



MORAL DISTRESS OF RADIOLOGICAL TECHNOLOGISTS IN CONVENTIONAL RADIOLOGY SERVICE IN SANTA CATARINA¹

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ABSTRACT

Introduction: The use of ionizing radiation in medical practice may cause harm to the health of the exposed individual. Thus, the ethical use of ionizing radiation must contemplate what is required by national and international legislation, as well as the principles of radiological protection and bioethics. Moral distress is related to the ethical dimension in health practice, and may affect radiological technologists. **Objective:** To identify the situations that trigger moral distress among radiological technologists in a conventional radiology service. **Methodology:** This is a qualitative, descriptive and exploratory research. Data collection techniques were participant observation, semi-structured interview and consensus validation. Data were analyzed through thematic analysis. **Results and discussion:** Situations of moral distress were observed when the radiological technologist was faced with patients in clinical conditions to go to the diagnostic and imaging unit, due to the non-clinical indication of the radiological exam, due to the disrespect of the protection principles and lack of autonomy to enforce the ethical precepts of the use of ionizing radiation. **Conclusion:** Failure to respect the legal principles as well as the principles of radiological and bioethical protection lead the professional of radiological techniques to moral distress.

Keywords: Radiology. Radiology department hospital. Radiation protection. Ethics. Occupational health.

INTRODUCTION

The discovery of x-rays is among one of humanity's greatest inventions. The use of ionizing radiation in medical practice allowed the internal study of the human body without the use of invasive methods. Thus, the practice of medical science is not envisioned nowadays without the use of ionizing radiation, either for diagnostic or therapeutic purposes.

However, this use can cause harm to the health of the exposed individual, whether patient or worker. The harmful effects of ionizing radiation on the body can lead to irreversible cell damage. From the perspective of radiological protection, it is considered that any dose of ionizing radiation may be associated with the probability of adverse effects to health^(1,2).

The ethical use of ionizing radiation by health professionals should be in accordance with national and international legislation, especially the publications of the International Commission on Radiological Protection (ICRP)⁽³⁾ and Ordinance n. 453 of June 1st, 1998⁽⁴⁾. In addition, the principles of radiological protection that encompass justification, optimization and dose limitation, as well as the principles of bioethics

— autonomy, beneficence, nonmaleficence, and justice should also be followed. These references should converge so that the benefit of being subjected to exposure to ionizing radiation outweighs any damage⁽¹⁻³⁾.

The ethical issues related to radiological protection have little recognition in the world of medical sciences and the performance of radiological exams is understood as a common and routine evaluation by the population⁽⁵⁾. Thus, the risk of exposure to ionizing radiation is unknown to most individuals undergoing radiological exams, which are medically and socially accepted, even though there is scientific consensus that radiation can cause cellular damage and lead to diseases such as cancer⁽⁶⁾. Moreover, it is a fact that exposure to ionizing radiation can lead to the occurrence of cell damage, such as skin burns, cataracts, thyroid dysfunction, alopecia, mutations and carcinogenesis⁽⁷⁾.

In addition, it is found that among physicians requesting radiological exams or performing interventionist procedures involving ionizing radiation, there is a portion that is unaware of the stochastic and deterministic effects related to the

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use of radiation for diagnostic or therapeutic purposes⁽⁸⁾.

It is also indicated that the principles of radiological protection are not respected when performing exams by orthopedic surgeons. It has also been found that physicians, regardless of title, do not implement adequate measures to reduce exposure to ionizing radiation⁽⁹⁾.

Knowledge about the principles of radiological protection and the use of ionizing radiation in the health work process was also considered deficient among nurses⁽¹⁰⁻¹¹⁾.

Given this context, working with professionals who do not respect the principles of radiological protection and who have deficiencies in knowledge about the biological effects of radiation, in addition to the lack of knowledge of the population exposed to radiological exams about the damage from radiation exposure may contribute to the occurrence of moral distress in radiological technologists.

Moral distress refers to suffering associated with the ethical dimension in health practice. In this situation, the worker identifies the appropriate ethical conduct to be implemented, however, due to obstacles related to the management of human, material and assistance resources or political and institutional decisions beyond their agreement, the worker is prevented from performing it⁽¹²⁻¹³⁾.

It is known that the work environment in health services proves to be a source of moral distress, which shows the severity of the situation and reinforces the importance of broadening the discussion on the subject¹⁴. Thus, there is a need to study how moral distress manifests itself among the various professional categories and, among these, the radiological technologists.

There are no studies in the literature addressing the issue of moral distress among radiological technologists. This article aims to fill this gap aiming to identify the triggering situations of moral distress of radiologic professionals in a conventional radiology service in Santa Catarina.

