Nat. Volatiles & Essent. Oils, 2021; 8(5): 5846 - 5870

Knowledge, Attitude and, Practices Regarding Evidence Based Dentistry Among Dental Students And Practitioners

M.Kavya shree,
Saveetha Dental College and Hospitals
Saveetha Institute of Medical and Technical Science,
Saveetha University
Chennai,
Tamil Nadu,
India.
Email: 151801080.sdc@saveetha.com

Dr. M.P.Santhosh Kumar
Professor, Department of Oral maxillofacial surgery,
Saveetha Dental College and Hospital,
Saveetha Institute of Medical and Technical Science,
Saveetha University
Chennai,
India

ABSTRACT
In these challenging times, practice of dentistry is becoming more complex. Evidence-based dentistry (EBD) strengthens the profession by identifying knowledge gaps, confidence in clinical decision making and encouragement to formulate clear questions regarding the evidence needed. It closes the gap between clinical research and real-world practice and provides tools to interpret and apply research findings.The aim of the study is to investigate the knowledge, attitude, and practices towards the use of EBD among dental students and practitioners.

MATERIAL AND METHODS
A cross sectional survey was conducted in a university dental hospital in chennai, Tamilnadu to assess the Knowledge, attitude, and practices regarding evidence based dentistry among dental students and dental practitioners using an online platform. Convenience sampling was followed with a Sample size consisting of 100 Undergraduate dental students and practitioners from chennai. The statistical software IBM SPSS V22 was used. Descriptive analysis and chi square tests were done and results obtained. $p<0.05$ was considered as statistically significant.

RESULTS
74 % of participants were aware about EBD. 60% of participants had knowledge about the level of evidence based dentistry. 52% participants said that printed journals and textbooks are the major source in clinical decision making. 46 % participants said EBD helps in clinical decision making.

CONCLUSION
Within the limitations of the study, it can be concluded that the majority of the participants had adequate knowledge and positive attitude towards EBD and were aware about the usage of EBD in dental practice. However, they were lacking in their practices towards EBD in clinics. Most of them believe that it should be included and emphasized in undergraduate dental curriculum so that in developing appropriate treatment plans, dentists should combine the patient's treatment needs and preferences with the best available scientific evidence, in conjunction with the dentist's clinical expertise.

KEYWORDS
Aware, Assessment, Evidence based dentistry, Innovative technique, Practitioners, Students

INTRODUCTION

In the present era, dentists are expected to base their clinical decisions on sound research evidence, for which they have to develop the skill of searching the relevant information from exponentially increasing publications and then critically appraise the evidence.(1)Evidence-based practice (EBP) is an approach that promotes critical thinking through the integration of patient values, best available evidence and clinical expertise.(2) As an educational paradigm, EBP allows the learners to set an agenda, focus on the application rather than acquisition of knowledge and stress upon independent assessment of the available evidence. Learners practice through the Assess-Ask-Acquire-Appraise-Apply method.(3)(4)Virtually all assessments of health professions education, including dental education, recommend focusing on evidence-based practice in the curricu- lum as a tool for educating students to provide patient care supported by research evidence versus the his- torical “in my hands” approach as well as instilling an educational culture that values and promotes intellectual curiosity.(5)

Previous studies were referred,In 2006, Shaneyfelt et al. reviewed instruments designed to evaluate trainees’ acquisition of EBP skills(6).Systematic reviews examine specific clinical ques- tions following a scientifically based plan that has been decided in advance and made explicit at every step.(7) Hendrickson et al. is designed to measure the outcomes of training in EBP in the context of dentistry.(8)A recent study on dental graduate competencies suggested that there is a clear need for a dental curriculum that focuses on the new knowledge and developments linked to research for best evidence based dental practice and decision making(9).Most of the published research on interprofessional education focuses on medical and allied health disciplines, with little attention to the role or analysis of interprofessional learning outcomes in dentistry.(10)

It is Enlightened that sources developing EBD skills in dental students should begin with emphasizing these skills early in the curriculum, followed by reinforcement through- out the educational program. Unfortunately, students in their first year of dental school do not have the necessary clinical knowledge to truly appreciate the need for EBD. However, they do have the ability to begin to strengthen their critical thinking skills.(11)Dental schools are supposed to teach the skills of formulating one’s own questions and search strategies to search on PubMed or other engines; but given the widespread dependence of students and in- ternees on ‘Google’ may not be receiving the necessary practice. (12)In dentistry; however, EBP is less developed but quickly gaining momentum.(13).From an educational perspective, EBP requires multiple high level skills such as critical and logical thinking and analysis. It also requires clinical expertise to make judgments and decisions.(14)However, in this study, the scope was broadened to students from the medical and dental health professional fields to provide wider visions for policy and decision makers.

Our team has extensive knowledge and research experience that has translated into high quality publication(15–26)(27–30)(31,32)(33) Thus, the aim of this study is to evaluate the knowledge, attitude, and practice towards the use of EBP among dental students and practitioners.

MATERIALS AND METHODS

A cross sectional survey was conducted in a university dental hospital in chennai, Tamilnadu to assess the Knowledge, attitude, and practices regarding evidence based dentistry among dental students and dental practitioners. Approval was taken from the institutional review board. Convenience sampling was followed with a Sample size consisting of 100 Undergraduate dental students and practitioners from chennai.

Data collection and tabulation

Demographic details were collected [Table 1]. A total number of 12 questions were included in the questionnaire [Table 2]. The survey was conducted using an online platform. The data from the google forms was exported to excel and tabulation of the data was done. Final data after elimination of incomplete responses was exported to SPSS for statistical analysis.

Statistical Analysis

The statistical software IBM SPSS V22 was used. Descriptive analysis and chi square tests were done and results obtained. $p<0.05$ was considered as statistically significant.

Table 1. Demographic characteristics of the study population

S.No	Questions	Option
1	Age	Male Female
2	Education	Undergraduate Post graduate Practitioner
3.	Clinical Experiences	1-5 years 6-10 years 11-15 years >15 years

Table 2. Questionnaire: Knowledge, Attitude and, Practices Regarding Evidence Based Dentistry

Questions	Answers	Percentage

1. Do you encounter difficulty in clinical decision making?	Yes No	74% 26%
2. What do you think is better to support clinical decision making?	a)previous clinical experience b)scientific literature evidence c)both of the above	38% 52% 10%
3. Are you aware of Evidence based dental practice [EBDP]?	a)Yes b)No	74% 26%
4. Familiarity with the terms used in EBDP such as Systematic review and meta-analysis.	Yes No Need additional information	60% 30% 10%
5. Familiarity with the terms used in EBDP such as Randomized controlled trials.	Yes No Need additional information	45% 35% 20%
6. Familiarity with the terms used in EBDP such as Case series/case reports.	Yes No Need additional information	30% 45% 25%
7. Familiarity with the terms used in EBDP such as Hierarchy of evidence.	Yes No Need additional information	60% 24% 16%
8. What source/sources of information do you use to support clinical decisions on practice?	a)From colleagues : Dentists, health care providers, b)Textbooks c)Print Journals d)INTERNET [Electronic Database (PubMed)etc.] e)Self experience f)others	24% 26% 26% 6% 18%
9. Do you agree that EBDP will help in clinical decision making?	a.strongly disagree b.disagree c.uncertain d.agree e.Strongly agree	6% 32% 14% 8% 40%

10. Do you agree that EBDP will Improve quality of patient care?	a.strongly disagree b.disagree c.uncertain d.agree e.Strongly agree	20% 30% 30% 10% 10%
11. Do you think EBDP should be an integral part of the undergraduate dental curriculum?	a.strongly disagree b.disagree c.uncertain d.agree e.Strongly agree	2% 28% 26% 22% 22%
12. Do you think EBDP will keep you updated with treatment protocols and recent advances in dentistry?	a.strongly disagree b.disagree c.uncertain d.agree e.Strongly agree	15% 25% 40% 15% 15%

RESULTS AND DISCUSSION

The study evaluated the knowledge, attitude, and barriers towards the use of EBP among dental students and practitioners. The total number of participants involved in this survey was 100. Among the students 64% undergraduate, 24% postgraduate and 12 % practitioners.

74% said that they encounter difficulty in decision making,whereas 26% cannot encounter the decision making which is represented as bar chart figure 1. Figure 2 represents there is no significant difference between the participants and their level to encounter difficulty in decision making.In previous article, result, dental students are taught by several inconsistent and sometimes contradictory teachers, and are trained to search for expert opinion and learn from the clinical experiences they encounter.(34)

52% said that scientific literature evidence supports them in clinical decision making which is represented as bar chart figure 3. Figure 4 represents that there are significant differences between participants and their opinion in clinical decision making. In previous studies there are opposition articles that were found in that, Not surprisingly, there was variation in the reported use of EBD in everyday clinical practice. Nevertheless, 92.5% claimed to be practising EBD most or at least some of the time. This was in contrast to their general lack of knowledge of the fundamentals of EBD, with only 41% obtaining a knowledge score that was above the mean score for the group: for the present purposes, this was considered the cut-off point for having an acceptable knowledge of EBD. Elsewhere, studies have also attempted to assess levels of awareness and implementation of EBD by clinicians, although the possibility that the selected nature of the populations studied overestimates the level of usage of EBD amongst all dentists is real (35)

74% said that they were aware about the Evidence based dentistry which is represented as bar chart figure 5. Figure 6 represents there is no significant difference between participants and their awareness on the

EBD. In a previous article, the overall awareness of EBD amongst dentists in Kuwait was low, even though more than half of them reported that they generally practise it. On the basis of their actual knowledge of EBD, the claim about practice of EBD may be a gross overesti- mate, which needs addressing. (36)

60% of participants said that they have knowledge about the level of evidence based dentistry which is represented as pie chart figure 7. Figure 8 represents there are significant differences between participants and their knowledge about level of evidence based dentistry.Awareness towards the strongest evidence in the hierarchy of EBP: In the 'Hierarchy of Evidence', the students were asked to choose from a list the one study type that provides the strongest 'evidence'. The list included the following options; animal study, systematic review, cohort study, and case report. Responses were considered correct when the option "systematic review" was chosen. No significant difference was reported between the Dental students and Medical students groups (p=0.370). Half of the students from each group chose the correct answer (DS=122/207, 58.9%; MS=48/90, 53.3%).(37)

Most of the participants said that printed journals and textbooks are a major source of information that supports themes in decision making which is represented as pie chart figure 9.Figure 10 represents there are significant differences between the participants and their opinion on major sources of information that supports themes in decision making. Online databases (e.g., PubMed), continuing dental education (CDE), communication with colleagues, professional organizations, study clubs, and peer-reviewed journals have been reported as the most common evidence sources utilized by health professionals(38). A study used PubMed for information retrieval to train the participants as it is the most commonly used up-to-date database.(39)

