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A study on knowledge, attitude and practice of using cosmetics among the university students

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***Abstract*---**Back ground: Cosmetics are an integral part of daily routine and strongly reinforced by the culture and society. But, there is a poor understanding of the safety issues and risks associated with the use of these products which are undergoing incredible advancements. The ingredients used for preparation of cosmetics are also rapidly changing. This scenario mandates public education campaigns to teach consumers about these risks and the importance of concomitant use of cosmetics. Methods: The study is a cross-sectional observational study involving 300 university students based on their knowledge, attitude and practice. This research was conducted from December 2021 to February 2022. The variables studied were mostly on behaviour of students and their opinions. The statistical test used was the chi-square test. Results: The results showed that most common age range was 21-25 that is 57% and most of the undergraduate students 51.3% and postgraduate students 48.7% in total had a positive knowledge, attitude and practice. There were significant relationship between knowledge, attitude and practice. Conclusions: We observed that there is no significant

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difference between knowledge and attitude scorings. And there is significant difference between knowledge and practice scorings. And there is a significant difference between attitude and practice scorings which isobserved the differences at 5%level of significance.The study recommends that health practitioners and advocates of safe cosmetic use to strengthen their awareness campaigns among all stakeholders such as the government, community leaders and, especially younger generation.

***Keywords*---**knowledge, attitude, practice, cosmetics, Hazards.

Introduction

The US Food and Drugs administration and cosmetic Act 1940 and Rule1945, defined Cosmetics as any articles intended to be rubbed, poured, sprinkled or sprayed or introduced into or otherwise applied to human body or any part there for cleaning, beautifying, promoting attractiveness or altering the appearance and include any article intended for use as a component of cosmetics. The Cosmetics are substances used to enhance the appearance of human body. Cosmetic includes skin care creams, lotions, powders, perfumes, lipsticks, finger nail and toe nail polish, eye and facial make up and many other type of products.

Modern-day society is experiencing a period of unprecedented consumption with an overwhelming multitude of chemical substances being used in consumer articles and commercial mixtures. Many substances classified as hazardous according to the EU regulation on classification and labeling (CLP Regulation) are present in everyday products as regular ingredients (EC No 1272/2008). Among the day to day consumer products we use, cosmetics have a major share and more frequently exposed directly to skin which may lead to accumulation and toxicity. This has motivated the current study to observe and the capability to comprehend toxicities and usage patterns of cosmetics in the selected group.

KAP studies are essential to help to plan, implement, and assess health education programs. “KAP” study measures the Knowledge, Attitude and Practices of a community. It serves as an educational diagnosis of the community. The main purpose of any KAP study is to explore changes in Knowledge, Attitude and Practices of the community about the aspect whose awareness need to be spread. Before beginning the process of creating awareness in any given community, it is first necessary to assess the environment in which awareness creation will take place. KAP Study tells us what people know about certain things, how they feel and also how they behave. The Knowledge possessed by a community refers to their understanding of any given topic. Attitude refers to their feelings towards this subject, as well as any preconceived ideas that they may have towards it. Practice refers to the ways in which they demonstrate their knowledge and attitude through their actions. Understanding the levels of Knowledge, Attitude and Practice will enable a more efficient process of awareness creation as it will allow the program to be tailored more appropriately to the needs of the community.

When assessing the KAP of a community, it is useful to divide that community into smaller sub-categories. In this case, these categories are students of different age groups and background. There are many reasons to expect that the levels of KAP will vary in these categories. Based on this the current study assessed the knowledge, attitude and practice studies on cosmetics and hazards among the university students.

Methods

Study design

This study was an observational study with a cross-sectional design that collected general data from students, including Age, Education, Family size and Family income. Furthermore, the data collected include knowledge, attitude and practice.

Sources of data

The data for the study were collected from the primary source. The primary data were collected from the sample respondents by using structured interview schedule to analyze the perceptions and attitude of the female cosmetic consumers. The data was gathered using Google forms among both UG and PG students via the what'sup app and E-mail. The respondents read the research subject explanation sheet at the beginning of the data form and, if they agreed, completed all of the questions on the Google form. If the research subject did not agree, they did not complete the Google form completely, and the data was recorded. The research subjects came from various students and were distributed at random over a three-month period with a link.

