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Research Article

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING GREEN DENTISTRY IN UDAIPUR, RAJASTHAN, INDIA: A REVOLUTIONARY CHALLENGE FOR DENTISTS

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ABSTRACT

The aim of the study was to assess the knowledge, attitude and practices regarding green dentistry among dentists in Udaipur, Rajasthan, India. A descriptive cross-sectional study was conducted among 300 dentists (Group A: Dental practitioners, Group B: Dental teaching staffs, Group C: Both dental practitioner and teachers) of Udaipur city. Investigator personally approached the study participants and circulated a self-structured questionnaire, which were collected in 2-3 successive follow-ups. The completed questionnaires were statistically analyzed using descriptive statistics and Chi-square test. Results showed that majority were males (57.3%) of 41-50 years age group (39.7%). It was observed that study subjects who were both teaching and practicing (Group C) had more knowledge and better attitude than the other two study groups, which was found to be statistically significant (p=0.001). Amalgam separators and precapsulated alloys were used by minimum dentists (16%), few respondents employed CFL/LED lights (57%) and maximum did not use digital radiography (59.7%). A handful of respondents had placed indoor greenery (24%), used VOC free paints on dental clinic walls (42.6%) and only about 45% study subjects printed on both sides of paper sheet showing poor practices of green dentistry including amalgam waste, energy, paper, light management. The authors concluded that lack of knowledge and awareness prevailed among the dentists of Udaipur city and eco-friendly strategies were not sufficiently being put into practice. Also the Group C subjects (Both dental practitioners and teachers) were found to have healthier knowledge, attitude and practices about green dentistry than the others.

INTRODUCTION

Each year, dental practice generate 4.8 million sheets of lead, 28 million liters of toxic substances used in radiology, 3.7 tons of mercury waste, 1.7 billion sterilization pouches, 680 million chair covers, covers for grip light source and bibs for patients (http://www.ecodentistry.org) (Popa *et al*, 2015).

Dental health care is devoted to endorsing and enhancing oral health and well-being and to achieve such goals, dentists use a diversity of materials and instruments. Unfortunately, particular materials that are currently used include heavy metals as well as biomedical waste, offer impending challenges to the environmental balance (Farmer *et al*, 1997).

Health-care waste refers to all the waste generated by a health care establishment. It is estimated that 10-25% of health care waste is hazardous, with the potential for creating a variety of health problems (Manchanda *et al*, 2015, Yadavannavar *et al*, 2010, Yurtseven *et al*, 2010). WHO fact sheet reported that, from the total of waste generated by health care activities, almost 20% are hazardous (WHO, 2011). Recently, there is a significant increase in the dental and medical teaching hospitals and correspondingly there has been tremendous increase in the amount of biomedical waste generated by the hospitals. (Kapoor *et al*, 2014, Sudhakar and Chandrashekar, 2008).

A healthy global environment is a necessity for survival of the human race and all living species. But regrettably, mother earth and her surroundings are getting polluted at an alarming rate due to wastes generated by mankind including dental health care providers and setups. To counter this type of environmental pollution, the birth of green dentistry or eco-dentistry concept cropped up.

Green dentistry is a recent high-tech advancement that lessen the environmental impact of dental practices and includes a service mould for dentistry that sustains health (Popa *et al*, 2015). It is a part of a movement towards ecologically-sustainable healthcare (Chin *et al*, 2000, Arenholt-Bindslev,

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1992). The key concepts of eco dentistry include conservation of water and energy, use of non-toxic products, reduction of waste and elimination of hazardous toxins that negatively affect patients and the environment and promote "green" products (Rastogi *et al*, 2014). This can be a reality by effectively designing dental clinics and using more eco-friendly materials in the clinical practice (Avinash *et al*, 2013).

