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A Study to Assess the Efficacy of A Structured Teaching Program on Adolescent Girls Understanding of the Harmful Effects of Cosmetic Products At Particular Bangalore Schools

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Abstract:
Materials used since early days for beautification of appearance.falls into the category of cosmetics. Various beauty products include skincare products,Hair products, which may contain chemicals that could be harmful to health, are used especially.for adolescents.
Objectives of the study: To assess the level of knowledge of adolescent girls about harmful effects of cosmetic product.
Mean of Pre- test and Post - test knowledge scores differences among adolescent girls about the harmful effects of cosmetics.
To find the relationship between mean Pre test knowledge level of adolescents
The aims of the study are: to study the socio-demographic and other variables factors that contribute to cosmetic usage, and to find an association, if any, between the usage of cosmetics and their harmful effects, along with selected socio-demographic variables.
Methods: Quasi experimental design was formulated to assess the effectiveness of structured teaching program regarding the harmful effects of cosmetic products among 60 females Selected school adolescents, Bangalore. The sampling method used is the simple random sampling method.
A structured knowledge questionnaire was used to assess participants' knowledge.
Results: 65% responded that they had suffered adverse effects from cosmetic products. The mean score in the pre-test was 26.05 ±2.13, whereas in the post-test, it was 35.25±2.11.with 't' value 3.21, which was higher than table value 2.75 at P≤0.05. Thus,
the structured teaching program proved effective in knowledge improvement among adolescent girls. Also,there was a significant relationship between pretest knowledge score and level of education and place of cosmetic purchase.
Conclusion: Adolescents are the first users of cosmetics. Use of wrong cosmetics can harm them in many ways. Thus, knowledge about harmful chemicals used in It is necessary to keep the cosmetic products at a minimum so that they can prevent themselves from the long term effects.

Keywords: Structured teaching program; Harmful effects; Cosmetic products; Adolescent

INTRODUCTION

Skin is the largest organ in the body, covering a surface area of approximately 20 square feet. Skin and affiliated tissuescomprise the integumentary system that serves as a barrier between the body and the environment.The epidermis is the top layer of the skin, the dermis is the middle layer, and the last layer is the hypodermis. skin works as an antioxidant, as it guards us against microbes, ultraviolet rays, regulates body temperature, allowing it to receive the sensations of touch, heat, and cold. The color of the skin results from specialized cells called melanocytes, which produce a pigment called melanin. The melanocytes are present in the epidermis. Skin has physical, mechanical, chemical, and immunologic properties. This protects against pathogens, skin sensation and metabolism. The normal pH of skin is 5.4 to 5.9 for a healthy skin integrity. The pH scale adolescents. Anything that is applied on the skin is absorbed by the skin. This ranges from cosmetics and skin care products.

According to the World Health Organization, the "adolescent is the person between" the age group 10 – 19 years. There are 1.2 billion adolescents in the world and one in six are teenagers. In India, there are 243 million adolescents, which form 21% of the total people in the world. of the overall population of India. They hold the future of the country within their might. economic force. For quite some time, there lacked an organized body controlling and regulating such social needs of adolescents. The committee on the Gopal Krishnan 4 rights of the Child (CRC, WHO)guidelines on rights of children and adolescents in year 2013 on guidelines on obligation of the states to recognize the special needs and rights of the adolescents and young people. Adolescence is perceived as an opportunity for gaining independence away from parents but never unconnected to them. Some of the physical changes during puberty include adrenarche and gonadarche.

The teens are self-aware regarding their appearance and are also very impressionable regarding fashion, trends, and stuff like that. "life of celebrities and peer. They display actions such as wearing the same type of dress or making a" Minute Marvels- Includes a series that focuses on "minute look like their favourite personality. The teenagers also attempt to emulate their idol through the use of the same cosmetic brand that they use The term 'cosmetics' has been derived from a Greek word "kosmeticos", which means to adorn. As early days The materials used for beautification or improvement of appearance come under the category of cosmetic. Human beings aspire to be beautiful, and the term cosmetic has existed since mankind and civilization. Various cosmetic items such as skincare, hair care, fragrances, oral care products, and nail care products, which could contain toxic chemicals that could be that are harmful to health, particularly for children. Long back, cosmetics have been known to improve the looks of the human figure. In a society that is fixated on appearances, individuals are tempted to mask their looks to overcome their insecurities. The cost to the cosmetic industry today is approximately 20 billion dollars worldwide.

Cosmetics is defined by their use as a product that is rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body for cleansing, beautifying, promoting attractiveness, or changing the look. These are cosmetics, which are skin care products used to To clean, exfoliate, and rejuvenate the skin through cleansing agents, toners, balms, among others. cosmetics meant for personal use for example shampoo, body shower, and scrubs, among others; can be used on on a daily basis

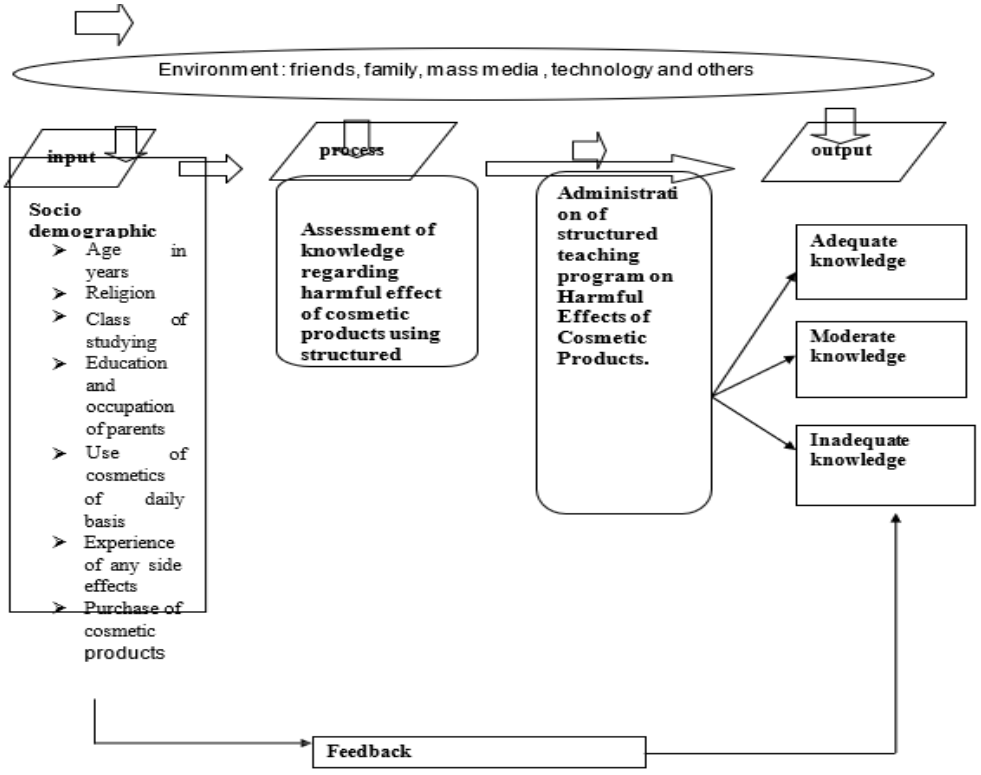
Certain cosmetic products are also applied to improve overall appearance such as foundation, concealers, lipsticks, fingernail polishes, eye & facial makeup, while others in fragrances such as perfume and body lotion, while others are utilized for skin hydration such as Moisturizers and lip balms that can be used multiple times daily.5

Skin Sensitization Tests are carried out as a pre-requisite before launching any cosmetic product in the market. The primary objective of these tests carrying out skin sensitization is to assess the skin sensitization hazard potential. Further color additives must also be tested for safety by cosmetic or dye manufacturers and then obtain the approval of the Food and Drugs Administration. These are the products that might not be appropriate As used on the skin is disapproved by the authority. The usage of cosmetic is based on ingredients and impact on health of the users. Thus, Food and Drugs Administration has an important and important role to play in the overall safety assessment and surveillance of cosmetic ingredients and products.

Federal Food, Drug, and Cosmetic Act (FD & C) is a significant legislation in the case of cosmetic products is marketed in the USA. It bans the marketing of cosmetic products containing a certain quantity of adulteration and is also responsible for monitoring violations regarding cosmetic ingredients, adulterants, processing, packaging, shipping, and handling. According to the law, cosmetic products are labeled, packaged, shipped, and handled under as adulterated, if it has any poisonous ingredients, which can transfer such negative effects to the consumers under conditions of use described on the labeling.

There are different types of toxic chemical components used in cosmetics that may result in such as mercury which enhances neurotoxicity,zicronium which exacerbates pulmonary illness bithionol causes photosensitization, vinyl chloride is carcinogenic, skin depigmentation such as hydroquinone is discovered to be one of the most toxic substances. There have been found mentions of ochronosis and mutagenicity.There could be serious illness caused by these substances: effects on the skin and may also induce carcinogenicity. The cosmetic formulations could pose some health risk and adverse consequences are linked to the toxic substances that are found in their formulation although various structures for regulation and quality control of cosmetics around

and the world are quite comprehensive, they have to be riforous in the inclusion of new matters. The use of potentially toxic substances in cosmetic formulation to prevent adverse effects to human health.



Population and Sample

RESEARCH APPROACH

The research approach provides a concept about collection of data, how to collect the data, when to collect, with whom to collect and how to analyse the data.[18] Also it suggests the possible conclusion obtained from the collected data. The approach of this study was to evaluate the effectiveness of structured teaching program regarding harmful effect of cosmetic products among adolescent girls, Bangalore.

RESEARCH DESIGN

A research design provides a view about researcher's attempt to answer the problem question. It is also called as backbone structure of the study. Research design is planned to test the hypothesis.[16] An evaluative research approach was adopted for this study in order to accomplish the objectives. In the view of the nature of problem and to accomplish the objectives of the study, quasi experimental design was formulated to evaluate the effectiveness of structured teaching program regarding harmful effect of cosmetic products among female adolescents, Bangalore.