48 % participants said EBDP Helps in clinical decision making,which is represented as figure 11. Figure 12 represents significant differences between participants and their view on practice on clinical decision making. In a previous article Among our respondents, 47% reported difficulty in practicing EBD in the past year. It is possible that our respondents perceived the same challenges as those reported previously. However, the response to this survey item may have been influenced by the condition under which students ren- der patient care. The treatment and services students provide are always under the direction of a licensed dentist, so students may not perceive themselves as practicing EBD when final decisions are being made by the supervising dentist(40)

44% participants strongly agree that EBD should be included in the undergraduate dental curriculum which is represented as pie chart figure 13. Figure 14 represents there are significant differences between participants and their opinion on EBD included in the undergraduate dental curriculum.In previous study Although the undergraduate medical curriculum at KAU has already incorporated EBP as a major competency standard for more than 6 years, the competence level of the MS group in this area is not positively reflective; thus, further assessment of the undergraduate curriculum from multiple perspectives including, assessing teaching strategies, clinical settings, educators qualifications for EBP, and others is required. On the other hand, the evidence-based competency standard is a new tool in the undergraduate dental curriculum at KAU and has just been implemented. This may explain the results of the Dental students group in this study.(41)

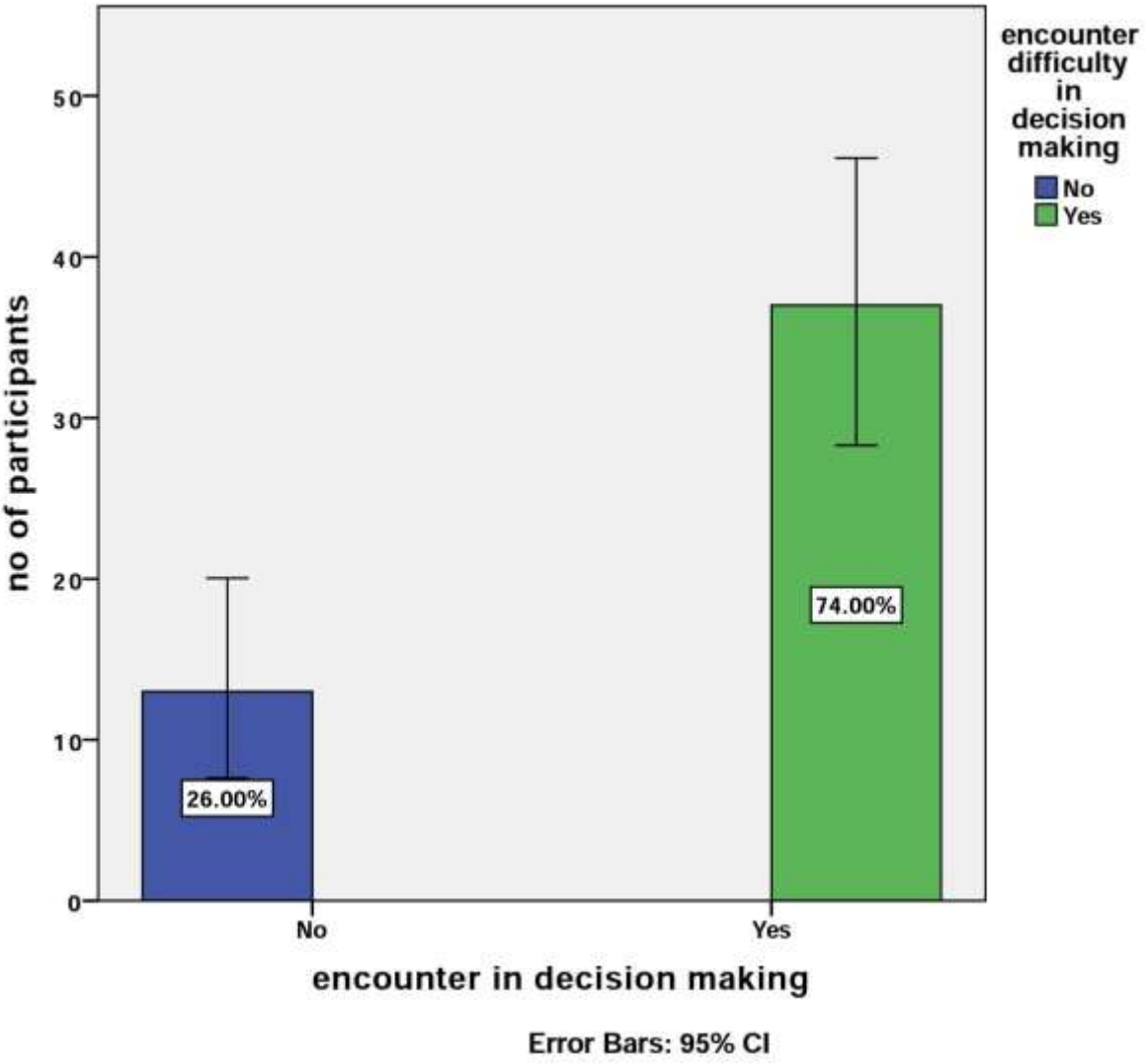
encounter difficulty in decision making
No
Yes
no of participants
50
40
30
20
10
0
26.00%
74.00%
No
Yes
encounter in decision making
Error Bars: 95% CI

Figure 1 represents the response of the participants regarding the difficulty encountered in clinical decision making. 74 % of participants agreed that they encounter difficulty in clinical decision making,

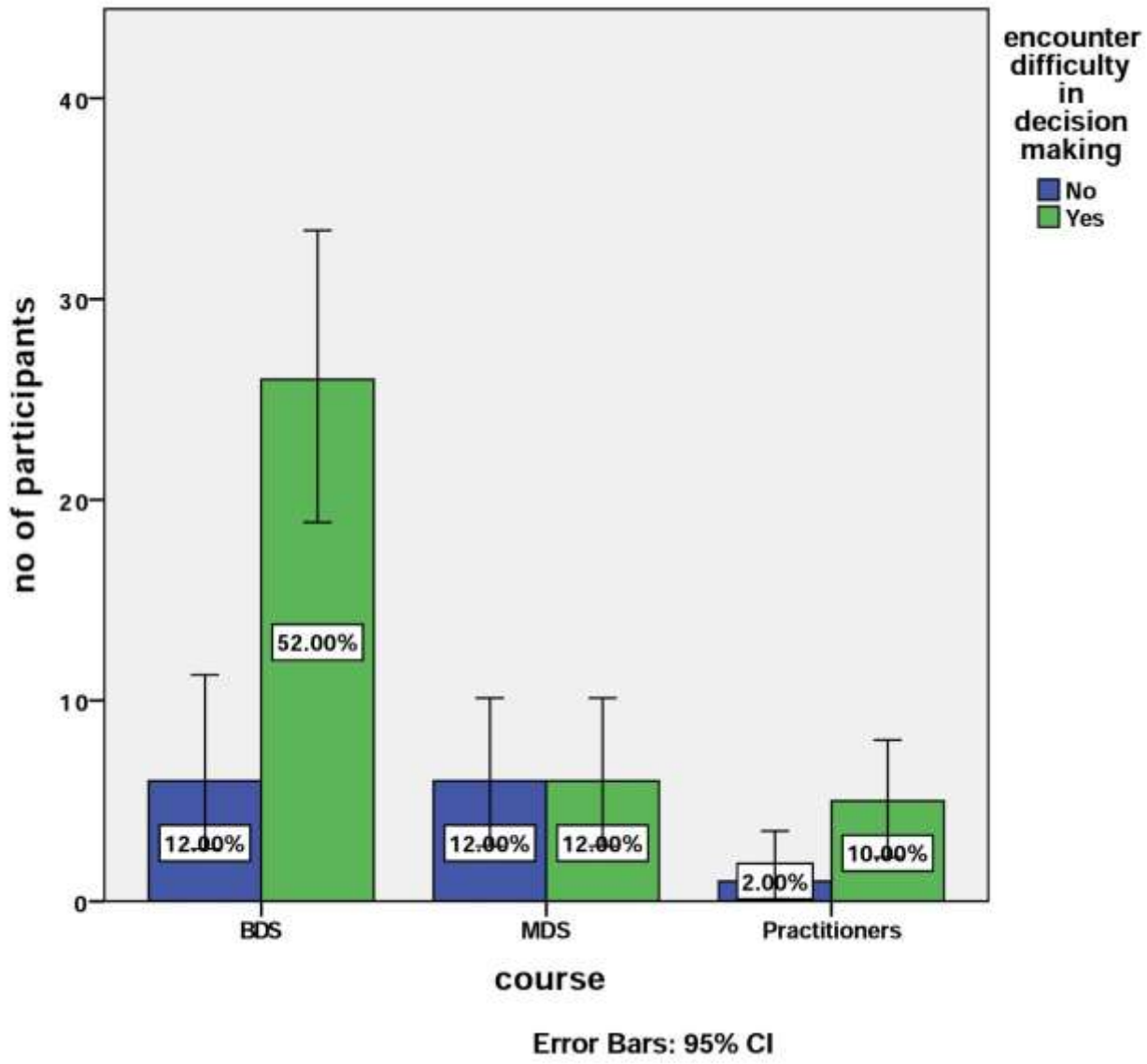

Figure 2: Bar graphs represent the association between the participants in different categories and their opinion regarding the difficulty encountered in clinical decision making. X axis represents students in different years of study and Y axis represents the number of responses. The participants who agree the statement is in green colour, blue colour represents disagreement. Chi square test was used, the association found to be statistically not significant (pearson chi square value is 4.789, p value=0.094) It was noticed that majority of the undergraduate felt they can encounter difficulty in decision making,

however there was no significant difference in opinion among participants based on the year of study regarding the difficulty in decision making.