A model for eco-friendly dentist has been developed by the eco-dentistry association (EDA), and educational and membership association for green dental professionals, (www.ecodentistry.org) (Adams, 2007, Passi and Bhalla, 2012). This model is environmental friendly that helps the dentist to protect the environment by integrating dental services that advance preventive dentistry and serving the needs of green dentistry consumers (Adams, 2007). The EDA defines green dentistry as: reducing waste and pollution, saving-energy, water, and money-incorporating high-tech-wellness-based.

Today, the dental education system throughout the globe lacks incorporation of such a subject. This concept should be made accessible to all dental health care professionals and students at a primary level. Dentists have to play their role in analysing and carrying out responsibilities for the eco-friendly environment (Al Sharat *et al*, 2013). Hence judging the knowledge and type of strategical planning implemented in dental clinics to support this budding concept is crucial for correcting the gap in awareness and advancement of eco-dentistry amongst the dental health professionals.

Till now, no studies have been conducted concerning knowledge and practices of green dentistry among dental health care workers in Udaipur city. Hence due to dearth of literature and keeping in mind the background of this field, the present study was conducted with the aim to assess the knowledge, attitude and practices regarding green dentistry among dentists in Udaipur, Rajasthan, India.

MATERIALS AND METHODOLOGY

Study design, study area and population:
A descriptive cross-sectional study was conducted among dentists of Udaipur city, Rajasthan, India in the month of October 2017. Study population consisted of 3 groups: Group A - Dental Practitioners, Group B-Teaching Staffs and Group C-Both (dental practitioner and teacher).

Ethical approval & official permission

The study protocol was reviewed and approved by the institutional review board of dental college and was granted ethical clearance. An official permission was taken before conducting the study from the principal of the dental college. Written informed consent was obtained from participants after explaining the nature and purpose of research.

Pretesting of questionnaire

Questionnaire was administered to 15 dentists, twice on successive days, who were interviewed to gain feedback on the overall acceptability of the questionnaire in terms of length, language clarity, time and feasibility of dentists completing and returning it. Based on their feedback, the questionnaire did not require any corrections. Cronbach's coefficient was found to be 0.80, which showed an internal reliability of the questionnaire. Mean content validity ratio (CVR) was calculated as 0.87 based on the opinions expressed by the panel of six academicians. Face validity was also assessed and it was observed that 92% of the participants found the questionnaire to be easy.

Questionnaire

A self-structured questionnaire written in English was used, which consisted of 3 sections.

Section I solicited general demographic information. Section II comprised of 10 closed-ended questions to assess the knowledge and attitude regarding green dentistry. Section III comprised of closed-ended questions based on eco-friendly strategies practiced by dentists.

Pilot study

A pilot survey was conducted among 30 dentists (10 dental practitioners, 10 teaching staffs and 10-both dental practitioner and teachers). Based on the results of the pilot study using 95% confidence interval, 5% allowable error and 80% power of the study, sample size was calculated, applying the following formula:

$n = \{Z^2_{1-\alpha/2}\, p(1-p)\}/d^2$

Where, expected prevalence in study group = p, expected absolute or relative precision required in the p = d (10% or relative precision of 10% of p), value of the normal deviate at considered level of confidence = $Z_{1-\alpha/2}$ (two sided test). The final sample size was calculated to be 270, which was rounded off to 300.

METHODOLOGY

Investigator collected the list of dental teaching staffs in all the dental colleges and dental practitioners in Udaipur city. Lists of dental practitioners only, dental teaching staffs only and both practicing and teaching dentists were prepared separately, from which the study participants were selected, 100 subjects for each of the 3 groups, by simple random sampling method.

A self-structured, self-administered questionnaire in English was distributed to the selected participants. The purpose of the study was informed and explained to the participants. Those willing to participate in the survey were requested to fill in the consent form and complete the questionnaire. Participants were asked to choose the most appropriate response for each question.

The questionnaire was given to the selected dental practitioners at their respective clinics and to the selected teaching staffs in the dental colleges after college working hours. Ample time was given to them to fill the questionnaire and any queries, which the respondents had, were clarified by the investigator. All questionnaires were collected from the study subjects by 2-3 successive follow-ups and checked carefully for their completeness.