Participants and Data collection

We collected data from 300 students in Sri Padmavati Mahila Visva Vidyalayam and Sri Padmavati Women's Degree College, Tirupati through online Google form and offline. As previously stated, data for a KAP survey are gathered using a structured, standardised questionnaire that may include quantitative and qualitative data as well as observations The types of data to be collected are determined by the survey objectives and questions to be answered. Quality control of data collection should be provided by the survey team on a daily basis during the survey period. The mode of data collection (e.g., paper questionnaire, smart phone, tablet) should be determined based on the survey area's feasibility, existing resources for training and supplies, and the availability of technological support in the field during the survey period. Data backup modes should be specified (e.g. paper forms for smart phones).

Period of study

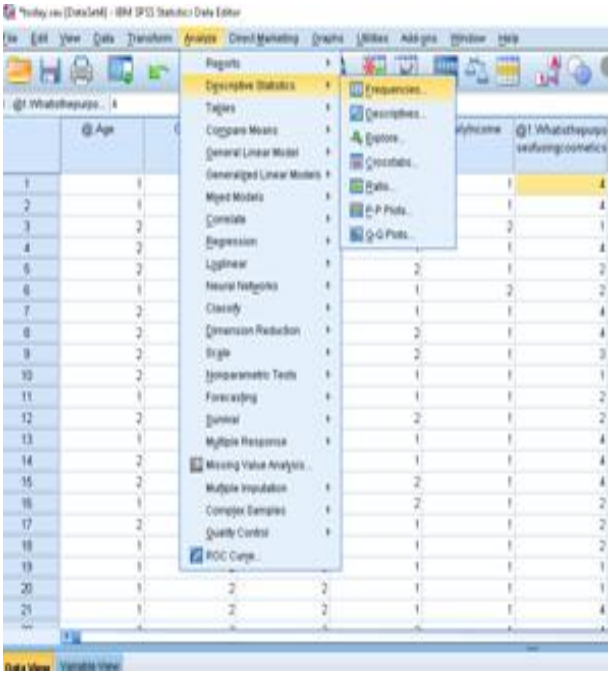
In the current study, primary sources of data on female behaviour were collected over a three-month period from December 2021 to February 2022.

KAP

A Knowledge, Attitude and Practice survey is method for gathering quantitative and qualitative data. In this study there are 13 questions related to knowledge on cosmetic products, 7 questions about an Attitude and 8 questions under their practices on cosmetic products survey. Through this data are calculated an association between their knowledge, Attitude and Practice of the survey.

Statistical analysis

The statistical programme IBM SPSS Version 2.0 was used in this study. To analyse the relationship of each categorical parameter, categorical variables were presented as percentages. For this data, the chi squared test was used to determine whether the relationship between the variables is statistically significant or not; zero indicates that people did not respond to the questions. The limit of significance used in this study was 5%, with the provision that it was not significant if p>0.05.



Demographic table

Variables	Options	Frequency&percentage(%)
Age	15-20	128 (42.7%)
	21-25	171(57.0%)
	Morethan 25	1(0.3%)
	Total	300(100.0%)

Education	undergraduate	154(51.3%)
	post graduate	146(48.7%)
	Total	300(100.0%)
Number of family members	1-2 members	9(3%)
	3-4 members	195(65.0%)
	Morethan 4 members	96(32.0%)
	Total	300(100.0%)
Family income	Less than 1 lakh	243(81.0%)
	1-5 lakhs	53(17.7%)
	above 5 lakhs	4(1.3%)
	Total	300(100.0%)

Questionnaire on Knowledge of Cosmetics

Question	Options	Frequency & (%)
What is the purpose of using cosmetics?	Improve beauty	74(24.7%)
	Protection	120(40.0%)
	Enjoyment	9(3.0%)
	Cleaning/correction of body smells	93(31.0%)
	No answer	4(1.3%)
	Total	300(100.0%)
Have you faced any problem with the Cosmetic products?	Yes	54(18.0%)
	No	245(81.7%)
	No answer	1(0.3%)
	Total	300(100.0%)
If yes, what type of problem do you faced by using Facial cosmetics (Powder , Cream) ? [Facial Cosmetics]	Itching	5(1.7%)
	Rashes	17(5.7%)
	Allergy	6(2.0%)
	Scaling/pigmentation	23(7.7%)
	No answer	249(83.0%)
	Total	300(100.0%)
If yes, what type of problem do you faced by using Facial cosmetics (Powder , Cream) ? [Facial Cosmetics]	Itching	5(1.7%)
	Rashes	17(5.7%)
	Allergy	6(2.0%)
	Scaling/pigmentation	23(7.7%)
	No answer	249(83.0%)
	Total	300(100.0%)
If yes, what type of problem do you faced by using Perfumes/Body Deodorants ? [Perfumes or Body	Itching	9(3.0%)
	Rashes	9(3.0%)
	Allergy	14(4.7%)