METHODOLOGY

This article was extracted from the dissertation entitled *Workload and professional wear of Medical Radiation Technologists in Conventional radiology service*, which is a qualitative, exploratory and descriptive research that used the consensus validation step of the Italian Workers Model as a methodological reference.

The research was conducted in a general hospital reporting to the State Health Department of the State of Santa Catarina, reference in orthopedics-traumatology. Informants of the research were the radiological technologists that work in conventional radiology. This radiology and imaging diagnostic service had a total of 19 radiologic professionals. Of this total, 14 worked in the conventional radiology service. The other five worked in the computed tomography service, not meeting the inclusion criteria, as they did not work in conventional radiology service. Thus, the research was conducted with 12 radiological technologists, two of which were not part of the sample because they were on sick leave.

Data collection techniques included semi-structured interviews, participant observation and consensus validation. Twelve radiological technologists were interviewed. This number of respondents contemplates what Guest, Bust and Johnson report¹⁵ who define that data saturation in qualitative research occurs when 12 interviews are contemplated. The interview was designed with questions about the workloads present in the work process, carried out in the work environment of the interviewed professionals, being recorded and then transcribed.

In the participant observation stage, a script was used to follow the professionals' work routine. Reflective and descriptive information were recorded in a field diary and then transcribed. Fifty hours of observation of the work process of radiological technologists were performed. The observation was made in the three work shifts, being guided by the following topics: assistance flow, interpersonal relations, working conditions, work organization and exposure to workloads.

Subsequently, we proceed with the consensus validation step, which comprises the process in which the recorded data are consensually

validated through a homogeneous working group¹⁶. For this validation, a pre-analysis of the data collected through the observation and interview techniques was performed. The pre-analyzed data were exposed to homogeneous groups, who refuted or approved the pre-analysis results. To have a homogeneous group, the 12 radiological technologists that worked in conventional radiology were invited. Of these 12 professionals, nine accepted the invitation and three chose not to participate. It is important to describe that three homogeneous groups were formed, with three participants each. The discussion with the homogeneous group was recorded and then transcribed. For data analysis, the Thematic Analysis was used. This method allows identifying, analyzing and reporting emerging themes in data, also implying the interpretation of various aspects related to the research theme⁽¹⁷⁾. Within the Thematic Analysis emerged as themes the ethical problems and moral distress - this last one, reference for this article.

This work was submitted to the *plataforma Brasil*, and was approved under opinion n. 1.020.563. Participants were given the Informed Consent Forms. To ensure anonymity, alphanumeric codes were used, given the letter I (interviewee) and a cardinal number in ascending order (1,2,3, ...). Consensus validations were also coded alphanumerically, with the letter G (group) plus a cardinal number (1,2,3) according to the sequence of the interviews.

RESULTS

One of the problems observed refers to the request for bed exams of patients who are hemodynamically stable and able to go to the radiology sector for the exams. In two situations, it was observed that the patient was walking around the room without the need for extra oxygen support. There was a medical request for a radiological exam in bed, but there was no clinical indication.

In this situation, the radiological technologists performed the exams in the requested bed. The patients' companions were asked to leave the room, but those patients who were dependent, that is, unable to walk, were not

removed. Due to lack of space, they were not removed two meters from the head of the mobile device, a distance recommended by Ordinance n. 453/1998, which establishes the basic guidelines for radiological protection in medical radiology⁴. There was only one lead apron on the mobile device, which was used by radiological technologists. Therefore, the other patients were exposed to ionizing radiation, a fact that is in accordance with the provisions of Ordinance n. 453/1998.

In another observed situation, we have the problem of the clinical indication of radiological exams in the intensive care unit. As observed, the medical request had a routine clinical indication of admission. According to Ordinance n. 453/1998, radiology exams should not be performed for hospitalization purposes. Radiological exams should be complementary and support the diagnosis, so that its clinical indication should never be hospitalization or admission to a certain sector⁴. Thus, the request for radiological exams without clinical indication shows a lack of knowledge on radiological protection by the requesting physicians.

In the speech of radiological technologists, it was evident the ethical problem faced by them when performing bed exams with clinical indication of routine exams, as well as the request for exams in patients able to go to the radiology sector to perform them. Thus, moral distress occurs, considering that the worker recognizes the ethically correct action to be taken, however, feels prevented from acting according to his consciousness, which generates moral distress.

The worst here is the emergency [here the worker says that in the resuscitation are five/six stretchers and one is next to the other, there are not 30cm distance], if I have to do an x-ray I have to push everything there and everything here, but it stays like this... for me to get in the middle is difficult, I'm radiating at least three stretchers because they are not... then Dr tells us: This is nothing! But the patient is not well there! I know I have to do... Will you refuse to do!? Are you obeying orders!?(G3).