Statistical analysis

Completed questionnaires were coded, compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of statistical package of social sciences-SPSS version 20.0 (SPSS Inc., Chicago, Illinois,

USA) and analyzed. Dependent variable was the practice of green dentistry by the dentists and independent variables were demographic variables, knowledge and attitude of study subjects regarding green dentistry. Descriptive statistics included computation of percentages and Chi-square test was used for categorical data to compare the responses among the three study groups. For all tests, confidence interval and p-value were set at 95% and ≤0.05 respectively.

RESULTS

Table 1 shows the distribution of study population according to several demographic variables.

Table 1 Distribution of study population according to several demographic variables

Variables	N	%
Age (years)		
20 – 30	42	14
31 – 40	105	35
41 – 50	119	39.7
>50	34	11.3
Gender		
Male	172	57.3
Female	128	42.7
Qualification		
Bachelor of dental surgery	80	26.6
Master of dental surgery	220	73.4
Study groups		
Dental practitioners	100	33.3
Dental teaching staff	100	33.3
Both	100	33.3
Total	300	100

It was observed that maximum of the study participants were males [n=172 (57.3%)] of 41-50 years age group [n=119 (39.7%)]. Majority of the study subjects were master of dental surgery qualified [n=220 (73.4%)].

Table 2 represents the knowledge and attitude regarding green dentistry among study subjects. The current study results showed that respondents who were both teaching and practicing (Group C) had more knowledge and better attitude than the other two study groups, which was found to be statistically significant (p=0.001).

The practicing dentists were found to have lowest knowledge and poor attitude for eco-dentistry. Overall nearly half of the respondents had never heard of green dentistry (45%), did not choose the correct type of flooring (43%), were not having adequate knowledge to prefer the zero VOC paints (48%) and showed poor attitude for digital computerized recording system (45%). But again, majority agreed that digital x-rays were better (60.6%), dental office procedures could be a major source of waste production (69.3%) and the design of dental clinics should follow the green design (58%).

Table 3 illustrates the implementation of eco-friendly strategies in dental setups among study subjects. On the whole, the Group C participants (both teaching and practicing dentists) were found to employ various eco-friendly dental strategies the most, which was statistically significant (p<0.05).

