

Assesment of knowlege and training of dental students in usage of PPE -A practical approuch

Type of Research : Original Research

Running Title : Awareness about personal protective equipment among dental students

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ABSTRACT:

INTRODUCTION: Personal protective equipment is protective clothing, helmets, goggles or other garments or equipment to protect the wearer's body from injury or infection. PPE kit is worn for job related occupational safety and health purposes. The main purpose of PPE is to reduce the employee exposure to hazards. In earlier PPE was used as body armor, boots and gloves. Therefore, the aim of this present study is to assess the knowledge, awareness and compliance of personal protective equipment among dental students. Therefore, Aim of this present study is to assess the knowledge, awareness and compliance of personal protective equipment among dental students

MATERIALS AND METHODS: A descriptive cross-Sectional survey was conducted among 100 study participants. Data collection was done by means of online google survey form. The first part of the questionnaire consists of demographic details which includes Age, gender, year of study. The second part of the questionnaire consists of questions related to knowledge, awareness, and compliance of personal protective equipment among undergraduate dental students in saveetha dental colleges. Simple random sampling technique was followed. Data was entered in Microsoft excel sheet after collection and was analysed using SPSS software. Descriptive statistics were expressed by means of number, frequency, and percentage. Chi-Square test was used to find the association between variables. The level of statistical significance is at $p < 0.05$. Statistical software is SPSS version 23.

RESULTS: The results of the study reveals that 57.28% of the participants were female and 41.75% were male in which 33.98% were PG and 65.05% were intern.As we compare with other study,use of personal protective equipment to protect against respiratory infection in the health care settings in the Pakistan whereas our study was conducted in only one particular college. Majority of the interns (20.59%) responded to communication when compared to PG participants. Pearson chi square value = 115.315^a P-value = 0.01 (<0.05), which is statistically significant.

CONCLUSION: Based on the result of the study we can conclude that there is a moderate awareness and knowledge about PPE among undergraduate dental students.

KEY WORDS: Cross Sectional Survey; Dental Students;Personal Protective Equipment, Innovative analysis

INTRODUCTION:

Personal protective equipment is protective clothing,helmets,goggles or other garments or equipments to protect the wearer's body from injury or infection.PPE kit is worn for job related occupational safety and health purposes(1,2).The main purpose of PPE is to reduce the employee exposure to hazards.In earlier PPE was used as body armor,boots and gloves(3).These were made up of thick material which was then covered in wax to make it water resistant(3,4).

The PPE kit was promoted by the Wu Lien-Teh They are five types of PPE kit are respirator, skin protection, eye protection,hearing protection and Protective clothing ensembles.Respirators protects the user from the Contaminantes in the Air, skin protection prevents diseases like contact dermatitis, skin cancer and other skin injuries and infections; Eye protection protects the eyes from the f eye related diseases;hearing Protection - protects from the industrial Noises overlooked as occupational hazards; Protective clothing and ensembles - it is a form of all encompassing PPE refers from the various suits and uniforms worn to protect the user from harm .There are various types of gsm (gram per square meten) available in the PPE kit which are the 70,80 and 40 gsm(4).The gsm indicates the quality of the material.

There are various types of PPE according to the material which are laminated, Non laminated and Woven Material(4,5).The PPE constitutes the variations by country by country(6). The USA population shows an example of a wide ranging definition of PPE.The CE marking is very important, which effectively states the Manufacturer's declaration that the product is compliant with the relevant EU Safety, health and or environment requirements(6,7). The full form of CE is "Conformite Europe"(8). It is a self Certifications of PPE which depends on the level of risk of the product To It exists only for products that have minimal risk of their use.(9). Our team has extensive knowledge and research experience that has translate into high quality publications(10–14)(15–19)(20–24)(25–29) The aim of this present study is to assess the knowledge, awareness and compliance of personal protective equipment among dental students.

MATERIALS AND METHODS:

STUDY DESIGN AND STUDY SETTING

A descriptive cross-Sectional survey was conducted in saveetha dental college.

SAMPLE SIZE AND ESTIMATION

Sample size was calculated using the manual formula ($N = Z^2 Pq/L^2$) based on the study done by (1)and the total sample size arrived was 100.

STUDY POPULATION

Study populations contain PG and Interns students from saveetha dental college.

ETHICAL APPROVAL

Ethical approval was obtained from the Institutional Review Board in Saveetha University.

