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Challenges Faced By Postgraduate Residents And Senior Residents While Conducting Their Dissertation: An Observational, Cross-Sectional Study In Tertiary Care Hospitals Of Mumbai, Maharashtra, India.

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ABSTRACT

Dissertation is integral part of post-graduate academic curriculum. However, it remains their last priority due to heavy workload. Very few studies are conducted in India about challenges faced by postgraduate residents while conducting dissertations. So, to understand the difficulties while conducting dissertation, this study was undertaken. A pre-validated questionnaire containing 24-items was sent to 100 M.D./M.S. residents and 100 senior residents across five tertiary care centres in Mumbai, India. Responses were recorded and analysed using descriptive statistics. Out of 200 residents, 48% faced problems in IEC submission. Only 17.5% were given a choice of guide selection. The topic was decided after mutual discussion between students and guides in 56.5% cases. 7% did not receive inputs and 16% of residents did not receive guidance from guide. 34% had difficulty in sample size calculation, and 28% sought assistance for data analysis. 74% agreed that enormous workload and patient load affected dissertation. 17.5% encountered language barriers. 24% faced financial difficulties and 17% felt lack of infrastructure. 58% had difficulty using literature databases. 22.5% did not know how to use citation tools. 77% said that lack of formal research curriculum was a problem. Overall, 48% were satisfied with their dissertation work. Challenges like lack of guidance and input from guide; challenges with sample size calculations and data analysis; heavy workload; financial difficulty; infrastructure issue; challenges using literature databases and citation tools; and lack of formal research curriculum need to address to overcome and improve the quality of dissertation.

Keywords: Thesis, Research, Residency, Workload, Difficulty

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INTRODUCTION

The word dissertation in the Latin word 'dissertate' means 'to debate, it answers a particular research question and can either report on an empirical study or a literature-based study. Dissertation is a practical exercise that educates students about the basics of research methodology, promotes scientific writing, and encourages critical thinking [1, 2]. It has become the integral and mandatory part of a residency in every branch of a medical college [3]. The dissertation can be considered the epitome of all the skills and knowledge of a student about conducting a scientific research study. It can count as important work toward scientific research. It is widely accepted that evidence-based medicine has contributed significantly to the practice of medicine and the advancement of medical science [4]. With the help of such dissertation studies during residency, many scientific issues can be studied well, if the research is conducted properly. Conducting research not only contributes to the generation of evidence but also increases the standard of care.

It is documented that there are approximately 539 medical colleges in India that offer various postgraduate courses, with approximately 32753 postgraduate students in government, private, and deemed institutions [5]. According to the Medical Council of India (MCI), there is a serious lack of research and publication in the medical field [6]. Students' knowledge, skill, and attitude are reflected in dissertation research. As a result, precise and systematic execution is required. A dissertation serves as an early exercise for students who will eventually become researchers [2]. The performance of their dissertation depends upon many factors and one of these factors is proper scientific medical knowledge. [7] Few residents have any idea about conducting scientific research, as many of them participated in research during their undergraduate studies for scholarship programs. Therefore, many residents struggle to select a topic of interest for their dissertation. As a result, the quality of research and evidence generation suffers. Among other reasons, lack of time during residency due to their intense work and patient load in the wards means that dissertation work continues to be their lowest priority [8]. Poor infrastructure for conducting research is another important obstacle commonly encountered in their research [7]. Other important factors that hamper the quality of the dissertation may be the COVID-19 infection due to which most of the residents could not give their time to their dissertation work [9].

Although research methodology workshop training and GCP training are provided at the start of their residency to help them overcome such issues, the problem remains unresolved. Many residents have a poor understanding of sample size calculation, Institutional ethics committee (IEC) submission, data analysis, etc. It is one of the important obstacles while writing their dissertation. Many residents find it difficult to attain this sample size and some of them even have to take statisticians' assistance for data analysis [10]. Another important barrier is the language barrier. It is a commonly encountered problem in making Informed consent document (ICD), and Case record form (CRF) for their dissertation project and while interacting with their patients. Students should be aware of the value of research in the creation of evidence and the importance of the publication of their study in a good indexed journal to maintain focus on the dissertation project. Keeping all of this in mind, we conducted this study with the objective to study the challenges faced by resident doctors and senior residents while conducting their dissertations.

METHODS

This is an observational, cross-sectional, questionnaire-based study that was conducted over 3 months in 100 postgraduate residents of second-year and third-year residency and 100 senior residents of any branch of tertiary care centres in Mumbai.

