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"The effectiveness of information booklet on knowledge and management of skin problems related to sunlight exposure among traffic police personnel of Supela Bhilai (C.G.)"

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Abstract: The skin is considered as the largest organ of the body and has many different functions; some of them are thermoregulation, protection, metabolic functions and sensation. Different anatomical layers of the skin serves in performing and protecting the inner structures and thus ensuring adequate metabolic functions of the body, but due to excessive sunlight exposure the skin, it gets wear and tear reaction and starts to lose its efficiency and it also leads to numerous skin diseases. Traffic police personnel are at the high risk of developing this skin diseases due to their job profile and demand, considering this, **Aim:** present study aims to to assess the knowledge regarding selected skin problems related to sunlight exposure among traffic police personnel of Bhilai, Chhattisgarh to make an effort toward enhancing knowledge and awareness through information booklet to reduce risk of developing skin diseases and to enhance health promoting behaviour of traffic police officers. **Methodology:** Self structures knowledge questionnaire was prepared, one group pre and post-test experimental design was selected and data was collected from 40 traffic police personnel. Data was analyzed using EZR statistical software. **Result:** In pre-test, 2(5%) are had poor knowledge score, 24(60%) are had average knowledge, 14(35%) are had good knowledge score personnel. Whereas in post-test 40(100%) traffic police personnel are having good knowledge score. The effectiveness of information booklet in preventing skin diseases was also came to be highly significant with calculated t test test value of 14.91

IndexTerms **- Skin diseases, Skin problems, Sunlight exposure, Information booklet, and Traffic police.**
Abbreviations - SSKQ (Self-structured knowledge questionnaire), CVC (Content validity coefficient)

I. INTRODUCTION

The skin is considered as the largest organ of the body and has many different functions like; Thermoregulation, protection, metabolic functions and sensation. The skin is divided into three layers; the epidermis, which is the outermost layer of skin, provides a waterproof barrier and maintains skin tone. The dermis, which is present beneath the epidermis, contains tough connective tissue, hair follicles, and sweat glands. The subcutaneous tissue or hypodermis is a fat and connective tissue layer.[1,2] The sun is a source of energy that sustains all life on earth. Sunlight triggers the synthesis of vitamin D within the body, Stanford researchers found that this action causes immune cells to travel the outer layers of the skin to protect and repair damage skin up to certain extent. The sunlight emits ultraviolet radiation (UV) is simply one form of energy coming from the sun, it contains three types of UV rays; UV-A (Near UV: 400-315 nm)[3] causes skin aging, wrinkles and erythema. UV-B (Middle UV: 315-280 nm) causes erythema without pigmentation, formation of vitamin-d, skin tanning, blisters and burn. UV-C (280-100 nm) these rays are most dangerous, fortunately these rays are blocked by ozone layer and it doesn't reach the earth. Up to certain extent exposure to sunlight is considered healthy, what if a person spends more of their time under sun? Excessive sunlight exposure definitely brings several skin conditions based on UV radiations. The most common skin conditions seen due to excessive sunlight exposure is; Photoaging, Actinic keratosis, Photo dermatitis and Skin Cancer particularly basal cell carcinoma and squamous cell carcinoma is most common cancer of the skin due to UV rays.[4,5] People with fare skin, freckles, large number of moles and family history are more prone to develop these skin diseases triggered by sunlight.[6] Skin diseases are easy to prevent rather than treating it. Covering up, wearing tight woven clothing that blocks out light, use sunscreen, sun protection factor (SPF) of at least 15 blocks 93% of UV rays, wear a hat; A wide brim hat is ideal because it protects the neck, ears, eyes, forehead, nose and scalp. Wear UV

absorbent shades, limit exposure, and apply sunscreen 30 minutes prior going outside. And having a complete body scan once a year are few measures that can easily prevent skin diseases up to major extent.[7-10]