DATA COLLECTION

The first part of the questionnaire consists of demographic details which includes Age, gender, year of study. The second part of the questionnaire consists of questions related to knowledge, awareness, and compliance of personal protective equipment among undergraduate dental students. Independent variables were age, gender and Level of education and dependent variables were level of knowledge, awareness, compliance of personal protective equipment among undergraduate dental students. Data collection was done by means of online google survey form.

SAMPLING:

Simple random sampling technique was followed

STATISTICAL ANALYSIS

Data was entered in Microsoft excel sheet after collection and was analysed using SPSS software. Descriptive statistics were expressed by means of number, frequency, and percentage. Chi- Square test was used to find the association between variables. The level of statistical significance is at $p < 0.05$. Statistical software is SPSS version 23.

RESULTS

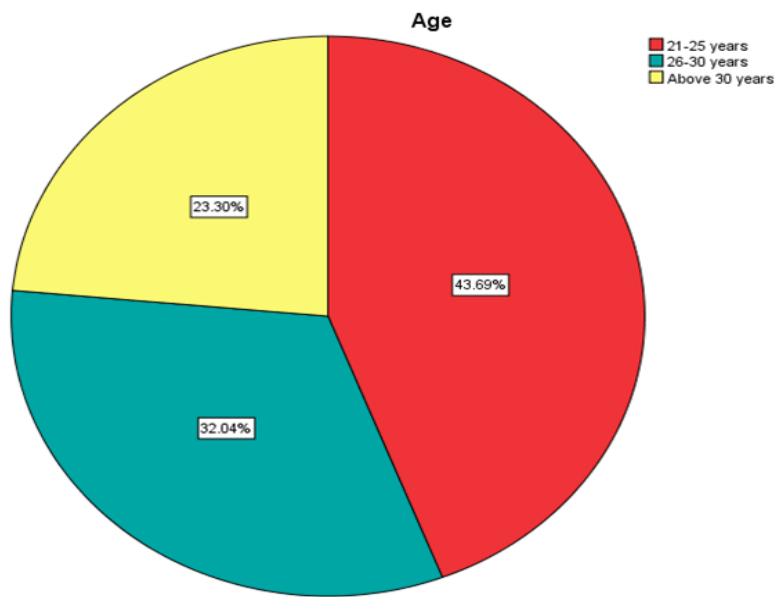


Figure1: The pie chart shows the percentage distribution of the participants based on age 43.69% of the respondents are from 21-25 years denoted in (scarlet red), 32.04% of the respondents are from 26-30 years and denoted in (Aqua green) and 22.30% of the respondents are above 30 years denoted by (yellow)

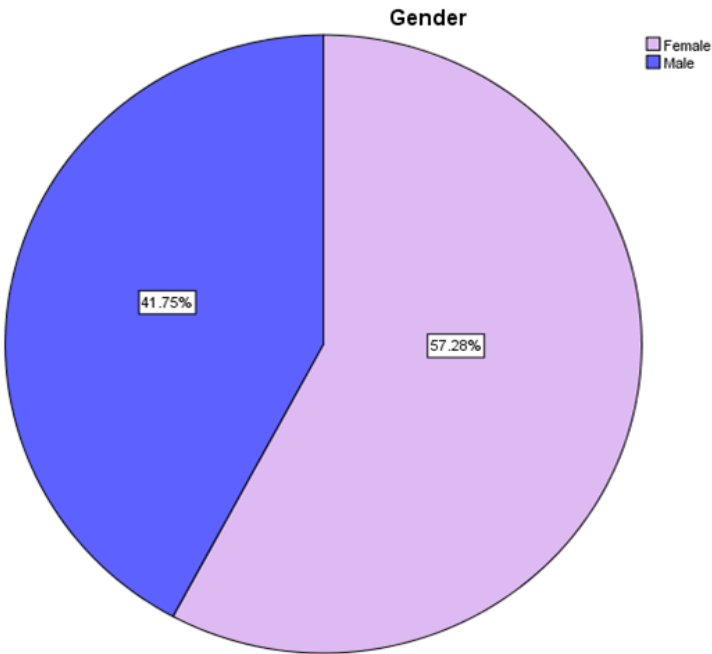


Figure 2 : The pie chart shows the percentage distribution of the participants based on gender.57.28% of the respondents are female denoted in (Lavender), 41.75% of the respondents are male denoted in (Ultramarine)