As there is very little literature available regarding difficulties in conducting the dissertation among post-graduate residents and senior residents, we could not get an estimated sample size using statistical considerations. Thus, we decided to carry out this study with 200 residents. (100 post-graduate residents and 100 senior residents).

The participants were contacted via email, WhatsApp, or in person, and the Informed Consent Document was sent through these methods. Once the participants agreed to participate in the study, the questionnaire was administered via email, WhatsApp, or in person. The questionnaire administered was designed specifically for this study and validated by the experts for face and content. Content validity ratio (CVR) was 0.9 and it was a 24-item questionnaire.

Data were analyzed using SPSS version 24.0. Data were analyzed by using Descriptive statistics. Parametric Quantitative variables were expressed as mean \pm standard deviation, whereas non-parametric quantitative data were expressed as a proportion. Qualitative variables were expressed as absolute and relative frequencies.

RESULTS

A questionnaire containing 24 questions was administered among the postgraduate residents and senior residents, which was later coded and analysed.

Table 1: Demographic characteristics and department of participants

| | Number of participants |
|-------------|-----------------------------|
| Gender | Male: 108 (54%) |
| | Female: 92 (46%) |
| Age | Age group: 24 to 43 years |
| | Mean age (SD): 29.44 (2.11) |
| Departments | Clinical: 106 (53%) |
| | Non-Clinical: 94 (47%) |

As demonstrated in **table 1**, the ages of the respondents ranged from 24 to 43 years with a mean age of 29.44 ± 2.11 . Male respondents (54%) were slightly higher than female respondents (46%). Resident’s involvement was more from clinical departments than non-clinical departments.

There were 200 responses in total, of which 164 respondents were participating in observational research, 17 in interventional studies, 18 in preclinical studies, and 1 in other studies (Figure 1).

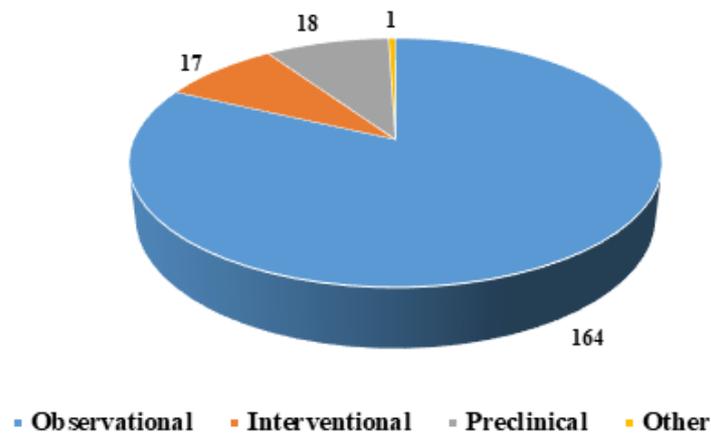


Figure 1: Type of study

Out of 200 residents, 96 (48%) residents faced problems in submitting the protocol for approval by the Institutional Ethics Committee (IEC), while 104 (52%) residents did not face any difficulty.

Only 35 (17.5%) respondents were given a choice of guide selection and 28 respondents said that getting a guide of choice helped them to select the topic/complete the dissertation. The topic was decided after a mutual discussion between the student and guide in 113 cases. 123 (61.5%) participants agreed that their guide provided them with input for writing and submitting the dissertation, 14 (7%) said they did not receive input for the dissertation, and 63 (31.5%) said it was not applicable because they had not begun writing the thesis. 32 individuals (16%) responded that they did not receive periodic guidance from their guide, whereas 168 people (84%) said they did (Figure 2).

