Awareness of importance of research in undergraduate dental students

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ABSTRACT

Research can be defined as a study on a particular topic in detail in a systematic and scientific method. The purposes of research are to find something new, to prove or support a theory, to contribute knowledge in a field, or to increase awareness about something. Medical research includes basic research to clinical research which leads to advancement in the pharmaceutical industry, to improve healthcare and public health. Research among undergraduate students will expand knowledge in their field, increases interest in their career and improves their resume for job search. A cross-sectional survey was conducted among undergraduate dental students to evaluate the awareness of the importance of research. The study population in the study are the undergraduate dental students with a sample size of 100. The questionnaire consisted of 20 questions and was shared to undergraduate dental students using online survey platform. 80% of the participates college encourage students to do research, 11% of the students college does not and 9% of the students college partially encourage students to do research. 48% of the participants said they would continuedoing research, 17% said they would not continue doing research and 35% said they might continue doing research. From the results obtained, we can conclude that moderate to agood level of awareness is seen in undergraduate dental students. More awareness should be created and undergraduate students should be encouraged to do research and make the best use of their college years.

INTRODUCTION

Research can be defined as a study on a particular topic in detail in a systematic and scientific method (Dellis et al., 2014). The purposes of research are to find something new, to prove or support a theory, to contribute knowledge in a field, or to increase awareness about something. Medical research includes basic research to clinical research which leads to advancement in the pharmaceutical industry, to improve healthcare and public health (Röhrig et al., 2009). It also includes developing tools and techniques for patient care, gathering information about diseases, its risk factors (Sriram et al., 2015; Menon and Thenmozhi,
2016). Some studies are conducted to find the presence or absence of some anatomical structures (Keerthana and Thenmozhi, 2016; Pratha and Thenmozhi, 2016). The measurements from these studies are useful in surgeries (Nandhini et al., 2018; Subashri and Thenmozhi, 2016; Kannan and Thenmozhi, 2016) and also useful in forensics especially to solve criminal cases (Krishna and Babu, 2016). Some of the benefits of medical researches are the invention of vaccines, insulin treatment for diabetes, antibiotics, medications, new surgical techniques and new treatment of diseases. Clinical trials are done to check whether it works in the human body or not and find the side effects (Seppan et al., 2018). While carrying out clinical trials in humans, the researcher must strictly follow the principles of medical ethics (Masic et al., 2014).

Research among undergraduate students will expand knowledge in their field, increases interest in their career and improves their resume for job search. There is a decrease in the number of medical graduates pursuing research as a career (Moraes et al., 2016). Incorporating research work along with the academics in students, enables them to develop independent critical thinking skills along with oral and written communication skills (Petrelia and Jung, 2008). It also allows students to oppose preconceived ideas. Many countries offer scientific research programs when undergoing medical residency (Kuhnigk et al., 2010). The other benefits of doing research could be to gain the personal satisfaction of contributing something to the society and getting recognition in the profession, etc. (Nayak, 2009). Studies have found that involvement in research as an undergraduate medical students have a strong association with postgraduate initiatives (VallabhaJosyula et al., 2014). Hence, undergraduate students should be very much encouraged to do research along with their academics. Over the past years, various research done by our team was on osteology (Hafeez and Thenmozhi, 2016; Choudhari and Thenmozhi, 2016), on RNA (Johnson et al., 2020; Sekar et al., 2019) and in few other fields (Samuel and Thenmozhi, 2015). Benefits of being a part of research among undergraduate students are that they develop their learning skills (Thejeswar and Thenmozhi, 2015), exposes students to other researches done in different parts of the world. It improves teamwork, communication skills and also teach students about how to defend their topic. All these skills are essential in professionals and have to be incorporated in them instead of focusing only on academics. When the students apply for jobs, the job recruiters does not check the marks obtained rather researches done adds value to the resume and favourably impresses the interviewer. Doing researches also shows the person’s interest and passion in their career as they are done voluntarily. Very few colleges have included research as part of the curriculum, while many colleges have not given any importance to research which has to be changed. The aim of this study is to evaluate the awareness of the importance of research in undergraduate dental students.