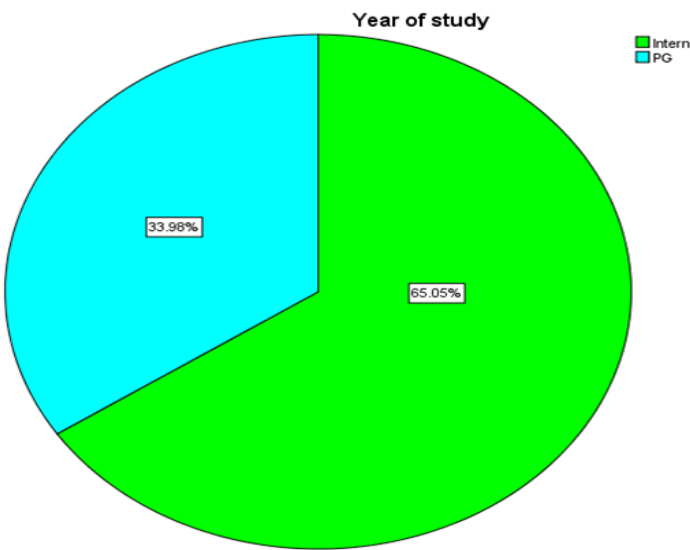


Figure 3: The pie chart shows the percentage distribution of the participants based on the year of study. 65.05% of the respondents are intern denoted in (Harlequin),33.98% of the respondents are PG students denoted in (turquoise)