Table 2 Knowledge and attitude regarding green dentistry among study subjects

Variables	Dental practitioners N (%)	Dental Teaching Staff N (%)	Both N (%)	N (%)	p-value
Heard of the term "Green Dentistry"					
Yes	40 (24.2)	55 (33.3)	70 (42.4)	165 (55)	
No	60 (44.4)	45 (33.3)	30 (22.2)	135 (45)	0.001*
Green Dentistry is referred to:					
A High-Tech Approach That Reduces The Environmental Impact Of Dental Practices And Encompasses A Service Model For Dentistry.	65 (57.5)	36 (31.9)	12 (10.6)	113 (37.6)	
Re-Thinking Dental Procedures, Office Administration And Marketing, And Office Design And Construction, Using The Tenets Of Green Dentistry As A Guide.	14 (46.7)	11 (36.7)	5 (16.7)	30 (10)	0.001*
Both	21 (13.4)	53 (33.8)	83 (52.9)	157 (52.3)	
None	0	0	0	0	
Preferred type of flooring					
Vinyl	13 (41.9)	4 (12.9)	14 (45.2)	31 (10.3)	
PVC	49 (69)	9 (12.7)	13 (18.3)	71 (23.6)	
Linoleum/Cork	22 (12.9)	68 (40)	80 (47.1)	170 (56.6)	0.001*
None	16 (57.1)	7 (25)	5 (17.9)	28 (0.09)	
Preferred type of paint for internal walls					
Paints With VOC	25 (49)	16 (31.4)	10 (19.6)	51 (0.1)	
Ultraflow VOC Paints	42 (60)	19 (27.1)	9 (12.9)	70 (23.3)	
Zero VOC Paints	20 (12.9)	63 (40.6)	72 (46.5)	155 (51.6)	0.001*
None	13 (54.2)	2 (8.3)	9 (37.5)	24 (0.08)	
Requirement of periodic monitoring of mercury vapour in dental setup					
Yes	47 (22.7)	75 (36.2)	85 (41.1)	207 (0.69)	
No	53 (57)	15 (16.1)	25 (26.9)	93 (31)	0.001*
Requirement of computer based recording system					
Yes	40 (24.2)	55 (33.3)	70 (42.4)	165 (55)	
No	60 (44.4)	45 (33.3)	30 (22.2)	135 (45)	0.001*
Digital x-rays better than Traditional x-rays					
Yes	45 (24.7)	60 (33)	77 (42.3)	182 (60.6)	
No	55 (46.6)	40 (33.9)	23 (19.5)	118 (39.3)	0.001*
Need to promote usage of reusable items					
Yes	39 (21.1)	74 (40)	72 (38.9)	185 (61.6)	
No	61 (53)	26 (22.6)	28 (24.3)	115 (38.3)	0.001*
Dental office infection control and sterilization processes can be a major source of waste generation & pollution					
Yes	46 (22.1)	80 (38.5)	82 (39.4)	208 (69.3)	
No	54 (58.7)	20 (21.7)	18 (19.6)	92 (30.6)	0.001*
Construction design of dental setup should follow the green design					
Yes	30 (17.2)	61 (35)	83 (47.7)	174 (58)	
No	70 (56)	39 (31.2)	17 (13.6)	126 (42)	0.001*
Total	100 (33.3)	100 (33.3)	100 (33.3)	300 (100)	

Test applied: Chi-square test, *p ≤ 0.05 statistically significant, VOC – Volatile organic compound

Table 3 Implementation of eco-friendly strategies in dental setups among study subjects

Variables	Dental Practitioners N (%)	Dental Teaching Staff N (%)	Both N (%)	N (%)	p-value
Amalgam Management Practices					
Use of amalgam separators and pre-capsulated alloys	18 (37.5)	13 (27.1)	17 (35.4)	48 (16)	0.594
Amalgam disposal done in well sealed containers	76 (39.2)	35 (18)	83 (42.8)	194 (64.6)	0.001*
Unused amalgam particles kept in well-sealed containers	82 (33.2)	80 (32.4)	85 (34.4)	247 (82.3)	0.647
Use of alternatives to amalgam filling (composite resin)	75 (33.8)	71 (32)	76 (34.2)	222 (74)	0.695
Radiographic waste management practices					
Use of digital radiography	28 (23.1)	37 (30.6)	56 (46.3)	121 (40.3)	0.001*
Fixer solutions and lead foils disposed off as hazardous waste separately	77 (28.9)	93 (35)	96 (36.1)	266 (88.6)	0.001*
Energy management practices					
Use of CFL/LED light bulbs	39 (22.8)	73 (42.7)	59 (34.5)	171 (57)	0.001*
Use of LCD display	48 (25.4)	56 (29.6)	85 (45)	189 (63)	0.001*
Electronic devices kept on sleep/standby mode/turned off when not in use	55 (26.4)	71 (34.1)	82 (39.4)	208 (69.3)	0.001*
Use of energy- star electric appliances	77 (33.9)	73 (32.2)	77 (33.9)	227 (75.6)	0.749
Infection control practices					
Use of tree oil/thyme/natural agents for disinfection rather than toxic chemicals	54 (28.7)	63 (33.5)	71 (37.8)	188 (62.6)	0.045
Use of steam sterilization	92 (36.2)	73 (28.7)	89 (35)	254 (84.6)	0.001*
Reuse of sterilized instruments, trays and film holding devices	64 (34.2)	57 (30.5)	66 (35.3)	187 (62.3)	0.386
Green Design of Dental Unit					
Use of paints on internal walls free of VOCs	33 (25.8)	34 (26.6)	61 (47.7)	128 (42.6)	0.001*
Use of Linoleum/cork flooring	16 (16.8)	29 (30.5)	50 (52.6)	95 (31.6)	0.001*
Indoor Greenery	14 (19.4)	21 (29.2)	37 (51.4)	72 (24)	0.001*
Water management practices					
Use of waterless vacuum system	78 (30.4)	89 (34.6)	90 (35)	257 (85.6)	0.027*
Limited usage of water for cleaning instruments & dental procedures	44 (24)	61 (33.3)	78 (42.6)	183 (61)	0.001*
Paper waste management practices					
Print on both sides of the sheet	31 (23)	41 (30.4)	63 (46.7)	135 (45)	0.001*
Use of digital record keeping	34 (23.6)	54 (37.5)	56 (38.9)	144 (48)	0.003
Prints taken in Draft mode	25 (18.1)	62 (44.9)	51 (37)	138 (46)	0.001*
Use of scrap paper for personal notes	45 (25.1)	64 (35.8)	70 (39.1)	179 (59.6)	0.001*
Reusable Practices					
Use of reusable metal glass/cups	53 (26.9)	68 (34.5)	76 (38.6)	197 (65.6)	0.002*
Use of reusable metal air/water syringes & suction devices	82 (33.9)	67 (27.7)	93 (38.4)	242 (80.6)	0.001*
Use of reusable steel impression trays	60 (29.1)	68 (33)	78 (37.9)	206 (68.6)	0.023*
Use of cloth lab coats which can be reused	63 (25.7)	87 (35.5)	95 (38.8)	245 (81.6)	0.001*
Total	100 (33.3)	100 (33.3)	100 (33.3)	300 (100)	

