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RESEARCH ARTICLE

KNOWLEDGE ATTITUDE AND AWARENESS REGARDING ZNO SUNSCREEN PROTECTION AMONG UNDERGRADUATE DENTAL STUDENTS

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Abstract

Background: Zincoxidenanorods were employed as the primary ultra-violet protection agent in the formulation of sunscreens. Examination of ZnO powder through FESEM and TEM micrographs revealed the predominant presence of rod-like structures with a width range between 61-70 nm. Notably, sunscreens containing 20-40% (by weight) of ZnOnanorods exhibited significantly improved UV absorbance across both UVA and UVB spectra (280-400 nm). This study mainly aims to assess the Knowledge Attitude and Awareness Regarding ZnOnanorodsinSunscreenProtectionAmongUndergraduateDentalStudents.

Aim: Knowledge Attitude and Awareness Regarding ZnO Sunscreen Protection Among Undergraduate Dental Students.

Objective: Analyzing and determining the Knowledge Attitude and Awareness Regarding ZnO Sunscreen Protection Among Undergraduate Dental Students.

Method: A cross sectional study was conducted among the dental students (II,III, IV, interns) in a tertiary care teaching hospital,Khammam, using a web basedtool called forms pro, a semi-structural online questionnaire was designed and distributed to the students in order to fill.Descriptive statistics were calculated using SPSS verson-29..A p- value <0.05 was used to evaluate statistical significance.

Result: A total of 209 students took part with females (70.8%) and males (29.2%). Age of participant's ranges from 19-25 years. In this study female students have more knowledge and awareness regarding ZnO Sunscreen Protection compared to males. Among all the students Interns have more knowledge, followed by IV-BDS, III-BDS and II-BDS.

Conclusion: The study result suggests that knowledge and awareness level of ZnO Sunscreen Protection is adequate.

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Introduction:-

The depletion of the ozone layer in the Earth's atmosphere has resulted in increased penetration of ultraviolet (UV) radiation, leading to various healthissues such as sunburn, premature aging, skin reddening, acne, allergies, and even skin cancer. Sunscreen usage has become a widely adopted approach to shield the skin from harmful UV radiation. The introduction of zinc oxide nanoparticles (ZnO NPs) has significantly enhanced UV protection due to their higher surface area-to-volume ratio and their transparency on the skin surface when compared to bulk ZnO particles. Additionally, ZnO NPs offer broad- spectrum protection, minimalskin irritation and sensitization, ingredient inertness, and low skin penetration. Sun Protection Factor (SPF) serves as the standard parameter for assessing the effectiveness of sunscreen products, attracting consumers with promises of reducing UV-induced erythema. SPF can be determined through both in vivo and in vitro methods. However, the high costs and time requirements associated with in vivo testing have led to the preference for in vitro methods, utilizing ultraviolet spectrophotometry to calculate SPFvalues based on absorbance measurements in the 290 to 320 nm range, employing the Mansur mathematical equation. We were watching Very limited research in dentistry or medicine Students, especially those going to college. before no studies have been observed comparing current graduates andtrainees. So, we took these two and compared them. A group of students whoare mainly exposed to stress while studying well.

Aim:-

Knowledge Attitude and Awareness Regarding ZnO Sunscreen Protection Among Undergraduate Dental Students.

Objective:-

Analyzing and determining the Knowledge Attitude and Awareness Regarding ZnO Sunscreen Protection among Undergraduate Dental Students.

Methodology:-

Studydesign and area:
Across sectional study was carried out at tertiary care teaching hospital, Khammam.

Study population:
The health care students including those of II, III, IV year and interns, who respondedto the online questionnaire sent through social media.

Study instrument:
A self-administered questionnaire was designed,based on the knowledge and awareness the questionnaire had total of 15 questions andthrough online forms prolink. Eachparticipant has to filltheir demographic data like name, age, year of study. Participant has to select one option from the answers provided against the question. The questions were based on the Knowledge Attitude and Awareness Regarding ZnO Sunscreen Protection among Undergraduate Dental Students.

Pilotstudy:
A pilotstudywasconducted ona groupofstudents to assess the validity and reliability of the study.

Samplingmethod:
Thesamplingmethodusedisconveniencemethod.

Inclusion criteria:
Studentswhowereinterested inthestudyand who are willing to participate are included.

Exclusioncriteria:
Studentswhoarenot willingtoparticipateareexcluded.

Organizing the study:
The purpose of the study was explained in a short notewhich was sent along with the link viasocial media participants, were asked to select one option from the answers provided against the questions.

Statistical analysis:
Data from the filled questionnaire was conducted in a tabular form in an excel worksheet and evaluated for analysis. The analysis was performed using SPSS 29 version.

