JRMI
Journal of Rehman Medical Institute

Volume 10, No. 2
April - June 2024
www.jrmi.pk

ORIGINAL ARTICLE

Variation in musculoskeletal oncology training and rotation in Orthopedic residency programs: a survey across Khyber Pakhtunkhwa teaching institutes

Muhammad Ibrahim, Muhammad Hassam Khan, Syed Usman Shah, Zeeshan Khan

Submitted
March 15, 2024
Accepted
June 17, 2024

Author Information

Dr Muhammad Ibrahim
Fellow of Musculoskeletal Oncology, Rehman Medical Institute, Peshawar, Khyber Pakhtunkhwa, Pakistan

Dr Muhammad Hassam Khan
Lecturer Family Medicine, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan

Dr Syed Usman Shah
Assistant Professor Department of Orthopedics Ayub Teaching Hospital, Abbottabad, Hazara, Khyber Pakhtunkhwa, Pakistan

Dr Zeeshan Khan
Associate Professor & Head Department of Trauma & Orthopedic Surgery, Rehman Medical Institute, Peshawar, Khyber Pakhtunkhwa, Pakistan
(Corresponding Author)
Email: zeeshan.khan1@rmi.edu.pk

Citation: Ibrahim M, Khan MH, Shah SU, Khan Z. Variation in musculoskeletal oncology training and rotation in Orthopedic residency programs: a survey across Khyber Pakhtunkhwa teaching institutes. J Rehman Med Inst. 2024 Apr-Jun;10(2):14-7.

ABSTRACT

Introduction: There is a significant variation in musculoskeletal oncology exposure during orthopedic residency program in Khyber Pakhtunkhwa Province of Pakistan

Objective: To evaluate the disparity in orthopedic oncology rotations amongst different Khyber Pakhtunkhwa (KP) teaching institutes.

Materials & Methods: A postal survey was conducted from July 1, 2021, to January 31, 2022, at the Department of Trauma & Orthopedic Surgery at Rehman Medical Institute, Peshawar. Questionnaires with 15 components were designed and distributed postally among orthopaedic residents. Simple numerical calculations were required for statistical analysis in this study and hence Microsoft Excel 2013 was used for data entry and calculations.

Results: Fifty percent of the residents were exposed to 1-5 musculoskeletal oncology patients/month in an OPD or emergency department; 55% of residents denied any exposure to a dedicated MSK oncology rotation in their training; 46% of residents did not receive any oncology rotations during their training, and 82% of residents believed that having a dedicated MSK oncology rotation will help them in passing their residency exit exam.

Conclusion: A large percentage of residents do not have a specialized oncology rotation during their residency. Furthermore, the number of weeks residents spend on a dedicated oncology rotation, the post-graduate year in which residents rotate on an oncology service, and the location in which residents receive their oncology training, as well as the number of cases per rotation and dedicated lectures, vary greatly among KP training institutes.

Keywords: Orthopedics; Musculoskeletal System; Surgical Oncology; Medical Residency.

The authors declared no conflict of interest. All authors contributed substantially to the planning of research, data collection, data analysis, and write-up of the article, and agreed to be accountable for all aspects of the work.

INTRODUCTION

Musculoskeletal (MSK) oncology is a branch of orthopedics that deals with all bone and soft tissue tumors and as these tumors are relatively rare, a general orthopedic surgeon will not be exposed to as many cases of MSK oncology in comparison to a dedicated MSK oncology surgeon.[1] This rarity and diverse group of pathologies poses further challenges for the generalist. It is therefore paramount that during residency training in orthopedics, the junior doctors are exposed to these pathologies ideally in a dedicated MSK oncology unit, so that they can recognize and deal with them accordingly when presented in their practices. The Accreditation Council for Graduate Medical Education (ACGME) in the United States has recommended that orthopedic residents undertake a minimum of ten orthopedic oncology cases before graduation.[2]