Test applied: Chi-square test, *$p \leq 0.05$ statistically significant, VOC – Volatile organic compound

Also the teaching dentists (Group B) depicted a moderate approach towards application of green dentistry and eco-friendly environment management practices in dental setups, followed by the dental practitioners (Group A). Amalgam separators and precapsulated alloys were used by minimum dentists (16%), less subjects employed CFL/LED lights (57%) and maximum study participants did not use digital radiography (59.7%). Very few respondents had placed indoor greenery (24%), used VOC free paints on dental clinic walls (42.6%) and only about 45% respondents printed on both sides of paper sheet.

DISCUSSION

Dental practice involves many hazardous exposures, which calls for the eco-friendly dental strategies implementation among the dentists around the globe. In the present study, 172 (57.3%) males and 128 (42.7%) female dentists had participated which was similar to a study conducted in Karnataka, India where 53% men and 47% women participants were included (Bhargava and Anand, 2017). Contrary to this finding, another study had considered higher proportion of males (78.5%) and less number of female dentists (21.25%) (Al –Qarni *et al*, 2016).

The current study showed that majority of the respondents were of 41-50 years age which is in accordance with the demographics of a study where maximum dentists were of 31-60 years age group (Bhargava and Anand, 2017).

The present study findings depicted that 55% of respondents had heard of the term “green dentistry” which is in contrast with a research which showed higher awareness among dentists of Hubli-Dharwad, Karnataka, India (64%) (Bhargava and Anand, 2017). Again another study conducted on dental practitioners of Thailand showed that only 16.5% participants had heard about it (Agrasuta and Nelson, 2013). Our study also indicated that 57.5% of dental practitioners knew about the meaning of green dentistry, while quite a higher proportion of dentists (73.1%) of King Khaild University of Saudi Arabia had the knowledge about the same (Al –Qarni *et al*, 2016).