MATERIALS AND METHODS

Study design

A cross-sectional survey was conducted among undergraduate dental students to evaluate the awareness of the importance of research. The sampling method is simple random sampling method. The sample size of this study is 100. The participants did the survey voluntarily and no incentives were given to them. The study was conducted in May 2020. Ethical approach and informed consent from the participants were obtained.

Survey Instrument

The survey instrument, which was a questionnaire, was prepared after an extensive review of the existing literature. The questionnaire was reviewed and amendments were made to improve the clarity of the questions to eliminate ambiguous responses. The questionnaire consisted of 23 questions with both open and closed-ended questions. The questionnaire was shared to undergraduate dental students using online survey platform.

Data analysis

Only completed surveys were taken for analysis and the incompletely filled surveys were eliminated. Frequency table was prepared for each question using SPSS Statistics 19 data analysis software. Descriptive statistics used to create pie charts. All the responses obtained were tabulated and the reliability of the data was checked.

RESULTS AND DISCUSSION

Out of the 100 participants, 71% were first-year dental students, 18% were in the second year; 4% in the third year; 2% in the fourth year and remaining 5% were interns. 80% of the participants were females, while 20% were males. 79% of the participants belong to the age group 17 to 20 years, 17% were between 20 to 22 years and the remaining 4% were more than 22 years (Table 1). 80% of the participants college encourage students to do research, 11% of the students college does not and 9% of the students college partially encourages the students.
Figure 1: College encourages students to do research. The majority said yes (80% blue), some said no (11% green) and some said partially (9% cream)

Figure 2: Interest of research in students. Interest is high (40% green), medium (50% green) and low (10% cream)

Figure 3: Number of researches done by the participants. One (14% blue), 1 to 3 (18% green), more than 3 (58% cream) and none (10% violet)

Figure 4: Difficulty level in publishing an article

Figure 5: Likelihood of subsequently feeling easier. Very difficult (10%), difficult (14%), moderate (28%), easy (35%) and not aware (10%)

Figure 6: Satisfaction with the research methodology. Very satisfied (10%), satisfied (20%), moderately satisfied (28%), dissatisfied (21%), very dissatisfied (14%) and not aware (10%)

Figure 7: Positivity towards publishing research articles. Very positive (10%), positive (20%), moderately positive (28%), somewhat negative (21%), negative (14%) and not aware (10%)

58% of the participants have done more than three researches, 18% have done one to three researches, 14% have done one research and 10% have not done any research (Figure 3). 67% of the participants agreed that publishing researches in undergraduate level will give more job opportunities, 10% disagreed and 23% said maybe it will give more job opportunities (Table 2). 58% of the participants felt that research methodology knowledge would be helpful in competitive exams, 21% did not feel that way and 21% said that they are not aware. When asked about the difficulty in publishing a research article 30% described it as very difficult, 28% as difficult, 35% as moderate, 1% as easy and 6% were not aware (Figure 4). 70% of the students who have done more than one research, found the process get subsequently easier, 9% did not and 21% partially felt it getting subsequently easier (Figure 5). 66% of the undergraduate dental students agreed that researching at undergraduate level increases pas-
67% of the participants agreed that research methodology in college develops independent critical thinking skills and problem-solving skills, 10% disagreed and 23% said maybe. 64% of the participants felt that researches improve oral and written communication skills, 7% did not feel that way and 29% said maybe. 59% of the students said that they felt an increase in their self-confidence after doing researches, 11% did not feel any increase in self-confidence and 30% of the participants were not aware (Figure 6). 35% of the participants said they would choose research as a career, 31% said they wouldn't choose research as a career and 34% said maybe that maybe they would pursue research as their career. 71% agreed that research benefits not only the students but also the faculties to gain more knowledge in their field, 4% disagreed and 25% said maybe it benefits the faculties. 61% of the participants have presented their research in a conference, 28% have not and the remaining 11% have not done any research (Figure 7). 75% of the participants said that research is included as part of the curriculum and 25% said no (Figure 8). 32% of the participants strongly agree that researches should be a part of the dental curriculum, 27% agreed, 29% were neutral, 7% disagreed and 5% strongly dis-
66% of the participants felt that research would help clinical practice later, 6% said no and 28% said maybe. 48% of the participants said they would continue doing research, 17% said they would not continue doing research and 35% said they might continue doing research.

