Original Article

J Nepal Health Res Counc 2020 Oct-Dec;18(49): 692-7

DOI: https://doi.org/10.33314/jnhrc.v18i4.3159

Orthopedic Sub-specialization: Need or Hype? Opinion from Nepalese Orthopedic Surgeons

Bibhuti Nath Mishra,[1] Rishi Ram Poudel,[2] Sravya Challa[3]

[1]Birat Medical College Teaching Hospital, Tankisinwari, Biratnagar, Nepal, [2]Nepal Cancer Hospital and Research Center, Harisiddhi, Lalitpur, Nepal, [3]University of California, San Diego, California, USA.

ABSTRACT

Background: In Nepal, the trend of rushing to orthopedic subspecialty fellowship is rising up. It's debatable whether this pattern of practice is advancing orthopaedic care. There are issues with cost of subspecialty training and work satisfaction after it. Thus, this study aims to analyze orthopaedic surgeon's prospect regarding subspecialty training in Nepal.

Methods: This is a cross sectional observational study designed to take opinion of orthopaedic surgeons of Nepal regarding subspecialty practice in orthopedics. Structured closed ended questionnaire was designed in form of "Survey app" and was disseminated to maximum possible via electronic media.

Results: Out of total 93 respondents (mean age 37.07 years), 45.7% had a subspecialty training. Among fellowship completed surgeons (42), mean duration of fellowship was 6.92 months, India was the commonest destination (53.49%), and Arthroscopy was highest followed by Spine and Arthroplasty. Among them who haven't done fellowship (51), 100% mentioned to have interest in doing one. Maximum respondents recommended paid/sponsored fellowships (94.62%) and of 12 months' duration (44.1%). Total of 97.85% agreed that fellowship training in orthopedics has really become important. Only 4.3% agreed that fellowship is an unnecessary burden/hype. Only 16.1% agreed that surgeons get detached from mainstream orthopedics after fellowship and also only 11.9% agreed that there retains any threat to mother orthopedics in future.

Conclusions: With emerging practice of subspecialty in Orthopedics in Nepal, a six months' duration fellowship and paid fellowship program is the major choice. Thus, the fraternity should work on to promote subspecialty practice and trainings.

Keywords: Fellowship; orthopedics; subspecialty training

INTRODUCTION

Orthopedic Specialty has continuously evolved over the past few decades into many subspecialties like: Spine, Hand, Arthroscopy & Sports medicine, Arthroplasty, Trauma, Orthopedic Oncology, Pediatric Orthopedics, Foot and Ankle etc.

There is rapid interest and participation in fellowship programs among orthopedic graduates.[1,2] Fellowship helps surgeon with better employment opportunities.[2,3] However, advanced sub-specialization based training might hamper the surgical learning of orthopedic residents as fellows are usually given more operating room exposure, thus forcing residents to pursue further subspecialty fellowship training to compensate for their inadequate surgical experience.[4,5] On the other hand, proliferation of various orthopedic subspecialties and fragmentation possess threat to mainstream Orthopedics.[6,7]

Although there are no clear-cut guidelines & regulations for subspecialty orthopedic practice in Nepal, surgeons especially from newer generation are rushing for fellowship trainings. So, we aimed to find out the Orthopedic Surgeons' perspectives regarding subspecialty practice in Nepal and reach to some conclusion and recommendation.

METHODS

Ours was a cross-sectional study, designed to seek opinions from the Orthopedic surgeons of Nepal regarding subspecialty practice & was conducted between

Correspondence: Dr Bibhuti Nath Mishra, Department of Orthopaedics, Birat Medical College Teaching Hospital, Tankisinwari, Biratnagar, Nepal. Email: drbibhuti5@gmail.com, Phone: +9779841216778.

December 2017- April 2019. All the participants were Orthopedic surgeons from Nepal. The population size of total registered orthopaedic surgeons was 475 at the time of start of this study and we wanted participation and responses from all of them. Hence, the inclusion criteria being any authorized orthopedic surgeon practicing in Nepal with or without a subspecialty training, whereas any Nepalese origin orthopaedic surgeons practicing outside Nepal was excluded. Structured closed ended questionnaire was designed aiming at current trend of subspecialty practice, fellowship opportunities and satisfaction level. This was a specifically designed Performa for data collection from target group. Out of total 24 target questions, 3 had multiple options and for the remaining 21, participants had to respond in 5-point Likert scale. They were asked about importance, need and timing of fellowship training, funding/cost of training, future expectations and subsequent job satisfaction. The questionnaire was also converted into "Survey App" and finally all 3 forms (Hard copy, digital word format and survey app link) of it were ready for distribution among registered orthopedic surgeons of Nepal. Postal address, email and social medial links (WhatsApp, Telegram, Facebook Messenger, etc.) were used to disseminate the questionnaire randomly to maximum possible. Despite multiple reminders and requests, total of 93 responded, of which 21 responded by filling up the hard copy of questionnaire, 5 through email and remaining 67 responded to survey app link. Responses received in direct Hard copy format and digital word format via email were entered into survey app by principal investigator so that all data accumulated at one place for final analysis. Microsoft Excel was used for data analysis and graphical representation of data.