It was observed that the dental professionals, both in teaching and practice of the present study possessed better knowledge and were aware of eco-friendly dentistry than only practitioners and only teachers. Green building is the practice of increasing efficiency of waste management where buildings use resources such as energy, water, and materials which may be unknown to majority of Indian dentists. About 47.7% of Group C subjects

had an idea that construction design of dental setup should follow green design, while only 35% and 17.2% of teachers and practitioners knew it respectively. For a developing country like India, green dentistry approach is quite a new one, hence most of the health professionals are not aware of this concept. A plausible reason for the dentists both in teaching and practice knowing more about the topic may be that they are in constant connection with books, journals, recent research work and in unison, implementing the facts which they obtain from recent literature and studies worldwide.

One previous study of Saudi Arabia (Al –Qarni *et al*, 2016) denoted that very few participants had positive knowledge and awareness regarding type of flooring to be used in dental clinics - linoleum or cork (20.6%), wall paint used should be volatile organic compound (VOC) free (36.25%) and digital radiography ought to be preferred (16.25%) . This is in congruency with the current study results which also showed that only about half of the study subjects opted for the correct type of flooring, paints and radiography. Majority of the dentists both in teaching and practice (39.4%) answered 'yes' when questioned about dental office infection control, whether it can be a major source of waste generation and environmental pollution as compared to the teachers (35%) and practitioners (17.2%) only.

Amalgam management practices were found to be better for Group C participants than the rest of the study population. The use of pre-capsulated alloys in different sizes which has been recommended by American Dental Association was not in much practice, as it was observed that a mere 16% of the study participants used amalgam separators and precapsulated alloys, which is similar to a research where 14% dentists did the same (Bhardwaj *et al*, 2017). On the other hand, few other studies presented contrasting findings that 36% and 86% respectively employed it (Chopra and Raju, 2017, Agrasuta and Nelson, 2013). Authors of a study on Jordanian general dental practitioners (Sawair *et al*, 2010) found that about 76% dental practitioners used amalgam which is dissimilar to the present study results that about 74% of study population used alternatives to amalgam filling. This might be because most of the dentists of Udaipur city use alternatives to amalgam such as composite, ceramic, gold and porcelain for restorations. It was found in the current study that 82.3% respondents stored unused amalgam in well-sealed containers which is in line with a study (75%) (Chopra and Raju, 2017), and is highly appreciable, but authors of another study found that only 49% subjects kept amalgam in the proper manner (Bhardwaj *et al*, 2017).

One research work illustrated that only 37.8% of the dental professionals of private sectors used digital radiography which is similar to the present study (40.3%), but contrary findings were observed in certain studies where 78% and 79.9% participants were supportive of the use of digitalized radiography (Chopra and Raju, 2017, Bhargava and Anand, 2017). In a review article (Farahani and Suchak, 2007) by using digital systems the author had saved 12600 papers annually and also eliminated the need for x-ray films, lead foils and fixer-developer solutions. Dental professionals may also find digital radiography convenient since working hours decrease and image diagnosis could be done in a better fashion. Our study also depicted that a high percentage of (88.6%) study subjects disposed off fixer and lead foils in their daily practice but dentists of Thailand (52%) and north India (37%) failed to adopt this practice for reduction radiographic hazards (Agrasuta and Nelson, 2013, Chopra and Raju, 2017). This may be due to the fact that senior dentists still prefer the use of conventional radiographic techniques and waste management and hence, use both digital and conventional radiography.

Previous studies showed that 91% (Chopra and Raju, 2017) and 77.6% (Agrasuta and Nelson, 2013) of the dentists employed the use of compact fluorescent light (CFL) or LED light bulbs which is contrast with the current study findings that less proportion of participants (57%) used. Our study results confirmed that 75.6% study participants unplugged electronic appliances when not used which is in accordance with the study on Thailand dental practitioners (Agrasuta and Nelson, 2013) but the proportion of dentists of Chandigarh practicing the same is quite high (96%) (Chopra and Raju, 2017). Thus it is portrayed clearly that dentists of Udaipur are lacking the proper knowledge about efficient energy management and methods of its application.

