

ORIGINAL ARTICLE

Professional satisfaction survey among young nuclear medicine physicians of Pakistan: the challenges ahead

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Abstract

Background The nuclear medicine physician community in Pakistan has seen attrition as many (almost 15%) young trained nuclear medicine physicians have opted to change their specialty. This has important implications for future nuclear medicine physicians numbers and raises questions about professional satisfaction and perception of future prospects among them. This prompted the authors to do a formal professional satisfaction survey. The survey also included those nuclear medicine physicians who had changed their specialty. This was done in the hope of getting an insight into the reasons of this rather unprecedented exodus of nuclear medicine physicians from the profession.

Methods A 12-item job satisfaction survey was designed and sent to nuclear medicine physicians of Pakistan who had completed their MSc (Nuclear Medicine) within the last 10 years. It addressed various dimensions including professional satisfaction with the job, perception of usefulness in patient management questions (as might arise in a clinico-pathological conference), perception of adequacy of training to answer commonly encountered clinical questions, future prospects, income and professional prestige. Additional data was collected in form of suggestions regarding desire of additional training and suggestions for change in the current programme. The questionnaire was sent by E-mail to 32 nuclear medicine physicians with 27 of 32 (84.4%) responders.

Results 16 out of 27 young nuclear medicine physicians (59.3%) were not happy professionally; however most of them (81.5%) considered themselves useful in clinico-pathological conferences. 16 (59.3%) would not choose nuclear medicine again as their profession, if given a chance. All considered that the professional infrastructure is not adequate in the country. 13 (48.1%) thought that their future is not secure while 16 (59.3%) believed that the field is not professionally satisfying and financially rewarding. 25 (92.6%) considered that the MSc (nuclear medicine) syllabus needs to be revised. 9 (33.3%) want additional training (FCPS) in nuclear medicine and 15 (55.6%) thought their MSc course provided enough skills and knowledge. 9 (33.3%) would like to start private practice. Almost half (14, 51.9%) thought that they needed additional training in complementary imaging modalities.

When the data was broken up into those who had graduated within 5 years versus those who had graduated before 5 years, it appeared that there was greater satisfaction in the older group as compared to the younger participants.

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Conclusion This survey points to significant levels of dissatisfaction among the population under study about their perceptions of the parameters of professional satisfaction. This survey should alert the policy makers, administrators and educators of the urgent need to address these perceptions and perhaps bring the training programmes and the service milieu in line with professional needs and in a way that would foster satisfaction and personal growth.

ABBREVIATIONS

PIEAS	Pakistan Institute of Engineering and Applied Sciences
PAEC	Pakistan Atomic Energy Commission
FCPS	Fellow of the College of Physicians and Surgeons of Pakistan
MD	Doctor of Medicine
PNRA	Pakistan Nuclear Regulatory Authority
MSc	Master of Science
NM	Nuclear Medicine

Key words: *Nuclear Medicine training, Pakistan, physician satisfaction survey, nuclear medicine physicians*

Introduction

The nuclear medicine physician community in Pakistan is faced with the dual stress of low induction as well as career change among trained nuclear medicine physicians. Almost 15% of those trained in nuclear medicine have decided to change to other specialties.

Professional satisfaction among physicians is important since it correlates with the quality of patient care and the possibility of a career change among physicians. A survey that reflects physicians' satisfaction with various aspects of his/her job and profession can help policy makers understand and resolve their problems and improve induction and retention of competent physicians where they are needed.

Physician job satisfaction has been linked to various patient care and health system outcomes and has been found to strongly correlate with patient satisfaction and desirable patient outcomes [1-3]. Satisfaction with one's profession can affect not only work motivation but also career decisions, personal health, and relationships with others. Those working in a profession that is undergoing dynamic and sometimes unpredictable change can be especially susceptible to feelings of uncertainty and lowered professional satisfaction[4]. Job satisfaction/dissatisfaction of a doctor affects his behaviour with co-workers, administration and particularly the patients [5].