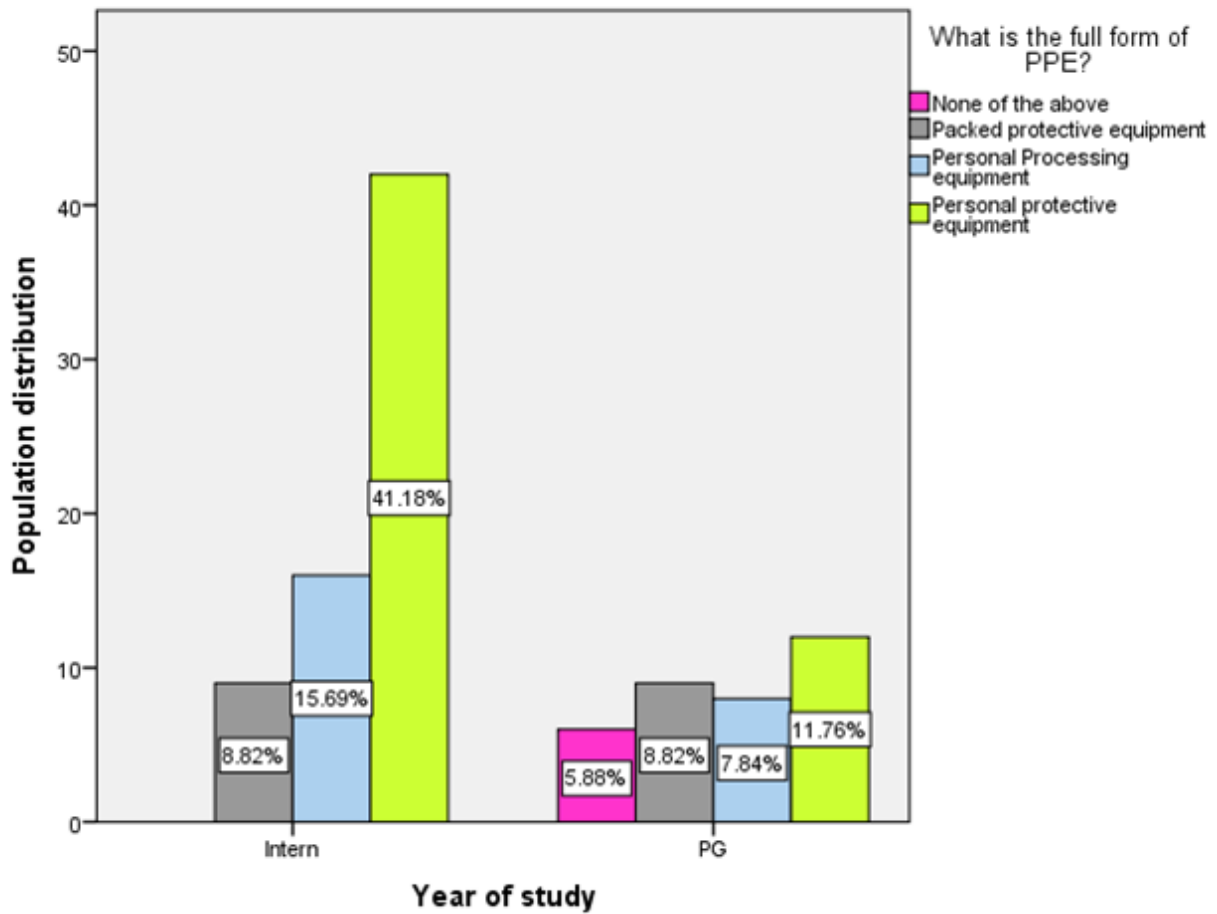


Figure 4: The bar graph represents the association between the year of the study and the responses related to the question of full form of PPE. X axis represents the year of study and Y axis represents the percentage distribution, in which magenta denotes none of the above, fossil grey denotes packed protective equipment, maya denotes personal processing equipment and chartreuse yellow denotes personal protective equipment. Majority of the interns (41.18%) responded using personal protective equipment, when compared to PG participants. Pearson chi square value = 120.130 p value = 0.01 (<0.05), which is statistically significant. Hence there is a significant difference in the responses between years of study with regard to given statements.