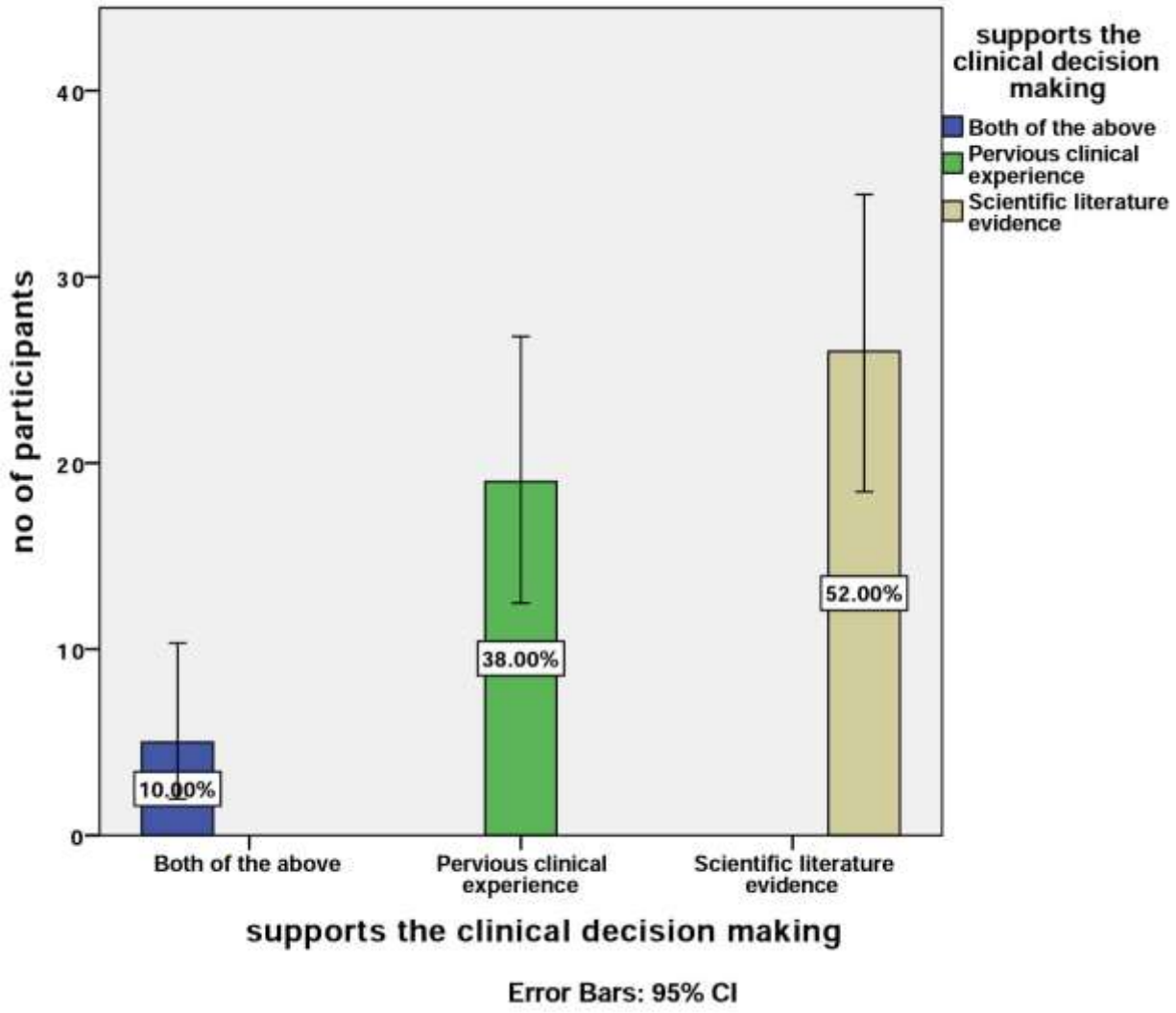

Figure 3 represents the response of participants regarding things that support them in clinical decision making. 52% answered scientific literature, 38% previous clinical experience and 10% answered both of them.

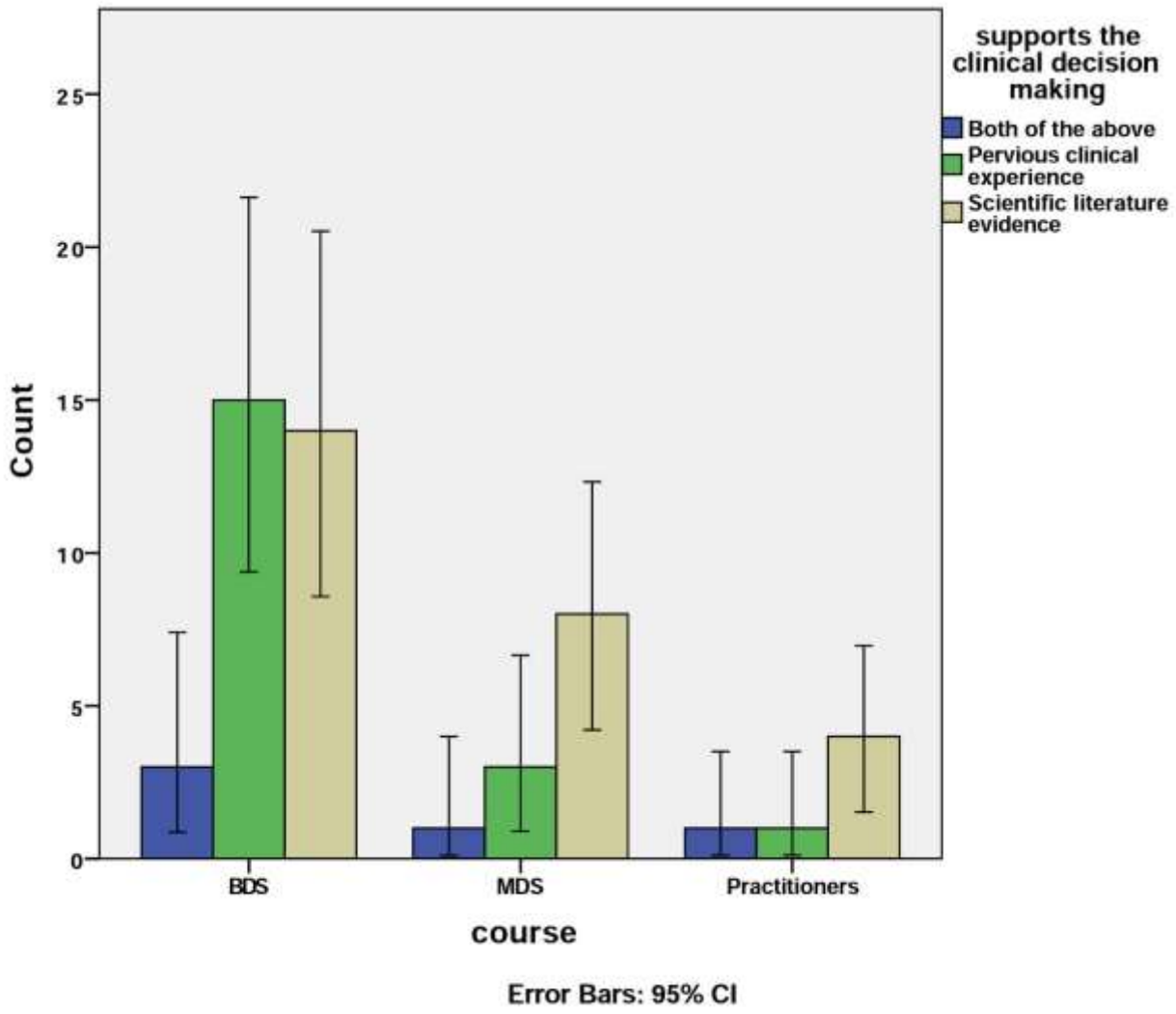

Figure 4 Bar graphs represent the association between the participants in different categories and their opinion regarding things that support them in clinical decision making. X axis represents students in different years of study and Y axis represents the number of responses.The participants who said that it is due to scientific literature evidence is in grey colour,previous evidence literature is in green colour and the participants who agreed with both evidence is in blue colour. Chi square test was used, the association found to be statistically not significant (pearson chi square value is 3.392, p value=0.495). It was noticed that the majority of the undergraduate students felt that scientific literature supports them in decision making, however there was significant difference in opinion among participants based on the year of study regarding the supports in evidence based dentistry.

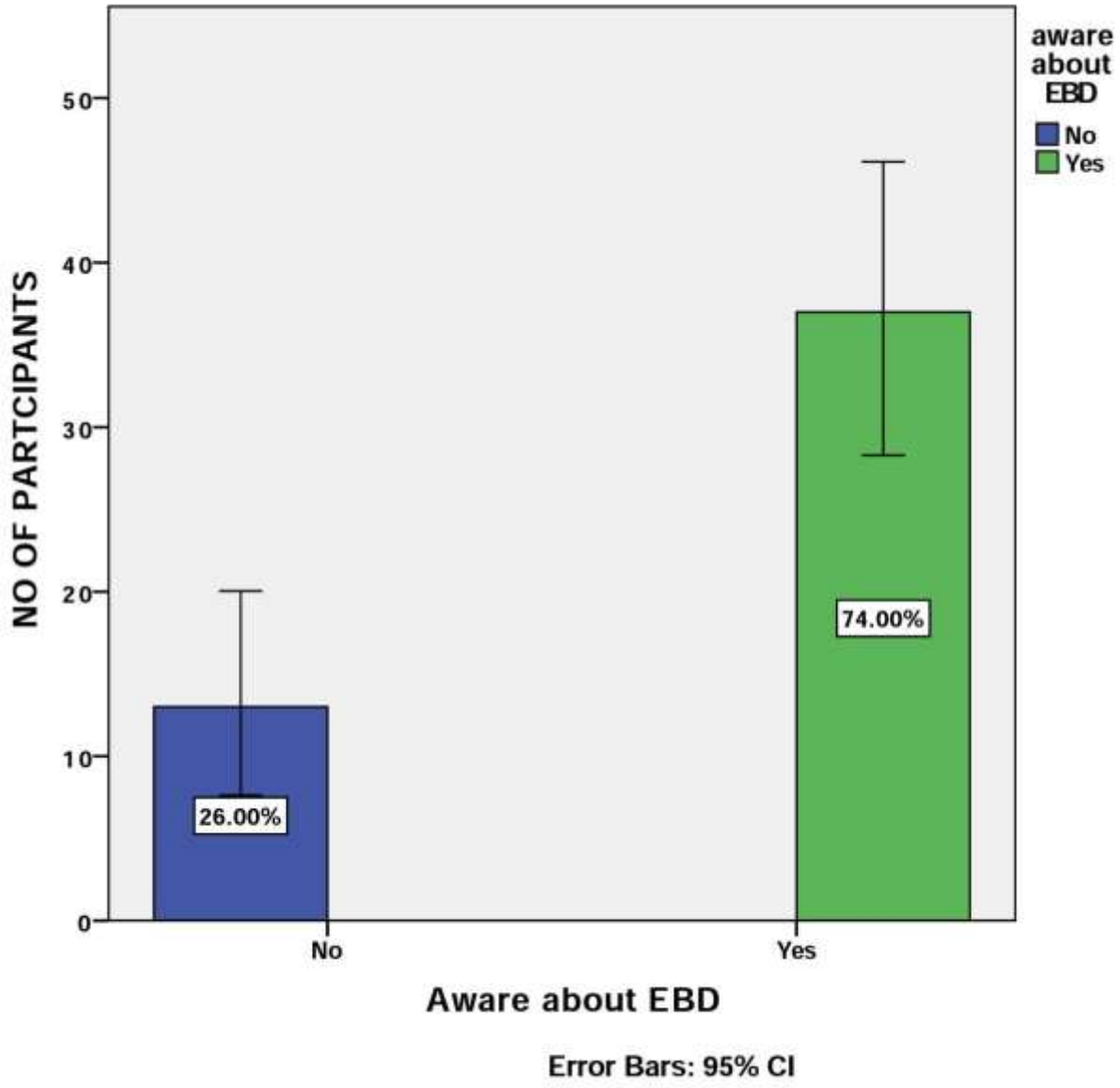

Figure 5 represents the response of the participants regarding their Awareness about EBD.