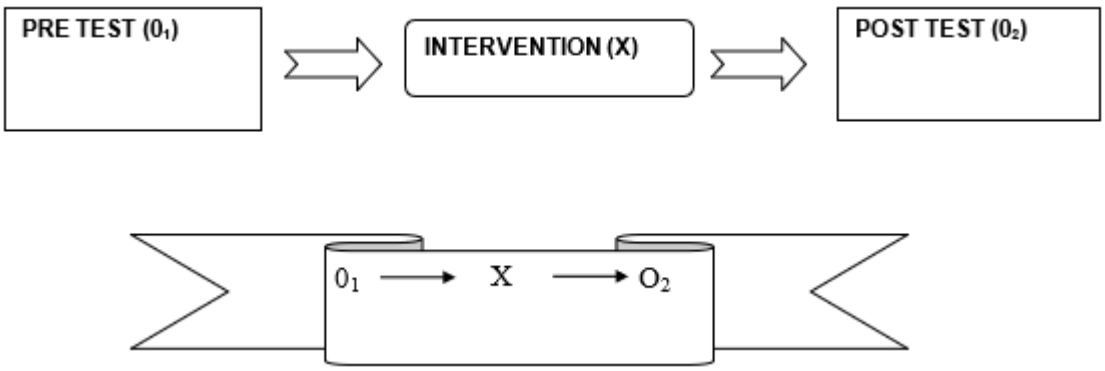
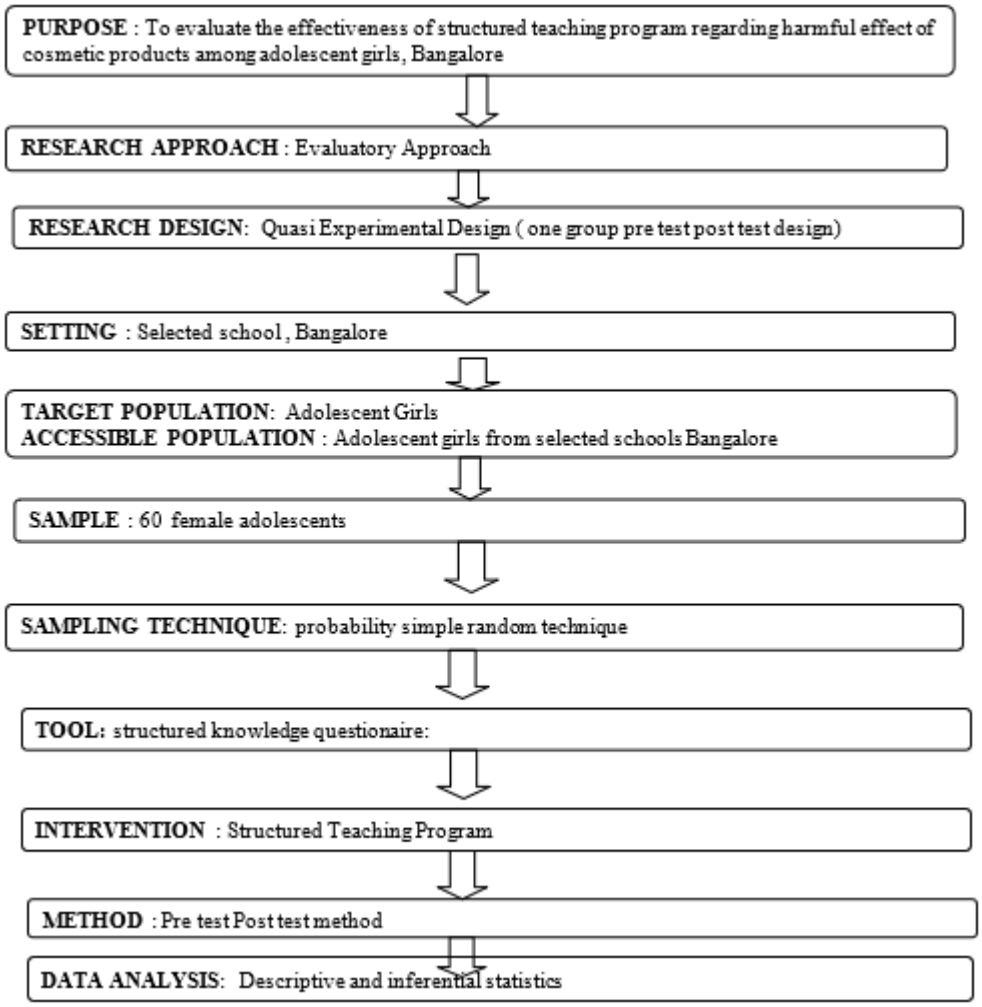


Fig2: Schematic representation of Research Design

Where O1 is the pre test for assessment of knowledge regarding harmful effect of cosmetic products
X is the educational intervention as a structured teaching program
O2 is the post test for assessment of knowledge regarding harmful effect of cosmetic products

SCHEMATIC REPRESANTATION OF RESEARCH METHODOLOGY



VARIABLES

Variables are the concept about various level of data that can be measured, manipulated or controlled in a study. There can be two types of variable : Independent and Dependent variables. They both were used to obtain the outcome in a study.

Independent Variables

An independent variable is that which is believed to cause or influence the dependent variable. In this study, the independent variable refers to the structured teaching program about Harmful Effect of Cosmetic Products.

Dependent Variables

Dependent variable is a response ,behaviour of outcome that the researcher wants to predict. Changes in the dependent variables are presumed to be caused by the independent variables. It is also called as effect variable .[16]

In the present study, dependent variables refer to knowledge regarding harmful effect of cosmetics among adolescents.

Attribute variables

Attribute variables include the uncontrolled variables that greatly influence the result of the study

In this study, attribute variables on this study were age, religion, education of parents, occupation of parents, type of family, no of cosmetic products used daily, purchasing of the products and experience of adverse effects due to cosmetic products.

SETTING OF THE STUDY

Setting refers to the geographical area where the study has been conducted. The physical location of the condition in which data collection is performed is the setting of the study. Being based on the geographical proximity, feasibility and familiarity with the setting, the investigator had selected School , Bangalore to carry out the study.

POPULATION OF THE STUDY

Population refers to the target population for the study, which represents the entire group or all the individuals that meet a certain criteria for inclusion in the study.[16] The researcher had chosen representative sample from the whole population to perform the study. The target population of the present study comprises of adolescent girls and adolescent girls from selected school Bangalore represented the accessible population for the study.

SAMPLE

Sample refers to subset of a population obtained to investigate properties of the large population. They are selected to participate in the study as a representatives. Sample size of the study is 60 adolescent girls studying at a selected school, Bangalore.

Colton's Formula

$$N = \frac{((Z_1 + Z_2)\sigma)^2}{d^2}$$

$$= ((1.96 + 1.28)2.5)^2 / (1.29)^2$$

Where,

N is the desired sample size

Z value is 1.96 at 0.05 level of confidence

Z_2 is 1.28 at 90% power

Ơ is the standard deviation of the outcome variance which is 2.5 (based on Thakral et al) d is the clinical significant difference which is 1.29

Thus, applying Colton's Formula , the desired sample size is 60

SAMPLING TECHNIQUE

Sampling technique refers to the process of selecting a group of subjects with whom the study is to be conducted.[17] In this study, the researcher opted simple random sampling technique through lottery method to select the sample using inclusion criteria.

SAMPLING CRITERIA

Inclusion criteria

- The study includes adolescents who are :
- Female age between 13-17 years
- studying at selected school , Bangalore
- willing to participate in the study
- available during data collection

Exclusion criteria

- The study excludes adolescents who :
- were included in the pilot study
- had attended any educational program regarding harmful effect of cosmetic products within 6 months

DESCRIPTION OF TOOL FOR DATA COLLECTION

The tool used for data collection was a Structured knowledge questionnaire in order to assess the knowledge regarding harmful effects of cosmetic products among adolescents. The question was divided into two parts. Part I contained demographic data while part II contained questions regarding harmful effects of cosmetic products

Part I

Part I contains question regarding socio demographic variables such as age, class of study, religion, education of parents, occupation of parents, number of cosmetic products used on daily basis, source of information, place of purchase of cosmetics and experience of any side effects due to cosmetics.

Part II

It consist of 40 knowledge based questions regarding harmful effect of cosmetics. There are three sections under part II.

Section A : Anatomy and Physiology of Skin
Section B: Chemistry and Application of Cosmetics
Section C : Components present in Cosmetics and its Harmful Effects
Section D : Prevention from Harmful Effect of Cosmetics

SCORING AND INTERPRETATION

The knowledge regarding harmful effects of cosmetic products would be measured in terms of knowledge scores. A structured knowledge questionnaire was prepared to assess the knowledge of adolescent girls. The questionnaire was phrased in multiple choice formed with four options. Among them one was the correct answer and other three were distractors. The correct response was provided with a score of 1 and incorrect response was given a score 0 respectively. The total score in the knowledge questionnaire was 40.

To interpret the knowledge level, The scores for knowledge were subjected on the following basis:

Knowledge level	Scores	Percentage
Inadequate	1-19	<50%

Moderate	19-29	51-80%
Adequate	30-40	>80%

(Adopted from Thakral et al)

PREPARATION OF STRUCTURED TEACHING PROGRAM

- The preparation of structured teaching program was done by the following ways:
- Review of literature published by previous researchers regarding Harmful Effects of Cosmetics
- Preparation and organization of the content of Structured Teaching Program that includes definition, chemistry of cosmetics, harmful effects of cosmetic products and prevention from harmful effects of cosmetic products.
- Ascertainment of the content validity of lesson plan and teaching program along with the tool
- Preparation of final draft for lesson plan and structured teaching program
- Editing the module
- Development of structured teaching program. The content was prepared by the investigator on basis of review of literature and with the guidance of research guide and experts of pediatric nursing field.