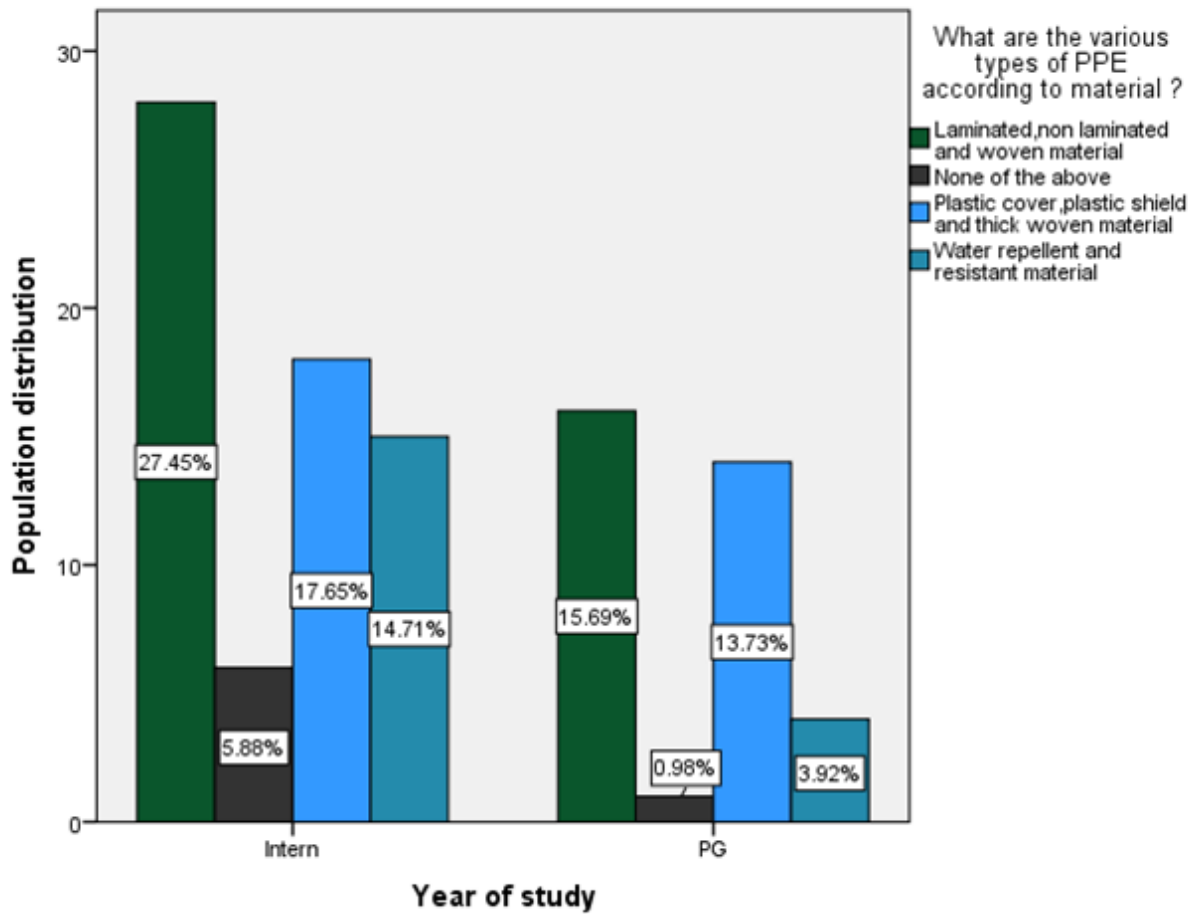


Figure 5: The bar graph represents the association between the year of the study and the responses related to various types of PPE according to material. X axis represents the year of study and Y axis represents the percentage distribution, in which Oil black denotes none of the above, Azure denotes plastic cover, plastic shield and thick woven material, Chathams denotes water repellent and resistant material; Hunter wellies denotes laminated, non laminated and woven materials. Majority of the interns (27.45%) responded using laminated non laminated and woven materials, when compared to PG participants. Pearson chi square value = 107.114 ; P value = 0.01 (<0.05), which is statistically significant. Hence there is a significant difference in the responses between years of study with regard to given statements.