RESULTS

Out of 475 registered Nepalese orthopedic surgeons at time of dissemination of questionnaire (December 2017), total of 93 (19.57%) responded to the questionnaire. Mean age of the respondents was 37.07 years (range 28-64 years). Ninety-two respondents were male and there was only one female respondent. 42/93 (45.16%) had undergone subspecialty fellowship training. 15 (35.7%) had fellowship training in Arthroscopy & Sports medicine followed by 12 (28.6%) in Spine & 8 (19%) in Arthroplasty (Figure 1). Interestingly, none had fellowship trainings in Foot and Ankle and Orthopedic Oncology subspecialties.

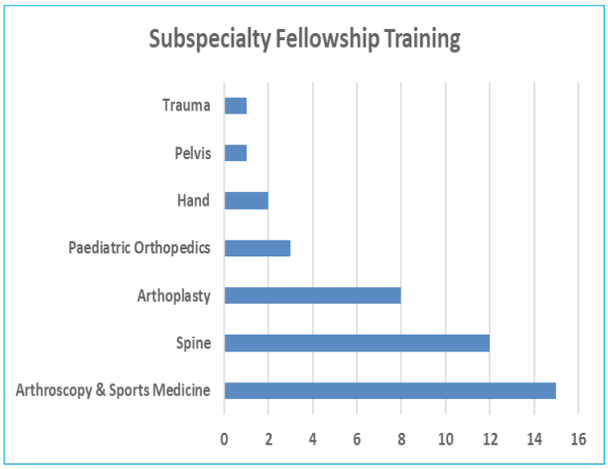

Figure 1. Orthopaedic Surgeons with Fellowship Subspecialty in Nepal.

India was the commonest destination of fellowship training for Nepalese Orthopedic surgeons. 23/42 (54.7%) of them did their fellowship training from India followed by 3 each from Nepal, Singapore, South Korea & Japan, 2 each from USA, Germany & Pakistan and 1 from Malaysia. 15/42 (35.7 %) underwent fellowship training for the duration of 3 months only followed by 12(28.5%) for 12 months, 9 (21.4%) for 6 months, 2 (4.5%) for 5 months and 1 (2.38%) each for 8 months, 2 months, 4 months and 24 months. Mean duration of fellowship training was 6.92 months. 36/42(85.7%) responded replying that their fellowship duration was enough to gain confidence for independent subspecialty practice, whereas for 6/42(14.3%) fellowship duration (3 months in 5 and 2 months in 1) was not enough to gain confidence for independent subspecialty practice. Interestingly, all 51 respondents who had not done fellowship subspecialty yet were interested in pursuing one and order of their interest again was Arthroscopy & Sports medicine (28) followed by Spine (12) and Arthroplasty (11). 41/93(44.1%) believed ideal fellowship duration should be of 12 months followed by 35/93(37.6%) of 6 months and 17/93(18.3%) of 3 months only.

The responses for the twenty-one opinion-based questions categorized under four headings are summarized in Table 1 as below.

Table 1. Summary of the responses for the twenty-one opinion-based questions categorized under four headings.