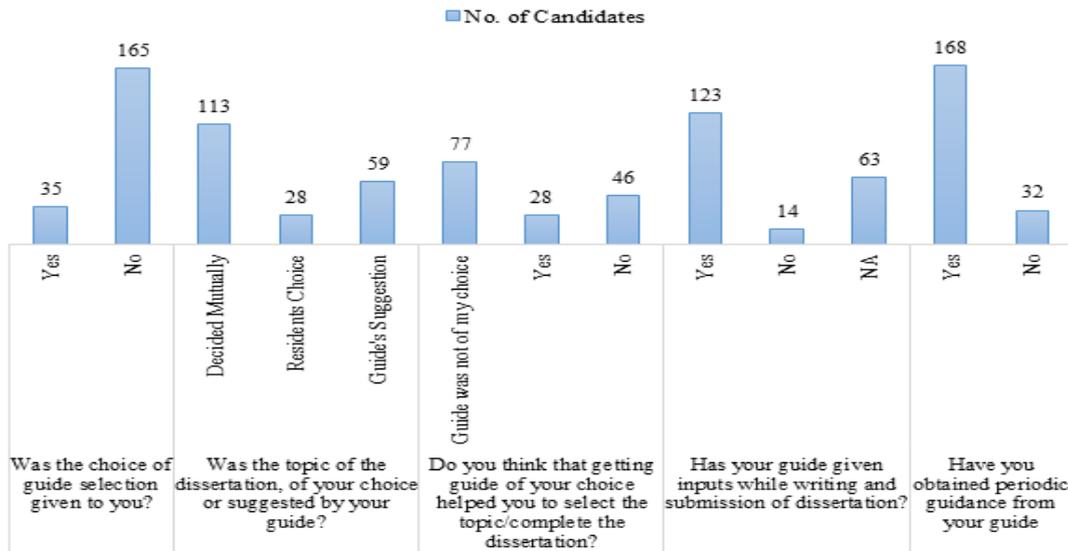


Figure 2: Guide-related questions

68 (32%) participants stated it was difficult to calculate the sample size, 113 (56%) people said it was not difficult to do so, and 19 (9.5%) people said it was not applicable. 62 (31%) found it difficult to attain the sample size, 96 (48%) did not, and 42 (21%) were unable to answer. To calculate the sample size, 77 (38.5%) students needed someone else’s help, 105 (52.5%) people calculated their sample size, and it was not applicable in 18 (9%) cases. 91 (45.5%) of participants performed their own data analysis for their dissertation, 55 (27.5%) sought assistance from a statistician or a friend, and 54 (27%) did not conduct data analysis yet (Figure 3).

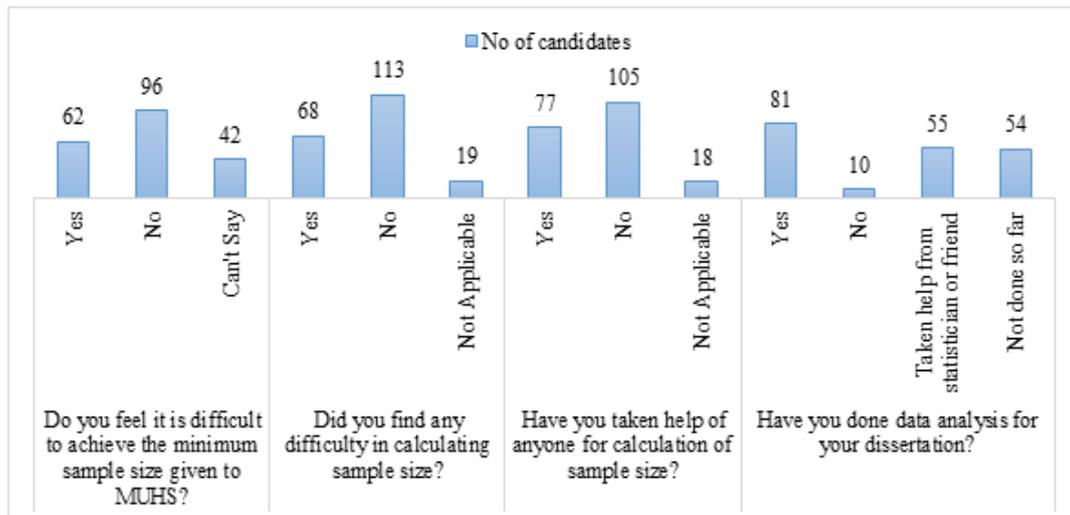


Figure 3: Statistics-related questions

When asked if residents were unable to focus on their dissertation adequately because of their enormous workload and patient load, 69 students strongly agreed, 79 students agreed, 37 students were indifferent, 13 disagreed, and just 2 strongly disagreed. While communicating with patients for the dissertation, 35 (17.5%) encountered language barriers, 136 (68%) did not, and for 29 (14.5%) students, it was not applicable (Figure 4).

