the changes in design of helmet according to user's perception. 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 (according to Head protection technology).

References

[1] **Costabile G., Amodeo G., Martorelli M., Schwanitz S., Lanzotti A., Odenwald (2013).** Improving passive safety of sports equipment through experimental testing of new protection devicves. *International conference on graphic engineering* june 19-21, Madrid, spain, pp. 1-6
[2] **Curnow W. J. (2008).** Bicycle helmets: A scientific evaluation. *In: Transportation accident analysis and prevention editor: anton de smet*, pp. 141-177
[3] Clair M. L.(August 19,2009) Accessed on http://ezinearticles.com/?motorcycle-half-Helmets---Advantages-and-disadvantages&id=3741404
[4] http://en.wikipedia.org/wiki/Motorcycle_helmet
[5] http://www.ehow.com/list_7358103_benefits-wearing-motorcycle-helmet_.html
[6] http://www.smf.org/helmetfaq
[7] **Kiran, U. V.; Renuka, S.; Reddy Mahalakshmi, R. V.; Kumar, R. D. (2010).** Computer Aided Prototype design of kitchen tongs. *International Journal of Asian Regional Association for Home Economics.* 17(3):67-72.
[8] **Kiran, U. V. (2013).** Design Compatibility of hand tools. *Asian journal of home science (An international refereed research journal).* 8(1):259-263.
[9] **Kulkarni S. G., Gao X.L., Horner S. E., Zheng J. Q., David N. V. (2013).** Ballistic helmets- Their design, materials, and performance against traumatic brain injury. *Journal homepage: www.elsevier.com/locate/compstruct*, pp. 313-331
[10] **Mithun L. S. K., Umesh S., Pathan R. (2013).** Conceptual design of motor cycle helmet to meet the requirement of thermal comfort, ergonomics and safety. Vol. 12, Issue 1, April 2013 pp. 65-71
[11] **Ross P., Ross L., Rahman A., Cataldo S. (2010).** The bicycle helmet attitudes scale: Using the health belief model to predict helmet use among undergraduates. *Journal, of American college health.* vol. 59, no.
[12] **Taher Halimi M., Ben Hassen M. and Sakli F. (2012)**. Subjective evaluation of novel comfort liners for motorcycle helm**et**. *ISSN: 2165-7556 JER. An open access journal*, vol. 2 Issue 1, 1000101