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
In your opinion, fellowship is important because:					
Fellowship in orthopedics has really become important	74.2%	23.7%	1.1%	1.1%	0.0%
The field of orthopedics is so immense that one can't possibly master it all	55.9%	37.6%	5.4%	1.1%	0.0%
Fellowship training will provide greater practice opportunities.	36.6%	46.2%	12.9%	3.2%	1.1%
Fellowship training will increase income.	14.0%	29.0%	44.1%	8.6%	4.3%
Fellowship training will increase potential to be hired.	29.0%	43.0%	23.7%	4.3%	0.0%
Fellowship training increases the likelihood to be hired by an academic institution	20.7%	45.7%	27.2%	5.4%	1.1%
Fellowship training is just an unnecessary burden/hype created these days. Nothing changes after it.	4.3%	0.0%	8.6%	40.9%	46.2%
Fellowship training should be certified by Nepal Medical Council via board examination upon completion.	17.2%	26.9%	22.6%	17.2%	16.1%
Your opinion regarding cost of training:					
Subspecialty training should be free of cost for the trainee and fellowship training institution should cover living expenses	73.1%	21.5%	2.2%	2.2%	1.1%
The trainee's workplace should pay the training fee and fellowship training institution should cover living expenses	46.2%	36.6%	9.7%	5.4%	2.2%
The trainee should pay the training fee and the fellowship training institution should cover living expenses.	5.4%	7.5%	17.2%	30.1%	39.8%
The trainee should pay for both training fee and living expenses	2.2%	2.2%	5.4%	28.0%	62.4%
The trainee's workplace should pay for both training fee and living expenses	22.6%	32.3%	23.7%	14.0%	7.5%
In your opinion, the best time for fellowship training is:					
Immediately after post-graduation	6.5%	13%	27.2%	39.1%	14.1%
After practicing for a couple of years	36.6%	47.3%	9.7%	5.4%	1.1%
As and when you feel you need training in a sub-specialty	14%	46.2%	25.8%	8.6%	5.4%
Residency training should be shortened	5.4%	7.5%	12.9%	41.9%	32.3%
Your opinion for fellowship training is:					
The cost of the services you provide increases after your complete fellowship training	9.7%	23.7%	37.6%	23.7%	5.4%
The quality of the services you provide increases after your complete fellowship training	58.1%	38.7%	3.2%	0.0%	0.0%
Surgeons get detached from mainstream orthopedics after fellowship training	7.5%	8.6%	21.5%	49.5%	12.9
These patterns of fragmentation into sub-specialty represent a threat to the orthopedics in future	5.4%	6.5%	7.5%	51.6%	29.0%

91/93 (97.85%) responded agreed that fellowship training in Orthopedics has really become important and in fact about three-fourth 69/93 (74.2%) strongly agreed to it. Majority of them either strongly agreed [52/93=55.9%] or agreed [35/93=37.6%] to the fact that the field of orthopedics is so immense that one can't possibly master it all. Majority strongly agreed or agreed that fellowship training will provide greater practice opportunities [77/93=82.8%] or potential to be hired [67/93=72%]. Majority [62/93=66.6%] agreed or strongly agreed to the fact that fellowship training increases the likelihood to be hired by an academic institution. Regarding whether fellowship training would increase income afterwards, majority (44.1%) preferred staying neutral but 40/93(43%) agreed or strongly agreed to it.

Only 4/93 (4.3%) respondents agreed that fellowship is an unnecessary burden/hype created these days and nothing will change after it. In contrast, majority of 81/93(87.1%) either disagreed (38/93=40.9%) or strongly disagreed (43/93=46.2%) to it. 41/93 (44.1%) agreed that fellowship training should be certified by Nepal Medical Council via board examination upon completion. 88/93(94.62%) respondents agreed that fellowships should be free of cost and training institution should cover the living expenses of the fellow. When training free cannot be exempted, 77/93(82.8%) had opinion that trainee's workplace should pay the training fee and training institution should cover the living expenses of the fellow. Majority were against the idea that trainee should pay for either training fees or living expenses.

Regarding best timing for fellowship training, most respondents agreed or strongly agreed to options like "After practicing for a couple of years" [78/93=83.9%] or "As and when you feel you need training in a sub-specialty"[56/93=60.2%]. Options like "Immediately after post-graduation" or "Residency training should be shortened" were mostly disagreed. Only 32/93 (33.4%) agreed or strongly agreed that the cost of the services one provide increases after completion of fellowship training, and rest either stayed neutral [35/93=37.6%] or disagreed [27/93=29.1%] to it. But 90/93 (96.8%) believed that the quality of the services one provides increases after fellowship training and more than half [54/93=58.1%] in fact strongly agreed to it. Only 15/93 (16.1%) agreed or strongly agreed that surgeons will get detached from mainstream orthopedics after fellowship and majority [58/93=62.4%] either strongly disagreed or disagreed to it. Regarding the concern that these patterns of fragmentation into sub-specialty represent a threat to the orthopedics in future, only 11/93 (11.9%) agreed or strongly agreed to it and 75/93 (80.6%) of majority either disagreed [27/93=29%] or strongly disagreed [48/93=51.6%] to it.

DISCUSSION

Nepal is also making baby steps towards focused subspecialty practice in almost all aspects of medical science.[8] The concept of sub-specialization in Orthopedics was introduced by John Charley in 1960 and with his work on Total Hip Replacement he showed that one can achieve excellence with focus on only one part of the body and with continuous evolution in past few decades, many subspecialties were developed.[9,10] Nepal is also following global trend of orthopedic sub-specialization[6] and even in our study 98% of Nepalese orthopedic surgeons realized that fellowships in orthopedics have really become important.