In a meta-analysis of 44 studies regarding the outcomes of physicians' job satisfaction, Williams ES et al. concluded that unhappiness among physicians has serious consequences among physicians and patients. According to the authors it is up to physicians, managers, and others involved in health system to develop workplaces that allows clinical professionals to practice quality medicine while addressing many of the serious issues facing health system today[6].

Nuclear medicine physicians of Pakistan are a small community. During the past decade, external forces have changed the practice of nuclear medicine in unprecedented ways. Almost 15% (about 30) of the existing nuclear medicine physicians have opted to change their specialty to other fields like radiology, radiotherapy, internal medicine, oncology etc.

Materials and Methods

This cross sectional study was conducted between September 2010 and October 2010. Those nuclear medicine physicians who had completed their MSc Nuclear Medicine between 2000 and 2010 and were serving the Pakistan Atomic Energy Commission (PAEC) as Medical Officers or Senior Medical Officers were targeted as the study population.

Of the 32 nuclear medicine physicians who fulfilled the criteria, 27 participated in the survey. Those who participated answered all questions. The information was collected through a questionnaire which was electronically mailed to the participants.

The survey had two types of questions, a set of dichotomous questions (answered by "yes" or "no") and a set of open ended questions with feedback and suggestions. One question was asked from those who have changed the nuclear medicine specialty and asked of the reason(s) for leaving the specialty.

Professional satisfaction was measured perceptions of professional happiness, usefulness in clinicopathological conferences, willingness to choose nuclear medicine again if given a chance, adequacy of existing professional infrastructure, perception of future security, desire for additional income, eagerness for getting higher a degree like FCPS, adequacy of current MSc degree in terms of training and knowledge.

Open-ended questions with detailed answers were asked regarding the desired professional infrastructure, nuclear medicine training and the MSc course at PIEAS. Those who left the speciality were asked about their reasons including lack of intellectual stimulation, difficulty of speciality, lack of opportunity of further training in NM, not enough opportunity of private practice, monotonous and boring work, future insecurity and the other causes.

Results

Eleven out of 27 (40.7%) nuclear medicine physicians were happy professionally, 22 (81.5%) thought themselves useful in clinico-pathological conferences at their hospitals and 11 (40.7%) would choose nuclear medicine again, if given such a chance. None of the participating nuclear medicine physician thought that professional infrastructure available in the country is adequate. 10 nuclear medicine physicians (37%) felt that their future is secure and is professionally satisfying and 9 (33.3%) thought that current service packages promise adequate financial rewards. 15 (55.6%) nuclear medicine physicians believed that the current MSc training in nuclear medicine was adequate and no further training is required to adequately practice nuclear medicine in Pakistan. 6 (22.2%) nuclear medicine physicians have tried or want to have FCPS training in nuclear medicine and 9 (33.3%) have tried to establish private practice. Two nuclear medicine physicians (7.4%) were of the view that the MSc program should continue unchanged at PIEAS and one nuclear medicine physician (3.7%) felt that current level of professional training is adequate.

Three open ended questions were included in the questionnaire. These asked for the participants opinion about i) professional infrastructure in the country, ii) suggestions for improving the present MSc (Nuclear Medicine) Programme and iii) their desire for additional training and the mechanisms for acquiring these.

Professional Infrastructure 9 (33.3%) nuclear medicine physicians suggested that newer techniques like SPECT-CT, PET-CT and new therapeutic radiopharmaceuticals should become available in the nuclear medicine centers.

MSc Curriculum at PIEAS 17 (63.0%) nuclear medicine physicians suggested that MSc course at PIEAS should be more clinically oriented. 10 (37.0%) nuclear medicine physicians thought that the mathematics course in the MSc nuclear medicine curriculum should be reduced. 3 (11.1%) nuclear medicine physicians were of the view that the duration of MSc course should be increased.