Deodorants]	Scaling/pigmentation	1(0.3%)
	No answer	267(89.0%)
	Total	300(100.0%)
If yes, what type of problem do you faced by using Fairness Products ? [Fairness Products]	Itching	2(0.7%)
	Rashes	14(4.7%)
	Allergy	11(3.7%)
	Scaling/pigmentation	11(3.7%)
	No answer	262(87.3%)
	Total	300(100.0%)
If yes, what type of problem do you faced by using Cosmetics for Hair ? [Cosmetics for Hair]	Itching	13(4.3%)
	Rashes	2(0.7%)
	Allergy	14(4.7%)
	Scaling/pigmentation	7(2.3%)
	No answer	264(88.0%)
	Total	300(100.0%)
If yes, what type of problem do you faced by using Cosmetics for Nails ? [Cosmetics for Nails]	Itching	11(3.7%)
	Rashes	8(2.7%)
	Allergy	11(3.7%)
	Scaling/pigmentation	11(3.7%)
	No answer	270(90.0%)
	Total	300(100.0%)
Which factor influences you the most while choosing your Cosmetic Brand?	peer group	35(11.7%)
	Family	85(28.3%)
	work place	52(17.3%)
	advertisement	128(42.7%)
	Total	300(100.0%)
What do you look first when you buy a Cosmetic product?	Packaging and appearance	72(24.0%)
	Price	55(18.3%)
	Features	159(53.0%)
	Advertisement	14(4.7%)
	Total	300(100.0%)
What type of cosmetics do you prefer to purchase?	Ayurvedic	136(45.3%)
	Chemical	11(3.7%)
	Organic	72(24.0%)
	Cosmetics with Medicinal value	81(27.0%)
	Total	300(100.0%)
From which place do you buy cosmetics?	Shopping mall	37(12.3%)
	Regular store	113(37.7%)
	Online	36(12.0%)
	Medical shop	23(7.7%)
	Random	91(30.3%)
	Total	300(100.0%)
What motivates your purchasing process in terms of cosmetics?	Discount	61(20.3%)
	Latest trend	56(18.7%)
	Advertisements	25(8.3%)
	Need for the product	156(52.0%)

	Other	1(0.3%)
	No answer	1(0.3%)
	Total	300(100.0%)

40% of Customers are preferring cosmetics to protect their skin due to humidity and winter seasons. Most of them (81.7%) are not faced problems with cosmetics because they are preferring Branded products and 7.7%of the customers facing problems by using facial cosmetics. some of them (4.7%)are facing skin problems like rashes, allergies and scaling pigmentation, because the products contained chemicals and they are uneven to their skin, hair and nails. Now a days, 42.7%. of the people are choosing their cosmetic products through an advertisements and 45.3% of them preferring Ayurvedic products. 37.7%. of the people buying cosmetics at Regular store where it is convenient and available. Most of the customers 52% are preferring cosmetic products because of their needs.

Questionnaire on Attitude of Respondents on Cosmetics

Question	Options	Frequency&percentage(%)
Regular usage of Lipstick leads to Kidney Failure, Cancer?	strongly disagree	31(10.3%)
	disagree	100(33.3%)
	Neutral	83(27.7%)
	Agree	72(24.0%)
	strongly agree	14(4.7%)
	Total	300(100.0%)
Deodorants cause Skin Allergy	strongly disagree	42(14.0%)
	disagree	101(33.7%)
	Neutral	119(39.7%)
	Agree	31(10.3%)
	strongly agree	5(1.7%)
	No answer	2(0.7%)
	Total	300(100.0%)
Cosmetic/face powder causes Respiratory Allergy	strongly disagree	17(5.7%)
	disagree	107(35.7%)
	Neutral	98(32.7%)
	Agree	65(21.7%)
	strongly agree	13(4.3%)
	Total	300(100.0%)
Nail polish leads to Infertility	strongly disagree	22(7.3%)
	disagree	87(29.0%)
	Neutral	89(29.7%)
	Agree	91(30.3%)
	strongly agree	11(3.7%)
	Total	300(100.0%)
Hair spray/Hair Colour leads to Hair fall and Scalp damage	strongly disagree	74(24.7%)
	disagree	132(44.0%)
	Neutral	53(17.7%)
	Agree	33(11.0%)
	strongly agree	6(2.0%)