And this thing of doing something wrong for me causes stress because I know I can't go out radiating the patient in a bad way, and I can't be submitting the other patients to a risk that should

be just for one patient. And we do it routinely, so for me it's very stressful! I'm risking my neck, I cause damage that I'm aware I'm doing... For negligence, for malpractice... For something we cannot change! (I7).

When there are X-ray exams, they (the nursing staff) often ask the doctor to request it as if it were for a bedbound. Then you go upstairs to X-ray the patient and, when you get there, often the patient is not even in the room. The patient is strolling down the corridor, the patient is in the bathroom, or the patient is in the next room talking to the neighboring patient. This is a strain for us, because the bed exam is for when the patient is unable to come to the sector. So, when we try to explain this to them, they say it's because they are short-handed. (I6).

We use routine X-rays, and the radiation that is used here, I think here in the hospital, or in any other hospitals, to assess the need for this patient to have a bed exam or not, whether the patient is here indiscriminately here sometimes performs three in bed x-rays on the same day, so I think this has to be reviewed, it's for the patient, for the other patients who are nearby, and for ourselves, the technician him/herself, who is always subject to taking more radiation than necessary. (I2).

The speeches show an ethical concern about the use of ionizing radiation in relation to the performance of X-ray in the bed and the exposure of other patients and professionals to the physical charge of ionizing radiation. Moreover, the reports show inefficient knowledge by the multiprofessional team regarding the principles of radiological protection, and this factor is related to the occurrence of moral distress among radiological technologists. There is also a concern with self-care in view of the physical risk of ionizing radiation, as it is a fact that chronic exposure to low doses of ionizing radiation can lead to leukemia⁽¹⁸⁾.

Another factor observed is due to the fact that the radiological technologists do not have these questions about the use of ionizing radiation considered by the institution and the medical staff. It also arises the question of the autonomy of the radiological technologists before the use of ionizing radiation and the medical-centered model.

[...] we have medical professionals and non-medical professionals. So, unfortunately, we have

to... We are forced and coerced to comply with the medical order. So, we live with a lot of wrong things, with practices that we know are not appropriate, and unfortunately for being non-medical professionals...Although we have in every situation... Qualification for certain things ... We are obligated accepting and doing things that we disagree with. (I11).

Given the mentioned factors regarding the request for radiographic exams, it is also necessary to ask if the medical team would be receiving adequate training on the use of ionizing radiation in imaging diagnostic, considering that it is known that the competence for requesting radiographic exams image is from medical staff. I5's speech highlights the question about medical knowledge about the ethical use of ionizing radiation.

"It's a repetition of the exam... It's radiation of continuous doses that you take, the patient takes. [...]. Clarification would also be needed for doctors, how X-rays are done, to avoid so much radiation around the world!"(I5).

DISCUSSION

The use of ionizing radiation for diagnostic purposes may lead to the occurrence of deleterious effects on the health of the exposed individual, whether health professional or patient. The justification principle advocates that medical exposure should result in a real benefit to the individual's health and that the efficacy, benefits and risks of alternative techniques available for the same purpose should be prioritized over the use of ionizing radiation^(4,19). It also emphasizes that any exposure that cannot be justified is prohibited, including routine chest exams for hospitalization purposes. It also points out that it is up to each member of the health team to avoid unnecessary medical exposures. It asserts that it is the responsibility of the physician prescribing or requesting a radiological procedure to be aware of the risks of ionizing radiation, the principle of justification, prohibitions, limitations and advantages of radiological practice compared with alternative techniques^(3,19). Ordinance n. 453/1998 also recommends that radiological exams with mobile equipment in hospital beds or collective inpatient environments, such as intensive care

units and nurseries, will only be allowed when it is unworkable or clinically unacceptable to transfer the patient to a facility with fixed equipment⁴. In this case, one of the following measures shall be taken: (a) All other patients who cannot be removed from the environment shall be protected from radiation scattered by a protective barrier (full body protection) of at least 0.5 mm equivalent of lead so any part of the body is at least 2 m distance from the imaging head or receiver⁽⁴⁾.

Respecting radiological protection standards is a minimum requirement for a safe practice to the population and, consequently, the ethical posture to be adopted by health professionals. Therefore, radiological technologists are aware of the deleterious effects of ionizing radiation and radiological protection standards, due to their specific training for the use of this workload in the health sector. By deliberating on their use in certain situations, such as performing bed-bound radiological exams of patients in a clinical condition of going to the radiology department and performing routine ICU admission exams, they are acting in accordance with their moral precepts regarding the use of ionizing radiation in the area of medical radiodiagnosis.