Majority of our fellowship trained orthopedic surgeons as well as those who want to pursue one in future had interest in Arthroscopy & Sports medicine followed by Spine and Arthroplasty which corresponds to the fact that Association of Spine Surgeons of Nepal (ASSN), Arthroscopy Society of Nepal (ASON) and Arthroplasty Subcommittee of Nepal Orthopedic Association (NOA) were few subspecialty societies established till 2019 in Nepal. Trauma, Arthroplasty and Spine were favorite subspecialties among orthopedic surgeons in Nigeria,[11] whereas Pediatric Orthopedics and Sports medicine were favorite in gulf countries[12] and, Hand, Sports medicine & Spine were favorite subspecialties in USA and Canada.[13] In our study, out of 42 fellowship trained surgeons, none had their interest in the field of 'Orthopedic Oncology' and 'Foot & Ankle'. Need for fellowship trained surgeons in these neglected branches cannot be overemphasized.

Across the globe, a smaller relative percentage of women pursue careers in orthopedic surgery than in any other subspecialty for various reasons.[11,14,15] Only one of 93 respondents in our study was female. Causes for scarcity of female orthopedic surgeons in our country need to be deeply looked into and should not be neglected.

Subspecialty fellowship training has emerged as essential component of orthopedic surgical education and enrollments into fellowship programs are increasing year by year across the globe.[3,10] Surgical skill development , better employment & research opportunities were the main reasons for pursuing the fellowship training in a study by Almansoori et al.[2] Inadequate training during residency was not the reason for fellowship training in their study in contrast to opinion by Sarminto.[4] Morel et al[16] revealed the trend in orthopedic job market seeking fellowship trained surgeons. In our study, also majority of the respondents agreed that fellowship training will provide better career opportunities and likelihood to be hired in an academic position. 43% responded that fellowship training will result into better financial gains in future. Gaskill et al[17] evaluated the financial return post-fellowship training compared to immediate entry into general orthopedic practice. Interestingly, their study showed Spine, Sports Medicine and Hand yielded positive returns, Trauma yielded neutral returns whereas, Pediatric Orthopedics and Foot & Ankle yielded negative returns. This might be the reason for interest in Arthroscopy & Sports medicine and Spine among Nepalese Orthopedic surgeons.

Majority of our respondents agreed to 'Paid Fellowships'. One has to go through many hardships and years to struggle to obtain M.S. Orthopedics degree. During fellowship program, fellows are involved in the clinical

and non-clinical work. Denying them payment is an injustice and against the labor laws. They should be paid stipends enough to sustain themselves financially and cover living expenses during their training period. Moreover, all have some financial responsibility towards their family. It's good to know some academic institutions in Nepal itself have paid fellowship programs without fees or bonds,[8] setting examples for others to follow.

In our study, only very few orthopedic surgeons (13/42) had fellowship for duration of 12 months or more. However, 41/93 (44.1%) believed ideal fellowship duration to be of 12 months. This number was comparatively higher then 35/93(37.6%) of 6 months or 17/93(18.3%) of 3 months' duration. Although short term fellowship trainings (3-6 months) are also available, orthopedic subspecialty fellowship trainings are usually of 1-year duration[3] and interestingly, studies also show that more than 90% orthopedic graduates usually are interested in pursuing 1-year fellowship training.[3,18] Sarmiento, however had a different opinion that length of fellowships should not be standardized as 1 year as 3 or 6 months is sufficient for the surgeon to gain the desired additional knowledge.[19] Regarding optimal timing for fellowship training, majority of our respondents agreed after few years of practice or as and when felt needed.

With evolution and proliferation of orthopedic sub-specialty practice their threat of fragmentation of Orthopedic specialty.[4,7] Surgeons focused on sub-specialty will mostly work in bigger cities with sophisticated infrastructure, whereas, surgeons practicing general orthopedic practice will be less in number, which in turn will lead to polarized distribution of orthopedic care among the various strata of population. Rural and poor population will be deprived of comprehensive focused subspecialty care and doctor to population ratio imbalance will arise with concentration of trained surgeons in bigger cities. Necessary guidelines and regulations should be laid to ensure smooth comprehensive medical care among all groups of populations. However, majority of our respondents in our study didn't agree to the idea of threat to orthopedic fragmentation, meaning they are interested in practicing general orthopedics as well even after subspecialty training.