74 % of participants were aware about EBD.

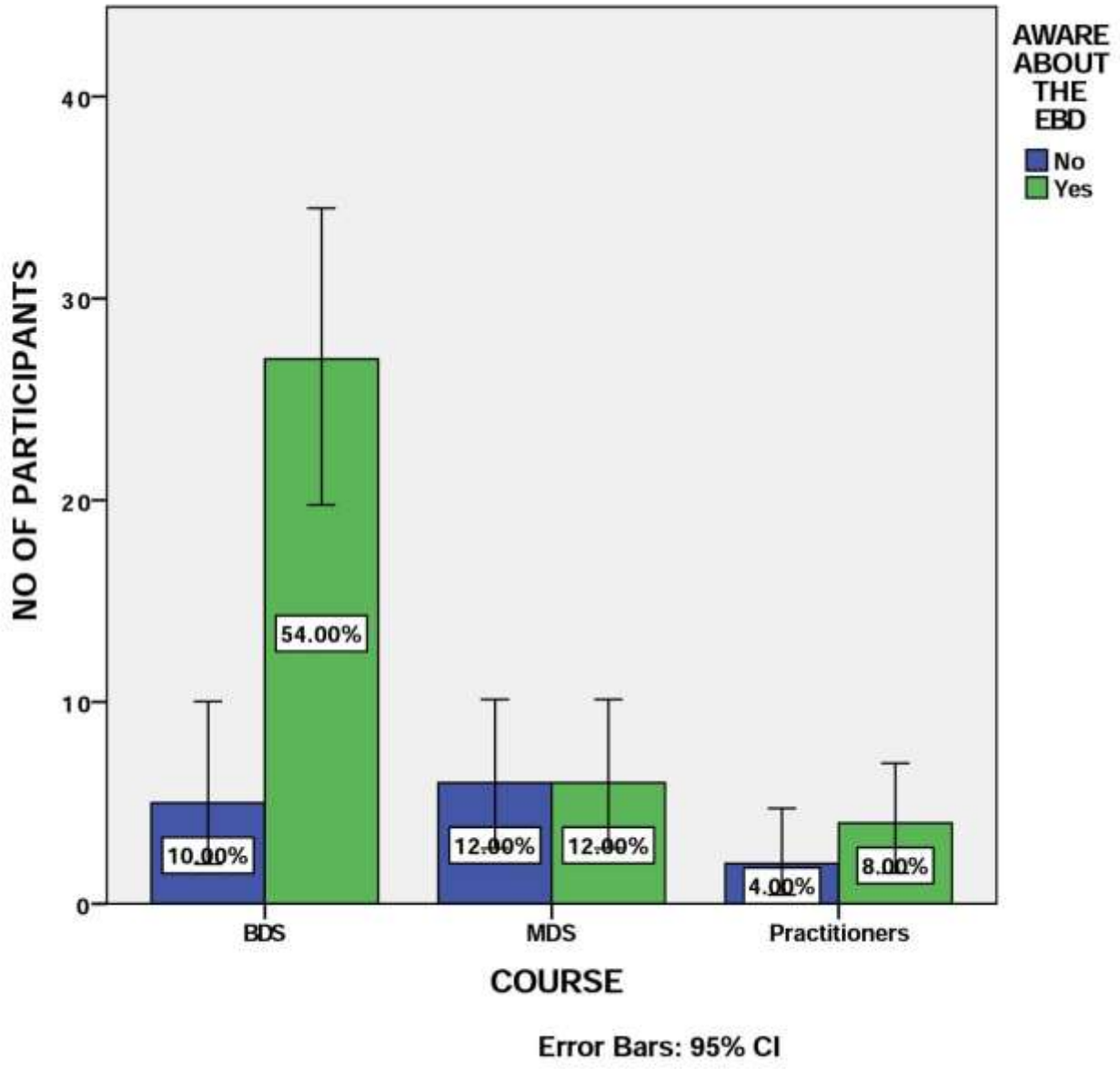

Figure 6 Bar graphs represent the association between the participants in different categories and their awareness about EBD. X axis represents students in different years of study and Y axis represents the number of responses .The participants who said .The participants who agree the statement is in green colour,blue colour is disagree. Chi square test was used, the association was found to be statistically not significant (pearson chi square value is 5.551, p value=0.062). It was noticed that the majority of the undergraduates were Aware about EBD. However, there was significant difference in opinion among participants based on the year of study regarding their Awareness about EBD.

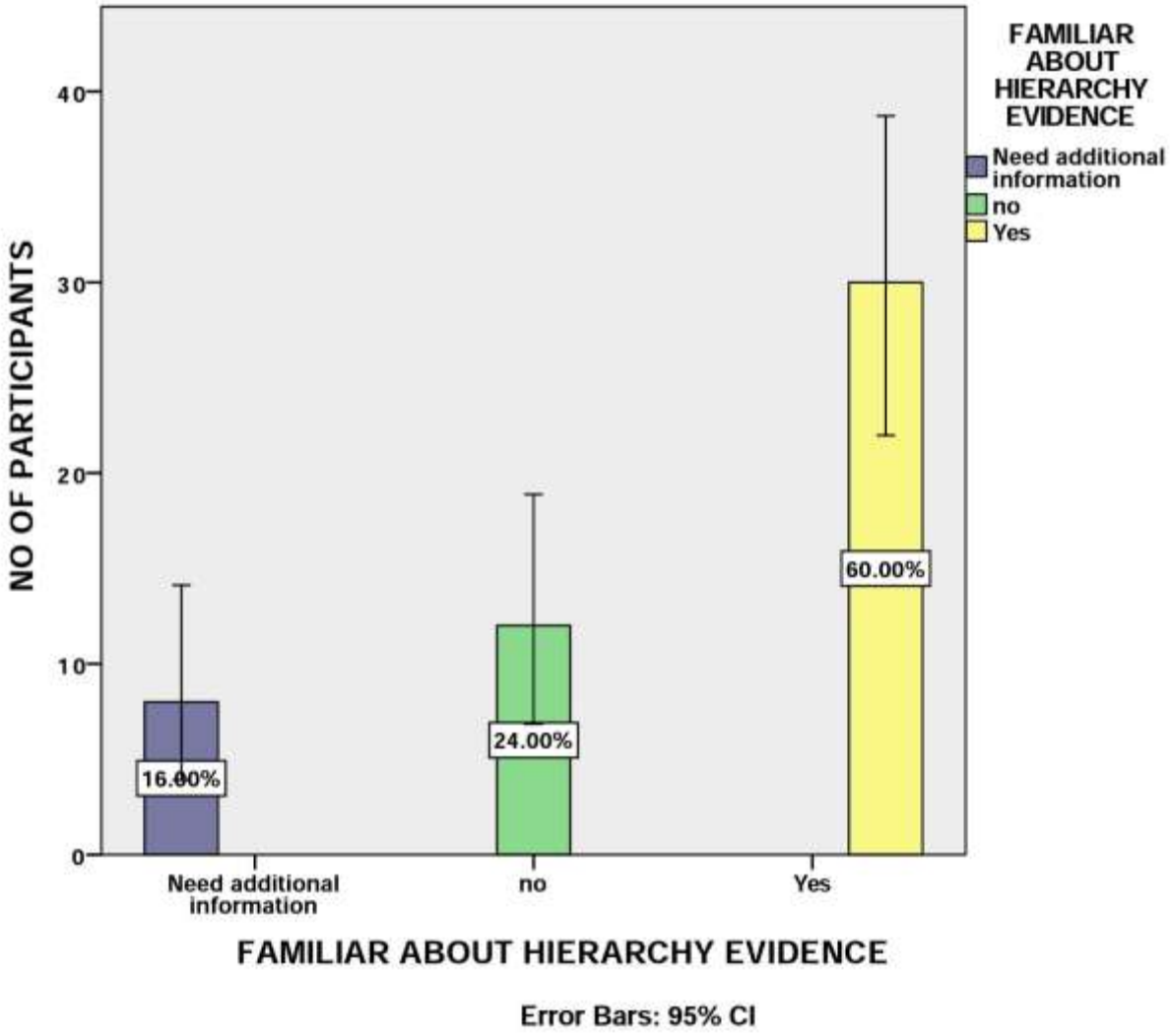

Figure 7 represents the response of the participants regarding their knowledge about the level of evidence based dentistry. 60% participants have knowledge about the level of evidence based dentistry.

