

# COMMUNICATION AND COMPASSION SKILLS AMONG PORTUGUESE RADIOGRAPHERS

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## ABSTRACT

**Background:** Over the last decade, literature has highlighted the importance of communication and compassion skills in professional-patient relations. In the context of Radiology, Radiotherapy and Nuclear Medicine, these skills are essential for more humanised approach, lower levels of burnout, and more effective results. **Objectives:** To explore the communication and compassion skills of Radiographers their association with sociodemographic and professional variables. **Methodology:** Observational, analytical, and cross-sectional study. Instruments: Sociodemographic and Work Questionnaire; Health Professionals Communication Skills Scale, and Compassion Scale. Participants: 51 (80.4% females) mean age 36.18 (SD=10.805). **Results:** Most of the participants were Radiographers (58.8%), followed by Therapeutic Radiographers (25.5%) and Nuclear Medicine Radiographers (15.7%). Average scores for Communication skills were: Empathy=4.90, Respect=5.37, Social Competence=4.42, and Informative Communication=5.01, total Compassion score=97.59. Younger professionals showed higher levels of Respect ( $p=0.049$ ), Therapeutic Radiographers had higher Empathy ( $p=0.028$ ), and professionals with Communication Skills showed higher Respect ( $p=0.016$ ). Communication and compassion were significant associated. **Conclusions:** These findings provide exploratory insight into communication and compassion skills in Radiographers. Given the small sample size, results should be interpreted with caution, and should not be generalized. It should be noted that further studies with larger samples are needed, given the importance of this topic for the humanization of healthcare.

**Keywords:** Medical Imaging, Patient Care, Humanisation of Healthcare, Empathy, Respect.

## 1. INTRODUCTION

Healthcare professionals must develop specific skills according to their area of practice. In addition, there is a convergence of opinions regarding the importance of communication and humanistic skills, which are essential and common to all specialties (Dias, 2023; Manteaw, 2025). Effective communication is crucial for the humanisation of healthcare and ensures the proper functioning of health systems (Silva, 2024). For communication to be effective and efficient, it is necessary to ensure that the message received is understood through feedback with the interlocutor (Gomes, 2014; Santos, 2022). In the technician-patient relationship, empathy and compassion are equally important. These two concepts are related to the principle of humanisation (Sinclair, 2016; Santos, 2022), it is crucial to review humanistic criteria, excellent human relations provide trust, mutual support and self-esteem, reducing absenteeism, stress and burnout, and multiplying the productivity that is so desired today (Alves, 2011).

The field of Medical Imaging and Radiotherapy is constantly evolving and is increasingly sought after for the diagnosis and treatment of diseases. In the work environment of Radiographers (Rad); Nuclear Medicine Radiographers (NMRad), Therapeutic Radiographers (TRad), it is necessary to be in direct contact with patients on a daily basis, so it is essential to have a more humanised relationship with the patient, with benefits for the patient, the professional and the service. In all three areas, communication is one of the most important factors in promoting trust and transparency of information between the technician and the patient (Saraiva, 2024). However, the professional must express information clearly, respond empathetically, listen actively, adapt communication to the patient's level of education and language, ensure that the patient feels cared for and listened to, encourage the patient to express their ideas, concerns, expectations and feelings (Gomes, 2014; Coelho, 2020; Dias, 2023). There are some barriers that influence the technician-patient relationship. On the one hand, technicians may have a heavy workload and when communicating with patients, they sometimes speak too quickly or in too much detail, use technical language that is difficult for the average person to understand (Pandit, 2014). Therefore, relational proximity facilitates communication, allows information to be validated through patient feedback, and enables greater rigour and objectivity (Martins, 2009; Byrne, 2024).

In view of the above, this study aims to assess healthcare professionals' communication skills, such as informative communication, empathy, respect and social competence, as well as their compassion towards patients in a hospital setting within medical imaging and radiotherapy.

## 2. MATERIALS AND METHODS

This study targeted professionals working in the field of Medical Imaging and Radiotherapy (Rad, NMRad, TRad) who work in public and/or private health institutions.

The study was observational, analytical, and cross-sectional.

The inclusion criteria are: being a Rad or NMRad or TRad professional, who is fully engaged in professional practice. The exclusion criteria are students in training and professional internships. Professionals who did not complete all items on the questionnaire were not included in the sample. The sampling method was non-probabilistic and based on convenience.