	No answer	2(.7%)
	Total	300(100.0%)
Mascara leads to Hormonal Imbalance	strongly disagree	27(9.0%)
	disagree	72(24.0%)
	Neutral	99(33.0%)
	Agree	94(31.3%)
	strongly agree	7(2.3%)
	no answer	1(0.3%)
	Total	300(100.0%)
How much do you spend on cosmetics per month?	Less than Rs.500	111(37.0%)
	Rs. 500-Rs. 1000	54(18.0%)
	Rs. 1000-Rs. 2000	53(17.7%)
	Above 2000	82(27.3%)
	Total	300(100.0%)

In our study, around 33.3% ,35.7% and 44% of the customers were disagreed with the statements like Regular usage of Lipstick leads to Kidney Failure and Cancer, cosmetic face powder causes respiratory allergy, hair spray/hair colour leads to hair fall and scalp damage which means that due to lack of knowledge about usage of products or selection of products. Majority 39.7% and 33% of the people were not facing any Skin Allergies problems from deodorants and hormonal imbalancing through mascara products.30.3% of the customers agreed with the statement that Nail polish leads to Infertility. Economically, people are spending less than 500/- rupees on cosmetics per month.

Questionnaire on Practice of Respondents on Cosmetics

Question	Options	Frequency&percentage(%)
Do you read package insert or contents of the products before purchasing	Yes	143(47.7%)
	No	32(10.7%)
	Sometimes	125(41.7%)
	Total	300(100.0%)
Do you buy a cosmetic product after watching its Advertisements?	Yes	43(14.3%)
	No	92(30.7%)
	Maybe	143(47.7%)
	Sometimes	22(7.3%)
	Total	300(100.0%)
Do you perform any Sensitivity test/ Patch test before using cosmetics?	Yes	64(21.3%)
	No	170(56.7%)
	Sometimes	66(22.0%)
	Total	300(100.0%)
type of cosmetics you use [a) Facial cosmetics]	Daily	57(19.0%)
	Often	55(18.3%)
	Occasionally	57(19.0%)
	Don't use	131(43.7%)
	Total	300(100.0%)
type of cosmetics you use [b) Perfumes/body	Daily	58(19.3%)
	Often	83(27.7%)

deodorants/lotion/cream]	Occasionally	89(29.7%)
	don't use	65(21.7%)
	No answer	5(1.7%)
	Total	300(100.0%)
type of cosmetics you use [c) Fairness products]	Daily	127(42.3%)
	Often	64(21.3%)
	Occasionally	64(21.3%)
	Don't use	38(12.7%)
	No answer	7(2.3%)
	Total	300(100.0%)
type of cosmetics you use [d) Cosmetics for hair]	daily	134(44.7%)
	often	50(16.70%)
	occasionally	94(31.3%)
	Don't use	18(6.0%)
	No answer	4(1.3%)
	Total	300(100.0%)
type of cosmetics you use [e) Cosmetics for nails]	daily	125(41.7%)
	often	79(26.3%)
	occasionally	82(27.3%)
	Don't use	8(2.7%)
	No answer	6(2.0%)
	Total	300(100.0%)

In this practice, nearly 47.7% percentage of people were purchasing their products before reading the contents inserted in the package and half of them were maybe bought a cosmetic products watching its advertisements. Most of the customers 56.7% were not performing any sensitive test/patch test before using cosmetics. 43.7% of the people were not using facial cosmetics as daily purpose. Some of them 29.7% were occasionally using Perfumes/body deodorants/lotion/cream. Most of the customers 42.3%, 44.7% and 41.7% were using fairness products, cosmetics for hair and nails daily to protect their skin, hair and nails from pollution and environment.

Results and Discussion

Among the respondents, regarding first step in purpose of using cosmetics was pronounced as a protection by majority of undergraduate students (42.9%).Whereas (37.0%) postgraduate students opted it respectively. The differences were observed at 5% level of significance and we observed that there is no significance difference between education and purpose of using cosmetics at p=0.54

Table 1

Education * What is the purpose of using cosmetics? Cross tabulation						
	What is the purpose of using cosmetics?					
	0	Improve beauty	Protection	Enjoyment	cleaning/correction of body smells	Total