When asked about the reasons to do research, 29.8% said that they are doing to find something and contribute to the world, 24.22% said to gain more understanding of the subject, 14.9% said that they are doing since it is mandatory as part of the curriculum, 10.5% said to improve resume, 20.5% said to increase knowledge (Figure 10). When asked about the barriers faced while doing research, 16.2% said lack of interest, 24.5% said inadequate knowledge about research methodology, 8.3% said inadequate facilities and funds, 10.06% said lack motivation, 6.7% said lack guidance by faculties, 22.3% said lack of time, 6.7% said other reasons and 5.02% were not aware (Table 3). From analysing in spss software, no significant difference was seen in interest to do research among males and females. (Figure 11). There was no significant difference seen in responses of students whose college has research as part of the curriculum and those students whose col-
Table 2: Awareness and perception of survey participants towards research

| Questions                                                                 | Yes | No  | Maybe |
|---------------------------------------------------------------------------|-----|-----|-------|
| Job opportunities will increase after publishing research                 | 67% | 10% | 23%   |
| Are you aware of the benefits of research in competitive exams?           | 58% | 21% | 21%   |
| Research publication increases passion for one’s career.                  | 66% | 9%  | 25%   |
| Research develops independent critical thinking skills and problem-solving skills. | 67% | 10% | 23%   |
| Exposure to research improves oral and communication skills.              | 64% | 7%  | 29%   |
| Would you pursue research as a career?                                    | 35% | 31% | 34%   |
| Are you aware of the benefits of research to the faculties?               | 71% | 4%  | 25%   |
| Are you aware that research will help clinical practice later?            | 66% | 6%  | 28%   |
| Will you continue researching after completing your degree?              | 48% | 17% | 35%   |

Table 3: Barriers to doing research faced by the participants

| Barriers faced by students for doing research                             | Percentage of responses |
|--------------------------------------------------------------------------|-------------------------|
| Inadequate knowledge about research methodology                          | 24.58%                  |
| Lack of time                                                              | 22.35%                  |
| Lack of interest                                                          | 16.2%                   |
| Lack of motivation                                                        | 10.06%                  |
| Inadequate facilities and funds                                           | 8.38%                   |
| Lack of guidance by faculties                                             | 6.7%                    |
| Other reasons                                                             | 6.7%                    |
| Not aware                                                                 | 5.02%                   |

From the data obtained and analysed of the present study, the awareness about research among undergraduate dental students is moderate and it has to be improved. This will make the students more productive and provide an opportunity to improve their skills. In a study conducted among medical students, the barriers faced for doing research was asked, 53% said that lack of awareness was a study. 44% of the participants in our study said that inadequate knowledge about research methodology as a barrier. 54% of them said lack of interest and 29% of the participants in our study said lack of interest as a barrier. In the previous study, 59% of the participants had a lack of time and 40% of the participants in our study said lack of time as a barrier. 62% of the participants in the previous study said lack of funds as a barrier. In the present study, 15% of the participants said the lack of facilities and funds as a barrier. The results were similar to our study (Basavareddy and Pallamparthy, 2019). A study was conducted among final year medical students in which the majority of the students, 88.6% agreed that research is important in the medical field. In our study, 32% of the participants strongly agreed that research should be a part of the dental curriculum, 27% agreed, and 29% were neutral about it. The results are similar to our study (Kini et al., 2017).