Throughout the study, ethical principles were followed in accordance with the Belmont Report, as well as all guidelines proposed by the Ethics Committee (D62/2024). Quantitative data were processed using IBM SPSS Statistics version 29 statistical analysis software. The data necessary for the development of this study were collected using the following instruments:

1) The sociodemographic and work questionnaire: this allowed us to collect information on age, gender, profession, educational qualifications, whether the respondent attended specific training on health communication skills during their degree course, whether they had attended specific training on health communication skills at the service where they work or have worked, in which region they practise their profession, the type of institution, how many full years they have been practising their profession, whether they work in more than one service and how many hours they work per week.

2) The Health Professionals Communication Skills Scale HP-CSS (Coelho, 2020) consists of 18 questions that assess four dimensions: Informative Communication, Empathy, Respect and Social Competence. The response scale is a 6-point Likert scale, where 1 corresponds to "Almost never" and 6 to "Often". However, two of these items are rated in reverse, questions 16 and 18. The Portuguese version presented Cronbach's alpha values between .65 (Social Competence) and .78 (Informative Communication) (Coelho, 2020).

3) The Compassion Scale (Vieira, 2013) consists of 24 questions, organised into six subscales that aim to assess Kindness, Indifference, Common Humanity, Separation, Mindfulness and Non-Involvement. It uses a 5-point Likert scale, where 1 corresponds to “Almost never” and 5 to “Almost always”. It aims to identify how participants feel and act towards others (Vieira, 2013). The negative subscales (Indifference, Non-Involvement, Separation) were reverse-coded before the statistical analysis (questions 1, 2, 3, 5, 7, 10, 12, 14, 18, 19, 22 and 23) (Barros, 2022). The Portuguese version presented a Cronbach's alpha of 0.92 (Vieira, 2013).

This self-administered questionnaire was distributed by professional associations via a Google Forms link. We obtained permission to use all instruments from the authors of the original scale and Portuguese adaptation.

Since the instruments (HP-CSS and Compassion Scale) were already validated for the Portuguese language and met the suitability requirements for application to the target population, the research team considered that there was no need to validate the Internal Consistency of the respective scales.

### 3. RESULTS

The sample consisted of 51 participants, with a mean age of 36.18 years ( $SD = 10.805$ ), ranging from 21 to 62 years. The average age was 35.66 years for females and approximately 38.3 years for males. Most participants were female (80.4%), while 19.6% were male. Regarding professional area, 58.8% were Rad, 25.5% were TRad, and 15.7% were NMRad. In terms of educational, 52.9% held a bachelor's degree, 25.5% a master's degree and 21.6% postgraduate qualifications. Most participants had not received communication skills training during their undergraduate studies (66.7%) or in service (76.5%). Additionally, 21.6% worked in more than one service, while 78.4% worked exclusively in one. Geographically, 43.1% worked in the centre, 27.5% in the North, 17.6% in Lisbon and Vale do Tejo, and smaller percentages in Madeira and the Azores (5.9%), the Algarve (3.9%), and the Alentejo (2%). Regarding the “Type of Institution”, 54.5% worked in the public sector, 31.4% in the private sector, and 13.7% in public-private services. Participants worked between 15 and 60 hours per week, with a mean of 38.67 hours. Regarding the results obtained in the Communication Skills Scale for Health Professionals, we can state that Radiographers (Rad, TRad and NMRad) scored an average of 4.90 ( $SD = 0.596$ ) on the Empathy scale; 5.37 ( $SD = 0.556$ ) on Respect; 4.42 ( $SD = 0.835$ ) on Social Competence and, finally, on Informative Communication, they obtained an average of 5.01 ( $SD = 0.555$ ).

With regard to the results obtained on the Compassion Scale, the following were displayed: Kindness had an average of 15.51 ( $SD = 2.11$ ); Common Humanity 16.80 ( $SD = 2.26$ ); Mindfulness 16.47 ( $SD = 1.99$ ); Indifference 16.24 ( $SD = 2.4$ ); Separation 16.51 ( $SD = 2.29$ ) and Non-Involvement 16.06 ( $SD = 2.52$ ). Overall, the Compassion Scale had an average of 97.59.