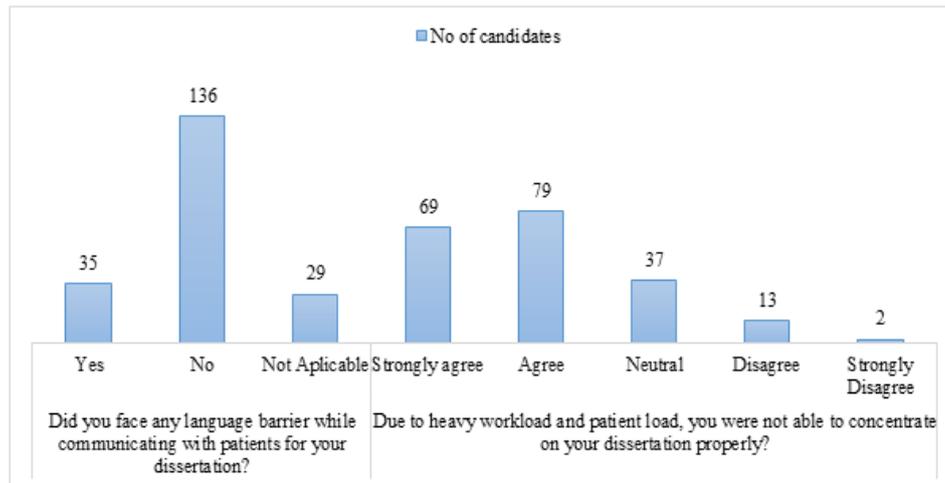


Figure 4: Language and workload-related questions

As given in figure 5, 119 (59.5%) did not face any financial difficulties while completing their dissertation projects while 48 residents had financial difficulties and 33 dissertation studies did not require any financial assistance. For conducting their dissertations, 34 residents (17%) felt that there was a lack of infrastructure, 141 (70.5%) residents did not feel this way, and in 25 (12.5%) dissertations, no infrastructure was required.

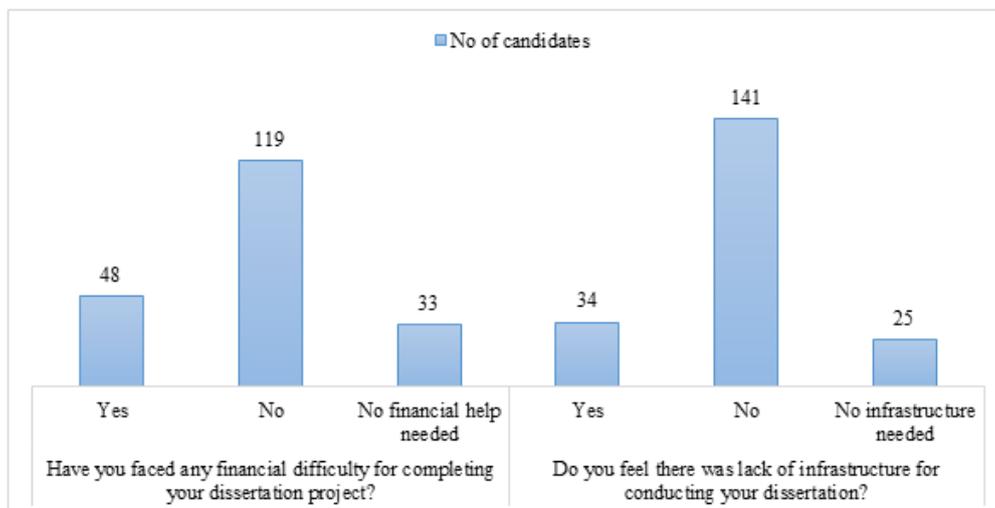


Figure 5: Resource-related questions

41 residents found it difficult to use literature databases such as PubMed, Google Scholar, and Cochrane Library, while 75 could use them with some difficulty, and 84 did not find it difficult. For citation, 73 students used citation tools such as Mendeley, Zotero, and others, 31 did not use such tools, 45 residents said they did not know how to use these tools, and 51 residents have not tried these tools yet. 59 (29%) residents had difficulty writing the dissertation, 73 (37%) did not, and 68 (34%) have not completed it yet. 15 students had problems submitting their dissertations, 94 had no difficulty, and 91 had not yet submitted their dissertations. 30 (15%) residents got queries after submitting the dissertation, 78 did not get any queries, and 92 have not submitted the dissertation so far. 30 (15%) residents received queries after submitting their dissertations, 78 did not get any queries, and 92 are yet to submit their dissertations (Figure 6).

