Any training process should be supervised and evaluated with the aim of verifying correct acquisition of the knowledge pertaining to this training. Following this approach and to determine the situation of the teaching of internal medical residents (MIR) in our speciality, in 2013 we carried out a survey among the tutors of the Nuclear Medicine Teaching Units (NMTU). This survey obtained information regarding the organizational resources available for the management of teaching activities from the perspective of the tutors of the specialty. The results indicated that, in general terms, the training of specialists in Nuclear Medicine in Spain has the necessary teaching resources, and there is special interest in unifying and updating all the material related to teaching. The evaluation systems and greater involvement of all the teaching team were considered to be aspects requiring improvement.

In order to contrast these data with the knowledge and perception of the training medical residents, we designed another anonymous, self-administered questionnaire including more in depth aspects specific to the training plan and the evaluation systems. The last part of the questionnaire assessed the grade of satisfaction of the MIRs and their opinion regarding the need to create a MIR group within the Spanish Society of Nuclear Medicine and Molecular Imaging (SEMNIM). In addition, the students were asked whether they would do a theory practical test at the end of residency to certify their level of training. The questionnaire finished with a section for comments and suggestions.

In order to know the opinion of the residents with respect to a determined aspect of their training, some questions of the evaluation were organized dichotomically (yes/no) while other were continuous numerical using a scale from 1 to 5, with 1 being very insufficient; 2: insufficient, 3: acceptable, 4: satisfactory and 5: very satisfactory. A single survey taker sent the questionnaires to all the NMTU with residents in training through the tutors of this specialty. Those surveyed returned the completed questionnaire directly to the survey taker. Sixty-two questionnaires were received; 61 were considered satisfactory. Only 41% reported having taken corrective measures if the teaching objectives had not been achieved in each rotation. The mean age of the survey responders was 31 years (25–47 years). Eleven were MIR1, 13 MIR2, 18 MIR3 and 20 MIR4. The distribution by gender was similar with 32 women and 30 men.

Among the MIR surveyed, 82% and 91% had teaching guidelines and programs and 69% of these included competences defined within the teaching plan. Sixty-one percent had a MIR textbook adapted to their teaching activity, training and investigation.

In relation to the questions on the sessions in their Nuclear Medicine Services, 61% reportedly had a calendar of the sessions with satisfactory compliance and grade of participation of the physicians in training and staff (score 4/5).

The acquisition of competences through the health care activity carried out and the grade of supervision of the same was considered satisfactory.

The teaching activity of the MIR was defined as satisfactory and their education in investigation was deemed acceptable. Eight-five percent participated in publications and research projects, although only 52% had published as the first author and only 10% had an active doctoral thesis project.

In regard to the external rotations to other departments, 87% evaluated these periods as satisfactory.

Among those surveyed 61% and 52% confirmed knowledge of the criteria of their training and final evaluations and considered these satisfactory. Only 41% reported having taken corrective measures if the teaching objectives had not been achieved in each rotation.

Tutor/resident interviews were described by 67% of the MIR surveyed but only 21% had had an annual contra evaluation to the training received.

In general terms the students considered the training received and the grade of tutorship to be satisfactory.

In relation to the final opinion section, 93% considered it necessary to create a MIR group to represent the remaining residents in training with a spokesperson and voting power within the SEMNIM. Eighty percent of the MIR were willing to take a theory practical test at the end of their residency to certify their level of training. Most of the comments/suggestions were focused on the need for objective annual evaluation tests as well as the updating and standardization of the prevailing training program.

In regard to analysis by gender, statistically significant differences were found with better evaluation of the external rotations by the women compared to the men (mean of 4.2 vs. 3.5, respectively, \( p = 0.02 \)). The grade of tutorship of the teaching activity was better assessed by the men compared to the women (4.1 vs. 3.7 respectively, \( p = 0.03 \)).

We found statistically significant differences between the participation in publications and investigation projects and the year of residency, with greater participation according to the more advanced year of MIR residency. Likewise, the grade of supervision of the teaching activity significantly varied between the early (MIR1 and MIR2) and the later training groups (MIR3 and MIR4), \( p < 0.05 \).
No association was found between the grade of satisfaction with the age, gender and year of MIR surveyed.

The concept of quality of the post-graduate teaching may be subject to the criteria of customer satisfaction of a Nuclear Medicine Service on determining the grade at which their expectations are achieved. However, the dimension of quality in teaching is somewhat more complex due to the interaction between the student and the teacher, as well as the attitudes and abilities of each, being key directives of the learning process.

On comparing the results obtained in the previous survey among the tutors we observed a certain discrepancy with respect to the competences established in the teaching guidelines, being 91% according to the tutors and 69% according to the MIRs.

Both of the groups surveyed agreed on the need for improvements in the systems and criteria of evaluation as well as performing contra evaluations. It was of note that the percentage of MIR not undergoing contra evaluations of the training received was greater in the questionnaires of the residents than the tutors (79 vs. 47%, respectively).

No major differences were observed between the opinion of the MIR and the tutors in regard to the establishment of corrective measures allowing modification of the practical application of the training program (41% for both).

Some authors consider that the satisfaction of the residents with their experiences acquired during the residency period is an important, albeit subjective, method to assess the development of the training program. The survey therefore not only included information on the satisfaction of the MIR in their training but also the knowledge and use of the teaching tools available, such as the MIR textbook (teaching guidelines and program, systems of evaluation etc.). The use of the two in parallel questionnaires (to teachers and students) allowed comparison of some of the results.

With regard to the limitations, there may be a participant selection bias due to the voluntary nature of the questionnaire which was distributed by the tutors of each MNTU. Indeed, some residents were hesitant to participate because they were doubtful as to the anonymity of the survey while others were unaware of its existence, with a certain delay in its distribution or through residents of other hospitals.

The rate of participation of the present survey was similar to that described by Piessen et al., although these authors reported greater dissatisfaction among the MIR in their first years of residency, something which was not observed in our results. Aziz et al. even described a lower grade of participation of 44%, with a similar questionnaire delivery methodology as that in the present study. We therefore believe that our rate of participation was sufficient to obtain reliable conclusions and the data reported are relevant due to the lack of questionnaires with similar characteristics in Spain.

5. Pagina web oficial de la Sociedad Española de Medicina Nuclear e Imagen molecular. [last visit 10.09.14]. Available at: https://www.semnim.es