#### 3.1 COMMUNICATION SKILLS

We will present the relationships between sociodemographic and occupational variables and “Health Communication Skills” (Empathy, Respect, Social Competence, and Informative Communication) and “Compassion” (Kindness, Indifference, Common Humanity, Separation, Mindfulness, and Non-Involvement).

Only one statistically significant correlation pattern was observed between the age of professionals and the dimension of Respect ( $r = -0.277$ ;  $p = 0.049$ ). The remaining dimensions proved to be independent of age (Empathy:  $r = -0.170$ ;  $p = 0.234$ ; Social Competence:  $r = 0.118$ ;

$p=0.410$ ; Informative Communication:  $r = -0.023$ ;  $p=0.873$ ). We can say that as these healthcare professionals got older, their levels of respect decrease.

With regard to gender, we sought to understand how professionals assumed “Communication Skills” taking into account “Gender”. According to the results presented, Communication Skills do not vary according to the Gender ( $p>0.05$ ).

Similarly, we sought to assess the relationship between “work area” (Rad, NMRad, and TRad) and levels of “Communication Skills”. We use the test ANOVA. Let us look at the following table 1:

**Table 1:** Differences in Communication Skills by Work Area.

|                           |                                | <b>n</b> | <b>M</b> | <b>SD</b> | <b>Minimum</b> | <b>Maximum</b> | <b>p</b> |
|---------------------------|--------------------------------|----------|----------|-----------|----------------|----------------|----------|
| Empathy                   | Radiographers                  | 30       | 4.74     | 0.620     | 3.80           | 6.00           | 0.028    |
|                           | Therapeutic Radiographers      | 13       | 5.26     | 0.427     | 4.60           | 6.00           |          |
|                           | Nuclear Medicine Radiographers | 8        | 4.92     | 0.534     | 4.20           | 5.80           |          |
|                           | Total                          | 51       | 4.90     | 0.596     | 3.80           | 6.00           |          |
| Respect                   | Radiographers                  | 30       | 5.25     | 0.623     | 4.00           | 6.00           | 0.112    |
|                           | Therapeutic Radiographers      | 8        | 5.64     | 0.346     | 5.00           | 6.00           |          |
|                           | Nuclear Medicine Radiographers | 8        | 5.37     | 0.452     | 4.67           | 6.00           |          |
|                           | Total                          | 51       | 5.37     | 0.556     | 4.00           | 6.00           |          |
| Social Competence         | Radiographers                  | 30       | 4.46     | 0.799     | 2.25           | 6.00           | 0.399    |
|                           | Therapeutic Radiographers      | 13       | 4.56     | 0.551     | 3.75           | 5.25           |          |
|                           | Nuclear Medicine Radiographers | 8        | 4.06     | 1.280     | 2.00           | 5.75           |          |
|                           | Total                          | 51       | 4.42     | 0.836     | 2.00           | 6.00           |          |
| Informative Communication | Radiographers                  | 30       | 5.00     | 0.516     | 3.83           | 6.00           | 0.627    |
|                           | Therapeutic Radiographers      | 13       | 4.92     | 0.679     | 3.67           | 5.83           |          |
|                           | Nuclear Medicine Radiographers | 8        | 5.17     | 0.519     | 4.00           | 5.50           |          |
|                           | Total                          | 51       | 5.01     | 0.556     | 3.67           | 6.00           |          |

Legend: M (Mean); SD (Standard deviation)

According to the data, TRad show more Empathy, Respect and Social Competence, while NMRad show more Informative Communication. Taking into account the p-value, we conclude that this difference is only statistically significant in relation to empathy ( $p<0.05$ ), with TRad showing significantly higher values, followed by NMRad and, lastly, Rad. There are no statistically significant results when compare Literacy Levels and Communication Skills ( $p>0.05$ ), with scores for the different Communication Skills being homogeneous across Literacy Levels.

With regard to “Training during the Degree”, we use the T-Student 2 Independent sample test. According to the results, communication skills do not vary according to the characteristic of training during the degree course ( $p>0.05$ ), with the exception of the dimension of respect, where professionals who reported having training in communication skills showed, on average, significantly higher levels of respect than professionals who did not receive training in the area of communication skills.

With regard to assessing the relationship between “Training in the Service” and levels of “Communication Skills”, we use the T-Student 2 Independent sample test. According to the results Communication Skills do not vary according to the characteristic “Training in the Service” ( $p>0.05$ ). With regard to the relationship between “Works in more than one Service” and levels of “Communication Skills”, these do not vary according to this variable ( $p>0.05$ ).