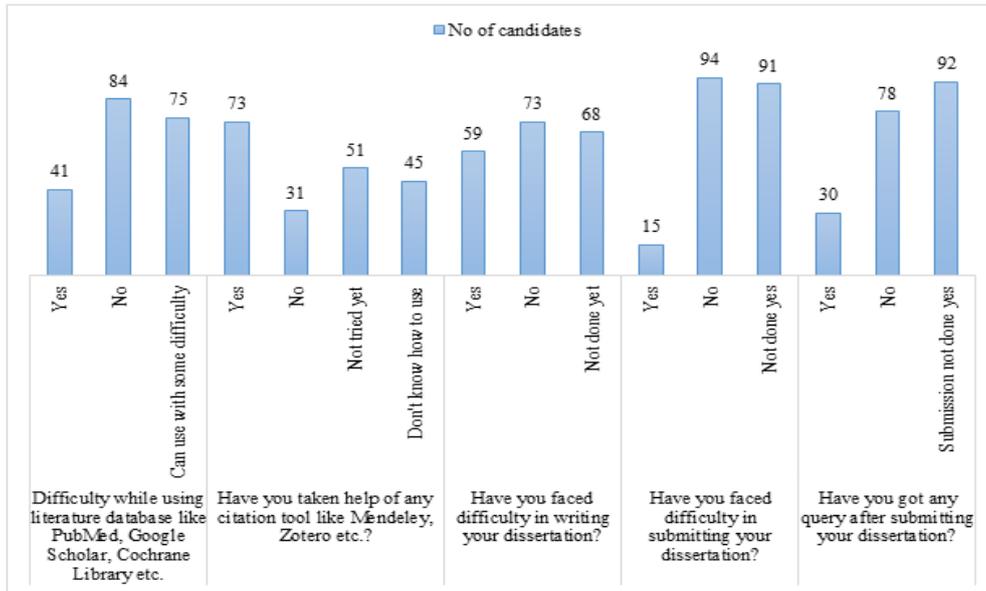


Figure 6: Literature search and citation-related questions

When asked if the lack of a formal research curriculum was a problem while conducting a dissertation project, 46 (23%) residents strongly agreed, 108 (54%) agreed, 35 (17.5%) were neutral, 8 (4%) disagreed and 3 (1.5%) strongly disagreed. While 132 (66%) agreed that the Research Methodology Workshop (RMW) aided them in conducting dissertation research, 47 (23.5%) did not. 21 people (10.5%) did not attend RMW (Figure 7).

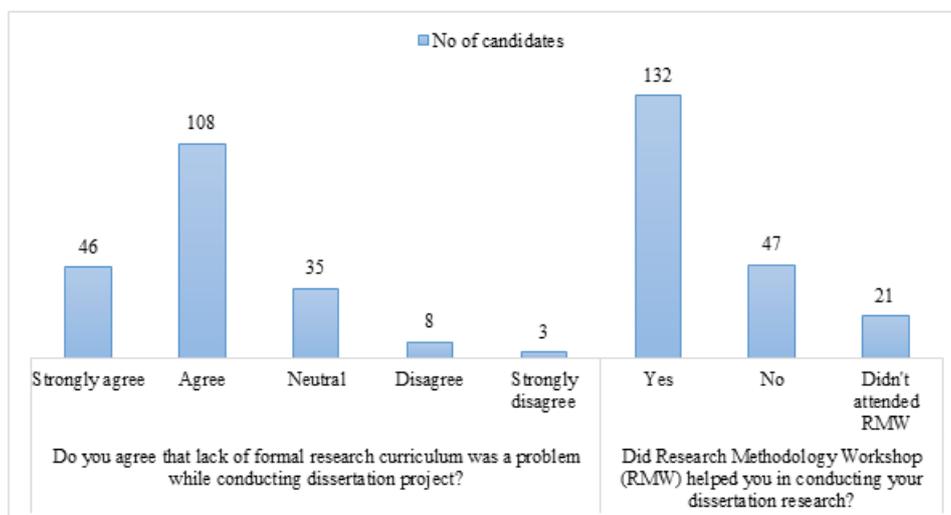


Figure 7: Research training-related questions

Overall, 96 residents were satisfied with their dissertation work, 8 were dissatisfied, 27 were unable to decide, and it was not applicable in 69 cases.

DISCUSSION AND CONCLUSION

Many PG students preferred observational studies compared to any other studies for dissertations. This finding is consistent with the study by Shah et al, where they also observed that the majority of PG students preferred observational studies over interventional studies for their thesis [11].