VALIDITY

Validity refers to the accuracy of the instrument used in study. An instrument is considerd valid when it measure what is intended to measure.[16] The prepared content of structured teaching program and tool along with problem statement , objectives, blue print and criteria check list were subjected to eight experts in the field of Pediatric Nursing, one Pediatrician, one General
Medicine Doctor and one Statistician. After validation from experts, respective corrections were made in the content and tool. The tool was evaluated for appropriateness, adequacy, relevance and completeness. The final draft of the tool contained 13 sociodemographic variables and 40 knowledge based questions regarding Harmful Effects of Cosmetic Products . The structured teaching program on harmful effect of cosmetic products was validated by experts for its appropriateness, organization of content and language

RELIABILITY

Reliability refers to the extent to which the instrument yields same result on multiple measures. An instrument is considerd reliable when it provides same result when applied more than once on a similar situation. A reliable instrument is characterized by consistency, accuracy, precision, stability, equivalence and homogenecity.
In this study, reliability was established by using split half method. The prepared tool was administered to 10% of the population that is 6 adolescent girls from Lakshmi Memorial English School, Bangalore who fulfilled the inclusion criteria. These samples who came under pilot study were not included in the main study. The tool was found to be reliable with Karl Pearsons correlation Coeffecient formula, ‘r’ was found to be 0.72. This shows that the instrument is reliable for application.

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PILOT STUDY

Pilot study is a trial run study conducted before the main study in different population with similar characterstics. Pilot study was conducted at Lakshmi Memorial English School, Bangalore.

Objectives of pilot study were :

- To find out the required time for completing the structured knowledge questionnaire
- To identify the ambiguity in wordings of the questionnaire
- To find out the feasibility of the study as a whole
- To identify any major flaws in the study design.

The permission to conduct this pilot study was obtained from Principal of the School. Purposive simple random sampling was performed to choose the subjects. The purpose of study was explained and anonymity was maintained during study. The data provided by subjects was kept confidential. Number of samples chosen for pilot study was 6. Structured English version knowledge questionnaire was used for the study and the structured teaching program was conducted by using flash cards, poster, meta card and pamphlets through lecture and discussion. Post test was conducted after 7 days of pre test. Same structured English version questionnaire was used for post test. The total time taken to administer and complete the questions was 20 minutes and the teaching program lasted for 30 mins.

The collected data was analysed by using descriptive and inferential statistics. The significance of difference between pre test and post test scores was formed by paired t test. The difference was found to be significant The findings from pilot study revealed that after structured teaching program, most of the adolescent girls (80%) had adequate knowledge and few(15%) had moderate knowledge and 5% of the girls had inadequate knowledge regarding harmful effect of cosmetic products .After pilot study, the tool and structured teaching lesson plan was found to be feasible, practically applicable and acceptable. Therefore, pilot study confirmed that main study would be feasible.

Data collection procedure

The data was collected from the adolescent girls studying at selected schools Bangalore. A written permission was obtained from concerned authority. The period of data collection was 2 weeks. Around 60 adolescent girls were selected as per the above mentioned inclusive criteria with prior informed consent with participants in the study. Initially a good rapport was maintained and the purpose of study was explained to them. The subjects were kept comfortably with an assurance of privacy maintenance. Before administering the tool, instructions were given to them. The pre test was conducted by using structured knowledge questionnaire to assess the knowledge regarding harmful effect of cosmetic products among adolescent girls. On the same day, the structured teaching program was conducted to those 60 adolescent girls. After seventh day of the teaching program, post test was conducted to the same 60 girls who fulfill the inclusion criteria. All the subjects were co operative and the investigator expressed her gratitude towards the subject.

PLAN FOR DATA ANALYSIS

Data analysis is the systematic organization of data and testing of the hypothesis. It involves the translation of obtained information in interpretable and manageable form.[17] The data obtained was analysed by using descriptive and inferential statistics on the basis of objectives and hypothesis of the study.

- Socio demographic data containing sample characterstics from the group were analysed by using frequencies and percentage.
- The data was organized in a master sheet.
- The knowledge score before and after the administration of teaching program(pre test and post test) were calculated by using mean and standard deviation

- The level of significance was set at $p<0.05$ for paired t test and $p<0.05$ for chi square test
- The significant difference between mean pre test and post test score was analysed by using paired t test.
- The associated between pre test knowledge level with selected socio demographic variables in group was analysed by using chi square test.

SAMPLE SIZE ESTIMATION

Sample size is the number of participants that we choose for a particular study. It is estimated by using special methods. After selecting a suitable setting, sample and method of sampling, sample size is estimated respectively. For this study, Colton's formula(1974) was used to estimate the sample size.

$$n = \frac{((Z1+Z2)\sigma)^2}{d^2}$$

Where,

n is the desired sample size

Z value is 1.96 at 0.05 level of confidence Z2 is 1.28 at 90% power
Ơ is the population standard deviation of the outcome variance which is 2.5 (Thakral etal)[10]

d is clinical significant difference 1.29 $n = (1.96 + 1.28)^2+(2.5)^2/ (1.29)^2$
= 58

Thus, applying Colton's Formula , the desired sample size was 60

RESULTS AND DISCUSSION

PART I

Description of sociodemographic profile of the sample

Table 1 : classification of sample by socio demographic characterstics

N=60

Characterstics	**Category**	**Respondents**	
		N	**%**
Age in years	13-14 years	42	70
	15-16 years	12	20
	Above 17 years	6	10
Religion	Hindu	23	38
	Christian	30	50
	Muslim	6	10
	Others	1	2
Class of study	Class 8	22	35.5
	Class 9	27	45.5
	Class 10	11	17.7

Education of mother	Primary	10	16.1
	Secondary	13	21.7
	Graduate and above	37	61.7
Education of father	Primary	7	11.7
	Secondary	21	35
	Graduate and above	32	53.3
Occupation of mother	Home maker	10	16.7
	Self employed	10	16.7
	Government employed	14	23.3
	Private job	26	43.3
Occupation of father	Home maker	6	10
	Self employed	11	18.3
	Government employed	22	36.7
	Private job	21	35
Family type	Nuclear	34	56.7
	Joint	19	31.7
	Extended	7	11.7
Family income	Less than or equal to 20,000	7	11.7
	21,000-30,000	16	26.7
	31,000-40,000	16	26.7
	Above 40,000	21	35

No of cosmetics used daily	1-2	41	68.3
	3-4	10	16.6
	5-6	9	15.2
Purchase of cosmetics	Online	18	30
	Drug store	8	13.3
	Beauty salon	19	31.7
	Super store	15	25
Attribute to buy	Cost	20	33.3
	Long lasting	10	16.7
	Packed size	18	30
	Ease of application	12	20
Experience of adverse effect	Yes	39	65
	No	21	35
Source of information	Friends and family	9	15
	Health personnel	6	10
	Social media	33	55
	No any	12	20

Table 1 shows that among 60 adolescent girls, 42 (70%) were 13-14 years of age, 12 (20%) were 15-16 years of age and 6(10%) were above 17 years of age respectively.

In regard to religion,23 (38%) girls were Hindu, 30(50%) were Christian, 6 (10%) were Muslim and 1(2%) belong to other religion.

It was observed that the educational level of the adolescent girls, 22(35%) girls belong to class 8, 27 (45.5%) girls belong to class 9 whereas 11(17.7%) belong to class 10.

About education of parents, 10 (16.1%) mothers were primary level educated, 13(21.7%) were secondary level educated and 37 (61.7%) were graduate and above. Similarly, 7(11.7%) father were primary level educated, 21(35%) were secondary level educated and 32(53.3%) were graduate and above.

In relation to occupation of the parents, 10(16.7%) of the mothers were home makers, 10(16.7%0 were self employed, 14(23.3%) were government employed and 26(43.3%) were in private job. Likewise, 6(10%) of the fathers were home makers, 11(18.3%) were self employed, 22(36.7%) were government employed and 21(35%) were in private job.

As per type of family, 34(56.7%) belong to nuclear family, 19(31.7%) belong to joint and 7(11.7%) belong to extended family.

In concern to monthly family income, 7(11.7%) answered less than or equal to 20,000. Similarly, 16(26.7%) answered 21,000 to 30,000, 16 (26.7%) answered 31,000-40,000 and 21(35%) answered above 41,000.

Based on the usage of cosmetics, 41(68.3%) respondents used 1-3 products daily, 10(16.6%) respondents used 4-6 products and 9 (15.2%) respondents used more than 6 products on a daily basis.

It was recorded that for the purchasing of cosmetic products, 18(30%) purchased the product online, 8(13.3%) purchased through drug store, 19(31.7%) purchased through beauty salon, and 15 (25%) brought it through super store.

In concern with the attribute that the participants look after while buying cosmetic products, 20 (33.3%) referred cost or price of the product, 10(16.7%) preferred long lasting feature, 18 (30%) preferred packed size whereas 12(20%) preferred ease of application.

In regard to experience of adverse effect of cosmetic products, 39(65%) participants responded that they had experienced adverse effects and 21(35%) responded that they had not experienced any adverse effects.

In relation with the source of information about cosmetic products, 9(15%) responded friends and family as a source of information, 6(10%) responded that health personnel were their source of information while 8 (10%) responded that social media were their source of information and 12(20%) responded for no any source of information.

PART II (A)

Overall and aspect wise knowledge scores on harmful effect of cosmetics among adolescent girls

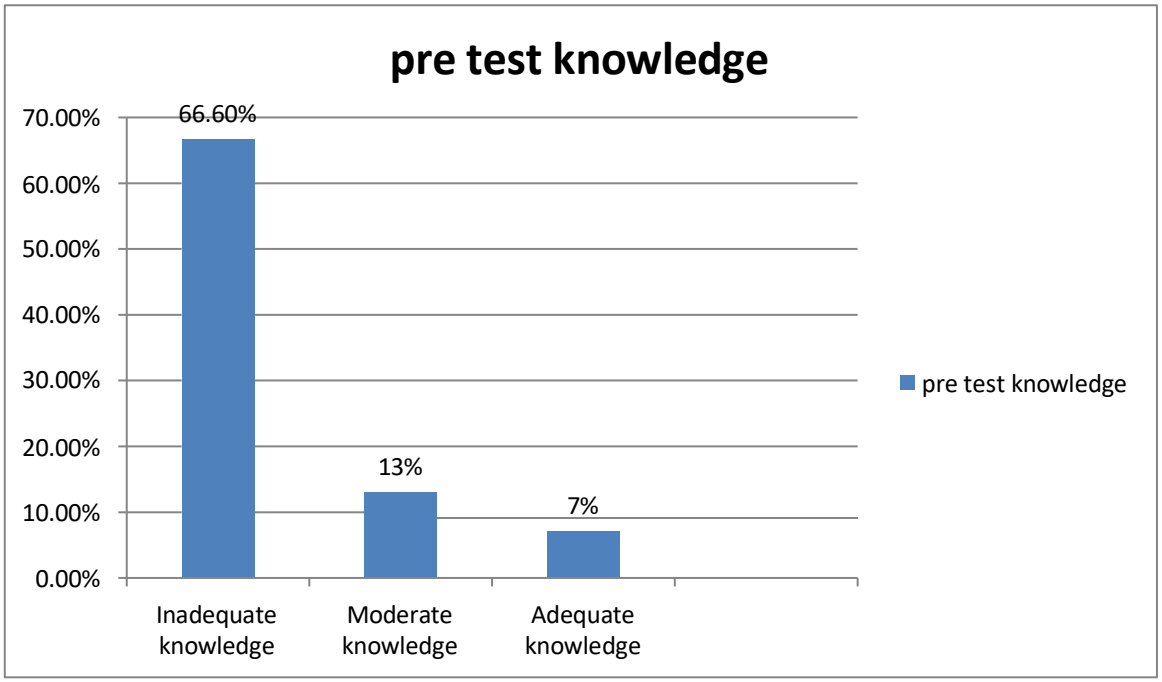


Table 2: Classification of pre test knowledge level on harmful effect of cosmetics among adolescents

Pic shows the classification of sample based on pre test knowledge score. Among 60 adolescent girls, 66.6% had inadequate knowledge, 21.66% had moderate knowledge and 11.6% had adequate level of knowledge regarding harmful effect of cosmetics.