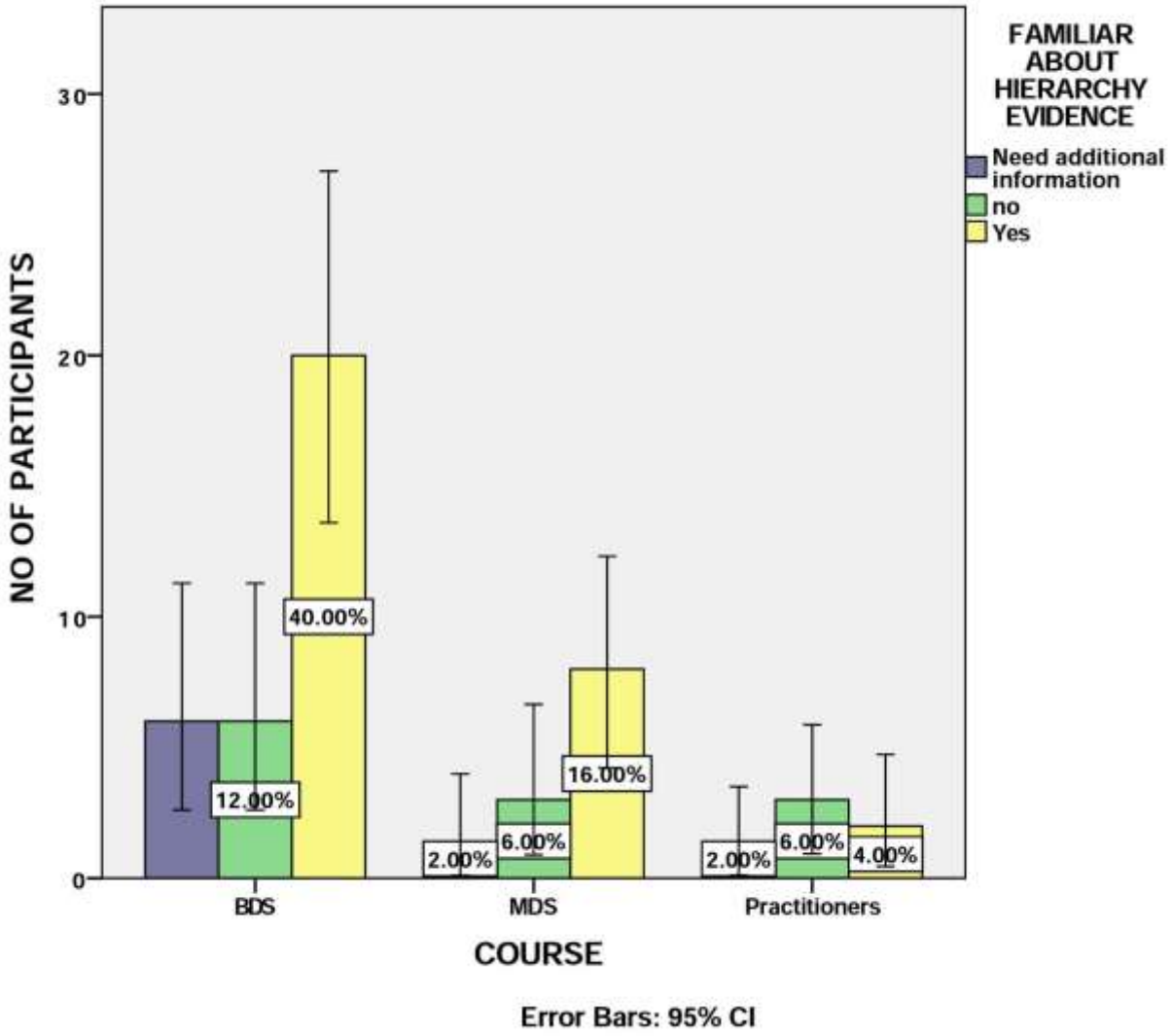

Figure 8. Bar graphs represent the association between the participants in different categories and the knowledge about the level of evidence based dentistry. X axis represents students in different years of study and Y axis represents the number of responses .The participants who said agree the statement is in yellow colour ,disagree is in green colour and the participants who need more information is in blue colour .Chi square test was used, the association found to be statistically not significant (pearson chi square value is 3.334 ,p value=0.479) It was noticed that majority of the undergraduate had knowledge about the level of evidence based dentistry, however there was significant difference in opinion among participants based on the year of study regarding knowledge about the level of evidence based dentistry.

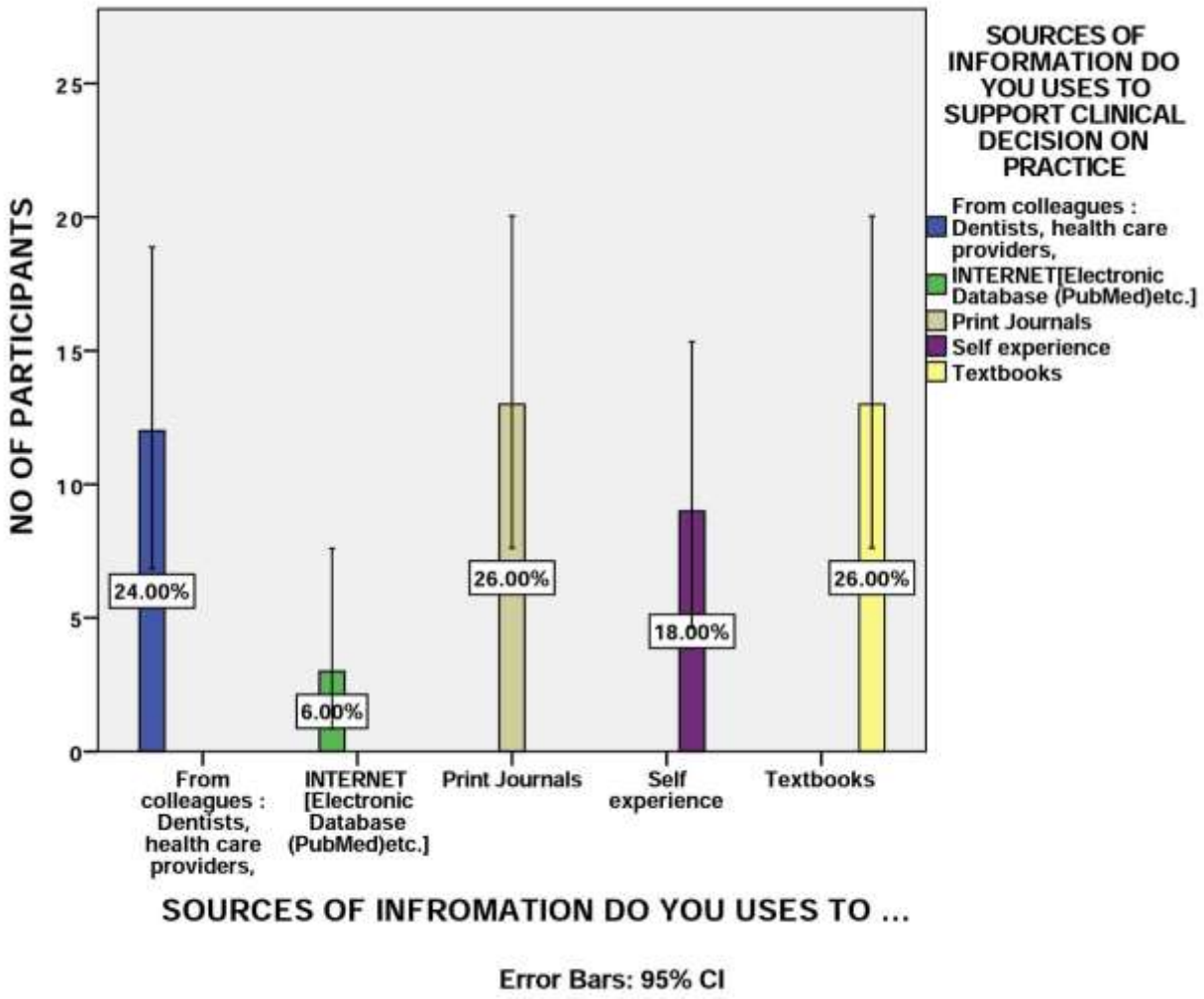

Figure 9 represents the response of the participants regarding the major source of information that supports them in decision making. 52% participants said that printed journals and textbooks are the major source in clinical decision making.

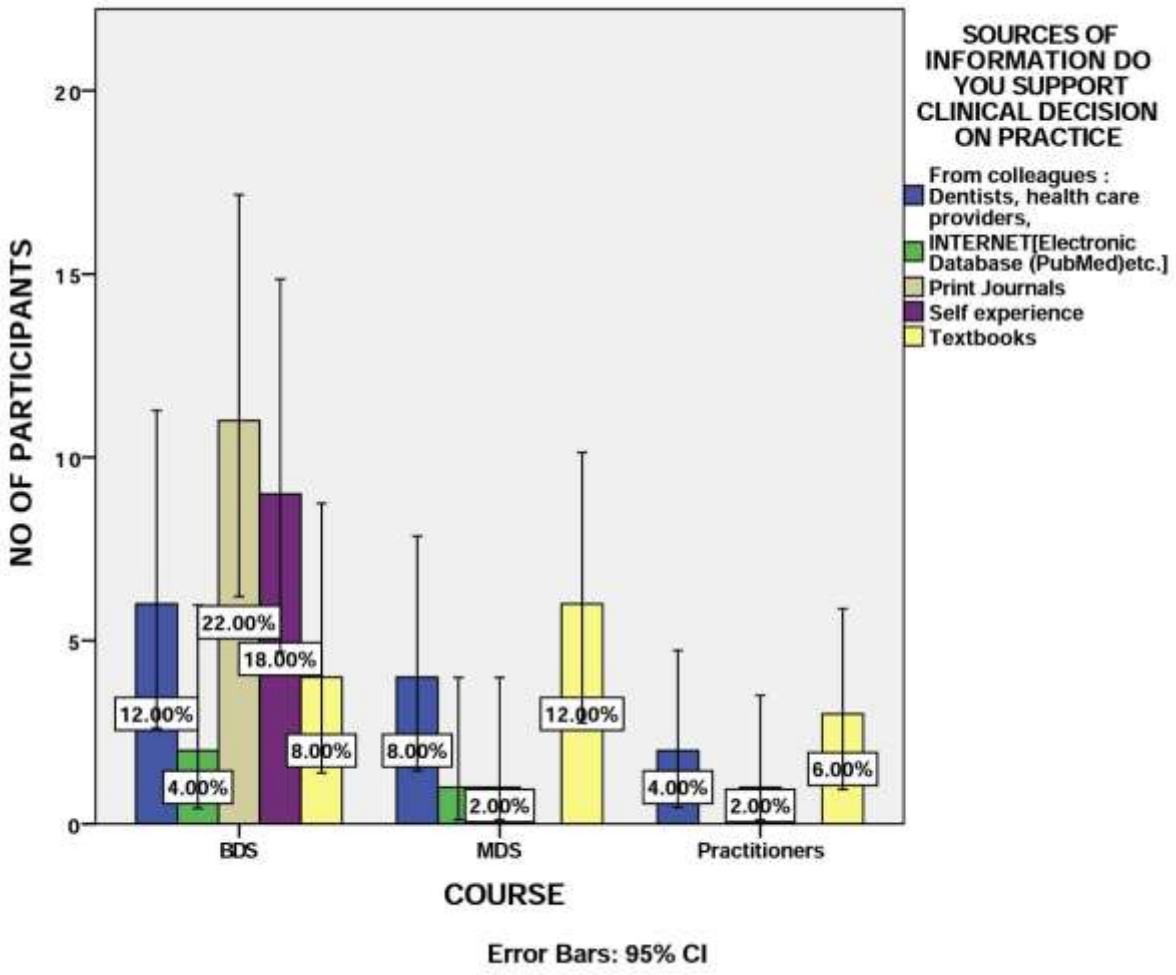

Figure 10. Bar graphs represent the association between the participants in different categories and the major sources of information that support them in clinical decision making. X axis represents students in different years of study and Y axis represents the number of responses. The participants said that colleagues denote the blue colour, the internet is in green colour, from print journal is in grey colour,self experiences denoted in violent colour,and from text book is in yellow colour. Chi square test was used, the association found to be statistically not significant (pearson chi square value is 15.291, p value=0.054). It was noticed that the majority of the undergraduate felt that printed journals and textbooks are the major source in clinical decision making, however there was significant difference in opinion among participants based on the year of study regarding the source of information that supports them in decision making.