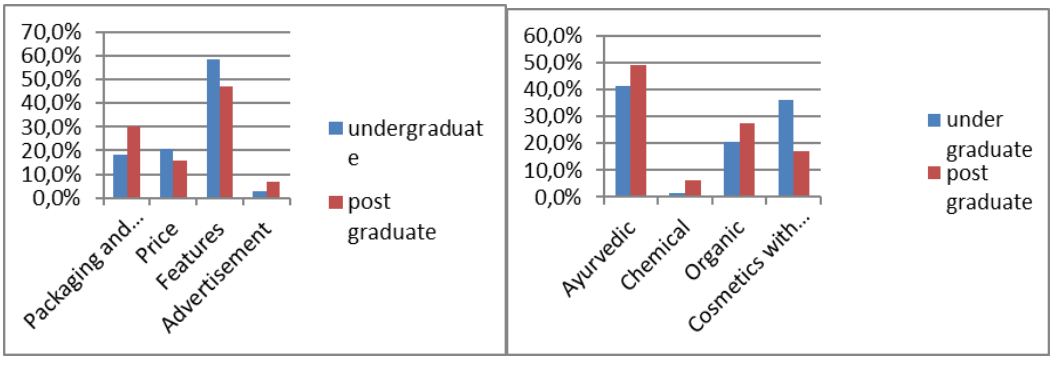
Education	UG	Count	3	36	66	3	46	154
		%	1.9%	23.4%	42.9%	1.9%	29.9%	100.0%
	PG	Count	1	38	54	6	47	146
		%	0.7%	26.0%	37.0%	4.1%	32.2%	100.0%
Total		Count	4	74	120	9	93	300
		%	1.3%	24.7%	40.0%	3.0%	31.0%	100.0%
chi-square value=3.054 p value=0.549								

Table 2

Education * Have you faced any problem with the Cosmetic products? Cross tabulation						
			Have you faced any problem with the Cosmetic products?			
			0	yes	no	Total
Education	UG	Count	1	35	118	154
		%	0.6%	22.7%	76.6%	100.0%
	PG	Count	0	19	127	146
		%	0.0%	13.0%	87.0%	100.0%
Total		Count	1	54	245	300
		%	.3%	18.0%	81.7%	100.0%
chi square value=5.862 p value=0.053						

Majority of post graduate students (87.0%) and undergraduates (76.6%) opined that they did not faced any problem with the cosmetic products that they use . where as only 22.7% undergraduates and 13% postgraduate students say yes that they are facing problem with cosmetic products that they opt. These differences were observed at a 5% level of significance and we observed that there is no significant difference observed between Education and Facing any problem by using cosmetics at p=0.053.

Figure 1 & 2



Majority of undergraduate population accounting 58.4% and 47.3% of post graduate population do check the features of cosmetics . The total of 24% people look first at packaging and appearance, and the least total 4.7%people influence of of population. These differences were observed at a 5% level of significance and

at P = 0.017 we observe that education and buying cosmetics are significantly differed.

Table 3

Education * Regular usage of Lipstick leads to Kidney Failure, Cancer? Cross tabulation								
			Regular usage of Lipstick leads to Kidney Failure, Cancer?					
			strongly disagree	disagree	neutral	agree	strongly agree	Total
Education	UG	Count	15	50	37	44	8	154
		%	9.7%	32.5%	24.0%	28.6%	5.2%	100.0%
	PG	Count	16	50	46	28	6	146
		%	11.0%	34.2%	31.5%	19.2%	4.1%	100.0%
Total		Count	31	100	83	72	14	300
		%	10.3%	33.3%	27.7%	24.0%	4.7%	100.0%
chi square value=4.639 p value=0.326								

Most of the under graduate students (41.6%) and post graduate students (49.3%) prefer Ayurvedic products. Influence of chemical products among the population is very low .Cosmetics with medicinal values and organic was the next preferred type of cosmetic among undergraduates and post graduates with total of 24%and 27%. Chemical type of cosmetics secured relatively less responses 3.7% among all other types by all the two groups of population. The differences were observed at 5% level of significance at p=0.001.

Majority of undergraduate and post graduate students disagreed with regular usage of lipstick leads to kidney failure, cancer. But a few undergraduate population 28.6% agreed that because effect and a little of post graduate students 19.2%believed that regular usage of lipstick leads to kidney failure, cancer. We observed that there is no significant difference between education and regular usage of lipstick by the value p =0.326.