With regard to the “Type of Institution”, we sought to understand how professionals assumed “Communication Skills”, we use the ANOVA test. There is no statistically significant difference between the type of institution and communication skills ( $p>0.05$ ).

In relation to “How many full years have you been working in your profession?”, we sought to assess the relationship between the number of full years that the professionals have been working and the levels of “communication skills”, we use the Pearson's linear correlation coefficient test. No statistically significant correlation was observed between the number of full years and the different communication skills ( $p>0.05$ ).

With regard to the “Number of Working Hours per week”, we sought to assess the relationship between the working hours per week of health professionals and the levels of “Communication Skills”. We use the Pearson's linear correlation coefficient test. No statistically significant correlation was observed between Working Hours per week and the different communication skills ( $p>0.05$ ). When analysing the scatter diagram matrix, we can see that Working Hours did not reveal any pattern with the various dimensions of Communication Skills, empathy, respect, social competence, and informative communication ( $r = -0.256$ ,  $p = 0.069$ ;  $r = -0.173$ ,  $p = 0.224$ ;  $r = -0.044$ ,  $p = 0.758$ ;  $r = 0.076$ ,  $p = 0.598$ , respectively).

### 3.2 COMPASSION SCALE

We also sought to explore the relationship between the “Compassion Scale” and “Communication Skills”, we use the Pearson's linear correlation coefficient test. Subscales with negative valence (Indifference, Non-Involvement, Separation) were reverse-coded prior to analysis, so that higher scores consistently represent higher compassion. Informative Communication showed significant positive correlations with all dimensions of compassion, Compassion, Mindfulness, Separation, Humanity, Indifference and Kindness ( $r = 0.406$   $p = 0.03$ ;  $r = 0.367$   $p = 0.08$ ;  $r = 0.293$   $p = 0.037$ ;  $r = 0.322$   $p = 0.021$ ;  $r = 0.527$   $p < 0.001$ ;  $r = 0.452$   $p = 0.001$ , respectively). Empathy shows statistically significant positive correlations with Mindfulness, Separation, Indifference and Kindness ( $r = 0.369$ ,  $p = 0.08$ ;  $r = 0.324$ ,  $p = 0.021$ ;  $r = 0.391$   $p = 0.05$ ;  $r = 0.457$   $p = 0.001$ , respectively). Respect shows positive correlations with Indifference and Kindness ( $r = 0.363$ ,  $p = 0.009$ ;  $r = 0.367$ ,  $p = 0.008$ , respectively).

In summary, in relation to positive dimensions of Compassion, Mindfulness (greater attention to feelings, thoughts, and sensations associated with the present, without judgement) is associated with higher Empathy and Informative Communication. In addition, Common Humanity (benevolence, natural approach to others and morality in order to achieve the common good) is associated with higher Informative Communication. Finally, Kindness (goodness, practising good deeds) is associated to higher levels of Empathy, Respect and Informative Communication.

Furthermore, in relation to negative dimensions of Compassion (subscales reverse-coded), lower Indifference (lack of interest, concern, or emotion towards others) are associated with greater Empathy, Respect, and Informative Communication towards patients. Lower Non-Involvement (disengagement of other's suffering) are associated with better Informative Communication, and lower Separation (distance of other's suffering) are associated with higher Empathy and Informative Communication.

#### 4. DISCUSSION

Scientific literature highlights the crucial importance of technical-patient communication, as its effectiveness has a positive impact on professionals and patients (Santos, 2022). When compared our results with the results of Coelho (2020) in which the Communication Skills Scale was validated with Portuguese doctors (Oncologists), we found that, in relation to the Empathy variable, Oncologists scored higher than Radiographers (Rad, TRad and NMRad). The Respect dimension (items 1, 3 and 15) showed no discrepancies compared to the scale validation study. In the Social Competence dimension, Radiographers scored higher than doctors, whereas doctors reported higher levels of Informative Communication. A study involving Assistant Doctors and Interns in General and Family Medicine using the same scale (Santos, 2022) found that, for Empathy and Respect, Radiographers scored lower than General and Family Medicine Doctors, but higher than doctors in other specialties. Regarding Informative Communication dimension, Radiographers scored lower than general practitioners and doctors from other specialties. The Social Competence was not assessed.