The College of Physicians and Surgeons of Pakistan (CPSP) promotes training and accreditation, as well as regulating the College of Physicians and Surgeons' fellowship (FCPS) program.[3] Despite the fact that the CPSP has designed a thorough standardized surgical training program that includes skills, seminars and tutorials,[4] some of the trainees might not be exposed to all the pathologies in the syllabus due to a myriad of reasons. This variation in exposure is mostly in the different subspecialties rather than general orthopedics and is mostly due to absence of trained subspecialists.[5]

This variation in the quantity of exposure to the subspecialties amongst residents is concerning and one such area is MSK oncology, which will have an adverse effect on the training of high-quality surgical professionals. According to a study conducted in the United States, trainees who completed a dedicated orthopedic oncology rotation performed well on the Orthopedic In-Training Exam (OITE).[6] Similar results can only be produced in our residency program, if just like the syllabus, the training program and rotations are adjusted more robustly in order to cater for the wide exposure to these subspecialties.

There has been little research done on the context of orthopaedic oncology training during residency in Pakistan and in Khyber Pakhtunkhwa (KP).

Working on the hypothesis that there is a significant variation in MSK oncology exposure during Orthopedic residency program in KP, this study was conducted to evaluate any possible disparity in Orthopedic oncology rotations amongst different Khyber Pakhtunkhwa (KP) teaching institutes.

MATERIALS & METHODS

A postal cross-sectional survey was conducted from July 1, 2021, to January 31, 2022, at the Department of Trauma & Orthopedic Surgery at Rehman Medical Institute (RMI), Peshawar, involving all the trainee orthopedic surgeons of KP in different teaching hospitals. In our study, only those Orthopedic trainees who were undergoing training were included, but those trainees who had already completed their training or who did not wish to participate were excluded. The ones who volunteered to participate in the study were asked to voluntarily and anonymously fill a questionnaire with 15 components. The questions were designed by the senior author in a way to provide a thorough understanding of the exposure of orthopedic residents to MSK oncology at various teaching hospitals of KP. They were distributed amongst all orthopedic residents and replies were received from: Ayub Teaching Hospital (ATH), Hayatabad Medical Complex (HMC), Khyber Teaching Hospital (KTH), Lady Reading Hospital (LRH), and Qazi Ahmed Hussain Medical Complex (QAHMC). Simple numerical calculations were required for statistical analysis in this study and hence Microsoft Excel 2013 was used for data entry and calculations.

RESULTS

A total of 102 orthopedic trainees from 5 different teaching hospitals responded to our postal survey for this study (Table 1). Most of the respondents belonged to Postgraduate year (PGY) 3 (41, 40.2%), followed by PGY 1 (32, 31.4%) and PGY 2 (29, 28.4%).

Table 1: Representing number of residents from different Institutes (n=102).

PGY Level	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Total
PGY 1	13	12	3	4	0	32
PGY 2	14	9	4	0	2	29
PGY 3	13	14	3	10	1	41
Total	40	35	10	14	3	102

About half of the respondents are exposed to 1-5 MSK oncology patients/month in an OPD or emergency department whereas 53% of them reported to being exposed to less than 5 cases/month in operating theatres with majority of exposure being at 3rd year of residency. (Table 2).

Table 2: Percentage of MSK cases operated & MSK patients seen by residents (n=102).

Characteristics of MSK patient care in hospitals	Percentage
MSK cases operated at hospitals per month	
1-5	53
6-10	20
11-15	18
16-20	9
MSK patients seen in OPD and ER by residents per month	
1-5	50
6-10	19
11-15	19
16-20	5
None	7

Furthermore, 58% of residents denied having a specialist MSK oncology surgeon at their facility with 55% residents denying any exposure to a dedicated MSK oncology rotation in their training (Figure 1). Additionally, the majority of residents were aware that their district has a dedicated MSK unit, and nearly all residents agreed that having a dedicated MSK oncology unit in their hospital or district would improve the standard of care.