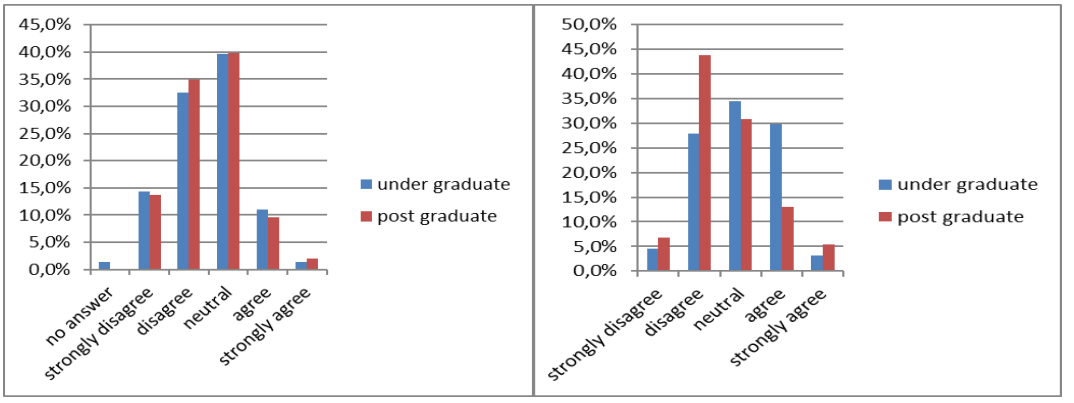
Table 4

Education * Deodorants cause Skin Allergy Crosstabulation									
			Deodorants cause Skin Allergy						
			no answer	strongly disagree	disagree	neutral	agree	strongly agree	Total
Education	UG	Count	2	22	50	61	17	2	154
		%	1.3%	14.3%	32.5%	39.6%	11.0%	1.3%	100.0%
	PG	Count	0	20	51	58	14	3	146
		%	0.0%	13.7%	34.9%	39.7%	9.6%	2.1%	100.0%
Total		Count	2	42	101	119	31	5	300
		%	.7%	14.0%	33.7%	39.7%	10.3%	1.7%	100.0%
Chi square value=2.460 p value=0.783									

Table 5

Education * Cosmetic/face powder causes Respiratory Allergy Crosstabulation								
			Cosmetic/face powder causes Respiratory Allergy					
			strongly disagree	disagree	neutral	agree	strongly agree	Total
Education	UG	Count	7	43	53	46	5	154
		%	4.5%	27.9%	34.4%	29.9%	3.2%	100.0%
	PG	Count	10	64	45	19	8	146
		%	6.8%	43.8%	30.8%	13.0%	5.5%	100.0%
Total		Count	17	107	98	65	13	300
		%	5.7%	35.7%	32.7%	21.7%	4.3%	100.0%
chi square value=17.010 p value=0.002								

Figure 3 & 4



Majority of the population are neutral 39.7% on their opinion that deodorants cause skin allergy and next highest percentage of population 33.7% disagreed the effect. Only 10.3%population agreed that it effects. The difference is observed at 5% level of significance. Most of the population are not aware of the respiratory allergies and majority of undergraduate and postgraduate students are neutral in this case .but 29.9%of ug students and 13% of pg students agreed that cosmetic/face powder cause respiratory allergy .

Table 6

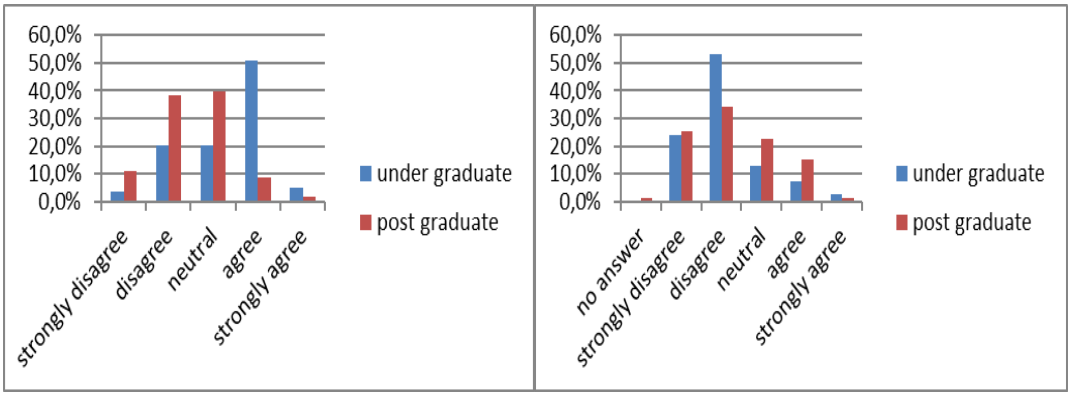
Education * Nail polish leads to Infertility Cross tabulation								
			Nail polish leads to Infertility					
			strongly disagree	disagree	neutral	agree	strongly agree	Total
Education	UG	Count	6	31	31	78	8	154
		%	3.9%	20.1%	20.1%	50.6%	5.2%	100.0%
	PG	Count	16	56	58	13	3	146
		%	11.0%	38.4%	39.7%	8.9%	2.1%	100.0%
Total		Count	22	87	89	91	11	300
		%	7.3%	29.0%	29.7%	30.3%	3.7%	100.0%