Result:-

Out of 209 participants, majority of them belong to 22 – 24 years age group. The following are the percentages of students who took part in thesurvey:IIBDS(19.6%), IIIBDS(23%),IVBDS (26.8%),interns (30.6%).

Theresponserateswere70.8%femalesand29.2%males.

On comparison knowledge and awareness among students, females have more knowledge than males. Among all the students Interns have more knowledge, followed by IV-BDS, III-BDS and II-BDS.

Table1:- DemographicProfileofRespondents.

Agegroups

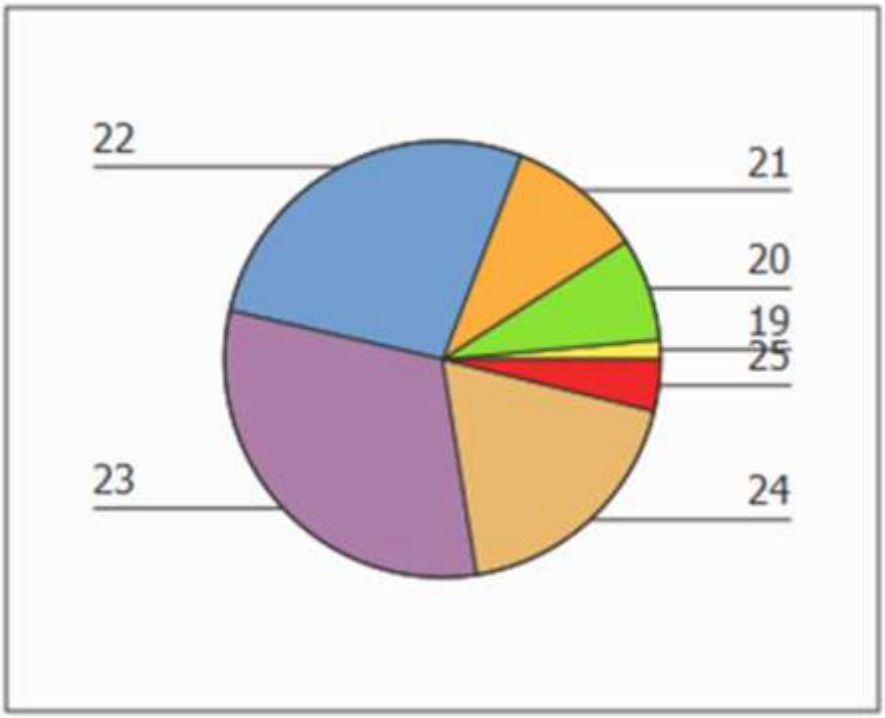
Demographicprofile	No. of respondents	%Ofrespondents
19	**03**	**1.4**
20	**16**	**7.7**
21	**21**	**10.0**
22	**57**	**27.3**
23	**65**	**31.1**
24	**39**	**18.7**
25	**08**	**3.8**
MeanAge	**22.50**	
SD Age	**1.30**	
Pvalue	**0.179**	

Gender

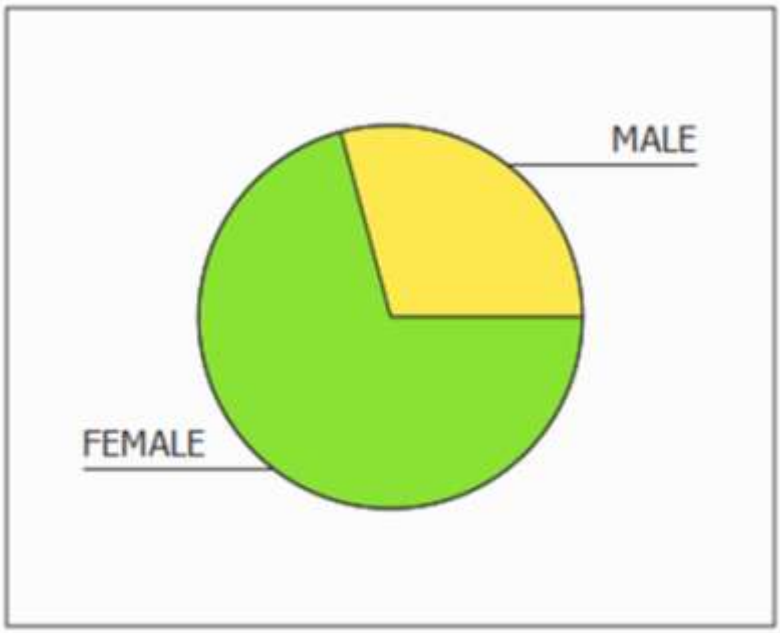
Demographicprofile	No. ofrespondents	%Ofrespondents
MALE	**61**	**29.2**
FEMALE	**148**	**70.8**
P value	**0.153**	