Additional Training and Other Issues 14 (51.9%) nuclear medicine physicians wanted radiology training. 8 (29.6%) wanted PET training, 3 (11.1%) wished for training in nuclear cardiology, 3 (11.1%) in therapeutic nuclear medicine, 2 (7.4%) in internal medicine and 1 (3.7%) in oncology along with general nuclear medicine training.

general nuclear medicine training. Six (22.2%) nuclear medicine physicians were of the view that the level of professional training should be improved. 5 (18.5%) nuclear medicine physicians suggested that there should be exemption from FCPS-I (Radiology) for the MSc degree holders for the completion of FCPS in nuclear medicine. 3 (11.1%) nuclear medicine physicians suggest that nuclear medicine physicians should be well trained in all radiological techniques like Ultrasound and CT.

The number of answers for the open ended questions do not add up to 27 (100%) because several respondents made more than one suggestion.

The data was also broken up into those who had done their MSc within 5 years versus those who had graduated more than 5 years

Table 1 *The dichotomous questions and their answers*

No	Question	Yes	No	Not answered
1	Are you happy professionally?	11	16	0
2	Your usefulness in CPCs?	22	4	1
3	Given a chance would you choose NM again?	11	16	0
4	Is professional infrastructure adequate?	0	25	2
5	Does future looks secure?	10	13	4
6	Does future looks professionally satisfying?	10	16	1
7	Does future looks financially rewarding?	9	16	2
8	Have you tried to get into FCPS in NM?	6	20	1
9	Does MSc provide enough training and knowledge?	15	11	1
10	Should MSc program continue unchanged?	2	25	0
11	Have you considered going for private practice	9	17	1
12	Is current training enough?	1	25	1

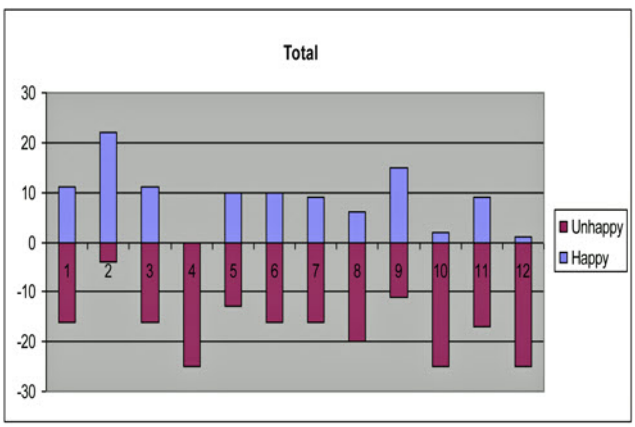

Figure 1 *Happiness score is all the participants*

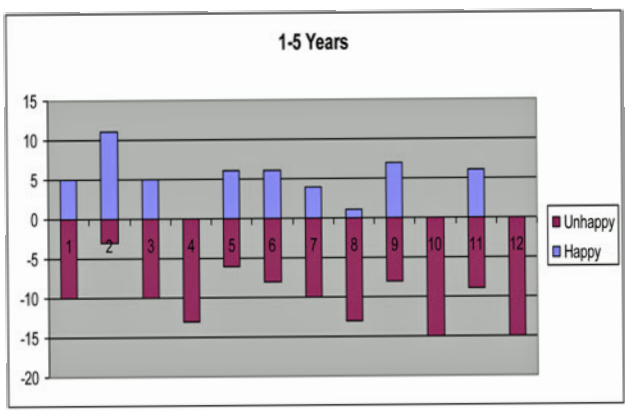

Figure 2 *Happiness score younger participants*

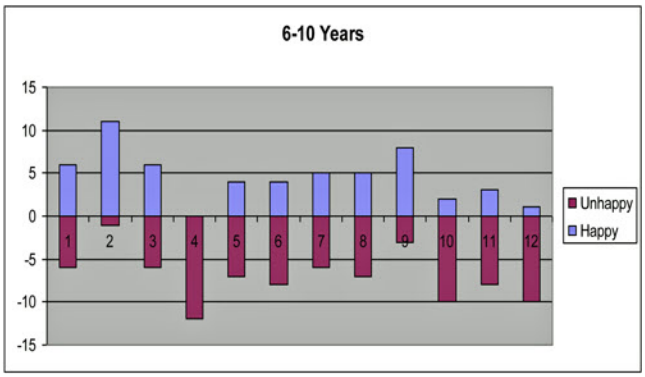

Figure 3 *Happiness score in older participants*

versus those who had graduated more than 5 years ago. The older group appeared happier (38.19%) than the younger group (28.3%), the total group happiness score for all questions was 32.72% (Figure 1).