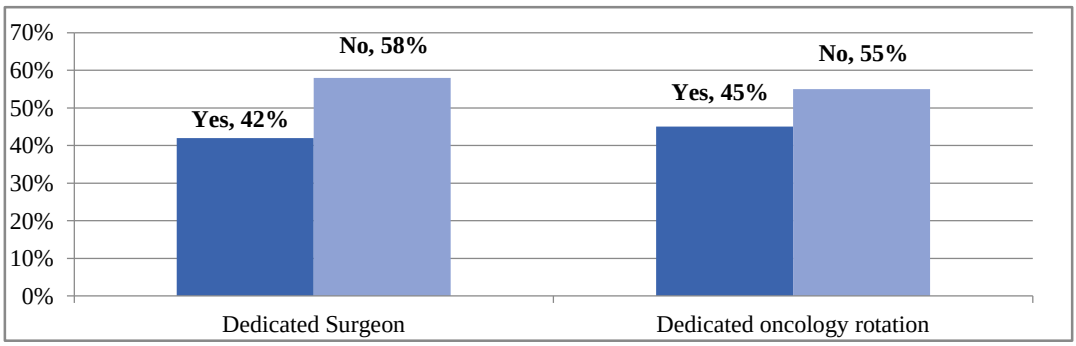

Figure 1: Residents response to having Dedicated Orthopaedic Oncology Surgeons and oncology rotation (n=102).

Surprisingly, 46% of residents did not receive any oncology rotations during their training, while 52% had only one. Among those who participated in oncology rotation, 38% had just 1 to 5 weeks of devoted orthopedic MSK oncology rotation and 27% had greater than 5 weeks.

Only 55% of residents responded yes to having had dedicated MSK lectures during their training. In addition, 82% of residents thought that having a dedicated oncology rotation will help them pass their residency exit exam (Figure 2).

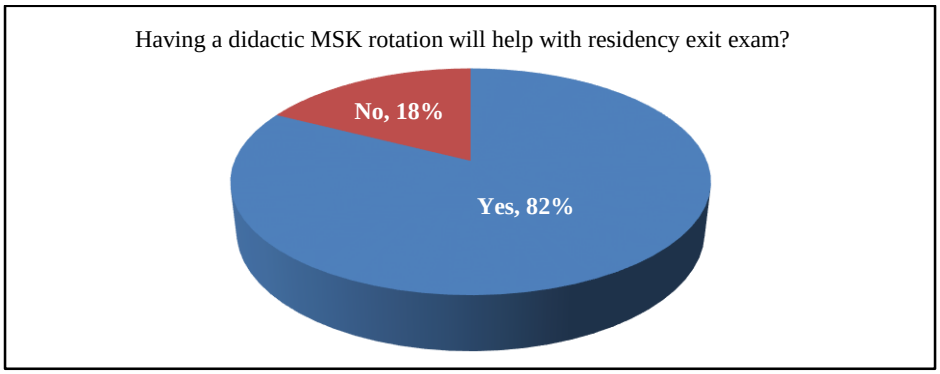

Figure 2: Residents opinion on whether having didactic MSK rotation be benfecial for their exit exam (n=102).

When asked where residents got their MSK rotation from, 19% said they got their rotation at a facility other than their home institution, while 47% said they got their rotation at their home institution (Figure 3). Moreover, when asked if their program training or trainer would support them to receive their MSK oncology rotation at a different institute if it wasn't available at their home institute, 53% of residents said yes that their training program/trainer will support them complete a dedicated MSK oncology rotation at another institute.