Worldwide, one in three cancers is skin related cancer. By WHO estimates, 132,000 cases of melanoma (66,000 deaths) and more than 2 million cases of other skin cancers occur annually.[11] These figures are on the rise, and the WHO expects the skin cancer epidemic to accelerate. In India, skin cancers constitute about 1-2% of all diagnosed cancers. Basal cell carcinoma is the most common form of skin cancer worldwide, but various studies from India have consistently reported squamous cell carcinoma as the most prevalent skin malignancy. Skin diseases are neglected in health care, particularly among rural population. Probably due to fact that majority of them are not associated with mortality. However, morbidity caused by these problems are either not realized fully or not taken much seriously.[12-14]

Traffic police personnel play a pivotal role in maintaining law, order and safety in road traffic. There are many health issues faced by them, like; pollution, accidents and definitely excessive sunlight exposure. Which makes them a vulnerable group who are at the risk for poor skin health.[16] A study reported that a prevalence of skin disorders among traffic police personnel was about 77% in Turkey in the year 2004.[17] According to the latest world cancer report from the WHO, more women in India are being newly diagnosed with cancer annually. As against 4.77lakh men, 5.37 lakh women were diagnosed with skin diseases including skin cancers in India 2012.[11] In terms of cancer deaths, the mortality rate among men and women in India, the corresponding number for women was 3.26 lakh. One in every 1000 Indians run the risk of getting Skin cancer before 75years of age. [18]

There are several studies that have conducted in various parts of INDIA regarding health risk and safety issues among traffic police personnel's which reveals about the maximum number of skin conditions including skin cancer among traffic police personnel. A cross sectional study conducted in Chennai estimated that 18.7% of the traffic police personnel was having skin disorder. Lack of awareness about the hazards on the workplace is the reality, this study can be the step in enhancing awareness among traffic police personnel related to skin diseases, and this study can also give light to various types of skin problems from which traffic police officers are suffering.[16] The primary aim of this study is to assess the knowledge and effectiveness of information booklet on knowledge and preventive practices of traffic police personnel regarding skin problems related to sunlight exposure. Hence, the researcher is motivated to assess the knowledge regarding selected skin problems related to sunlight exposure among traffic police personnel of Bhilai, Chhattisgarh to make an effort toward enhancing knowledge and awareness through information booklet to reduce risk of developing skin diseases and to enhance health promoting behaviour of traffic police.

II. METHODOLOGY

2.1 Population and sample: The present study was conducted in Traffic police station of Bhilai, Chhattisgarh. Ethical clearance was obtained from traffic police headquarters in Durg, Bhilai. The administrative permission was obtained from the institutional ethical committee, Principal, Shreyas College of Nursing. Before the data collection procedure, official notice was given to the traffic police station and small session was kept explain the purpose and to gain voluntary consent from the traffic police officers. The Inclusion criteria were: The traffic police personnel who are working in the field. Exclusion criteria: Traffic police personnel who are working in administrative post, not exposed in sunlight. The representative sample was selected by using Non probability purposive sampling of traffic police personnel. Sample size was calculated using estimate of mean formula: Total sample size calculated was 40 subjects. 5 extra samples were added in consideration of drop out. Therefore 45 subjects was divided in three regions 15 subjects from Supela Bhilai, 15 subjects from Durg and remaining 15 from powerhouse Bhilai traffic police sub-station/RTO/Signal.

2.2 Methodology: The experimental one group pre-test post-test study design was adapted to accomplish the objectives of the study. The design represented as:

Sample	Pre test	Treatment	Post test
Traffic police personnel	O1 (DAY-1st)	X (DAY-1st 2nd & 3rd) (Information booklet)	O2 (DAY-7th)

O1: It is the knowledge test of traffic police personnel on selected skin problems related to sunlight exposure before administration of information booklet.
X: It is the administration of information booklet.
O2: It is the knowledge test of traffic police personnel on selected skin problems related to sunlight exposure after administration of information booklet.