Discussion

Of exceptional concern to the authors is the exodus of trained nuclear medicine physicians combined with reduced induction of new physicians as evidenced from the annual graduating list of the MSc Nuclear Medicine Class (Table 2).

The authors worry that over the next few years, not enough trained nuclear medicine physicians will be available to meet the requirements of the country. While nuclear medicine will of course continue to be practiced, it is feared that those who do so will lack adequate training.

Satisfaction in life, or satisfaction in the profession depends upon fulfillment of 3 basic needs of the individual: competence, autonomy and relatedness [7]. We might not realize this but all through our lives we seek the gratification of these basic human needs. This satisfaction survey touched upon two of the three aspects that make up these basic needs, competence and relatedness or relevance. The survey was also designed to seek suggestions of improving the current training and job environment. Autonomy issues, though very common in life were not relevant to this survey because those doctors

Table 2 *Graduates of the MSc (Nuclear Medicine) programme, Pakistan Institute of Engineering and Applied Sciences (PIEAS)*

Session	Graduates	Cumulative
1989-A11990	14	14
1990-1992	07	21
1994-1996	14	35
1998-2000	13	63
1999-2001	09	72
2000-2002	06	78
2002-2004	14	92
2003-2005	11	113
2004-2006	10	123
2005-2007	19	132
2006-2008	08	140
2007-2009	04	144
2009-2011	04	148

who do choose to leave the specialty still stay on within the same organization, so they are faced with the same administrative controls (autonomy issues).

There is a strong link between measures of job satisfaction and employee productivity burnout, retention even quality of patient care [8].

Although it should be possible, with a small population as the Pakistani Nuclear Medicine Physicians, to get the data from every member of the group, this survey was directed at the younger members that have shown the highest career change rate. Even in other specialties, younger physicians are more likely to change professions than their older colleagues [9].

Within the study group, there was statistically significant ($p = 0.036$) difference in the happiness score between the older (> 5 years of MSc), and younger (<5 years of MSc), with the older group reporting greater happiness. Perhaps the older physicians have reconciled or resigned to their situation, or perhaps only those nuclear medicine physicians go on to seniority who find NM interesting and rewarding, the younger ones having left already.

Common themes of dissatisfaction relate to training content, quality and duration, the lack of current nuclear medicine facilities like PET CT and SPECT CT and the lack of enough opportunities for after-hours private practice. The reasons for leaving nuclear medicine can be related to these common themes too.

Training issues

The MSc (Nuclear Medicine) programme run by the Pakistan Institute of Engineering and Applied Sciences (PIEAS) is the major, and has been for a very long time, the only post-graduate training available in nuclear medicine in the country. This is a 2 year, full-time rigorous course that offers very strong concepts of basic sciences and research protocols. The basic sciences components are balanced with a year of research experience and clinical work at one of the nuclear medicine centres of the county. The graduates have uniformly praised the quality of training, however, it was considered to be not enough and there was a desire to strengthen it by converting it into 4-5 year programme, make it more clinical, add more hours of radionuclide therapy and more exposure to other imaging modalities. While most of the topics mentioned were felt to be under-represented, it was felt that mathematics was over emphasized. The course involves considerable "number-crunching" that can perhaps be replaced by a more conceptual content.

The FCPS programme is more clinical but has too few graduates with too few post-qualification years to permit a critical analysis of the usefulness, but it is the authors opinion that the CPSP programme will suffer from the same lack of broad-based approach to imaging. The exclusive focus on nuclear medicine techniques (barring a 6 week rotation in radiology) is likely, in future to provide inadequate skills for hybrid imaging that is now going to be the future of nuclear medicine imaging.