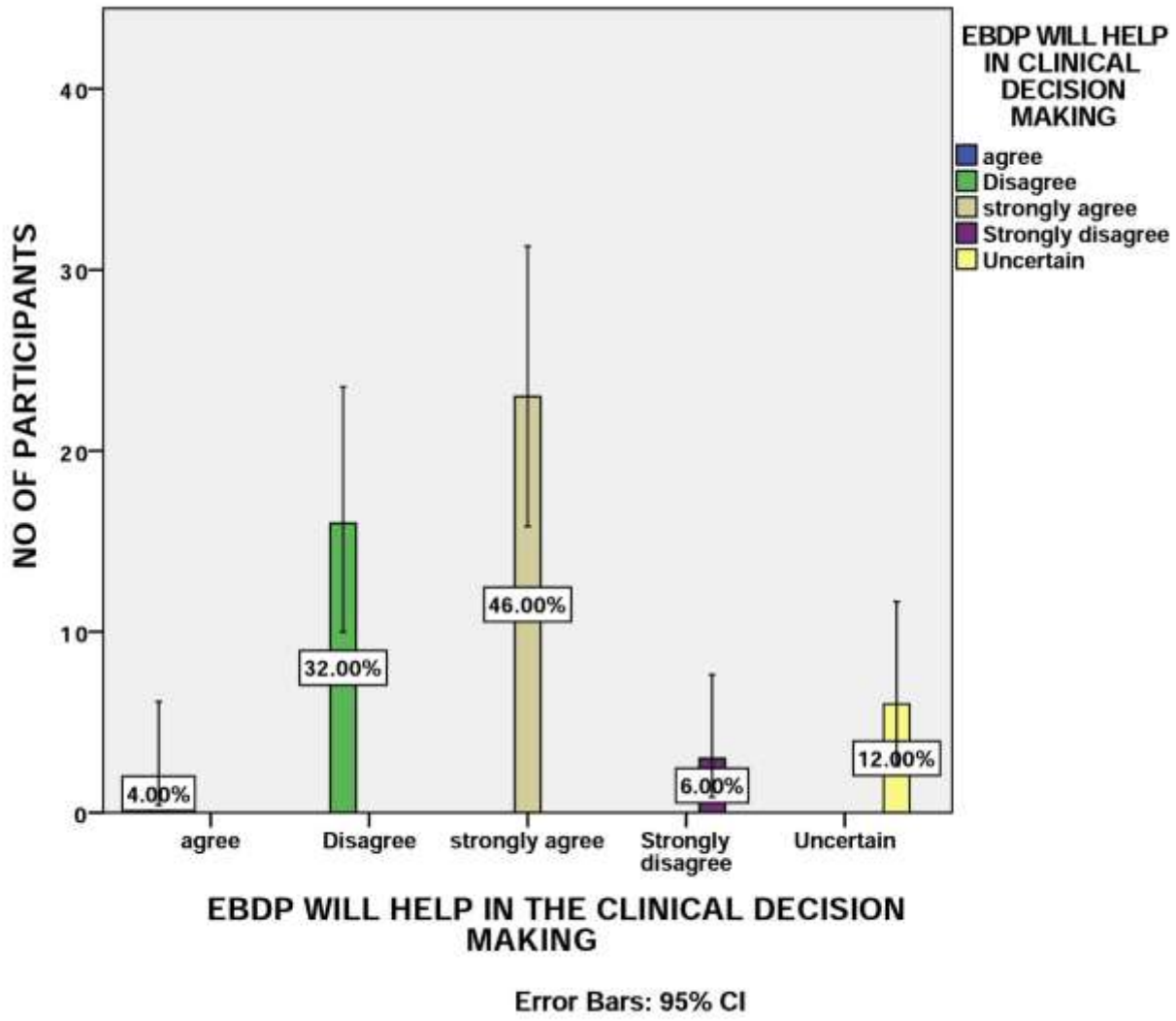

Figure 11 represents the response of the participants regarding whether EBDP Helps in clinical decision making. 46 % participants said EBD helps in clinical decision making.

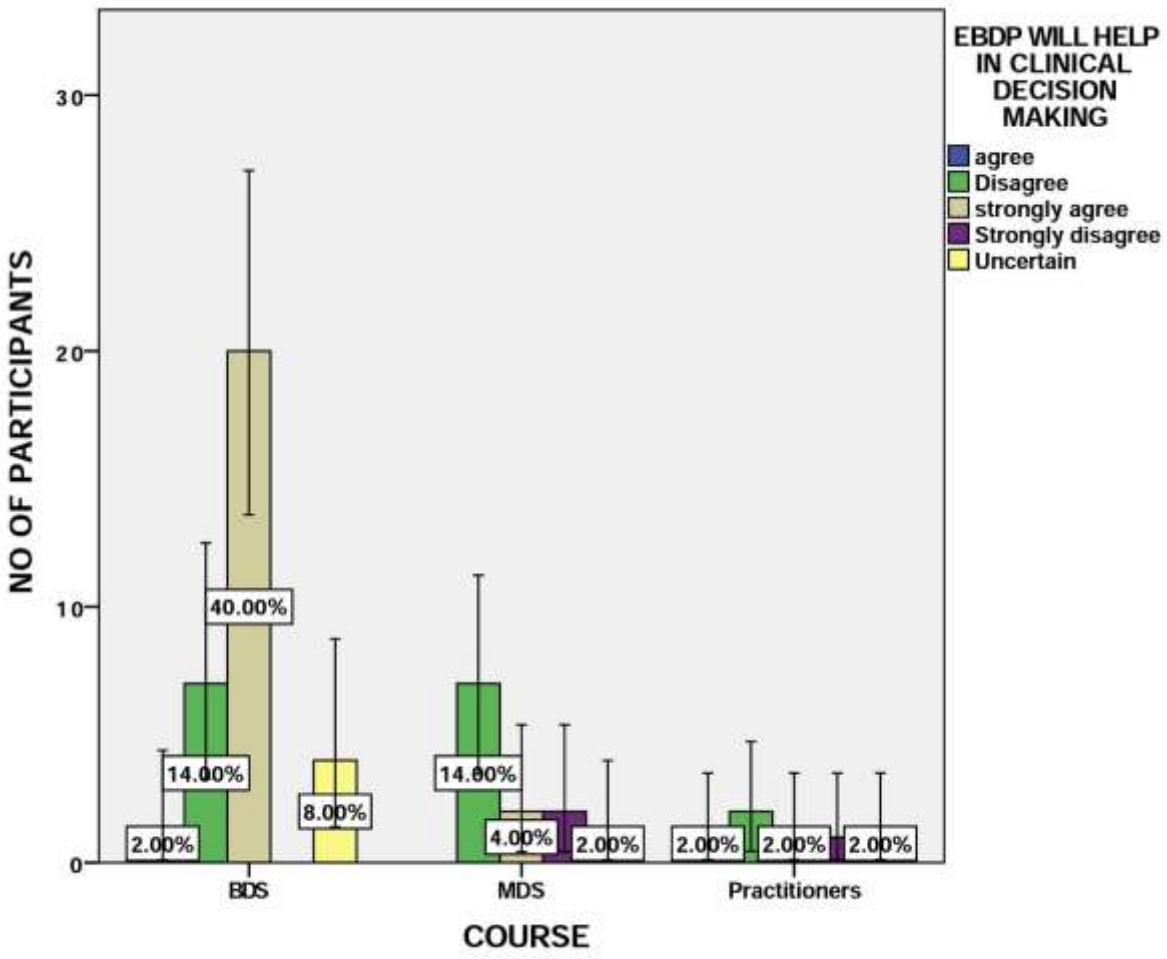

Figure 12 Bar graphs represent the association between the participants in different categories and their opinion regarding whether EBDP Helps in clinical decision making.

X axis represents students in different years of study and Y axis represents the number of responses .The participants who disagree denotes in green colour,strongly agree in grey colour ,strongly disagree is in purple colour,uncertain denoted in yellow colour and agree in blue colour.Chi square test was used, the association found to be statistically significant (pearson chi square value is 16.643,p value=0.011). It was noticed that the majority of the undergraduate felt it helps in clinical decision making, however there was significant difference in opinion among participants based on the year of study regarding thelps in clinical decision making.