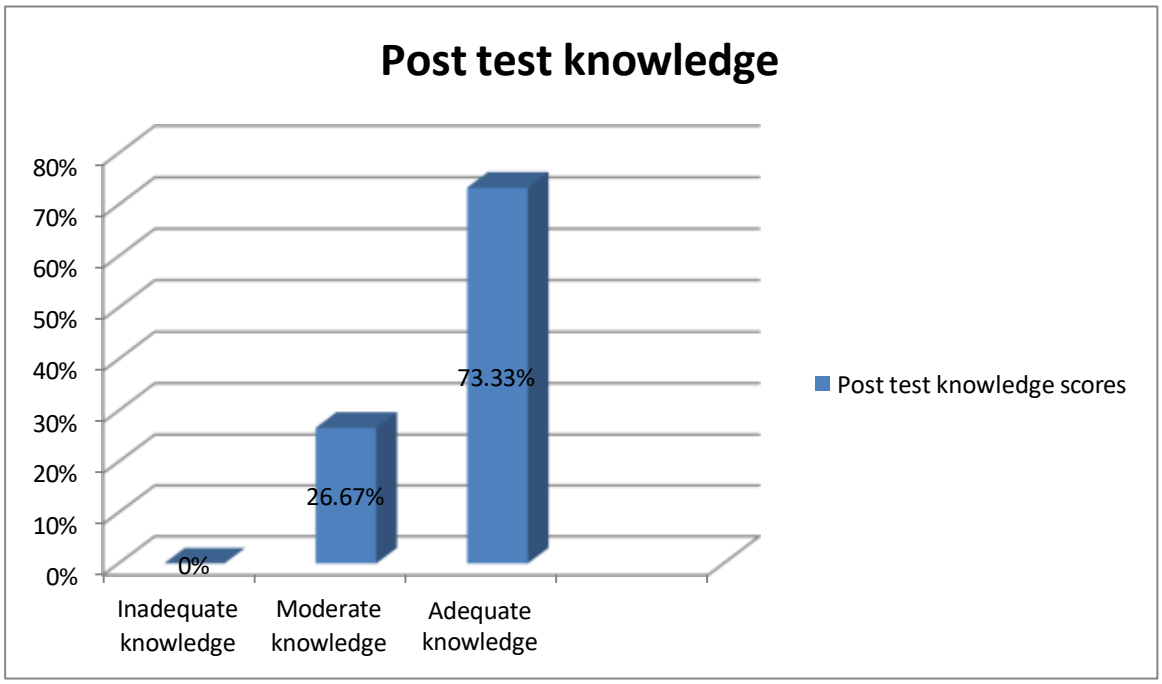
Aspect wise pre test mean knowledge scores of adolescent girls regarding harmful effect of cosmetic products.

N=60

Sno	Aspect wise knowledge	Max statement	Max score	Knowledge of respondents		
				Range	Mean	SD
1	Anatomy and physiology of skin	7	7	3-6	5.22	1.99
2	Chemistry and application of cosmetics	13	13	2-10	5.83	2.1
3	Components present in cosmetics and its harmful effects	14	14	2-9	6.1	1.7
4	Prevention from harmful effect of cosmetics	6	6	0-4	2.9	2.44
	Overall	40	40	7-22	26.05	2.13

The above Table denotes that the respondents had more knowledge regarding components present in cosmetics and its harmful effect as the mean score is 6.1±1.7. Regarding anatomy and physiology of skin, the mean score is 5.22±1.99. For chemistry and application of cosmetics, the mean score is 5.83±2.1. Similarly for prevention from harmful effect of cosmetics, the mean score is 2.9±2.44. the total mean score of the group was 26.05±2.13.

Classification of post test knowledge level on knowledge regarding harmful effect of cosmetics among adolescent girls



It denotes the classification of respondents on post test knowledge regarding harmful effect of cosmetics. Out of total number of respondents (60) , majority of them 43 (73.33%) had adequate knowledge about harmful effect of cosmetics, 16(26.67%) had moderate knowledge and none of the (0) had inadequate knowledge about harmful effects of cosmetic products.

Aspect wise post test knowledge scores of respondents on harmful effect of cosmetic products.
N=60

Sno	Aspect wise knowledge	Max statement	Max score	Knowledge of respondents		
				Range	Mean	SD
1	Anatomy and physiology of skin	7	7	2-6	4.62	0.3
2	Chemistry and application of cosmetics	13	13	4-11	8.76	1.34
3	Components present in cosmetics and its harmful effect	14	14	5-12	9.11	2.55

4	Prevention from harmful effect of cosmetics	6	6	2-5	3.6	2.35
	Overall	**40**	**40**	**4-28**	**35.25**	**2.11**

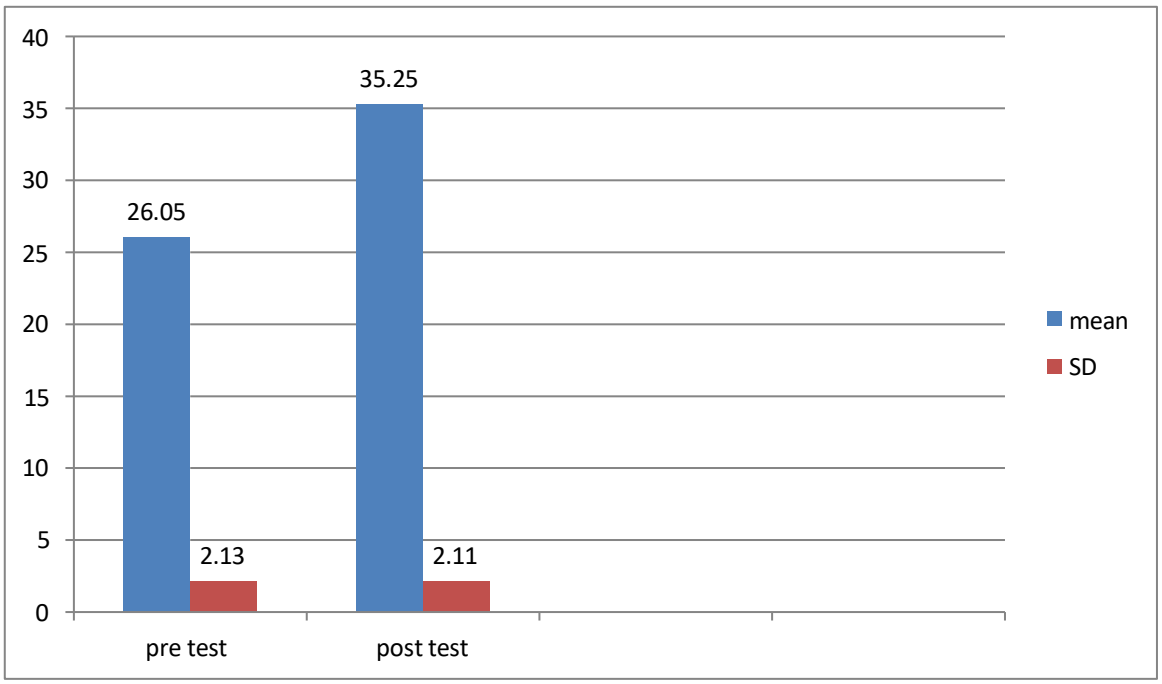
The above table 5 presents aspect wise post test knowledge score of respondents on harmful effect of cosmetic products. The maximum score was 40. Respondents had high level of knowledge about components present in cosmetics and its harmful effects as the mean score is 9.11±2.55. The range for anatomy and physiology of skin is 2-6, mean score is 4.62±0.3.

The

mean score for chemistry and application of cosmetics as 8.76±1.34. Similarly for prevention from harmful effect of cosmetics, the mean score is 3.6±2.35. the overall mean score as 35.25±2.11.

PART II (B)

Comparison of mean pre test and post test knowledge scores to evaluate the effectiveness of structured teaching program.