Professional infrastructure

There are only two functioning PET scanner in the country, there are a few (less than 5 at the time of writing this) SPECT-CTs. Many nuclear medicine centres are working with obsolete equipment, with no spares and no maintenance. This obviously generates frustration when the physicians are unable to effectively contribute to patient-care because their tools won't let them.

Opportunity for additional income

Compared to other government entities, the government organization hiring the largest number of nuclear medicine physicians used to pay its doctors very well, but given the recent pay increases announced by the federal government, there is a negative "pay-gap" between federally employed physicians and those working in this organization. There has been no news of a commensurate enhancement of the emolument package for physicians working in this organization.

The organization has also, till very recently, discouraged, or at least been ambivalent about after-hours private practice in nuclear medicine. This ambivalence to the idea of practicing physicians under its aegis is fairly deeply ingrained in the corporate psyche and often resurfaces.

There are also several difficulties in establishing private nuclear medicine facilities in the country; of these the regulatory authority rules and departmental conditions for a privately run nuclear medicine centre are major hurdles. The PAEC, to its credit, has recently started an "institutional based practice" exercise, based on the model developed at the authors' institute. This offers some incentive but does not compare with the potential of the nuclear medicine physicians when it comes to additional income. This has been pointed as a concern by many of the survey participants.

Suggestions

Training issues: Nuclear medicine all over the world is engaging with new realities brought on by rapid advances in hybrid imaging and therapy. Newer equipment now come with diagnostic quality CTs, hybrid systems with MRs are also emerging, placing demands on the nuclear medicine physicians and hospital administrators for dual trained physicians who can use the full potential of the machines. Advances in therapy also demands a greater understanding and knowledge of internal medicine, patho-physiology and radiobiology than currently available. The immediate challenge is to understand the need for changing the current training system to prepare the new graduates for these developments. Those responsible for designing training need to understand that what is being taught today, though very good, is not enough.

The training programme needs to be converted into a 4 -5 year course resulting in a degree, perhaps an MD. The emphasis on nuclear medicine should be retained, but training in radiology should be given to the extent of making the graduates into radiologists capable of independent reporting. Nuclear medicine physicians with adequate training are eminently more valuable in the job market than the pure nuclear medicine physicians now being trained [10-11]. There should be a strong therapy component also, perhaps with internal medicine/medical oncology semesters dovetailed into program. This could be one degree with one course or one degree with two possible majors (diagnostic or therapeutic).

The working environment: Nuclear medicine continues to be an investment intensive specialty but no more so than radiology, and the new niches that have been occupied by NM show no risk of displacement over the immediate-to-medium term future. There is no investment risk and this needs to be emphasized.

There has been considerable easing of rules governing after-hours practice in nuclear medicine but bottlenecks persist that make it difficult to start and establish a private practice in nuclear medicine for most physicians. Sometimes, private practice is allowed, but only reluctantly and these individuals are later punished for their "temerity"; the recent reluctance to give the researcher-tax-benefit to practicing physicians in a large organization highlights this bias. The major hiring authorities and the regulatory authority should recognize the positive contribution after-hours practice makes to general health-care delivery and encourage it without prejudicing public sector out-door and inpatient hospital care. The potential for conflict of interest exists but there are several ways of dealing with this.

Conclusions

While it would be simplistic to assume that the results of this survey give a comprehensive or an exclusive explanation of the current depletion in the active population of the nuclear medicine physicians and the apparent inability to attract new professionals, this does give an insight into the level and common causes of frustration among young nuclear

medicine physicians.

The results can also be the initiating argument of a policy change study with the view of making the training and service environment more congruent with professional aspirations of those who practice nuclear medicine. A mechanism for assessing future needs in terms of training, job opportunities etc needs to be devised. Perhaps the professional society, in this case the Pakistan Society of Nuclear Medicine (PSNM) should be invited to interface with the major organizations as the incumbents can be expected to be sensitive to these issues. Once the systems have been optimized a continuous quality improvement programme with the mantra of 'start small, start early and keep working on it'[12-13] should be put in place rather than thinking of fixing it when it is almost too late.

Acknowledgement

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