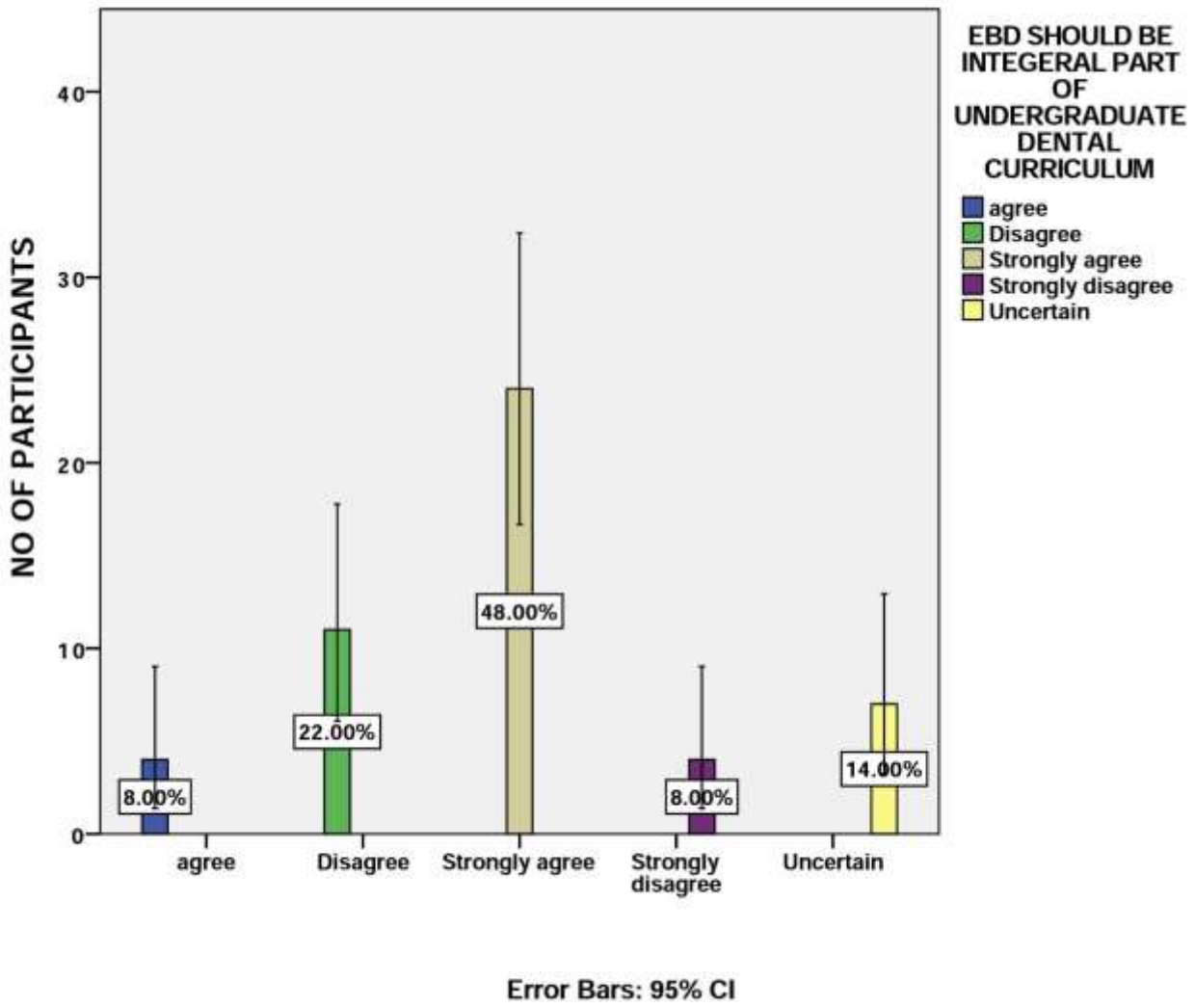

Figure 13 represents the response of the participants regarding whether EBDP should be in part of the dental curriculum. 48 % participants said it should be part of the dental curriculum.

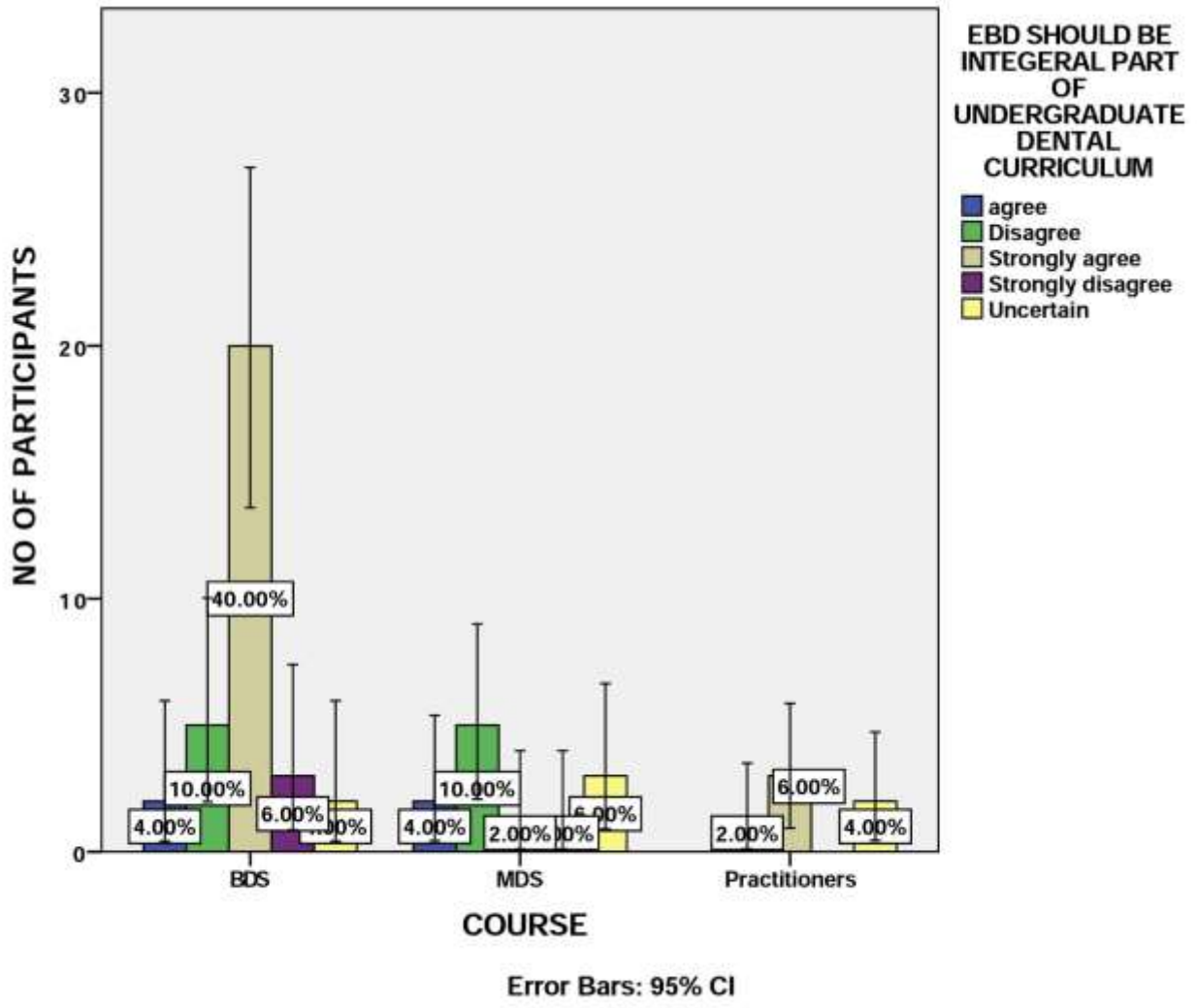

Figure 14 Bar graphs represent the association between the participants in different categories and their opinion regarding including EBD as a part of the dental curriculum.

X axis represents students in different years of study and Y axis represents the number of responses.The participants who disagree denote in green colour,strongly agree in grey colour ,strongly disagree is in purple colour,uncertain denoted in yellow colour and agree in blue colour. Chi square test was used, the association found to be statistically significant (pearson chi square value is 20.023,p value=0.003). It was noticed that the majority of the undergraduate felt it should be part of the dental curriculum, however there was significant difference in opinion among participants based on the year of study regarding it should be part of the dental curriculum.

Limitations of the study

First, this is a cross-sectional study that was carried out at one time point with no follow up of the sequence of events. However, for future publication it may be more appropriate for the purposes of improving recommendations to conduct a longitudinal study at different subsets and on more than one occasion. Cross-sectional studies do indicate associations that may exist and are therefore useful in

generating hypotheses for future research. Despite those limitations, the results can provide a strong background for more complex research into better incorporation of EBP in the undergraduate curriculum.

CONCLUSION

Within the limitations of the study, it can be concluded that the majority of the participants had adequate knowledge and positive attitude towards EBD and were aware about the usage of EBD in dental practice. However, they were lacking in their practices towards EBD in clinics. Most of them believe that it should be included and emphasized in undergraduate dental curriculum so that in developing appropriate treatment plans, dentists should combine the patient's treatment needs and preferences with the best available scientific evidence, in conjunction with the dentist's clinical expertise. To keep pace with other health professions in building a strong evidence-based foundation, dentistry will require significant investments in clinical research and education to evaluate the best currently available evidence in dentistry and to identify new information needed to help dentists provide optimal care to patients.

ACKNOWLEDGEMENT

The authors would like to acknowledge the help rendered by Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.

FUNDING SUPPORT

The present project is funded by

- Saveetha Institute of Medical and Technical Sciences,
- Saveetha Dental College and Hospitals,
- Saveetha University,
- Royal Medicals, Dindigul.

CONFLICTS OF INTEREST

The authors declare no potential conflict of interest.

REFERENCES:

1. Akobeng AK. Principles of evidence based medicine [Internet]. Vol. 90, Archives of Disease in Childhood. 2005. p. 837–40. Available from: http://dx.doi.org/10.1136/adc.2005.071761

2. Iqbal A, Glenny A-M. General dental practitioners' knowledge of and attitudes towards evidence based practice [Internet]. Vol. 193, British Dental Journal. 2002. p. 587–91. Available from: http://dx.doi.org/10.1038/sj.bdj.4801634

3. Dawes M, Summerskill W, Glasziou P, Cartabellotta A, Martin J, Hopayian K, et al. Sicily statement on evidence-based practice. BMC Med Educ. 2005 Jan 5;5(1):1.

4. Provost SE. Book Review: Straus, S. E., Richardson, W. S., Glasziou, P., & Haynes, R. B. (2005). Evidence-Based Medicine: How to Practice and Teach EBM (3rd ed.). Edinburgh, UK: Elsevier Churchill Livingstone, ISBN: 0-443-07444-5 [Internet]. Vol. 17, Research on Social Work Practice. 2007. p. 521–2. Available from: http://dx.doi.org/10.1177/1049731506296167

5. Institute of Medicine, Committee on the Future of Dental Education. Dental Education at the Crossroads: Challenges and Change. National Academies Press; 1995. 368 p.

6. Leffers JM, Audette JG, Hardwick KS, Van Cleve W. International Partnerships for Strengthening Health Care Workforce Capacity: Models of Collaborative Education. Frontiers Media SA; 2018. 246 p.