chi square value=68.457
p value=0.000

Table 7

Education * Hair spray/Hair Colour leads to Hair fall and Scalp damage Cross tabulation									
			Hair spray/Hair Colour leads to Hair fall and Scalp damage						
			no answer	strongly disagree	Disagree	neutral	agree	strongly agree	Total
Education	UG	Count	0	37	82	20	11	4	154
		%	0.0%	24.0%	53.2%	13.0%	7.1%	2.6%	100.0%
	PG	Count	2	37	50	33	22	2	146
		%	1.4%	25.3%	34.2%	22.6%	15.1%	1.4%	100.0%
Total		Count	2	74	132	53	33	6	300
		%	.7%	24.7%	44.0%	17.7%	11.0%	2.0%	100.0%
chi square value=17.078									
p value=0.004									

Figure 5 & 6



Most of the under graduate students50.6% agreed that wearing nail polish leads to infertility the results are neutral in postgraduate students it shows that 30.3% of total population opinion that nail polish leads to infertility and we observed the significant difference exists between education and students opinion on nail polish at p=0.000. Almost a half of under graduate population 53.2 percent was convinced that hair spray was not the most prevalent thing for the hair fall and scalp damage while half of under graduate population disagreed it. A mixture of choices was observed for hair fall and scalp damage, approximately 34.2 percent post graduate students disagreed that hair fall is not the only case when using hair spray. These differences were observed that there is significant difference exists at p=0.004.

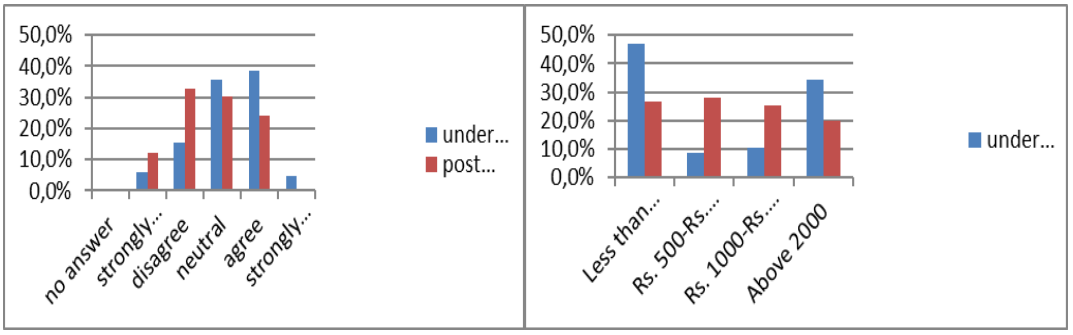
Education * Mascara leads to Hormonal Imbalance Cross tabulation							
	Mascara leads to Hormonal Imbalance						Total
	no answer	strongly disagree	disagree	neutral	agree	strongly agree	

Education	UG	Count	0	9	24	55	59	7	154
		%	0.0%	5.8%	15.6%	35.7%	38.3%	4.5%	100.0%
	PG	Count	1	18	48	44	35	0	146
		%	.7%	12.3%	32.9%	30.1%	24.0%	0.0%	100.0%
Total		Count	1	27	72	99	94	7	300
		%	.3%	9.0%	24.0%	33.0%	31.3%	2.3%	100.0%
chi square value=26.155									
p value=0.000									

Table 8 & 9

Education * Amount spent Cross tabulation							
			Amount spent				Total
			< Rs.500	Rs. 500 to 1000	Rs. 1000 to 2000	> Rs.2000	
Education	UG	Count	72	13	16	53	154
		%	46.8%	8.4%	10.4%	34.4%	100.0%
	PG	Count	39	41	37	29	146
		%	26.7%	28.1%	25.3%	19.9%	100.0%
Total		Count	111	54	53	82	300
		%	37.0%	18.0%	17.7%	27.3%	100.0%
chi square value=39.489							
p value=0.000							

Figure 7 & 8



From the above table we observed that 38.3% undergraduate students agreed that the chemicals in mascara can effect oestrogen and 24.0% postgraduate students agreed too. We observed the differences at 5% level of significance and resulted mascara is harmful with chemicals and it shows significant difference between education and the opinion of students on mascara at p=0.000. Majority of population undergraduates 46.8% spend less than Rs. 500/- for cosmetics per month while postgraduates28.1% spend about Rs.500-1000/- per month on cosmetics and significantly large undergraduate population 34.4% spend above Rs.2000/- per month on cosmetics whereas this range is observed in least percent in post graduate students that is 19.9%.These are significantly differed among education and amount spend for cosmetics per month ,we observed at p=0.000.