Nearly half of the residents faced problems in submitting the protocol for approval by the Institutional Ethics Committee (IEC), while the other half of the residents did not face any difficulty. The

study by Dahn et al also found that obtaining research ethics approval interferes with being able to do research [12].

A guide has a very important role in the entire process, including the identification of the research topic, formulation of the research question which is relevant, planning the study so that it is completed within the time frame specified by the university, and providing timely guidance and inputs to the student. In our study, we found that only 17.5% of respondents were given a choice of guide selection. In the majority of cases, the topic was decided after a mutual discussion between the student and the guide. Most of the participants agreed that their guide provided them with input for writing and submitting the dissertation. But few residents said they did not receive any input for the dissertation. In addition, some residents (16%) responded that they did not receive periodic guidance from their guide.

The significance of calculating sample size cannot be overstated. A precise and accurate conclusion is only with appropriate sample size. A study with an excessively large sample size will waste scarce resources and be unethical. Similarly, a study with an insufficient sample size may yield inconclusive results and may also be considered unethical. In this study, 32% of participants found it difficult to calculate the sample size. Again 31% of residents found it difficult to attain the sample size. 38% of students even needed someone else's help to calculate the sample size. 28% of residents had to seek assistance from a statistician or a friend for data analysis. Dahn et al also found that there is a lack of statistical support for residents in their respective departments [12]. Jaroonvanichkul et al in their study found that one of the most common barriers cited by residents was statistics.

Patient-related workload consumes a lot of time during the residency; therefore, dissertation becomes a low-priority work for the resident doctors. We found the same problem in our study. The enormous workload and the patient load were a problem for most residents. Matin et al also found that some of the students had time constraints due to the workload for the completion of thesis work [7]. Due to India's linguistic diversity, language barriers present a significant barrier to accurate patient-resident doctor communication and the completion of the dissertation study. In our study, some residents encountered language barriers.

Some studies may necessitate financial assistance to be carried out. In our study, 24% of residents had financial difficulties while completing their dissertation projects. In a study conducted by Matin et al., many students (69.9%) believed there wasn't enough funding for their thesis work [7]. To solve this issue, institutes or universities must have the facilities for arranging funds through grants, sponsorships or soft loans, etc. Likewise, some studies need proper infrastructure in terms of state-of-the-art technology for innovative dissertation studies. In this study, a few residents also felt that there was a lack of infrastructure to carry out their study. According to Matin et al., 54.1% of students felt that their institutions' resources are limited for thesis projects [7].

Literature review in scientific manuscripts has multifold significance. It helps in calculating the impact of the latest information in the field by mapping their progress of knowledge. In our study, 41 residents found it difficult to use literature databases such as PubMed, Google Scholar, and Cochrane Library, while 75 could use them with some difficulty, and 84 did not find it difficult. For citation, 73 students used citation tools such as Mendeley, Zotero, and others, 31 did not use such tools, 45 residents said they did not know how to use these tools, and 51 residents have not tried these tools yet. 29% of residents had difficulty writing the dissertation, 37% did not, and 34% have not completed it yet. 15 students had problems submitting their dissertations, 94 had no difficulty, and 91 had not yet submitted their dissertations. 15% of residents got queries after submitting the dissertation, 78 did not get any queries, and 92 have not submitted the dissertation so far. 15% of residents received queries after submitting their dissertations, 78 did not get any queries, and 92 are yet to submit their dissertations.

When asked if the lack of a formal research curriculum was a problem while conducting a dissertation project, the majority of 154 residents agreed. This finding is consistent with a study by Pawar et al which stated that a lack of research curriculum was a hurdle in the conducting dissertation study for most of the resident doctors [13]. Also most residents (66%) agreed that the Research Methodology Workshop (RMW) aided them in conducting dissertation research. Overall, 96 residents were satisfied with their dissertation work.



So, to conclude action should be taken at the Institution/department level to tackle the challenges faced by PG students while conducting their dissertations. A dedicated time for the dissertation should be given by residents without affecting patient care. The guide should take an active part in the smooth conduct of the dissertation right from the conception, motivation, supervision, and conduct of the dissertation. There is a need to include a formal research curriculum in the postgraduate academic curriculum.

Ethical Approval

The study protocol was approved by the Institutional Ethics Committee (IEC/63/22) of Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, India.

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