Around 62.6% the study subjects used biodegradable disinfectants (tree oil/thyme/natural agents) for dental setups rather than toxic chemicals, whereas very few dental practitioners had adopted this measure as portrayed in other studies (8% and 23.5% respectively) (Chopra and Raju, 2017, Agrasuta and Nelson, 2013). These biodegradable, nontoxic, enzyme based and nonchlorinated cleaners are beneficial for the environment as well as man's health. A large percentage of dentists (85.6%) showed effective water management practices by utilizing waterless vacuum systems in dental procedures.

Less percentage (42.6%) of study subjects used VOC free wall paints which is in congruency with another study (Chopra and Raju, 2017). Its use should be promoted as VOC paints are known to release volatile organic compounds in air through years that may prove to be risky. Poor implementation of eco-friendly strategies were found among the current study subjects in designing their dental units. Most of them were found to use vinyl flooring in clinics. Vinyl might serve the purpose of releasing harmful components such as lead, cadmium, and phthalate platicizers through thr passage of time (Chopra and Raju, 2017).

The present study results also revealed that a frequency of 59.6 used scrap papers for personal notes, but on the other hand, earlier studies indicated a higher frequency of participants among Jordan dentists (78%) (Rastogi *et al*, 2014) and north Indian dental professionals (63%) utilizing scrap paper resourcefully (Chopra and Raju, 2017). Digital record keeping was employed by 49% study respondents in the present study but a contrast result was depicted in a research in north India conducted on 100 registered dentists where majority (62%) maintained computerized records for the patients. An upgradation to the use of electronic record keeping appliances is called for in dental profession which can save time and simultaneously record patient information.

A study showed that 89% participants used washable cloth lab coats (Chopra and Raju, 2017) which is in concordance with the current study results (81.6%) but another study (Sawair *et al*, 2010) uplifted a different view that declared less use of cloth lab coats by dental practitioners. Reusable metal drinking

glass or cups were used by 65% respondents. There is a need for additional equipments such as special sanitization cycle with dishwasher and also added workforce to accomplish the health requirements in dental clinics which may be a possible reason for such contrary findings.

Limitations

Comparative analysis of results among different countries is difficult as it is a new approach with a huge lacunae in literature. Secondly, in the present study, the sample size is less as it is confined to the dentists of one city only and hence, the generalizability of the study findings is compromised. Thirdly, the study responses are self-reports, based on individual perceptions and personal opinions of dentists may vary accordingly. Fourthly, the interpretation of the statements and responses depends on the knowledge of the authors and their ideas. Therefore further large scale studies in different countries and population will help to gain insight into this inchoate field.

Recommendations

Dental health professionals can be leaders in saving our planet from the catastrophic effects of environmental changes by adopting and advocating the four 'R's- rethink, reduce, reuse, recycle (Al -Qarni *et al*, 2016). The sole major barrier for environment friendly practice implementation is 'financial burden' (Chopra and Raju, 2017, Al-Qarni *et al*, 2016). The government may introduce some cost-effective green design units and appliances for the effective utilization of the model of green dentistry. Lack of awareness among people could be countered by conducting continuing dental education (CDE) programmes on green dentistry, thereby educating health professionals and updating their knowledge on environmental crisis and techniques to follow effective energy, paper and water waste management practices. Future campaign strategies should address these issues by convincing dentists and making them realise that they have a crucial role.

CONCLUSION

The current study results propose that lack of knowledge and awareness regarding green dentistry prevails among the dentists of Udaipur city. The findings also indicate that eco-friendly dental strategies were not implemented adequately by the study population. Also the dental professionals, both in teaching and practicing, were found to have better knowledge, attitude and practice regarding green dentistry as compared to only practicing or teaching dentists of Udaipur city. Further prospective research is a necessity in identifying the lacunae and regions where additional focus considering the development of environment friendly practice must be paid.

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