7. Higgins JPT, Green S. Cochrane Handbook for Systematic Reviews of Interventions. Wiley; 2008. 672 p.

8. Hendricson WD, Rugh JD, Hatch JP, Stark DL, Deahl T, Wallmann ER. Validation of an Instrument to Assess Evidence-Based Practice Knowledge, Attitudes, Access, and Confidence in the Dental Environment [Internet]. Vol. 75, Journal of Dental Education. 2011. p. 131–44. Available from: http://dx.doi.org/10.1002/j.0022-0337.2011.75.2.tb05031.x

9. Mettes TG, van der Sanden WJM, van Eeten-Kruiskamp L, Mulder J, Wensing M, Grol RPT, et al. Routine oral examination: Clinical vignettes, a promising tool for continuing professional development? [Internet]. Vol. 38, Journal of Dentistry. 2010. p. 377–86. Available from: http://dx.doi.org/10.1016/j.jdent.2010.01.004

10. Sargeant J, Loney E, Murphy G. Effective interprofessional teams: "Contact is not enough" to build a team [Internet]. Vol. 28, Journal of Continuing Education in the Health Professions. 2008. p. 228–34. Available from: http://dx.doi.org/10.1002/chp.189

11. Straub-Morarend CL, Marshall TA, Holmes DC, Finkelstein MW. Informational Resources Utilized in Clinical Decision Making: Common Practices in Dentistry [Internet]. Vol. 75, Journal of Dental Education. 2011. p. 441–52. Available from: http://dx.doi.org/10.1002/j.0022-0337.2011.75.4.tb05068.x

12. Maggio LA, Kung JY. How are medical students trained to locate biomedical information to practice

evidence-based medicine? a review of the 2007–2012 literature [Internet]. Vol. 102, Journal of the Medical Library Association : JMLA. 2014. p. 184–91. Available from: http://dx.doi.org/10.3163/1536-5050.102.3.008

13. Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group [Internet]. Vol. 268, JAMA: The Journal of the American Medical Association. 1992. p. 2420–5. Available from: http://dx.doi.org/10.1001/jama.268.17.2420

14. Aitken LM, Hackwood B, Crouch S, Clayton S, West N, Carney D, et al. Creating an environment to implement and sustain evidence based practice: A developmental process [Internet]. Vol. 24, Australian Critical Care. 2011. p. 244–54. Available from: http://dx.doi.org/10.1016/j.aucc.2011.01.004

15. Website [Internet]. Available from: 1. J PC, Pradeep CJ, Marimuthu T, Krithika C, Devadoss P, Kumar SM. Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study [Internet]. Vol. 20, Clinical Implant Dentistry and Related Research. 2018. p. 531–4. Available from: http://dx.doi.org/10.1111/cid.12609

16. Perumal K, Narayanasamy R, Muthusekar RM, Nagalingam S, Thyagarajan S, Ramakrishnan B. Lower pretreatment hemoglobin status and treatment breaks in locally advanced head and neck squamous cell carcinoma during concurrent chemoradiation [Internet]. Vol. 0, Indian Journal of Cancer. 2020. p. 0. Available from: http://dx.doi.org/10.4103/ijc.ijc_656_18

17. Wang H, Chinnathambi A, Alahmadi TA, Alharbi SA, Veeraraghavan VP, Krishna Mohan S, et al. Phyllanthin inhibits MOLT-4 leukemic cancer cell growth and induces apoptosis through the inhibition of AKT and JNK signaling pathway. J Biochem Mol Toxicol. 2021 Jun;35(6):1–10.

18. Li S, Zhang Y, Veeraraghavan VP, Mohan SK, Ma Y. Restorative Effect of Fucoxanthin in an Ovalbumin-Induced Allergic Rhinitis Animal Model through NF-κB p65 and STAT3 Signaling [Internet]. Vol. 38, Journal of Environmental Pathology, Toxicology and Oncology. 2019. p. 365–75. Available from: http://dx.doi.org/10.1615/jenvironpatholtoxicoloncol.2019030997

19. Bishir M, Bhat A, Essa MM, Ekpo O, Ihunwo AO, Veeraraghavan VP, et al. Sleep Deprivation and Neurological Disorders [Internet]. Vol. 2020, BioMed Research International. 2020. p. 1–19. Available from: http://dx.doi.org/10.1155/2020/5764017

20. Fan Y, Maghimaa M, Chinnathambi A, Alharbi SA, Veeraraghavan VP, Mohan SK, et al. Tomentosin Reduces Behavior Deficits and Neuroinflammatory Response in MPTP-Induced Parkinson's Disease in Mice [Internet]. Vol. 40, Journal of Environmental Pathology, Toxicology and Oncology. 2021. p. 75–84. Available from: http://dx.doi.org/10.1615/jenvironpatholtoxicoloncol.v40.i1.70

21. Gan H, Zhang Y, Zhou Q, Zheng L, Xie X, Veeraraghavan VP, et al. Zingerone induced caspase-dependent apoptosis in MCF-7 cells and prevents 7,12-dimethylbenz(a)anthracene-induced mammary carcinogenesis in experimental rats [Internet]. Vol. 33, Journal of Biochemical and Molecular Toxicology. 2019. Available from: http://dx.doi.org/10.1002/jbt.22387

22. Zhang C, Chen Y, Zhang M, Xu C, Gong G, Veeraraghavan VP, et al. Vicenin-2 Treatment Attenuated the Diethylnitrosamine-Induced Liver Carcinoma and Oxidative Stress through Increased Apoptotic Protein Expression in Experimental Rats [Internet]. Vol. 39, Journal of Environmental Pathology, Toxicology and Oncology. 2020. p. 113–23. Available from:

http://dx.doi.org/10.1615/jenvironpatholtoxicoloncol.2020031892

23. Website [Internet]. Available from: Ramakrishnan M, Dhanalakshmi R, Subramanian EMG. Survival rate of different fixed posterior space maintainers used in Paediatric Dentistry – A systematic review [Internet]. Vol. 31, The Saudi Dental Journal. 2019. p. 165–72. Available from: http://dx.doi.org/10.1016/j.sdentj.2019.02.037

24. Website [Internet]. Available from: Felicita AS, Sumathi Felicita A. Orthodontic extrusion of Ellis Class VIII fracture of maxillary lateral incisor – The sling shot method [Internet]. Vol. 30, The Saudi Dental Journal. 2018. p. 265–9. Available from: http://dx.doi.org/10.1016/j.sdentj.2018.05.001

25. Su P, Veeraraghavan VP, Mohan SK, Lu W. A ginger derivative, zingerone—a phenolic compound—induces ROS-mediated apoptosis in colon cancer cells (HCT-116) [Internet]. Vol. 33, Journal of Biochemical and Molecular Toxicology. 2019. Available from: http://dx.doi.org/10.1002/jbt.22403

26. Wan J, Feng Y, Du L, Veeraraghavan VP, Mohan SK, Guo S. Antiatherosclerotic Activity of Eriocitrin in High-Fat-Diet-Induced Atherosclerosis Model Rats [Internet]. Vol. 39, Journal of Environmental Pathology, Toxicology and Oncology. 2020. p. 61–75. Available from: http://dx.doi.org/10.1615/jenvironpatholtoxicoloncol.2020031478

27. Website [Internet]. Available from: 2. Wahab PUA, Abdul Wahab PU, Madhulaxmi M, Senthilnathan P, Muthusekhar MR, Vohra Y, et al. Scalpel Versus Diathermy in Wound Healing After Mucosal Incisions: A Split-Mouth Study [Internet]. Vol. 76, Journal of Oral and Maxillofacial Surgery. 2018. p. 1160–4. Available from: http://dx.doi.org/10.1016/j.joms.2017.12.020

28. Mudigonda SK, Murugan S, Velavan K, Thulasiraman S, Krishna Kumar Raja V. Non-suturing microvascular anastomosis in maxillofacial reconstruction- a comparative study [Internet]. Vol. 48, Journal of Cranio-Maxillofacial Surgery. 2020. p. 599–606. Available from: http://dx.doi.org/10.1016/j.jcms.2020.04.005

29. Veeraraghavan VP, Hussain S, Balakrishna JP, Dhawale L, Kullappan M, Ambrose JM, et al. A Comprehensive and Critical Review on Ethnopharmacological Importance of Desert Truffles: Terfezia claveryi, Terfezia boudieri, and Tirmania nivea [Internet]. Food Reviews International. 2021. p. 1–20. Available from: http://dx.doi.org/10.1080/87559129.2021.1889581

30. Chandrasekar R, Chandrasekhar S, Shantha Sundari KK, Ravi P. Development and validation of a formula for objective assessment of cervical vertebral bone age [Internet]. Vol. 21, Progress in Orthodontics. 2020. Available from: http://dx.doi.org/10.1186/s40510-020-00338-0

31. Saravanakumar K, Park S, Mariadoss AVA, Sathiyaseelan A, Veeraraghavan VP, Kim S, et al. Chemical composition, antioxidant, and anti-diabetic activities of ethyl acetate fraction of Stachys riederi var. japonica (Miq.) in streptozotocin-induced type 2 diabetic mice. Food Chem Toxicol. 2021 Sep;155:112374.

32. Sathya S, Ragul V, Veeraraghavan VP, Singh L, Niyas Ahamed MI. An in vitro study on hexavalent chromium [Cr(VI)] remediation using iron oxide nanoparticles based beads [Internet]. Vol. 14, Environmental Nanotechnology, Monitoring & Management. 2020. p. 100333. Available from: http://dx.doi.org/10.1016/j.enmm.2020.100333

33. Wei, Wei W, Li R, Liu Q, Seshadri VD, Veeraraghavan VP, et al. Amelioration of oxidative stress,

inflammation and tumor promotion by Tin oxide-Sodium alginate-Polyethylene glycol-Allyl isothiocyanate nanocomposites on the 1,2-Dimethylhydrazine induced colon carcinogenesis in rats [Internet]. Vol. 14, Arabian Journal of Chemistry. 2021. p. 103238. Available from: http://dx.doi.org/10.1016/j.arabjc.2021.103238

34. Ismail AI, Bader JD. Evidence-based dentistry in clinical practice [Internet]. Vol. 135, The Journal of the American Dental Association. 2004. p. 78–83. Available from: http://dx.doi.org/10.14219/jada.archive.2004.0024

35. Haj-Ali RN, Walker MP, Petrie CS, Williams K, Strain T. Utilization of evidence-based informational resources for clinical decisions related to posterior composite restorations. J Dent Educ. 2005 Nov;69(11):1251–6.

36. Haron IM, Sabti MY, Omar R. Awareness,knowledge and practice of evidence-based dentistry amongst dentists in Kuwait [Internet]. Vol. 16, European Journal of Dental Education. 2012. p. e47–52. Available from: http://dx.doi.org/10.1111/j.1600-0579.2010.00673.x

37. Sriram N, Leelavathi L. Knowledge, Attitude and Practice Towards Evidence based Practice among Medical and Dental Students [Internet]. Vol. 10, Indian Journal of Public Health Research & Development. 2019. p. 3716. Available from: http://dx.doi.org/10.5958/0976-5506.2019.04168.8

38. Botello-Harbaum MT, Demko CA, Curro FA, Brad Rindal D, Collie D, Gilbert GH, et al. Information-Seeking Behaviors of Dental Practitioners in Three Practice-Based Research Networks [Internet]. Vol. 77, Journal of Dental Education. 2013. p. 152–60. Available from: http://dx.doi.org/10.1002/j.0022-0337.2013.77.2.tb05457.x

39. Jefferson T, Godlee F. Peer Review in Health Sciences. BMJ Books; 2003. 392 p.

40. Daly B, Batchelor P, Treasure E, Watt R. Essential Dental Public Health. OUP Oxford; 2013. 264 p.

41. Bernadette Mazurek Melnyk, PhD, RN, CPNP/PMHNP, FAANP, FNAP, FAAN, Ne-Bc LG-FPR, Faan EF-OPR. Implementing the Evidence-Based Practice (EBP) Competencies in Healthcare: A Practical Guide for Improving Quality, Safety, and Outcomes. Sigma Theta Tau; 2016. 352 p.