Our study has few limitations. It was only aimed to know the subjective opinions of Nepalese orthopedic surgeons regarding subspecialty (fellowship) training. Out of 475 registered orthopedic surgeons, only 93 participated in our study and responded to our questionnaire. Despite the fact that more responses would have increased the power of study, this study holds significance as its first of its kind done in orthopaedic society of Nepal for analyzing the need and possibility of subspecialty advancements and trainings. We didn't look into the difference in opinion between fellowship trained group and those without fellowship group as well.

CONCLUSIONS

With continuous progress in the field of Orthopedics, subspecialty training and practice is deemed essential, and majority of Nepalese orthopedic surgeons are in favor of paid fellowship programs of 12 months' duration. Based on this pilot study, bigger studies can be designed which definitely will help the policy makers of the country, on the way forwards.

CONFLICTS OF INTEREST

None.

REFRENCES

1. Pellegrini CA, Warshaw AL, Debas HT. Residency training in surgery in the 21st century: a new paradigm. Surgery. 2004 Nov;136(5):953–65.[Article]
2. Almansoori KA, Clark M. Increasing Trends in Orthopedic Fellowships Are Not due to Inadequate Residency Training. Education Research International.2015;2015:1–9. [Article]
3. Daniels AH, DiGiovanni CW. Is subspecialty fellowship training emerging as a necessary component of contemporary orthopaedic surgery education? J Grad Med Educ. 2014 Jun;6(2):218–21. [Article]
4. Sarmiento A. Additional thoughts on orthopedic residency and fellowships. Orthopedics. 2010 Oct;33(10):712–3. [Article]
5. Sarmiento A. The Projected Shortage of Orthopaedists May Be Our Fault: The Journal of Bone and Joint Surgery-American Volume. 2012 Jul;94(14):e105-1–3.[Article]
6. Pradhan RL. Developing Sub-specialty Education and Societies in Orthopaedic Surgery. Nepal Ortho Assoc J. 2014 Jan 5;3(2):1.[Article]
7. Rockwood CA. Keep the family together. J Bone Joint Surg Am. 1984 Jun;66(5):800–5.[Article]
8. Neupane HC, Shrestha N, Shrestha BK. Fellowship Training in Nepal: Current Prospects. J Nepal Health Res Counc. 2018 Oct 30;16(3):345–50.[Article]
9. Natarajan MV. Orthopedic training in India: Time to change. Indian J Orthop. 2012 May;46(3):257–8. [DOI]
10. Horst PK, Choo K, Bharucha N, Vail TP. Graduates of Orthopaedic Residency Training Are Increasingly

Subspecialized: A Review of the American Board of Orthopaedic Surgery Part II Database. J Bone Joint Surg Am. 2015 May 20;97(10):869–75.[Article]

11. Amaraegbulam P. Orthopaedic subspecialisation: The Nigerian experience. Niger J Orthop Trauma. 2018;17(1):8.[Article]
12. Shafiq MO, Khaja AF, Alshammari AN, Altayeb MA, Ghabban KM, Khoshhal KI. The journey of orthopaedic surgery from residency to fellowship: A cross-sectional study in the Gulf Cooperation Council countries. J Taibah Univ Med Sci. 2019 Apr;14(2):131–8. [Article]
13. Dailey SW, Brinker MR, Elliott MN. Orthopedic residents' perceptions of the content and adequacy of their residency training. Am J Orthop. 1998 Aug;27(8):563–70.[Article]
14. Rohde RS, Wolf JM, Adams JE. Where Are the Women in Orthopaedic Surgery? Clin Orthop Relat Res. 2016 Sep;474(9):1950–6.[Article]
15. Alshammari A, Shafiq M, Altayeb M, Khaja A, Ghabban K, Khoshhal K. Gulf cooperation council female residents in orthopedics: Influences, barriers, and mental pressures: A cross-sectional study. J Musculoskelet Surg Res. 2018;2(2):51.[Article]
16. Morrell NT, Mercer DM, Moneim MS. Trends in the orthopedic job market and the importance of fellowship subspecialty training. Orthopedics. 2012 Apr;35(4):e555-560.[Article]
17. Gaskill T, Cook C, Nunley J, Mather RC. The Financial Impact of Orthopaedic Fellowship Training: The Journal of Bone and Joint Surgery-American Volume. 2009 Jul;91(7):1814–21.[Article]
18. Hariri S, York SC, O'Connor MI, Parsley BS, McCarthy JC. Career plans of current orthopaedic residents with a focus on sex-based and generational differences. J Bone Joint Surg Am. 2011 Mar 2;93(5):e16.[Article]
19. Sarmiento A. On the education of the orthopedic resident. Indian J Orthop. 2008;42(3):241. [Article]