2.3 Research Tool: Special focus was kept in the formation of quality Information booklet; Development of information booklet regarding skin diseases due to sun light exposure was an intricate process. (Figure 1) In present study Information booklet was an independent variable (Intervention) and the knowledge of the traffic police personnel was dependent variable. Which was measured through research tool, 'Self-structured knowledge questionnaire'.

The research tool was constructed based on extensive review of literature. Knowledge questionnaires consist of two sections. Section A: Demographic data, Section B: Skin problems related to sunlight exposure. There were 30 items in total. 10 and 20 items respectively in each section. Reliability and validity of the tool was calculated through pilot study i.e. **R=0.8** and **CVC=95.6%** respectively. No other significant problems were faced during pilot study. During the data collection procedure investigator maintains rapport to the respondent, assisted them in filling all the pre-test SSKQ. Information booklet was distributed the traffic police personnel, they have been instructed to read the book and ask for any queries at the same time and through email. Post-test was taken after 7 days. Data was analyzed based on objectives using descriptive and statistical analysis.

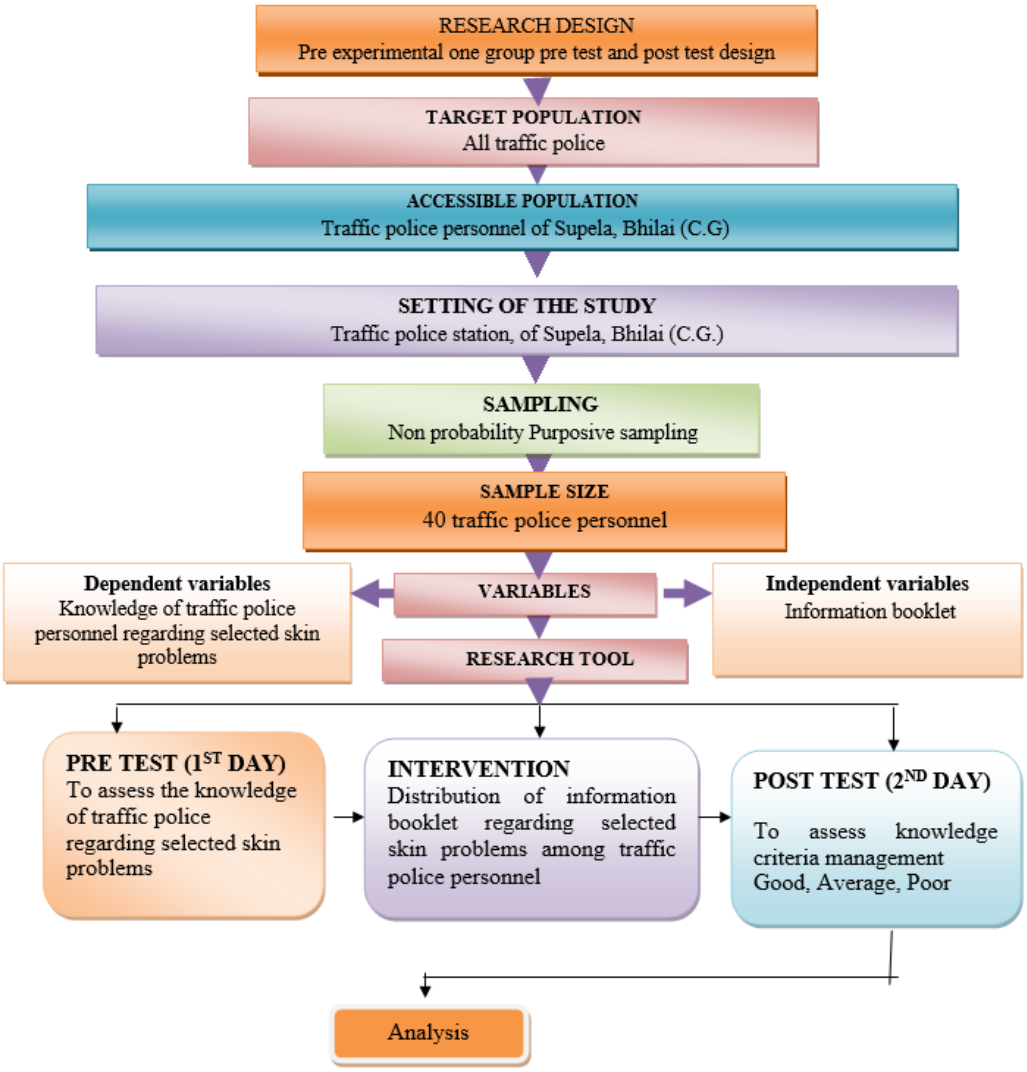

Figure 1: Schematic presentation of Research design

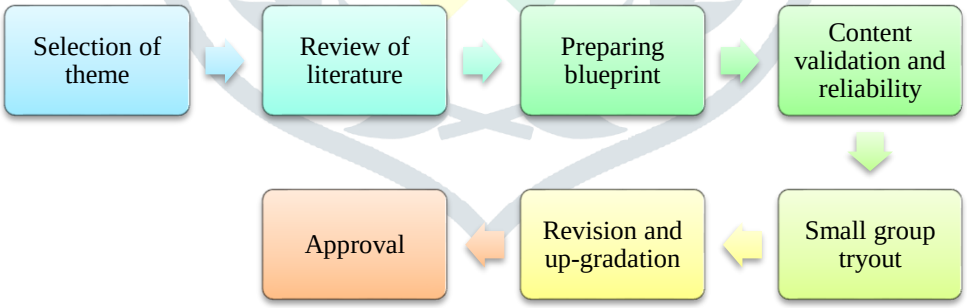

Figure 2: Development of Information booklet

Table 1: Index of Information Booklet on 'Prevention of Skin diseases among traffic police officer due to sunlight exposure'

S.no.	Content
1	Introduction to skin
2	Introduction to UV Rays
3	Physiological effect on skin due to UV rays
4	Diseases due to prolonged exposure to UV rays
5	Prevention of skin problems from UV rays