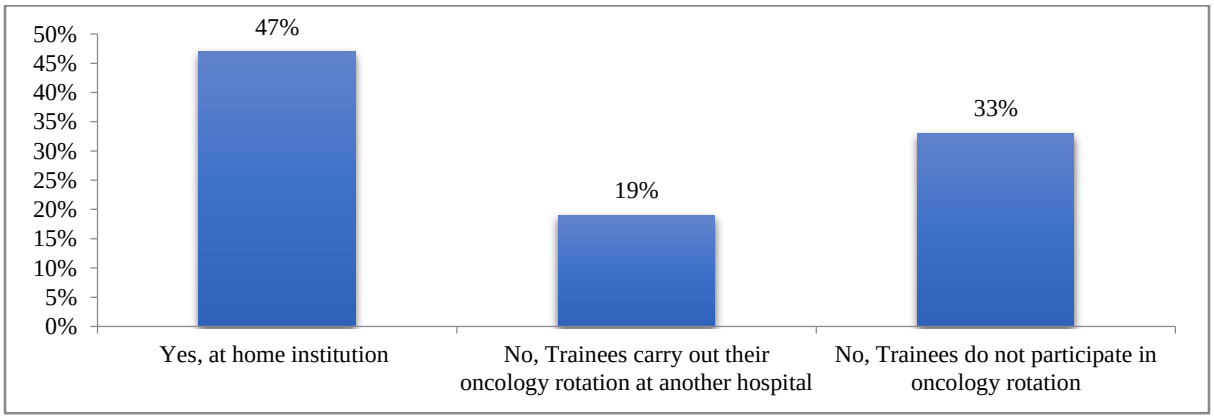

Figure 3: Percentage of trainees who are doing their orthopedic oncology rotation at home institutions (n=102).

DISCUSSION

Although musculoskeletal (MSK) oncology is a section of orthopedics that deals with all bone and soft tissue tumors, a general orthopedic surgeon will not be exposed to as many cases of MSK oncology as a specialist MSK oncology surgeon due to the rarity of these tumors. CPSP has developed a comprehensive standardized surgical training program that includes skills, seminars, and tutorials[4]. However, due to a variety of factors, some trainees may not be exposed to all of the pathologies in the syllabus. This variance in exposure can be attributed to the lack of skilled subspecialists in different subspecialties rather than in general orthopedics. The goal of this research was to understand the delivery of orthopedic oncology curriculum and education and approach at several residency programs in Khyber Pakhtunkhwa (KP), Pakistan. Our findings suggest that the execution of orthopedic oncology rotation differ significantly between various residency programs.

Residents were asked how many MSK oncology cases they see in their OPD or emergency room, and 50% said 1 to 5 cases, while 53% said 1 to 5 MSK oncology cases are operated in a month. In a similar vein, when asked if residents undertook their orthopedic oncology rotation at their home institution or at a hospital outside of their home program, 19% said they took at their MSK oncology rotation at another hospital. These findings are not surprising, given the reality that MSK tumors are uncommon in comparison to other types of cancer.[7] As a result, some residents would prefer to do a rotation in a unit with a dedicated MSK oncology service (Figure 2). However, to the senior author's knowledge, no understanding exists between different teaching hospitals where residents are encouraged to attend MSK oncology rotation in a dedicated unit in another hospital. Therefore, this response from the residents may not be correct and may need further investigation.

Winterton et al[7] found that away rotations at institutions other than individual's home had minimal educational benefit. Likewise, the effect of a mentor was found to influence their

choice of fellowship in a survey by Matson et al,[8] with an average rating of 2.99 out of 4 (scale 1-4). According to this research, a trainee's interaction with a supervisor has the ability to affect their career choices. Still, it's unclear if collaborating with trainers from another institute has an impact on an orthopaedic resident's training. If a devoted MSK oncology rotation is not possible at their institution, 55% of residents reported that their training program/trainer will help them in doing one in another hospital. This, however, needs to be transformed into practice with a memorandum of understanding between different teaching hospitals, training residents for a fixed time period in rare specialties in different hospitals, which is a common practice in many developed countries.

According to the most recent ACGME case log reports from 2016-2017,[9] orthopedic residents in the United States are completing 38.7 oncology cases on average by the conclusion of their residency, which is significantly above the minimum requirements. However, according to our research, a major percentage of orthopedic residents do not see any oncology cases, while others see 1 to 5 cases on average, which is below the ACGME minimum requirement. The amount of week's investment on a dedicated oncology service could be another topic in the study that received a broad range of replies. The most commonly chosen category was 1-5 weeks (38%), followed by 6-10 weeks (27%), as shown in Figure 1. According to a study the number of weeks a resident spends on a rotation isn't always a good indicator of how well they'll learn, and when orthopedic oncology rotation is compared to other rotations, such as trauma, where trainees commonly spend some time every year of training, the amount of time spent in oncology is minimal.[6] Although the number of weeks residents spend in rotation isn't a reliable predictor of learning outcomes but spending too little time in any rotation will certainly result in poor learning outcome. According to the present survey, residents rotated on an orthopedic oncology service 40.2% of the time during PGY-3.