Figure 4, Some said it is very difficult (30% blue), some said it as difficult (28% green), some as moderate (35% cream), some as easy (1% violet) and some were not aware (6% yellow)

Figure 5, The majority said yes (70% yes), few said no (9% green) and some as partially (21% cream)

Figure 6, The majority said yes (59% blue), some said no (11% green) and some were not aware (30% cream)

Figure 7, The majority have presented their research in a conference (61% blue), some have not (28% green) and some have not done any research (11% cream)

Figure 8, The majority agreed (75% blue) and some disagreed (25% green)

Figure 9, Some of the participants strongly agree (32% blue), some agree (27% green), some neutral answer (29% cream), some disagree (7% violet) and some strongly disagree (5% yellow)

Figure 10, Some said that to find something and contribute (29.81% blue), some said to gain more
understanding of the subject (24.22% green), some said as mandatory as part if curriculum (14.91% cream), some said to improve resume (10.56% violet). Some said as to increase knowledge (20.50% yellow)

Figure 11, The X-axis represents gender Y-axis represents the number of participants interested towards research. Association between gender and their interest in doing research was done using the Chi square test. P value = 0.305 (>0.05) hence not significant. There was no statistical significance most of the participants in both genders had an either high or medium interest in doing research

Figure 12, The X-axis represents gender and Y-axis represents the number of participants. Association between gender and their awareness if research would help in their clinical practice was done using Chi square test. P value = 0.28 (>0.05) hence not significant. There was no statistical significance most of the people in both genders responded that research would help in their clinical practice

In a previous study conducted among students in a medical college in southern India, most of the students felt that research is essential, but 75% of them were not exposed to doing research which is quite a large number. In our study, only 10% of the participants have not done any research, which is significantly less. Majority of the students in our research have done research compared to a previous study (Vallabhaprasad et al., 2014). In another study conducted among medical students, 12% had attended an international conference. In the present study, 61% of the participants have presented their research at any conference, which is significantly much higher than the previous study (Möller and Shoshan, 2017).

Some of the limitations in the present study are the small sample size of 100, homogeneous population, response bias, survey fatigue. Large sample size would give more accurate data. The study population was undergraduate dental students and hence a wide variety of population could be included to get more information.

CONCLUSION

From the results obtained, we can conclude that the awareness of the importance of research among dental students is convincing. Many of the dental students are aware of its importance, but there is still some group of participants who are not aware of. More awareness should be created and undergraduate students should be encouraged to make best out of their years spent in college. Young researchers tend to have more innovative ideas which can be brought up and used in the research world. Some colleges have made research mandatory as part of the curriculum while many colleges have not given any importance to research which has to be changed.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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REFERENCES

Basavareddy, A., Pallamapathy, S. 2019. Knowledge, attitude, practice, and barriers toward research among medical students: A cross-sectional questionnaire-based survey. Perspectives in Clinical Research, 10(2):73–73.

Choudhari, S., Thenmozhi, M. S. 2016. Occurrence and Importance of Posterior Condylar Foramen. Research Journal of Pharmacy and Technology, 9(8):1083–1083.

Dellis, A., Skolarikos, A., Papatsoris, A. G. 2014. Why should I do research? Is it a waste of time? Arab Journal of Urology, 12(1):68–70.

Hafeez, N., Thenmozhi 2016. Accessory foramen in the middle cranial fossa. Research Journal of Pharmacy and Technology, 9(11):1880–1880.

Johnson, J., Lakshmanan, G., M, B., R.M, V., Kalimuthu, K., Sekar, D. 2020. Computational identification of MiRNA-7110 from pulmonary arterial hypertension (PAH) ESTs: a new microRNA that links diabetes and PAH. Hypertension Research, 43(4):360–362.

Kannan, R., Thenmozhi, M. S. 2016. Morphometric Study of Styloid Process and its Clinical Importance on Eagle's Syndrome. Research Journal of Pharmacy and Technology, 9(8):1137–1137.

Keerthana, B., Thenmozhi, M. S. 2016. The occurrence of the foramen of Haschke and its clinical significance. Research Journal of Pharmacy and Technology, 9(11):1835–1835.