2.4 Theoretical framework

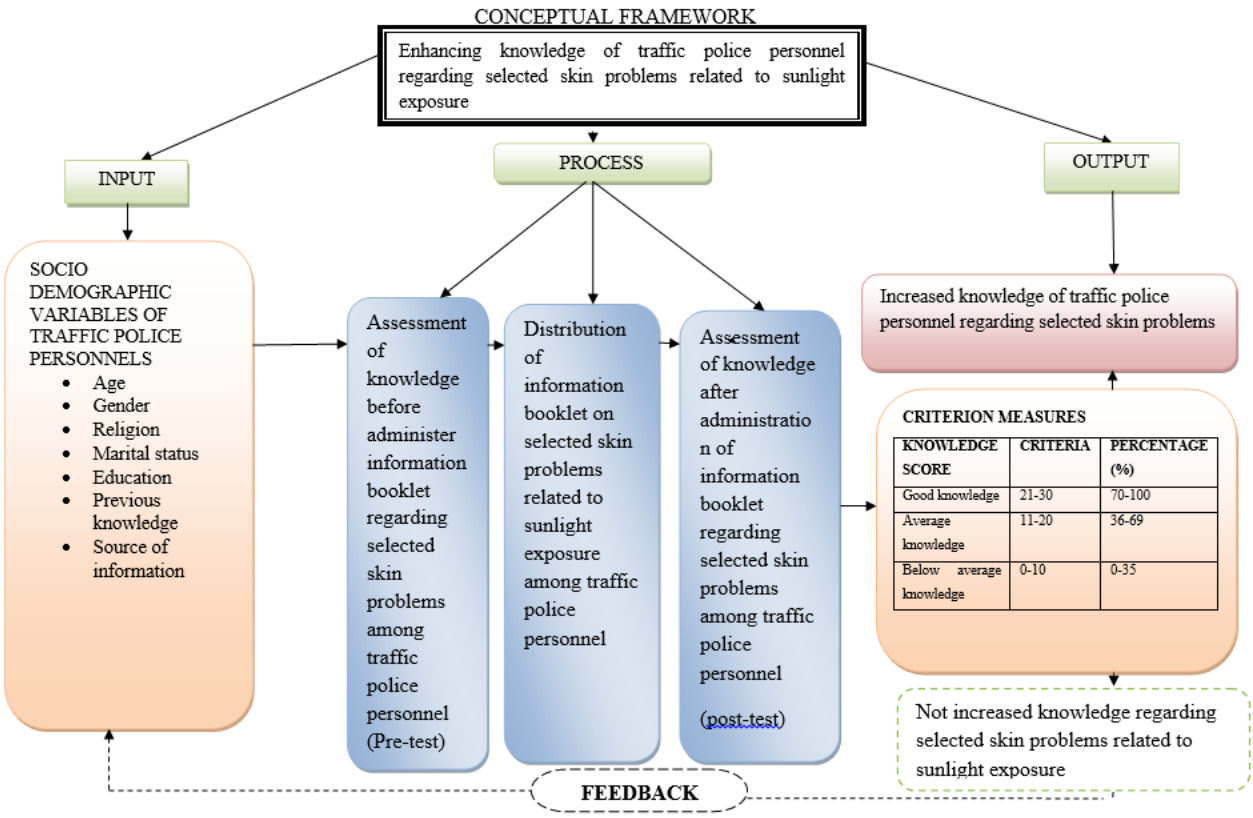

Figure 3: Conceptual framework based on General System Theory [19]

III. RESULTS

The result of the present study was organized in three sections; Analysis of knowledge score, Analysis of effectiveness of information booklet and Association of knowledge score with demographic variables.

Demographic details regarding gender, age, religion and previous knowledge was taken, out of which 42.5% was in the age of 20-30 years, 62.5% were male, 65% were Hindi followed by Christian 10% and others 20%. 50% of the subjects were married and only 27.5% was having previous knowledge regarding skin diseases due to prolonged sunlight exposure. The source of previous knowledge was mostly newspaper 12.5% followed by media/TV 10%.

There are different areas where Pre and Post-test knowledge was assessed like general awareness about skin, Skin problems, causes, symptoms and diagnostic evaluation, treatment and prevention.

3.1 Analysis of Knowledge score

Table no. 2: Pre and Post-test analysis of knowledge regarding skin diseases due to prolonged sunlight exposure.

(N=40)

S.NO	KNOWLEDGE ON	NO.OF QUESTIONS	MIN-MAX SCORE	PRE-TEST			POST-TEST		
				MEAN	SD	% OF MEAN SCORE	MEAN	SD	% OF MEAN SCORE
1.	General awareness about skin	11	0-11	7	1.7	63.6	10.5	0.7	95.4
2.	Skin problems	3	0-3	1.5	0.8	50	2.7	0.4	90
3.	Causes	1	0-1	0.6	0.4	60	0.9	0.1	90
4.	Symptoms	1	0-1	0.5	0.4	50	0.8	0.3	80

5.	Diagnostic evaluation	1	0-1	0.7	0.4	70	0.9	0.2	90
6.	Treatment	5	0-5	3	1.1	60	4.5	0.5	90
7.	Prevention	8	0-8	5.3	1.7	66.2	7.3	0.8	91.2
	TOTAL	30	0-30	2.6	0.9	59.9	3.9	0.4	89.5

In the given table significant difference can be seen in pre and post-test mean score particularly for General awareness about skin mean knowledge score was 7, Mean% 63.6%, SD (1.7) in pretest and in post-test percent of mean score was 95.4%. Similarly for prevention, post-test means score percentage was 91.2% from 66.2% in pretest. Overall there was a 30% increase in mean score percentage in post-test.