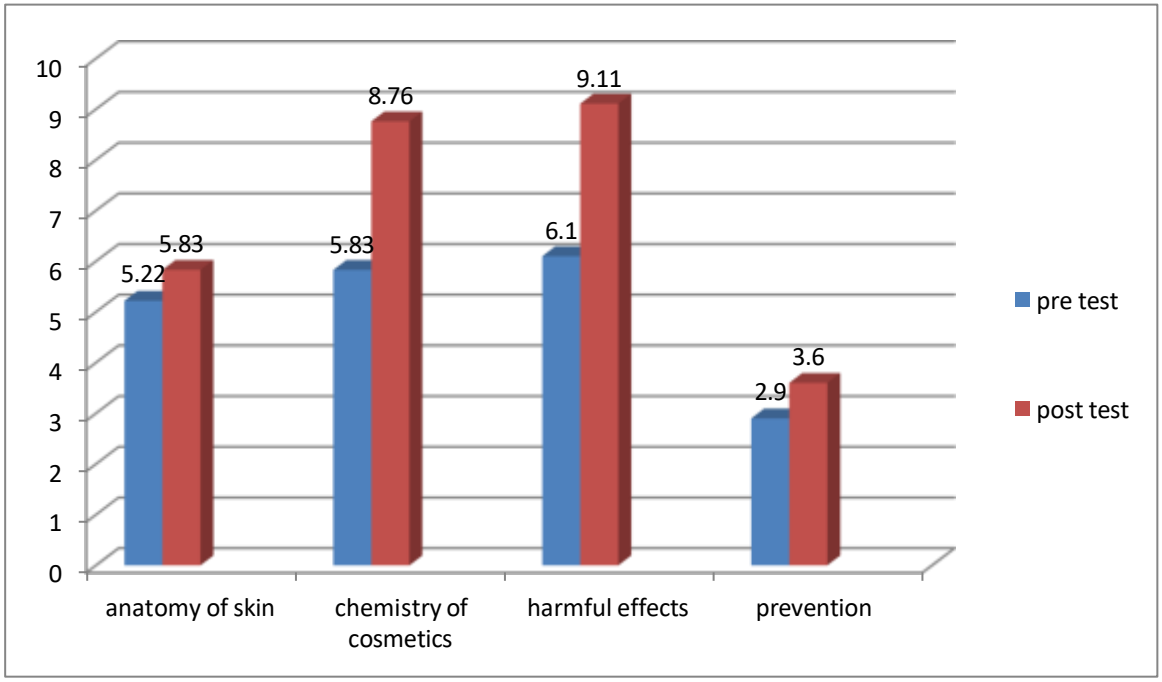


It denotes the difference of knowledge of respondents in pre test and post test regarding harmful effect of cosmetics. The mean score in pre test was 26.05 ±2.13 whereas in post test the mean score was 35.25±2.11. the obtained 't' value was 3.21, which was higher than the table

value 2.75. therefore, it is significant at a level of P≤0.05.

Inference

The data above implies that the mean post test knowledge scores were significantly higher than mean pre test knowledge scores at P≤0.05 level of significance. There is a significant difference between the mean Pre test and Post test knowledge level of adolescent girls regarding harmful effect of cosmetics. Hence , Hypothesis (H1) is accepted for the respondents.



Aspect wise knowledge score of respondents about skin anatomy, chemistry of cosmetics, harmful effects and prevention from harmful effect of cosmetics.

Pic represents aspect wise pre test and post test knowledge regarding prevention of harmful effect of cosmetics. The mean pre test knowledge score for anatomy and physiology of skin was 5.22±1.99 whereas in post test it was 4.62±0.3 with an obtained t value of 3.34. for chemistry and application of cosmetics, the mean pre test knowledge score was 5.83±2.1 and the mean post test knowledge was 8.76±1.34 with an obtained t value of 7.22. for the components present in cosmetics and its harmful effect, the mean pre test knowledge score was 6.1±1.7 and mean post test knowledge score was 9.11±2.55 with an obtained t value of 8.95. regarding prevention of harmful effect of cosmetic products, the pre test mean score was 2.9±2.44

PART III

Association between pre test knowledge level and selected sociodemographic variables

N=60

Characterstics	Category	No	Level of knowledge		Chi square	P value
			Inadequate knowledge	Moderate knowledge		
Age in years	13-14 years	42	22	20	0.64 (NS)	5.67 (P>0.05)
	15-16 years	12	9	3		
	Above 17 years	6	3	3		
Religion	Hindu	23	18	5	1.28 (NS)	

	Christian	30	24	6		2.89 (P>0.05)
	Muslim	6	3	3		
Educational level	Class 8	22	15	7	7.01* (S)	7.2 (P>0.05)
	Class 9	27	19	8		
	Class 10	11	5	6		
Type of family	Nuclear	34	27	7	4.47 (NS)	9.12 (P>0.05)
	Joint	19	10	9		
	Extended	7	4	3		
No of cosmetics used daily	1-3	41	33	8	2.99 (NS)	7.15 (P>0.05)
	4-6	10	5	5		
	>6	9	4	5		
Purchase of cosmetics	Online	18	11	7	8.1* (S)	7.27 (P>0.05)
	Drug store	8	4	4		
	Beauty salon	19	7	12		
	Super market	15	9	6		
Attribute to look while buying	Cost/ price	20	10	10	4.87 (NS)	2.26 (P>0.05)
	Long lasting	10	4	6		
	Packed size	18	8	10		
	Ease of application	12	6	6		
Experience of adverse effect	Yes	39	31	8	3.59 (NS)	4.3 (P>0.05)
	No	21	13	8		

Source of information	Friends and family	9	4	5	3.98 (NS)	1.7 (P>0.05)
	Health personnel	8	3	5		
	Social media	33	23	10		
	No any	12	5	7		

*significant at P≤0.05 level, S: significant and NS: non significant

Table 8 presents the association between knowledge level of adolescent girls and selected demographic variables. Association was obtained with variables like age, religion, educational level, type of family, no of cosmetics used daily, place of purchase, attribute to look while buying cosmetics , experience of adverse effect and source of information. The obtained chi square value were 7.01 for educational level and 8.1 for purchase of cosmetics which were the higher value respectively for P≤0.05 level of significance.

Inference

In regard to the association between pre test knowledge score and selected demographic variable, there was a significant association between pre test knowledge and educational level of the participants . Also there was a significant association between pre test knowledge score and place of purchase of cosmetics. But there was no any significant association of pre test knowledge score and age of the respondents , religion, type of family, number of cosmetics used daily, attribute to look while buying cosmetics or source of information.

DISCUSSION

Adolescents are the future adults. They are at a transition phase where they learn many things about themselves , explore around and mold themselves as adult. They are the beginner users of cosmetic products on their own. On purpose of enhancing looks or cleaning the skin, adolescent girls attempt to use multiple cosmetic products.[16] We can prevent harmful effect of cosmetic products by providing them correct education.

Therefore the present study was undertaken to evaluate the effectiveness of structured teaching program about harmful effects of cosmetic products among adolescent girls at selected school of Bangalore. In order to attain the objectives, pre test and post test was done using a structured knowledge based questionnaire. Simple random sampling technique as used to choose the sample and the data was collected from 60 adolescents. Post test was conducted after 7 days with the same questionnaire. Following are the findings of the study according to objectives.

Socio demographic characterstics of samples:

- The study findings revealed that among 60 adolescent girls, 42(70%) were 13-14 years of age, 12(20%) were 15-16 years of age and 6 (10%) were above 17 years of age respectively.
- On basis of religion., 23(38%) adolescent girls were hindu, 30 (50%) were Christian, 6(10%) were muslim respectively.
- As per educational level, 22(35.5%) girls belonged to class 8, 27(45.5%) belong to class 9 and 11(17.7%) belong to class 10 respectively.
- According to the education of parents, 10(16.1%) of mothers were educated till primary level, 13(21.7%) were educated to secondary level and 37(61.7%) were educated to graduate and above. Similarly, 7(11.7%) fathers were educated upto primary level, 21(35%) were educated to secondary level and 32(53.3%) were educated upto graduate and above.
- As per occupation of parents, 10(16.7%) mothers were home makers, 10(16.7%) were self employed, 14(23.3%) were government employed and 26(43.3%) had private job. Similarly, 6(10%) fathers were home makers, 11(18.3%) were self employed , 22(36.7%) were government employed and 21(35%) had private job.
- According to type of family, 34(56.7%) girls belonged to nuclear family,19(31.7%) belonged to joint family and 7(11.7%) belong to extended family.
- In concern to family monthly income, 7(11%) had ≤20,000 family income, 16(26.7%) had 21,000-30,000 family income, 16(26.7%) had 31,000-40,000 family income and 21(35%) had above 41,000 family income.
- In relation with number of cosmetic products used daily, 41(68.3%) girls used 1-3 cosmetics on a daily basis, 10(16.6%) girls used 4-6 products on a daily basis and 9(15.2%) used more than 6 products daily.
- The data reveals that for the purchasing of cosmetics, 18(30%) girls purchased online, 8(13.3%) purchased at drug store , 19(31.7%) purchased at a beauty salon and 15(25%) purchased the cosmetic products at super market.
- In concern with attribute to look for while buying cosmetic products, 20(33.3%) girls looked for cost of the product, 10(16.7%) looked for lost lasting effect, 18(30%) looked for packed size and 12(20%) looked for ease of application while buying the cosmetic products.

- About the adverse effects of cosmetic products, 39(65%) of the girls answered that they have experienced adverse effects and 21(35%) answered that they have not faced any adverse effects while using the cosmetic products.
- As per the source of information, 9(15%) adolescent girls referred friends and family as a source of information, 6(10%) referred health personnel as source of information, 33(55%) referred social media as their source of information and 12(20%) implied not having any source of information regarding harmful effects of cosmetic products.
- According to a cross sectional study conducted by Akmen S, among 100 adolescent girls in a study, 60(60%) girls responded that they have experienced adverse effects due to the use of cosmetic products . This finding is similar to the findings of this study where 39(65%) adolescent girls responded that they have faced adverse effects due to the use of cosmetic products.[53]
- According to a true experimental study conducted by Khan A, among 300 respondents, 69% of them answered that health personnel were the major source of information . This finding contradicts to this study findings where 33(55%) have answered that social media as their major source of information for cosmetic products.[54]

Overall and aspect wise knowledge score on harmful effect of cosmetic products among adolescent girls.