According to our results, a significant number of residents may not be able to rotate in orthopedic oncology by the time they take their FCPS part II exam and choose their fellowship. Matson et al[8] discovered that outstanding mentorship influences an orthopedic resident's decision to pursue a fellowship area, as previously indicated. Our findings suggest that residents may not have enough time to build relationships with supervisors if they are rotating on an oncology unit for the first time in their fourth year of training.

According to a survey conducted in the United States, 71 programs gave didactic oncology lessons, which improved OITE scores in the pediatric category.[10] A massive 82% of trainees believe that doing a dedicated oncology rotation will assist them in passing the FCPS part II exam. The reason for this is that the exit test has a good number of MSK oncology questions. Their practical training and information will aid in passing the exam.

CONCLUSION

The orthopedic sub-specialty rotations at the various institutes within KP differ significantly. A large percentage of residents do not have a specialized oncology rotation during their residency, nor do their institutions have a dedicated oncologist surgeon. Furthermore, the number of weeks residents spend on a dedicated oncology rotation, the post-graduate year in which residents rotate on an oncology service, and the location in which residents receive their oncology training, as well as the number of cases per rotation and dedicated lectures, vary greatly among KP training institutes. Residents also believe that having a dedicated orthopedic oncology rotation will help them pass the FCPS exit exam.

RECOMMENDATION

It is suggested that the postgraduate deanery and CPSP make sure that there is no disparity in exposure to MSK oncology training for trainees during their residency which will reflect in their exam performance and delivery of care.

REFERENCES

1. White J, Toy P, Gibbs P, Enneking W, Scarborough M. The current practice of orthopaedic oncology in North America. Clin Orthop Relat Res. 2010;468(11):2840-53.
2. ACGME. Case Log Guidelines for Musculoskeletal Oncology Review Committee for Orthopaedic Surgery. [Webpage]. Available from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.acgme.org/globalassets/pfassets/programresources/270_caseloggui delines_musculoskeletaloncology.pdf.
3. Chaudhry ZU. Establishing a system of postgraduate medical education in Pakistan. JMR. 2015;101(3):37-40.
4. Saqib SU, Memon AH, Saleem O, Shariff A. Current standards of postgraduate surgical education and training in Pakistan: Time to bridge the gaps in lieu of national necessity. J Pak Med Assoc. 2021;71(Suppl 1)(1):S56-s60.
5. Khan Z, Khan MA. Emergence of subspecialities in Orthopaedics: The road forward in Khyber Pukhtunkhwa - Pakistan. JPMI. 2021;35(1):1-2.
6. DiCaprio MR. Oncology fellowships. Clin Orthop Relat Res. 2006 Aug:449:232-4. doi: 10.1097/01.blo.0000224068.62792.7c.
7. Winterton M, Ahn J, Bernstein J. The prevalence and cost of medical student visiting rotations. BMC Med Edu. 2016;16(1):291.
8. Matson AP, Kavolus JJ, Byrd WA, Leversedge FJ, Brigman BE. Influence of trainee experience on choice of Orthopaedic subspecialty fellowship. J Am Acad Orthop Surg. 2018;26(3):e62-e7.
9. ACGME. Surgery Case Logs National Data Report 2017 Sep 12. Available from: https://www.acgme.org/globalassets/PDFs/440_National_Report_Program_Version_2016-2017.pdf.
10. Franklin CC, Bosch PP, Grudziak JS, Dede O, Ramirez RN, Mendelson SA, et al. Does a weekly didactic conference improve resident performance on the pediatric domain of the Orthopaedic in-training examination? J Pediatr Orthop. 2017;37(2):149-53.