Table no. 3: Pre and post-test knowledge score of traffic police personnel regarding skin problems due to prolonged sunlight exposure.

(N=40)

S.NO	**CATEGORY**	**PRE-TEST**					**POST-TEST**				
		(f)	**(%)**	**Mean**	**Mean score %**	**SD**	**(f)**	**(%)**	**Mean**	**Mean score %**	**SD**
1.	Poor (0-10)	2	5	9.5	23.75	0.1	0	0	0	0	0
2.	Average (11-20)	24	60	17.9	44.75	1.5	0	0	0	0	0
3.	Good (21-30)	14	35	23.4	58.5	1.1	40	100	27.9	69.75	1.8
	TOTAL	**40**	**100**	**16.9**	**42.3**	**0.9**	**40**	**100**	**27.9**	**69.75**	**1.8**

Pre-test and post-test knowledge score of traffic police regarding skin problems related to sunlight exposure. In pre-test, 2(5%) are had poor knowledge score, 24(60%) are had average knowledge, 14(35%) are had good knowledge score personnel. Whereas in post-test 40(100%) traffic police personnel are having good knowledge score.

3.2 Effectiveness of Information booklet

Table no. 4: Evaluation of effectiveness of information booklet regarding prevention of skin diseases due to prolonged sunlight exposure using t-test

Knowledge	**Mean**	**SD**	**df**	**Paired t-test value**	**P value**	**Table value**	**Inferences**
Pretest	16.9	0.9	39	14.91	0.05	2.04	Significant
Posttest	27.9	1.8					

Given table depicts that in present study the calculated t test test value is 14.91, which is greater than the table value of 0.05 and is highly significant. This data signifies that the information booklet was very effective.

3.3 Association between pre-test knowledge score with their selected socio-demographic variable

Table no. 5: Association between pre-test knowledge score with their selected socio-demographic variable using Chi square.

S.NO	**Demographic Variables**		**level of knowledge score**						**Total**	**Df**	**Chi square value**
			Good		**Average**		**Poor**				
			N	**%**	**n**	**%**	**n**	**%**			
1.	Age in years	20-30	4	10	12	30	1	2.5	17	6	$\chi^2 = 8.503$ P>0.005 Non significant
		31-40	6	15	8	20	1	2.5	15		
		41-50	3	7.5	2	5	0	0	5		
		51-60	1	2.5	2	5	0	0	3		

2	Religion	Hindu	9	22.5	15	37.5	2	5	26	6	χ^2 = 89.52 P>0.005 Significant
		Muslim	1	2.5	1	2.5	0	0	2		
		Christian	2	5	2	5	0	0	4		
		Others	2	5	6	15	0	0	8		
3	Gender	Male	8	20	16	40	1	2.5	25	2	χ^2 = 2.61 P>0.005 Non significant
		Female	6	15	8	20	1	2.5	15		
4.	Marital status	Unmarried	8	20	2	5	2	5	12	4	χ^2=6.72 P>0.05 Non Significant
		Married	3	7.5	17	42.5	0	0	20		
		Separated/widow	3	7.5	5	12.5	0	0	8		
5.	Family monthly income	Rs. 5,000-10,000	6	15	9	22.5	2	5	17	6	χ^2= 31.56 P>0.05 Significant
		Rs. 10,001-20,000	5	12.5	8	20	0	0	13		
		Rs. 20,001-30,0001	2	5	5	12.5	0	0	7		
		>30,000	1	2.5	2	5	0	0	3		
6	Education	Primary	1	2.5	1	2.5	1	2.5	3	6	χ^2= 10.93 P>0.05 Non Significant
		Middle school	8	20	12	30	0	0	20		
		High secondary	3	7.5	6	15	1	2.5	10		
		Graduate/Postgraduate	2	5	5	12.5	0	0	7		
7.	Previous knowledge	Yes	8	20	3	7.5	0	0	11	2	χ^2= 2.20 P>0.05 non Significant
		No	6	15	21	52.5	2	5	29		
8	Source of information	Newspaper	2	5	3	7.5	0	0	5	6	χ^2= 21.84 P>0.05 Significant
		Mass media/TV	3	7.5	1	2.5	0	0	4		
		Magazines	0	0	1	2.5	0	0	1		
		Others	0	0	1	2.5	0	0	1		

Given table shows the association between pre-test level of knowledge of traffic police personnel with their socio demographic characteristics such as age, religion, gender, marital status, family monthly income, education, previous knowledge, source of information.