- As per the knowledge score of pre test , among 60 adolescent girls, 66.6% had inadequate knowledge, 21.66% had moderate knowledge and 11.6% had adequate level of knowledge regarding harmful effect of cosmetics.
- In concern with aspect wise pre test knowledge scores, the respondents had more knowledge regarding components present in cosmetics and its harmful effect as the mean score is 6.1±1.7. Regarding anatomy and physiology of skin, the mean score is 5.22±1.99. For chemistry and application of cosmetics, the mean score is 5.83±2.1. Similarly for prevention from harmful effect of cosmetics, the mean score is 2.9±2.44. the total mean score of the group was 26.05±2.13.
- As per the post test knowledge regarding harmful effect of cosmetics. Out of total number of respondents (60) , majority of them 43 (73.33%) had adequate knowledge about harmful effect of cosmetics, 16(26.67%) had moderate knowledge and none of the (0) had inadequate knowledge about harmful effects of cosmetic products.
- The overall mean score for aspect wise post test knowledge score was 35.25±2.11. The maximum post test knowledge score was 40. Respondents had high level of knowledge about components present in cosmetics and its harmful effects as the mean score is 9.11±2.55. The range for anatomy and physiology of skin is 2-6, mean score is 4.62±0.3. The mean score for chemistry and application of cosmetics as 8.76±1.34. Similarly for prevention from harmful effect of cosmetics, the mean score is 3.6±2.35.
- According to a quasi experimental study conducted by Robinson M, among 300 respondents, the overall pre test knowledge score was 26 and overall post test knowledge score was 32. The respondents had high level of knowledge regarding prevention from harmful effects of cosmetics 10.56±1.45. This findings contradicts with this study where the respondents had high knowledge about components present in cosmetics and its harmful effect 9.11±2.55.[55]
- According to a true experimental study conducted by Protr H, among 250 respondents, 129(51%) had high level of knowledge regarding harmful impact of cosmetics on the skin with a mean score of 34±1.66. This finding is similar to the findings of this study where during post test, the respondents

had high level of knowledge about components present in cosmetics and its harmful effects 9.11±2.55.[56]

Comparison of pre test and post test mean knowledge score of samples to evaluate the effectiveness of structured teaching program regarding harmful effect of cosmetic products among adolescent girls.

- In this study, comparison of knowledge score of pre and post test was done to evaluate the effectiveness of structured teaching program regarding harmful effect of cosmetics. The mean score in pre test was 26.05 ±2.13 whereas in post test the mean score was 35.25±2.11. the obtained 't' value was 3.21, which was higher than the table value 2.75. therefore, it is significant at a level of P≤0.05. The mean post test knowledge scores were significantly higher than mean pre test knowledge scores at P≤0.05 level of significance. There was a significant difference between the mean Pre test and Post test knowledge level of adolescent girls regarding harmful effect of cosmetics. Hence , Hypothesis (H1) was accepted for the respondents.
- In regard to the aspect wise pre test and post test knowledge regarding harmful effect of cosmetics, the mean pre test knowledge score for anatomy and physiology of skin was 5.22±1.99 whereas in post test it was 4.62±0.3 with an obtained t value of 3.34. for chemistry and application of cosmetics, the mean pre test knowledge score was 5.83±2.1 and the mean post test knowledge was 8.76±1.34 with an obtained t value of 7.22. for the components present in cosmetics and its harmful effect, the mean pre test knowledge score was 6.1±1.7 and mean post test knowledge score was 9.11±2.55 with an obtained t value of 8.95. regarding prevention of harmful effect of cosmetic products, the pre test mean score was 2.9±2.44
- According to a quasi experimental study done by Haashima R, among 80 respondents,mean pre test knowledge score for skin anatomy was 8.1±1.7 whereas in post test it was13.01±2.2. this findings contradict with this study where mean pre test knowledge score for skin anatomy and physiology 5.22±1.99. also for skin side effects, the mean pre test score for skin harm was 12.22±1.6. this finding also contradicts with this study where the score of pre test for harmful effect on skin was 6.1±1.7.[57]

The findings of the study were obtained by conducting structured teaching program and through administration of questionnaire with 40 knowledge based questions.60 adolescents were selected by using probability simple random technique. The result indicated that mean pre test knowledge score of the respondents was 26.05 and the mean post test knowledge score of respondents after providing structured teaching program was 35.25. There was a significant difference between mean pre test and post test knowledge scores of the adolescent girls after receiving the structured teaching program. The enhancement of knowledge from pre test to post test as 9.2 and found to be significant revealing the effectiveness of structured teaching program.

Association between mean pre test knowledge level and socio demographic variables.

The association between mean pre test knowledge level and selected socio demographic variable were analysed by using chi square test. . Association was obtained with variables like age, religion, educational level, type of family, no of cosmetics used daily, place of purchase, attribute to look while buying cosmetics , experience of adverse effect and source of information. The obtained chi square value were 7.01 for educational level and 8.1 for purchase of cosmetics which were the higher value respectively for P≤0.05 level of significance. These findings are

similar to a study conducted by Sushil M where true experimental study was conducted among 60 adolescents regarding awareness about metal use in cosmetics. While obtaining association between source of information and awareness level , the obtained value was 6.3 for P≤0.05 level of significance. [52,57]
The above findings were determined by a quasi experimental study to determine the effectiveness of structured teaching program regarding harmful effects of cosmetic products among adolescent girls. A total sample size of 60 was estimated for the study. The result revealed that the mean pre test score is 26.05 and mean post test score was 35.25. There was a significant difference between mean pre test and post test scores. The enhancement in mean knowledge score was 9.2. paired t test was carried out where 19.3 was the value at P≤0.05 level of significance. thus, the study revealed that the structured teaching program was effective in improving the knowledge of adolescents.

CONCLUSION

This chapter deals with the findings of the study and their nursing implications. This study was conducted to evaluate the effectiveness of structured teaching program regarding harmful effect of cosmetic products among adolescent girls at selected schools of Bangalore. In the present study, 60 adolescent girls were selected by using simple random sampling technique. For this study, quasi experimental design was adopted as a research design with a view to measure the pre test knowledge level and the effectiveness associated with post test knowledge level following a structured teaching program on harmful effect of cosmetics among adolescent girls. The data was interpretated by using descriptive and inferential statistics.
The following findings were drawn from this study:

- The study findings revealed that among 60 adolescent girls who were the participants, , 42 (70%) were 13-14 years of age, 12 (20%) were 15-16 years of age and 6(10%) were above 17 years of age respectively.
- In regard to religion,23 (38%) girls were Hindu, 30(50%) were Christian, 6 (10%) were Muslim and 1(2%) belong to other religion.
- With regard to the educational level of the adolescent girls, 22(35%) girls belong to class 8, 27 (45.5%) girls belong to class 9 whereas 11(17.7%) belong to class 10.
- About education of parents, 10 (16.1%) mothers were primary level educated, 13(21.7%) were secondary level educated and 37 (61.7%) were graduate and above. Similarly, 7(11.7%) father were primary level educated, 21(35%) were secondary level educated and 32(53.3%) were graduate and above.
- In relation to occupation of the parents, 10(16.7%) of the mothers were home makers, 10(16.7%0 were self employed, 14(23.3%) were government employed and 26(43.3%)
- were in private job. Likewise, 6(10%) of the fathers were home makers, 11(18.3%) were self employed, 22(36.7%) were government employed and 21(35%) were in private job.
- As per type of family, 34(56.7%) belong to nuclear family, 19(31.7%) belong to joint and 7(11.7%) belong to extended family.
- In concern to monthly family income, 7(11.7%) answered less than or equal to 20,000.
- Similarly, 16(26.7%) answered 21,000 to 30,000, 16 (26.7%) answered 31,000-40,000 and 21(35%) answered above 41,000.
- Regarding usage of cosmetics, 41(68.3%) respondents used 1-3 products daily, 10(16.6%) respondents used 4-6 products and 9 (15.2%) respondents used more than 6 products on a daily basis.

- In regard to the purchasing of cosmetic products, 18(30%) purchased the product online, 8(13.3%) purchased through drug store, 19(31.7%) purchased through beauty salon, and 15 (25%) brought it through super store.
- In concern with the attribute that the participants look after while buying cosmetic products, 20 (33.3%) referred cost or price of the product, 10(16.7%) preferred long lasting feature, 18 (30%) preferred packed size whereas 12(20%) preferred ease of application.
- In regard to experience of adverse effect of cosmetic products, 39(65%) participants responded that they had experienced adverse effects and 21(35%) responded that they had not experienced any adverse effects.
- For the source of information about cosmetic products, 9(15%) responded friends and family as a source of information, 6(10%) responded that health personnel were their source of information while 8 (10%) responded that social media were their source of information and 12(20%) responded for no any source of information.
- As per the knowledge score of pre test , among 60 adolescent girls, 66.6% had inadequate knowledge, 21.66% had moderate knowledge and 11.6% had adequate level of knowledge regarding harmful effect of cosmetics.
- In concern with aspect wise pre test knowledge scores, the respondents had more knowledge regarding components present in cosmetics and its harmful effect as the mean score is 6.1±1.7. Regarding anatomy and physiology of skin, the mean score is
- 5.22±1.99. For chemistry and application of cosmetics, the mean score is 5.83±2.1. Similarly for prevention from harmful effect of cosmetics, the mean score is 2.9±2.44. the total mean score of the group was 26.05±2.13.
- As per the post test knowledge regarding harmful effect of cosmetics. Out of total number of respondents (60) , majority of them 43 (73.33%) had adequate knowledge about harmful effect of cosmetics, 16(26.67%) had moderate knowledge and none of the (0) had inadequate knowledge about harmful effects of cosmetic products.
- The overall mean score for aspect wise post test knowledge score was 35.25±2.11. The maximum post test knowledge score was 40. Respondents had high level of knowledge about components present in cosmetics and its harmful effects as the mean score is
- 9.11±2.55. The range for anatomy and physiology of skin is 2-6, mean score is 4.62±0.3. The mean score for chemistry and application of cosmetics as 8.76±1.34. Similarly for prevention from harmful effect of cosmetics, the mean score is 3.6±2.35.
- In this study, comparison of knowledge score of pre and post test was done to evaluate the effectiveness of structured teaching program regarding harmful effect of cosmetics.
- The mean score in pre test was 26.05 ±2.13 whereas in post test the mean score was 35.25±2.11. the obtained 't' value was 3.21, which was higher than the table value 2.75. therefore, it is significant at a level of $P \leq 0.05$. The mean post test knowledge scores were significantly higher than mean pre test knowledge scores at $P \leq 0.05$ level of significance. There was a significant difference between the mean Pre test and Post test knowledge level of adolescent girls regarding harmful effect of cosmetics. Hence , Hypothesis (H1) was accepted for the respondents.
- In regard to the aspect wise pre test and post test knowledge regarding harmful effect of cosmetics, the mean pre test knowledge score for anatomy and physiology of skin was

- 5.22±1.99 whereas in post test it was 4.62±0.3 with an obtained t value of 3.34. for chemistry and application of cosmetics, the mean pre test knowledge score was 5.83±2.1 and the mean post test knowledge was 8.76±1.34 with an obtained t value of 7.22. for the components present in cosmetics and its harmful effect, the mean pre test knowledge score was 6.1±1.7 and mean post test knowledge score was 9.11±2.55 with an obtained t value of 8.95. regarding prevention of harmful effect of cosmetic products, the pre test mean score was 2.9±2.44.
- Association of pre test knowledge scores was obtained with variables like age, religion, educational level, type of family, no of cosmetics used daily, place of purchase, attribute to look while buying cosmetics , experience of adverse effect and source of information. The obtained chi square value were 7.01 for educational level and 8.1 for purchase of cosmetics which were the higher value respectively for $P \leq 0.05$ level of significance. There was a significant association between pre test knowledge and educational level of the participants . Also there was a significant association between pre test knowledge score and place of purchase of cosmetics. But there was no any significant association of pre test knowledge score and age of the respondents , religion, type of family, number of cosmetics used daily, attribute to look while buying cosmetics or source of information.