Kini, S., R., M., Maiya, R. G., K., N. K., Kiran, N. U. 2017. Attitudes and perceptions towards research among final year medical students in a private medical college of coastal Karnataka: A cross-sectional study. Journal of Health and Allied Sciences NU, 07(01):007–011.

Krishna, R. N., Babu, K. Y. 2016. Estimation of stature from physiognomic facial length and morphologi-
calf facial length. Research Journal of Pharmacy and Technology, 9(11):2071–2071.

Kühnigk, O., Böthern, A. M., Reimer, J., Schäfer, I., Biegler, A., Jueptner, M., Harendza 2010. Benefits and pitfalls of scientific research during undergraduate medical education. GMS Zeitschrift für medizinische Ausbildung, (5):27–27.

Masic, I., Hodzic, A., Mulic, S. 2014. Ethics in medical research and publication. International Journal of preventive medicine, 5(9):1073–1073.

Menon, A., Thenmozhi, M. S. 2016. Correlation between thyroid function and obesity. Research Journal of Pharmacy and Technology, 9(10):1568–1568.

Möller, R., Shoshan, M. 2017. Medical students' research productivity and career preferences; a 2-year prospective follow-up study. BMC Medical Education, 17(1):51–51.

Moraes, D. W., Jotz, M., Menegazzo, W. R., Menegazzo, M. S., Veloso, S., Machry, M. C., Costanzi, M., Pellanda, L. C. 2016. Interest in research among medical students: Challenges for the undergraduate education. Revista da Associação Médica Brasileira, 62(7):652–658.

Nandhini, J. S. T., Babu, K. Y., Mohanraj, K. G. 2018. Size, Shape, Prominence and Localization of Gerdy's Tubercle in Dry Human Tibial Bones. Research Journal of Pharmacy and Technology, 11(8):3604–3604.

Nayak, B. 2009. Why learn research methodology? Indian Journal of Ophthalmology, 57(3):173–173.

Petrella, J. K., Jung, A. P. 2008. Undergraduate research: Importance, benefits, and challenges. International journal of exercise science, 1(3).

Pratha, A. A., Thenmozhi, M. S. 2016. A Study of Occurrence and Morphometric Analysis on Meningo Orbital Foramen. Research Journal of Pharmacy and Technology, 9(7):912–912.

Röhrig, B., Prel, J. B. D., Wachtlin, D., Blettner, M. 2009. Types of study in medical research: part 3 of a series on evaluation of scientific publications. Deutsches Arzteblatt International, 106(15).

Samuel, A. R., Thenmozhi, M. S. 2015. Study of impaired vision due to Amblyopia. Research Journal of Pharmacy and Technology, 8(7):912–912.

Sekar, D., Lakshmanan, G., Mani, P., Biruntha, M. 2019. Methylation-dependent circulating microRNA 510 in preeclampsia patients. Hypertension Research, 42(10):1647–1648.

Seppan, P., Muhammed, I., Mohanraj, K. G., Lakshmanan, G., Premavathy, D., Muthu, S. J., Shimmray, K. W., Sathyanathan, S. B. 2018. Therapeutic potential of Mucuna pruriens (Linn.) on ageing induced damage in dorsal nerve of the penis and its implication on erectile function: an experimental study using albino rats. The Aging Male, pages 1–14.

Sriram, N., Thenmozhi, Yuvaraj, S. 2015. Effects of Mobile Phone Radiation on Brain: A questionnaire based study. Research Journal of Pharmacy and Technology, 8(7):867–867.

Subashri, A., Thenmozhi, M. S. 2016. Occipital Emissary Foramina in Human Adult Skull and Their Clinical Implications. Research Journal of Pharmacy and Technology, 9(6):716–716.

Thejeswar, E. P., Thenmozhi, M. S. 2015. Educational Research-iPad System vs Textbook System. Research Journal of Pharmacy and Technology, 8(8):1158–1158.

Vallabhasoyula, S., Shetty, R. S., Nair, S. 2014. Knowledge, Attitude and Practice towards Medical Research among Students of a Medical College in Southern India. Journal of Research in Medical Education & Ethics, 4(2):220–220.