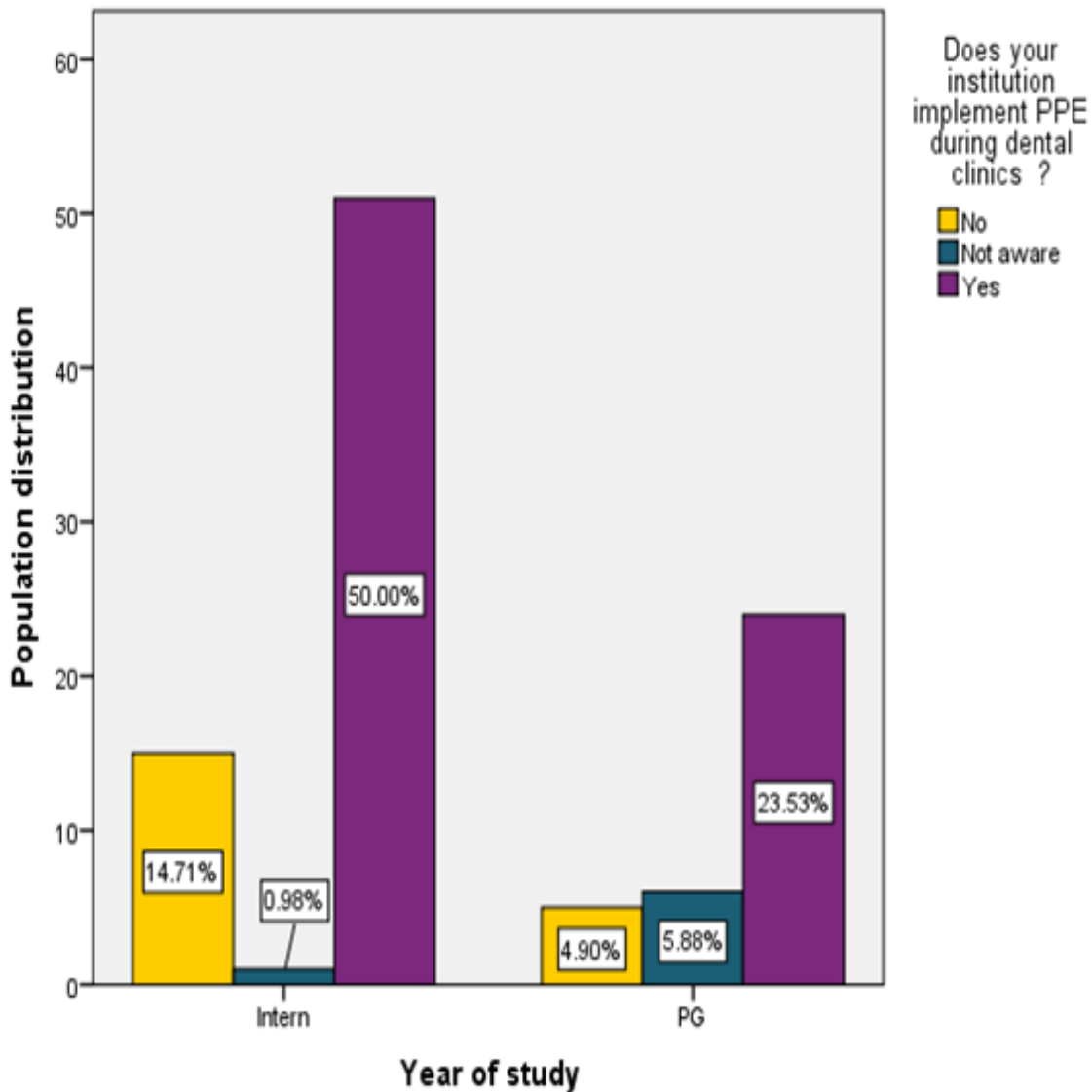


Figure 6 : The bar graph represents the association between the year of the study and no of responses towards the implementation of PPE. X axis represents the year of study and Y axis represents the percentage distribution, in which Aegean denotes “Not aware”, light purple denotes “Yes”,Tangerine yellow denotes “No”. Majority of the interns (50%) responded “Yes” compared to interns. Pearson chi square value = 112.243 P value = 0.01 (<0.05), which is statistically significant. Hence there is a significant difference in the responses between years of study with regard to given statements.

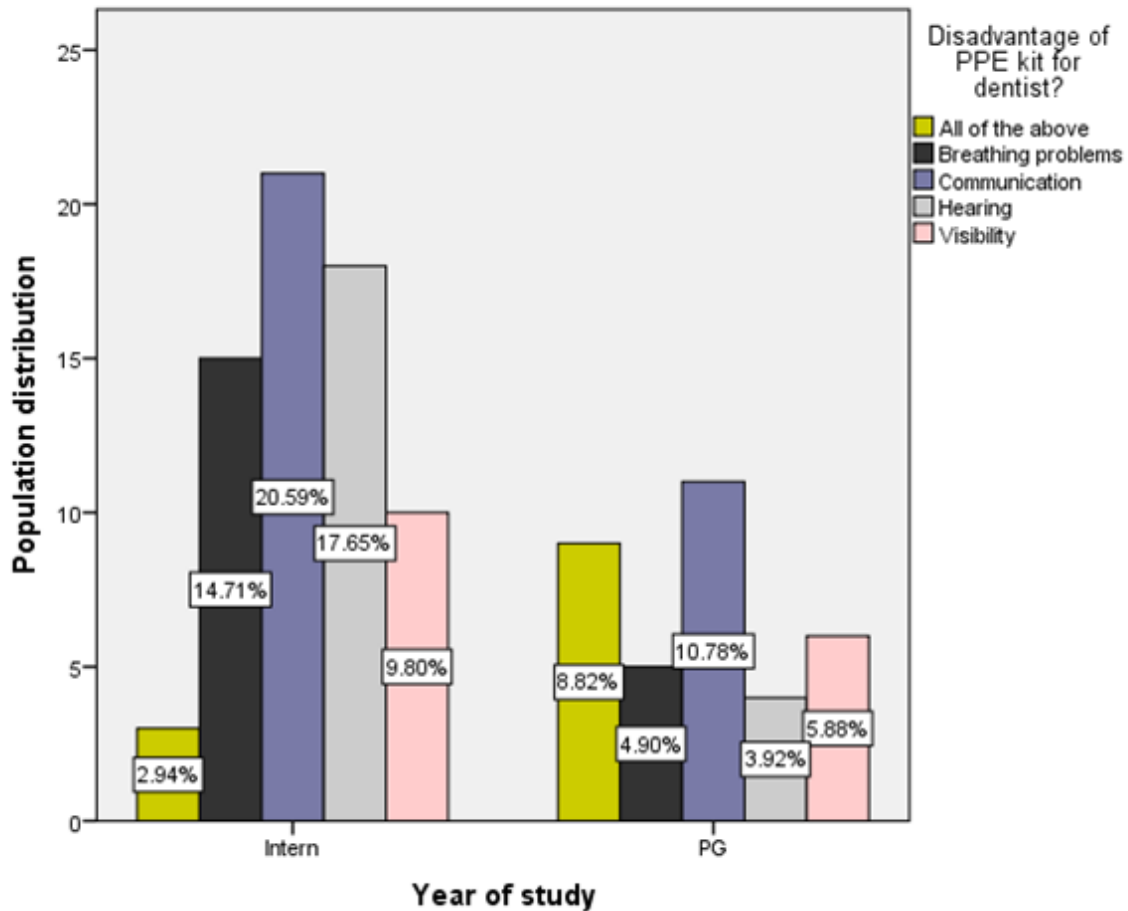


Figure 7 : The bar graph represents the association between the year of the study and number of responses towards the disadvantage of PPE kit for dentist. X axis represents the year of study and Y axis represents the percentage distribution Ebony black in which denotes breathing problems, Greyish violet blue denotes communication, Iced cube silver grey denotes hearing, lemonade pink denotes visibility and Cyber green denotes all of the above. Majority of the interns (20.59%) responded to communication when compared to PG participants. Pearson chi square value = 115.315 P-value = 0.01 (<0.05), which is statistically significant. Hence there is a significant difference in the responses between years of study with regard to given statements.