NURSING IMPLICATION

The implication of the findings of this study had been discussed in relation to nursing service, nursing education, nursing administration and nursing research.

Implications in nursing service:

1. The findings of the study revealed that fact that structured teaching program regarding harmful effect of cosmetic products helped the adolescents to improve their knowledge and helped to improve their daily lifestyle in better ways.
2. The study findings will help the school health nurse to conduct health programs on similar topic in future.
3. The community health nurse of that area can use these findings to conduct similar type of programs on other age group people
4. The structured teaching program can act as a guideline for the nursing personnel to provide health education to other adolescents
5. The findings can be used by the health care workers of that area in order to implement the findings as a preventive measure in community

Implications in nursing education:

1. Nursing personnel working as an instructor can use this content to provide basic health education to update the learner's knowledge, skill and attitude among similar or different age group.
2. There can be an impact on curriculum planning about skin anatomy, skin care and chemistry of cosmetics.
3. Nursing students can be motivated to provide health education to adolescent girls on same or similar topic
4. Seminars, workshop and symposium can be conducted regarding harmful effect of cosmetics and prevention from those harmful effects.
5. Pamphlets, handouts and booklets can be placed in the school , PHC or hospitals regarding the harmful effect of cosmetics so that people can be aware about cosmetics they use in daily life.

Implications in nursing administration

1. Nursing administrator can organize programs for adolescent girls in the college or in the community to prevent the harmful effect of cosmetic products.
2. Administration can play a role in improving quality of life of adolescents.
3. Nurse as an administrator can initiate the education or training programs where central theme can be chemistry of cosmetics, its harmful effects and prevention from harmful effects.

Implications in nursing research:

1. Nurses working as researcher can conduct this same study for different age groups like young adult or middle adult.
2. Incidence and prevalence of harmful effects of cosmetics can be revealed through research
3. Knowledge or awareness level of respondents belonging to a particular age group or a particular place can be revealed through further researches
4. Nursing students will get a guidance on the topic that they can teach to the adolescent girls.

Limitations of the study

The limitations of the study were:

- The study was conducted using simple random sampling technique, which restricted the generalization of the study as a whole
- The number of participants was limited only upto 40.

Suggestions

The findings of the study suggests that

- The nurse educator should provide importance to aware the adolescents about harmful effect of cosmetic products as they are the beginner user of cosmetic products
- A health education program can be conducted including girls of many schools about harmful effect of cosmetics
- School health programs can be conducted to prevent the harmful effect of cosmetic products
- Community health programs can be conducted to improve the usage of cosmetic products where different age group women can be included.

Recommendation for further studies:

On basis of the findings of present study, the researcher has put forward the following recommendation for further studies on this topic:

- A similar study can be conducted on a large scale at different setting
- Similar project can be replicated on adolescents at different school
- Similar study can be replicated on different age group women like early adult women or middle adult women
- A cross sectional study can be conducted to assess knowledge ,attitude and practice regarding cosmetics usage in different setting
- A comparative study can be done to assess the knowledge level of harmful effects of cosmetic products at urban and rural area.

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REFERENCES

1. National Organization for Product Safety. A report on Schedule 34 of the Product Safety and Metrology Statutory Instrument(Regulation (EC) No. 1223/2009), 2015.[March 24] Available from https://www.who.int/health-topics/adolescent-health#tab=tab_1
2. Sema G, Akman S. Investigation of lead content in lipsticks by solid sampling high resolution continum source electrothermal atomic absorption spectometry. Regulatory toxicology and pharmacology.2013 Feb 22; 65 (1):34-37. Available from https://doi.org/10.1016/j.yrtph.2012.10.009
3. Lumen R. Introduction to psychology. Life Span Development. 2014 August 14;3(6):24 29. Available from : courses.lumenlearning.com/waymaker-psychology/
4. Khan AD, Alam MN. Cosmetics and their associated adverse effects: a review .Journal of applied pharmaceutical science and research.2019 April; 152(1):1-6 E ISSN:2581-5520 ; Available from: https://doi.org/10.31069/japsr.v2i1.1
5. Food and Drug Division.Cosmetic Ingredient Review: General Information, Accessed [Internet]. CIR; 2005 [cited 2020 Aug 03]. Available from: www.cir-safetv.org
6. Gerberick G. F., Robinson.M.K. A skin sensitization risk assessment approach for evaluation of new ingredients and products. Am. J. Contact Dermatitis. 2000 Nov 15; 11:65–73. Available from : doi: 10.1111/cod.13167
7. Code of Federal Regulations, Title 21, Volume 7. Chapter 1-Food and Drug Administration. Department of Health and Human Services. Subpart B-Requirements for Specific Cosmetic Products. 21 CFR Volume 17. Available from : http://www.ecfr.gov/.
8. Ministry of Food and Drug Safety.A report on Cosmetic Ingredient Review: General Information, CIR; 2005 [cited 2020 Aug 03]. Available from: www.cir-safetv.org
9. Danielle M , Cosmetics, skin care and appearance in teenagers .Seminar in cutaneous medicine and surgery. 1999 September 8; 18(3) : 244-249. Available from from Academia.edu
10. Prita A. Cosmetic chemicals market size , share and trend analysis report by product type, by application and by region and segment forecasts.Market analysis report. 2020 November 04;100.Report ID: GVR468038-790-2. Available from https://www.grandviewresearch.com/industry-analysis/global-cosmetic-chemicals-market
11. Prakash K L, Manjushree M S. Determination of heavy metals in cosmetics used in Bangalore.Saudi Journals. 2019 April 07; 20(12): 54-58. Available from :saudi journals .com
12. Mitura S , Alina S, Jaiswal A, Biopolymers for hydrogels in cosmetics. Journals of material science . 2020 May 25 ; 31(6): 50. Available from PMCID: PMC7248025 PMID: 32451785 doi: 10.1007/s10856-020-06390-w
13. Yalim O. Meta Cognitive impairment in processing ingredients. Emrald insight Journals. 2021 October 4;15(1):89-103. ISSN 1747- 3616 available from https://doi.org/10.1108/YC-03-2021-

14. Jeong Y, Kim H .Use of beauty products among US adolescents : an exploration of media influence. Journal of Global Fashion Marketing.2010 December 10; 13(2): 172-181. availablefrom https://doi.org/10.1080/20932685.2010.10593069
15. Getachew M , Twelde T. Cosmetic use and its adverse effects among female students of Jimma university. Ethopian journal of health science, 2018 November 08 ; 28(6): 717– 724 doi: 10.4314/ejhs.v28i6.6 PMCID: PMC6308756 PMID: 30607088
16. Rehna S , Hashim A. Analysis of lead and arsenic in cosmetics and assessment of students awareness about toxicity. International journal of basic and clinical pharmacology. 2017 June 06; 6(6): 1-5. available from Print ISSN: 2319-2003 | Online ISSN: 2279-0780, DOI: 10.18203/2319-2003.ijbcp20172235
17. Ministry of Health and Family Welfare. Guidelines on Registration of Import of Cosmetics. [2018Jan06].Availablefrom: http://www.cdsco.nic.in/writereaddata/Guidelines%20on%20Registration%20of%20Import%20of%20Cosmetics.pdf
18. Thayane G, MayaraS. Bathing , make aup nd sunscreen: which products do children use? Rev Paul Pediatria.2020 May 8;38: e2018319 PMCID: PMC7212586 PMID: 32401944doi: 10.1590/1984-0462/2020/38/2018319
19. Phulan S, Harish K. Cosmetovigilance in india : need of the day. Indian journal of pharmacology.2017Sep-Oct;49(5):341–343,PMCID: PMC5830843 PMID: 29515273available from doi: 10.4103/ijp.IJP_45_18
20. Kazim S, Thomas A. Impact of cosmetic adverstisement on customer perception. Asian journal of marketing and management research. 2016 May 01; 5(1) (2): 62-68. onlineISSN 2279-0667
21. Sushil M, A study of brand loyality for cosmetic product among youth.International Journal for research in management in pharmacy.2014 August 14:3(6) ,ISSN:2320-0901
22. Wang M T, Craig JP. Investigating the effect of eye cosmetic on the tear film : current insights. Dove Press. 2018 14 February; 10 (2):33-40. Available fromhttps://doi.org/10.2147/OPTO.S150926
23. Onuhoa K, Okoro J. Consumption of Cosmetics Usage among Teenagers; A study of Parental Perception. Department of Home Economics and Hospitality Management.International Journal of Advance research and Innovative Ideas in Education. 2020 November; 6(5): 979-986 Available from : http://ijariie.com/AdminUploadPdf/EFFECTS_OF_COSMETICS_USAGE_AMONG_TEENAGERS_A_STUDY_OF_PARENTAL_PERCEPTION_ijariie12759.pdf
24. Quang T , Quing S. Prevalence and risk factors of facial acne vulgaris among teenagers. De Gruyiter health journal. 2007 October 1;26(2):56-59. Available fro **https://doi.org/10.1002/cb.387**
25. Shaina G, Arman S. Investigation of lead content in lipsticks by solid sampling high resolution continum source electrothermal atomic absorption spectometry. Regulatory toxicology and pharmacology.2013 Feb 22; 65 (1):34-37. Available from https://doi.org/10.1016/j.yrtph.2012.10.009
26. W Funk, S Xu. Cosmetics and Cancer: Adverse Event Reports Submitted to the Food and DrugAdministration. JNCI Cancer Spectrum. 2018 April 20;2(2):pky012 available from doi: 10.1093/jncics/pky012 PMCID: PMC6649728 PMID: 31360845