A study conducted by Vieira validating the Compassion Scale (Vieira, 2013), which addresses Compassion in the Portuguese population, participants showed higher mean scores in Kindness, while Radiographers (Rad, TRad and NMRad) obtained higher averages in Common Humanity, Mindfulness, and lower averages in Indifference, Separation and Non-involvement. When examining a study conducted with Portuguese healthcare professionals using the Compassion Scale (Barros, 2022), it was found that the participants in this study had a higher average Compassion score than Rad, NMRad, and TRad.

In our sample, communication skills of Rad, NMRad, TRad did not vary with age. Although literature suggests age and gender influence empathy and communication (Sommerlad, 2021; Zhou, 2020), this may reflect the sample's young average age and small size. No gender differences were found (Duarte, 2021). TRad showed higher empathy, linked to better patient satisfaction, positive attitudes, and lower pain during radiotherapy (Mattarozzi, 2019). No association was found between education and communication, though gaps in radiology training remain (Jacinto, 2019).

The present study examined the relationship between undergraduate and workplace training and communication skills of Rad, NMRad, TRad. No significant differences were found, except for the Respect dimension related to undergraduate training, and no association with workplace training. Previous studies highlight inconsistencies in communication training during undergraduate education and report that many healthcare professionals perceive it as insufficient, particularly in palliative care (Santos, 2022). Barriers such as workload and limited consultation time hinder skill development. However, targeted communication training has been shown to improve self-efficacy, reduce emotional exhaustion, enhance professional performance, and increase job satisfaction (Lopes, 2017).

After reverse coding the negative subscales, TRad revealed a significant association between communication skills and compassion. Evidence from nursing professionals emphasizes the link

between empathy, compassion and sympathy, with empathy crucial for understanding patients' needs (Cunha, 2024). These competencies can be enhanced through training, reflection and supportive institutional environments, reinforcing the connection between compassion and communication skills.

## 5. CONCLUSIONS

In conclusion, effective communication in healthcare is crucial for high quality care. This study explored the communication and compassion skills of Rad, NMRad, and TRad, thus fulfilling its main objective. We highlight that in Communication Skills, the dimension with the highest average was Respect (5.37) and the lowest average was Social Competence (4.42). For Compassion, Common Humanity scored highest (16.80) and Kindness lowest (15.51). Compared to other health professionals, Radiographers scored lower Empathy, Respect and Informative Communication, but higher scores than some other specialties. In Compassion, Radiographers have lower scores in the Kindness but higher scores in the other dimensions, when compared to the general population, and lower than other health professionals overall. These results suggest that further studies are needed to consolidate the results obtained and that it is essential to invest in postgraduate training for Rad, NMRad, TRad in order to promote the development of these skills. The specific objectives of this study were also achieved, identifying some significant relationships between communication skills and sociodemographic variables, namely Age, Profession, and Undergraduate Education. We can conclude that, after analysing the results obtained, and comparing them with the literature, that the levels of respect tend to decrease with age. It should also be noted that TRad showed higher levels of empathy, compared to Rad, and NMRad. Training during undergraduate studies focused on communication skills proved to be important for the professional performance and satisfaction of Radiographers. Comparing communication skills and the dimensions of compassion, we found that empathy, respect, and informative communication are significantly related to the dimensions of compassion. It was observed that Mindfulness attitudes and lower values of Separation (of other's suffering) are linked to higher levels of Empathy and Informative Communication. Lower Non-Involvement (disengagement of other's suffering) is associated with better Informative Communication. Common Humanity is also related to better Informative Communication. Furthermore, lower Indifference is linked to higher levels of Empathy, Respect, and Informative Communication. Finally, healthcare professionals with higher levels of Kindness are associated with more Empathy, Respect and Informative Communication. This study has some limitations, small sample size, associated with low response rates. Given the small sample size and low response rate, these results should be interpreted with caution and cannot be generalised to the Portuguese population. Finally, it is important to note that this study has implications for practice, namely the focus on postgraduate training focused on Communication and Compassion Skills, as this proves essential to raising the standard of patient care and well-being. Finally, despite the limitations mentioned, it will be important to replicate the study with a larger sample. We consider that the results obtained represent a valid contribution to the study of the communication and compassion skills of Rad, NMRad and TRad, considering that they are essential skills for humanised healthcare.

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