Table No.10

Education * Do you read package insert or contents of the products before purchasing Cross tabulation						
			Do you read package insert or contents of the products before purchasing			Total
			Yes	No	Sometimes	
Education	UG	Count	81	19	54	154
		%	52.6%	12.3%	35.1%	100.0%
	PG	Count	62	13	71	146
		%	42.5%	8.9%	48.6%	100.0%
Total		Count	143	32	125	300
		%	47.7%	10.7%	41.7%	100.0%
chi square value=5.752						
p value=0.056						

Table No. 11

Education * Do you perform any Sensitivity test/ Patch test before using cosmetics? Cross tabulation						
			Do you perform any Sensitivity test/ Patch test before using cosmetics?			
			Yes	no	sometimes	Total
Education	UG	Count	49	71	34	154
		%	31.8%	46.1%	22.1%	100.0%
	PG	Count	15	99	32	146
		%	10.3%	67.8%	21.9%	100.0%
Total		Count	64	170	66	300
		%	21.3%	56.7%	22.0%	100.0%
chi square value=22.538						
p value=0.000						

Majority of population accounting 42-52% do read the label on cosmetic pack while purchasing and using whereas it is only sometimes in appreciable size of population. These differences were observed at a level of significance P = 0.056 at 5% level of significance. Amongst undergraduate population almost half do not perform any sensitivity test before using and about 22.1% of them do it sometimes whereas postgraduate responses were less for yes and sometimes. Among undergraduates and postgraduates majority does not perform sensitivity test and relatively a large group among them44% do it sometimes only. These differences were observed at P = 0.000, that is education and their skin sensitivity practice are significantly differed at 5% level of significance.

Table No. 12: Association between Age and KAP

Variables	Pearson Chi-Square	Value	df	P
Age and knowledge	Pearson Chi-Square	63.692	46	.043
Age and attitude	Pearson Chi-Square	35.736	42	.741
Age and practice	Pearson Chi-Square	81.805	34	.000

By the above table we observed that there is significant difference between age and knowledge. The difference were observed at p=0.043. And there is no significant difference between age and attitude. The difference were observed at p=0.741. And there is significant difference between age and practice. The difference were observed at p=0.000.we observed the differences at 5%level of significance

Table 13 : Association between Education and KAP

Variables	Pearson Chi-Square	Value	df	P
Education and knowledge	Pearson Chi-Square	65.523	23	.000
Education and attitude	Pearson Chi-Square	42.022	21	.004
Education and practice	Pearson Chi-Square	48.358	17	.000

By the above table we observed that there is significant difference between education and knowledge. The difference were observed at p=0.000. And there is significant difference between education and attitude. The difference were observed at p=0.004. And there is significant difference between education and practice. The difference were observed at p=0.000.we observed the differences at 5%level of significance

Table 14: Association between Family income and KAP

Variables	Pearson Chi-Square	Value	df	P
Family income and knowledge	Pearson Chi-Square	64.954	46	.034
Family income and attitude	Pearson Chi-Square	75.226	42	.001
Family income and practice	Pearson Chi-Square	24.671	34	.879

By the above table we observed that there is significant difference between family income and knowledge. The difference were observed at p=0.034. And there is significant difference between family income and attitude. The difference were observed at p=0.001. And there is no significant difference between family income and practice. The difference were observed at p=0.879.we observed the differences at 5%level of significance

Table 15: Association between knowledge, Attitude and Practice Scorings

Variables	Pearson Chi-Square	Value	df	P
knowledge and attitude	Pearson Chi-Square	514.498	483	.155
knowledge and practice	Pearson Chi-Square	643.269	391	.000
attitude and practice	Pearson Chi-Square	619.162	357	.000

By the above table we observed that there is no significant difference between knowledge and attitude scorings. The difference were observed at p=0.155. And there is significant difference between knowledge and practice scorings. The difference were observed at p=0.000. And there is significant difference between

attitude and practice scorings. The difference were observed at p=0.000.we observed the differences at 5%level of significance

Conclusions

This study on cross tabulation found that there was a relationship between knowledge, attitude and practice. All the behaviors that include KAP are interconnected, especially the end results that there is no significant difference between knowledge and attitude scorings is observed. The difference were observed at p=0.155. And there is significant difference between knowledge and practice scorings. The difference were observed at p=0.000. There is significant difference between attitude and practice scorings. The difference were observed at p=0.000.we observed the differences at 5% level of significance.

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