The calculated value of chi square for religion (89.52), family monthly income (31.56), education (14.24), and for source of information (21.84) were significant were as age (8.50), gender (2.61), marital status (6.72), previous knowledge (2.20) were not significant

Hence it is concluded that religion, family monthly income, education and source of information were associated with pretest level of knowledge were as age, gender, marital status, previous knowledge were not associated with pretest level of knowledge.

IV. DISCUSSION

The present study was done using informational booklet, which was used as an intervention to enhance knowledge of traffic police personnel in prevention of skin diseases due to sunlight exposure. Effectiveness of information booklet was estimated using 40 samples (One group). Out of 40 samples 42.5% was in the age of 20-30 years, 62.5% were male, 65% were Hindi followed by Christian 10% and others 20%. 50% of the subjects were married and only 27.5% was having previous knowledge regarding skin diseases due to prolonged sunlight exposure. The source of previous knowledge was mostly newspaper 12.5% followed by media/TV 10%. The demographic details of traffic police personnel of this regions, slightly varies with other region like; A cross sectional study conducted in Chennai to assess the health status of traffic police personnel was having 96.4% male under 40-50 years of age i.e. 45.3%.[16] Similar in Malaysian and Nepal based study 91.1% and 94.7% was male respectively.

Information booklet on prevention of skin diseases or damage due to excessive sunlight exposure among traffic police personnel, consist of basic anatomy of skin, skin diseases and simple modes to prevention. Information booklet was developed on three languages, English, Hindi and Chhattisgarhi. To ensure appropriate understanding. In-spite to busy schedule all the traffic police personnel under study managed to read the book and quarries was also asked by them to the researcher. Information booklet in this topic was an intervention as well as a product of this study. After the implementation of the Information booklet it was seen that there was overall 30% increase in mean score percentage in post-test. Many studies had implemented structures teaching programme on this concern, but very limited number of studies actually used Information booklet.[20] It ensured long lasting to permanent change in level of knowledge and behaviour.[21] In present study the calculated t test value is 14.91, which is greater than the table value of 0.05 and is highly significant. This data signifies that the information booklet was selfsame effective.

In general consideration as per present demographic scenario it is seen that family income is directly proportional with knowledge similarly with level of education. Same scenario was also seen in present study when association between pre-test knowledge score with their selected socio-demographic variable was estimated. Hence, family monthly income (31.56), education (14.24), and for source of information (21.84) were significant were as age (8.50), gender (2.61), marital status (6.72), previous knowledge (2.20) were not significant.

Coverall present study was a successful research in terms of implementation of information booklet and its positive effect. It will definitely help many traffic police personnel in long run and will help them in prevention of skin diseases due to prolonged sunlight exposure. In spite of that there was certain limitations, the study was conducted in a small sample which restricted the general liability of the study. Retention of knowledge can also be assessed. On the basis of findings of the study recommends to replicate the study on larger sample so that it can be generalized to larger population.

V. CONCLUSION

Knowledge provides the ability to survive and thrive the world. Through information booklet on prevention of skin diseases due to sunlight exposure especially for traffic police personnel helped them to gain knowledge and small change in behavioural practice can prevent severe consequences of excessive sunlight exposure. This study was successful in terms of getting authenticated information on knowledge score and establishing effectiveness of information booklet which can also be used for future reference and in spreading information, education and communication to larger population.

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