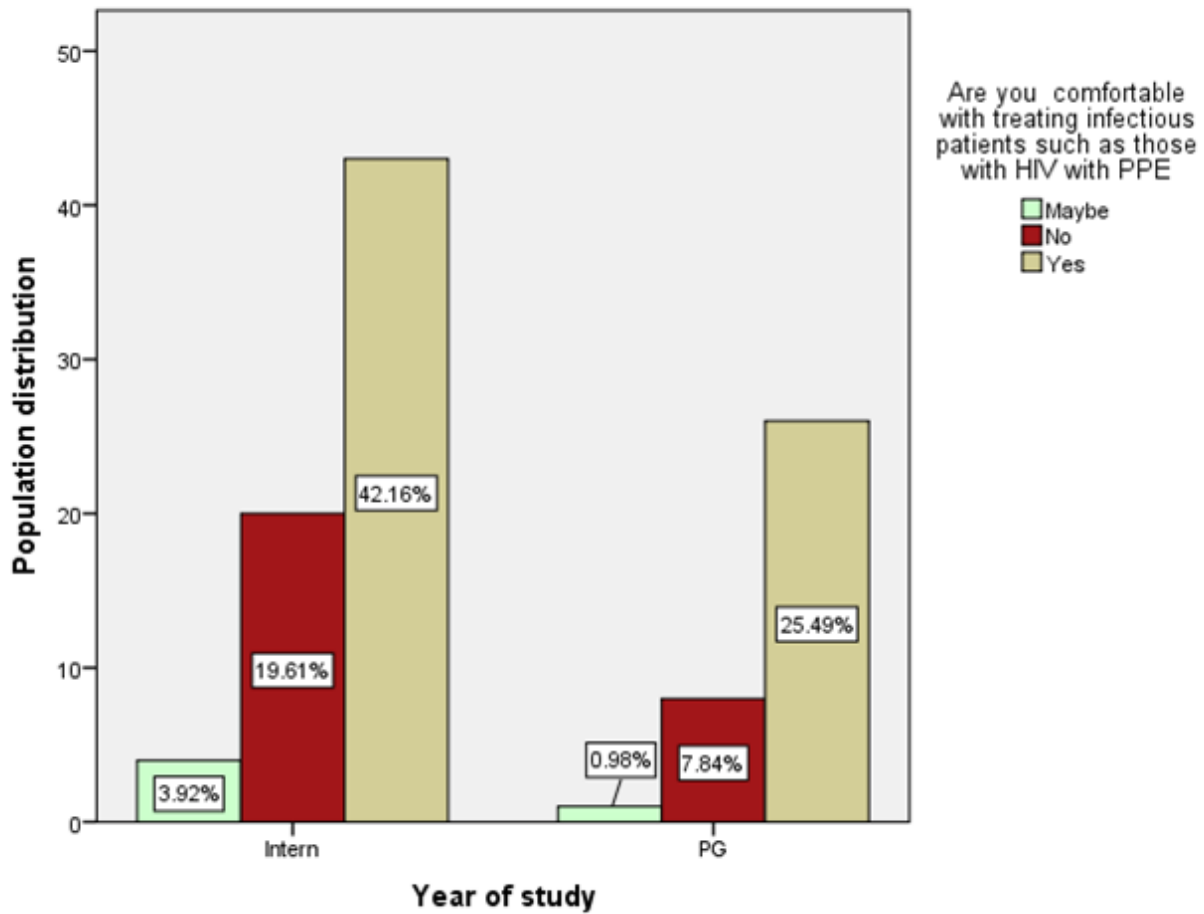


Figure 8: The bar graph represents the association between the year of the study and no of responses for treating infectious patients. X axis represents the year of study and Y axis represents the percentage distribution, in which Mint green denotes “No”, Beige denotes “Yes”, Red denotes “May be”. Majority of the interns (42.16%) responded compared to interns. Pearson chi square value = 104.223^a p value = 0.01 (<0.05), which is statistically significant. Hence there is a significant difference in the responses between years of study with regard to given statements.