27. Ilankizhai R, Vishnupriya V.Cosmetic Contamination awareness among Adolescent Female: Asian Journal of Pharmaceutical and Clinical research. 2016 September; 9(5):117-120.Available from 10.22159/ajpcr.2016.v9i5.12663
28. Onul K. Effect of Cosmetics Usage among Teenagers; A study of Parental Perception.Department of Home Economics and Hospitality Management.International Journal of Advance research and Innovative Ideas in Education. 2020; 6(5): 979-986.
29. Shrestha R, Shakya J. Knowledge regarding adverse effect of cosmetic products among adolescent female students. Journal of Chitwan Medical College. 2017 February 20; 6(2):27-
32. Available from : https://www.nepjol.info/index.php/JCMC/article/view/16685
30. Dehvari M, Taghi M, et al. Knowledge , Attitude and Practice of women about adverse effect of cosmetics.Briefland Journals. Healthscope. 2016 November 13; 7(1):e68257 available from : 10.5812/jhealthscope.68257
31. Rasool I, Shahid S. Effectiveness of Structured Teaching Program on Knowledge regarding Acne among Adolescent: International Journal of Creative Research Thoughts.2021 September9;9(9):698-710. Available from 10.13140/RG.2.2.34863.87205
32. Petric D. Review of Toxic Chemicals in Cosmetics.Research Gate.2021 October 07;1(3):2-6.Available from DOI:10.14293/S2199-1006.1.SOR-.PPKO7OD.v1
33. Aydin O, Attila G, Dogan A, Aydin M, Canacankatan N, Kanik A. The effects of methyl methacrylate on nasal cavity, lung, and antioxidant system (an experimental inhalation study). Toxicological Pathology. 2002:30(3):350-356.
34. Biljina K, Dragan V. A Study of Possible Harmful Effect of Cosmetics Beauty Products on Human Health. Springer Biology. 2016 August 5; 7(45):476-484.Available from https://link.springer.com/article/10.1007/s12011-015-0477
35. Ng A, Evans K, North R, Purlow C. Eye Cosmetic Usage and Associated Ocular Comfort. Opthalmic Physiology opt.2012;42(4):211-220. Available from: https://www.researchgate.net/publication/324199816_Investigating_the_effect_of_eye_cosmetics_on_the_tear_film_Current_insights
36. Tantry T, Kadri R. Mascara Induced Milphosis, An Etiological Evaluation. International Journal of Trichology.2013 July10;5(3):144-147. Available from http://dx.doi.org/10.4103/0974-7753.125611
37. Sniepiene G, Judita J. Cosmetic Usage Habits and Related side Effects among Female.CBI Conference Proceedings.2019 September 7. Available froDOI:10.12955/cbup.v7.1462
38. Manjula N, Virendra S, Smitha P. Awareness Regarding Adverse reactions caused by Cosmetic Products Among Female Patients. Journal of Cosmetic Dermatology.2023 March 31; 21(4):57-61
39. Addis G,Yimer Y, Dagnew S. Cosmetic Use and Negative Side Effects. Journal of Public Health Research Gate. 2023 January 20; 21(33):31-38. Available fromhttps://www.researchgate.net/publication/366987187_Cosmetic_use_and_related_negative_efects_among_graduate_university_female_students_in_Ethiopia_A_multicenter_cross-sectional_study
40. Shah M, Shah L, Cosmetics Utilization and its Knowledge among Female Adolescent Students. Journal of Medicine and Medical Science.2021 October 12;1(2):51-56.Available from : DOI:10.3126/mjmms.v1i2.46497
41. Rosen R, Phelps R. Mutations in Basal Cell Carcinoma Arising in Sunscreen Users.Journal of Photochemistry and Photobiology.1999 November 5 ;70 (5):798-806. Available from : DOI:10.1111/j.1751-1097.1999.tb08285.x

42. Maliyil B,Koshy R. Trust Your Sunscreen with Caution.Research Gate.2023 April;2(4):4-7.Available from DOI:10.25259/CSDM_52_2023
43. Richard A, Dartey A.Level of Awareness of effect of the sue of Cosmetic Bleaching Products among Women. Research on Humanities and Social Science.2014 October 4;4(11):224-576.Available from [PDF] Level of awareness of effects of the use of cosmetic **bleaching** productsamong women: a case study of Bolgatanga
44. Nater P, Groot C. Adverse Effects of Cosmetics and Toileteries: A retrospective Study in General Population. Journal of Cosmetology.1987 December 3;((6):255-259. Available from**https://doi.org/10.1111/j.1467-2494.1987.tb00481.x**
45. Ligade V, Shreedhar D. Cosmetic Use Related Adverse Effects: Analysis of Literature.Journal of Pharmacy and Applied Science.2021 August 24;8(3): 67-72.Available from **https://doi.org/10.3390/cosmetics8030075**
46. Shrestha R, Shakya J.Knowledge Regarding Adverse Effects of Selected Cosmetic Products among selected Female , Secondary level Students. Journal of Chitwan Medical College.2017February7;6(2):27.Availablefromhttps://www.researchgate.net/publication/313871939_Knowledge_regarding_adverse_effects_of_selected_cosmetic_products_among_higher_secondary_level_girl_students_Chitwan
47. Girish K, Vasundhara K, Knowledge and Practice Towards Cosmetics and their Adverse Reactions among Undergraduate Students. Asian Journal of Pharmaceutical and Clinical Research.2022January;15(9):118-122. Available from: DOI:10.22159/ajpcr.2022v15i9.45429
48. Shiraz A, Rahaman A. The Study on Awareness about Adverse Health Effect of Cosmetics among Female of Different Age Group.Journal of Medical Science and Clinical Research. 2019 November 11;7(11): 61-70.
49. Shaban H, Alhajri W, Usage Pattern of Cosmetic and Personal Care Among Female Population in Saudi Arabia.Journal of Environment and Public Health. 2020 April;2020(12):1-8.Available from: DOI:10.1155/2020/8434508
50. Sniepiene G, Margarita M.Young Women's Opinion about the Use of Cosmetics and its Impact on Health 2019 October 13;1(20): 3-8. Available from : DOI:10.33607/rmske.v1i20.782
51. Rohilla E, Mehta M. Effect of Cosmetic Products on the Human Body and Environment.ResearchGate.2020 November 02;1(6):4-9.Availablefrohttps://www.researchgate.net/publication/345416992_Effects_of_Cosmetics_Products_on_the_Human_Body_and_Environment
52. Feroze K, Atif M. Attitude Towards Organic Cosmetic: A cross Sectional Population Based Survey. Journal of Cosmetic Dermatology.2020 December 23;20(8):2552-2555.Available from**https://doi.org/10.1111/jocd.13909**
53. Ministry of Health and Family Welfare. Guidelines on Registration of Import of Cosmetics. [2018Jan06].Availablefrom: http://www.cdsco.nic.in/writereaddata/Guidelines%20on%20Registration%20of%20Import%20of%20Cosmetics.pdf
54. National Organization for Product Safety. A report on Schedule 34 of the Product Safety and Metrology Statutory Instrument(Regulation (EC) No. 1223/2009), 2015.[March 24] Available from https://www.who.int/health-topics/adolescent-health#tab=tab_1

55. Ministry of Health and Family Welfare. Guidelines on Registration of Import of food and drugsupplies. [2018Jan06].Availablefrom: http://www.cdsco.nic.in/writereaddata/Guidelines%20on%20Registration%20of%20Import%20of%20Cosmetics.pdf
56. Ministry of Health and Family Welfare. Guidelines on Registration of Import of Cosmetics. [2018Jan06].Availablefrom: http://www.cdsco.nic.in/writereaddata/Guidelines%20on%20Registration%20of%20Import%20of%20Cosmetics.pdf
57. Nole P, Goer Y. Adverse Effects of Cosmetics and Toileteries: A retrospective Study in General Population. Journal of Cosmetology.1987 December 3;(6):152-166. Available from**https://doi.org/10.1111/j.1467-2494.1987.tb00481.x**
58. Lam, Shaman T. Cosmetic Use Related Adverse Effects: Analysis of Literature. Journal of Pharmacy and Applied Science.2021 August 51;8(3): 67-72.Available from **https://doi.org/10.3390/cosmetics8030075**
59. Ministry of Health and Family Welfare. Guidelines on Registration of Import of Cosmetics. [2018Jan06].Availablefrom: http://www.cdsco.nic.in/writereaddata/Guidelines%20on%20Registration%20of%20Import%20of%20Cosmetics.pdf
60. Marsa S , Biopolymers for hydrogels in cosmetics. Journals of material science . 2020 May 25 ; 31(6): 50. Available from PMCID: PMC7248025 PMID: 32451785doi: 10.1007/s10856-020-06390-w
61. Yasir A, Meta Cognitive impairment in processing ingredients. Emrald insight Journals. 2021October4;15(1):89-103. ISSN 1747- 3616 available from https://doi.org/10.1108/YC-03-2021-
62. Lumen R. Introduction to psychology. Life Span Development. 2014 August 14;3(6):24-
29. Available from : courses.lumenlearning.com/waymaker-psychology/
63. Sameer G, The Study on Awareness about Adverse Health Effect of Cosmetics among Female of Different Age Group.Journal of Medical Science and Clinical Research. 2019 November 11;7(11): 61-70.
64. Abdullah A, Usage Pattern of Cosmetic and Personal Care Among Female Population in Saudi Arabia.Journal of Environment and Public Health. 2020 April;2020(12):1-8.Available from: DOI:10.1155/2020/8434508Shoma G, Margarita M.Young Women's Opinion about the Use of Cosmetics and its Impact on Health 2019 October 13;1(20): 3-8. Available from : DOI:10.33607/rmske.v1i20.78