Yearofstudy

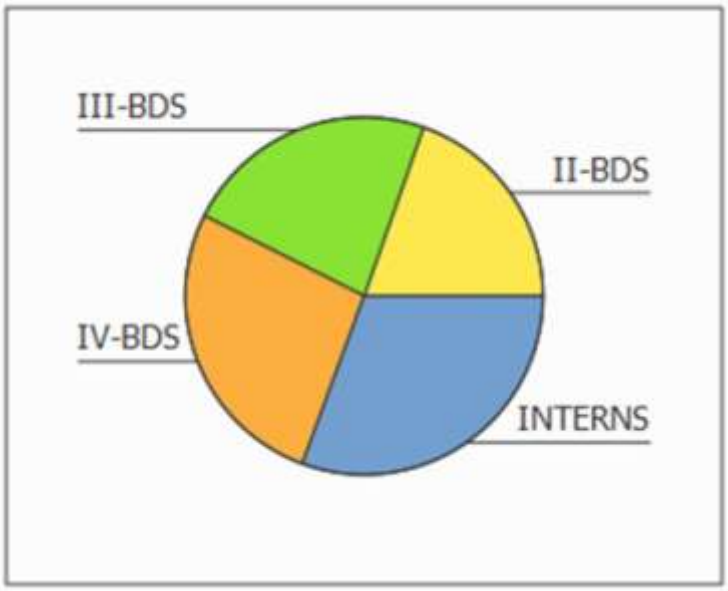
Demographic profile	No. of respondents	%Of respondents
2nd year	**41**	**19.6**
3rd year	**48**	**23.5**
4th year	**56**	**26.8**
Interns	**64**	**30.6**
Total	**209**	**100**
Pvalue	**0.002**	



Graph 1a:- Demographicdetails–Age.



1-b:-Demographicdetails–Gender.



1-c:-Demographicdetails–YearofStudy.

Table 2:- Distributionofstudysubjectsbasedonresponsestoitems.

Items	Responses(Options)								
	A		B		C		D		p-values
	N	%	N	%	N	%	N	%	
Q1	134	64.1	75	35.9	-	-	-	-	0.132
Q2	72	34.4	84	40.2	53	25.4	-	-	0.137
Q3	56	26.7	60	28.7	68	32.5	25	12.1	0.879
Q4	51	24.4	63	30.1	65	31.1	30	14.4	0.911
Q5	29	13.9	50	23.9	85	40.7	45	21.5	0.975
Q6	30	14.4	37	17.7	93	44.5	49	23.4	0.891
Q7	92	44	73	34.9	44	21.1	-	-	0.145
Q8	92	44	73	34.9	44	21.1	-	-	0.167
Q9	43	20.7	40	19.1	86	41.1	40	19.1	0.915
Q10	59	28.2	90	43.1	60	28.7	-	-	0.179
Q11	98	46.9	111	53.1	-	-	-	-	0.113
Q12	33	15.8	59	28.2	79	37.8	38	18.2	0.811
Q13	110	52.7	51	24.4	26	12.4	22	10.5	0.913
Q14	75	35.9	92	44	42	20.1	-	-	0.116
Q15	150	71.8	59	28.2	-	-	-	-	0.106

Discussion:-

The atomic and weight percentage measurements revealed a relative ratio of O: Zn at 0.74 and 0.18, respectively. This finding indicates that the oxygen atom content was lower than that of zinc. The excess zinc content could be attributed to inherent defects within crystalline ZnO, such as oxygen vacancies and zinc interstitials.Consequently, thesunscreen formulationincorporatedZnOnanorods as the primary active UV filter.ZnOnanorods exhibit distinctive opticalproperties, with exceptionally high absorption in the UV regions, effectively shielding the skin from UV rays.

Therefore,thisstudyisafirststepin investigatingtrends inknowledge, and Awareness Regarding ZnO Sunscreen Protection for research. To understand new technologies applied to ZnO Sunscreen Protection.

Thestudywas conductedamongdentalstudents inKhammam.Theresults showed that the highest number of participants were familiar with the term ZnO Sunscreen Protection through university courses, i.e., of which 69% knew.

Participants were also aware of the ZnO Sunscreen Protection. This indicated that participant hadaclearbackgroundknowledge ofZnOSunscreenProtection.

Conclusion:-

Based on the above study the current findings imply the dental students in Khammam have enough knowledge awareness regarding ZnO Sunscreen Protection.Therefore, needtoconductmore programs onrelativelyto bring awareness towards ZnO Sunscreen Protection.

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