DISCUSSION

The results of the study revealed that based on age 43.69% of the respondents are from 21-25 years denoted in scarlet red colour,32.04% of the respondents are from 26-30 years denoted in Aqua green colour and 22.30% of the respondents are above 30 years denoted by yellow colour of which 57.28% of the respondents are female denoted in Lavender colour, 41.75% of the respondents are male denoted in Ultramarine colour in which 65.05% of the respondents are intern denoted in Harlequin colour and 33.98% of the respondents are PG students denoted in turquoise colour.The questionnaire survey consisted of 15 questions. which were sub categories of knowledge,awareness and Compliance.On assessing the knowledge of the students(intern and PG).41.18% of the intern and 11.76% of the PG answered the correct full form of PPE;27.45% of the intern and 15.69% of the PG as correctly answered the various types of gsm available in the PPE kit;26.73% of the intern and 15.84% of the PG as

correctly answered the various types of PPE according to the material;49.50% of the intern and 25.74% of the PG were aware of PPE used in dentistry is required to be CE marked.

On assessing the awareness of the students(intern and PG).2.94% of the intern and 8.82% of the PG answered all of the above(breathing problems,communication,hearing and visibility;42.16% of the intern 25.49% of the PG are comfortable with treating infectious patients such as those with HIV using PPE;34.65% of the intern and 18.81% of the PG answered “Always” for wearing lab coats in clinic;31.68% of the intern and 23.76% of the PG as answered “Always” for wearing gloves when treating patients.35.64% of the intern and 18.81% of the PG answered “Always” for nurses/dental assistants wear gloves when handling patients.

On assessing the compliance of the students,58.42% of the interns and 24.75% of the PG answered “True” for the questions that medical gloves consists of two types;35.64% of the intern and 14.85% of the PG answered “True” for the question that powdered latex gloves are associated with causing allergic reactions.44.55% of the intern and 22.77% of the PG answered “True” for the question that Nitrile/Neoprene(Non latex) made gloves are preferred over latex gloves;32.67% of the intern and 17.82% of the PG answered “Always” does often dentist change gloves between patients;34% of the intern and 17% of the PG as answered “Always” for washing your hands using proper technique after every glove change.

As we compare with other study,use of personal protective equipment to protect against respiratory infections in Pakistan states that this study is reviewed in the health care settings in the Pakistan whereas our study was conducted in only one particular college(30)(convenient sampling).In comparison with the next study the sourcing of personal protective equipment during COVID-19 pandemic summarises the PPE management during COVID-19 pandemic whereas our study states about the uses of PPE during COVID 19(30,31).The current coronavirus disease 19 (COVID- 19) pandemic has affected most countries.As we compare with other study this study discusses about the infection, prevention, and control training is vital in mitigating the spread of COVID- 19. The closure of universities by the Nigerian government has hampered academic activities of dental students.The main objectives of this study was to assess the knowledge, perception, and attitude of undergraduate dental students in Nigeria to the COVID- 19 pandemic and infection control practices.As we compare with previous study,the main purpose of this study was to analyze compliance, awareness and practices of infection control procedures among senior dental students at the school of Dentistry, University of Sharjah, United Arab Emirates.When we compare with the next study,this study discuss about the Dental health care workers also as patients got to be shielded from cross contamination during routine dental procedures by means of infection control measures(32).

As dental students are at an increased risk of exposure to microorganisms it's important to assess the knowledge and awareness of private protective measures and reinforce the practices of varied personal protective measures among them(32,33). the target of the study was to work out the extent of data , awareness, and compliance of undergraduate dental students towards personal protective equipment/measures, undergoing the clinical phase of coaching in South India's dental colleges(34).A cross-sectional study was conducted to get information regarding knowledge, awareness, and compliance with personal protective equipments and measures.

CONCLUSION:

Based on the results of the Present study, it can be concluded that interns had better knowledge about PPE among undergraduate dental students compared with PG Students. Even Though COVID-19 is a huge pandemic,students were not that knowledgeable and aware about personal protective equipment.Majority of the interns answered correctly for the full form of PPE kit.

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