Lack of communication and partnership between work teams, disregard of doctors, lack of opportunity to dialogue with managers, impotence to challenge decisions of other professionals and poor autonomy at work are factors that can trigger moral distress in health professionals⁽²⁰⁻²²⁾. These factors were reported by radiologic professionals in the present study as triggers of moral distress.

The gaps in knowledge and qualification of health professionals, especially medical professionals, about the use of ethical ionizing radiation emerged as a triggering factor of moral distress. About the knowledge of radiological protection of medical professionals, it is a fact that there is a low recognition of the principles of radiation protection, especially as justification and dose optimization. Professionals mistakenly believe that patients are protected from the risks of ionizing radiation when respecting dose limits, neglecting the probabilistic cellular damage that may occur to the exposed individual⁽⁴⁾.

Continuing and permanent education should permeate the medical use of ionizing radiation, in order to contribute to the legislation and principles related to radiological protection to be applied in daily medical practice. In order for the healthcare team to request radiological exams based on the principles of radiological protection and ethics, it is necessary that they have knowledge about ionizing radiation and its risks⁽²³⁻²⁵⁾, given that the lack of knowledge of these professionals may result requesting radiological exams arbitrarily. Thus, it is highlighted the need to invest in education and training of professionals, with the teaching of radiological protection already introduced at the undergraduate level of medical courses⁽²³⁻²⁵⁾. In addition, the need for continuing and permanent education for physicians requesting imaging exams addressing radiation protection issues is highlighted.

CONCLUSION

It was observed the existence of moral distress in the work process of radiological technologists facing the request for bed exams. In this situation, it was evidenced that the fact that the patient has clinical conditions to go to the imaging sector, as well as the lack of clinical indication or the clinical indication of routine exams, led the radiological technologists to moral distress, since they had to perform the task even though they knew they were breaking the principles of radiation protection and bioethics.

There were also gaps in medical knowledge about the principles of radiological protection, which leads to a request for bed exams without justification. This situation could be solved if there were continuing education programs addressing the ethical use of ionizing radiation, as well as issues related to radiation protection. Thus, during training of medical professionals, the curriculum of the courses should address, in a deeper way, the theme of radiological protection.

It was also demonstrated the lack of autonomy of radiological technologists when requesting and performing bed exams, since the request for bed radiological exams is a medical act. The professionals even asked the medical team and other professionals about the need to

perform bed exams in situations that violated the principles of radiological protection, but did not have their suggestions heard. Therefore, when they had to perform the exam, they met the recommendations regarding the ethical use of ionizing radiation, a situation that caused moral distress to radiological technologists.

This way, it is concluded that the ethical use of radiological protection is still a situation to be conquered. There is a need for a greater approach to bioethical principles and radiological protection in health courses, especially from professionals who request and perform these exams.

It is noteworthy that the sharing of knowledge about ethics in the multiprofessional team can lead to the reduction of inappropriate exposure of professionals and patients, which consequently leads to a decrease in the occurrence of moral distress in radiologic professionals.

Regarding the limitation of the present study, we can bring the reduced number of professionals who composed the sample. Thus, for future work, it is suggested to expand the number of radiological technologists, as well as to understand how to cope with the moral distress in the daily work of these professionals.

SOFRIMENTO MORAL DOS PROFISSIONAIS DAS TÉCNICAS RADIOLÓGICA EM SERVIÇO DE RADIOLOGIA CONVENCIONAL DE SANTA CATARINA

RESUMO

Introdução: O uso da radiação ionizante na prática médica pode ocasionar eventos nocivos à saúde do indivíduo exposto. Diante disso, o emprego ético da radiação ionizante deve contemplar o que preconiza a legislação nacional e internacional, assim como os princípios de proteção radiológica e da bioética. O sofrimento moral relaciona-se à dimensão ética na prática da saúde, podendo afetar os profissionais das técnicas radiológicas. **Objetivo:** identificar as situações desencadeadoras de sofrimento moral nos profissionais das técnicas radiológicas em um serviço de radiologia convencional. **Metodologia:** trata-se de uma pesquisa qualitativa, descritiva e exploratória. Usou-se como técnicas de coleta de dados a observação participante, a entrevista semiestruturada e a validação consensual. Os dados foram analisados por meio da análise temática. **Resultados e discussão:** Observou-se situações de sofrimento moral quando o profissional da técnica radiológica se deparava com pacientes em condições clínicas de se dirigir a unidade de diagnóstico e imagem, diante da não indicação clínica do exame radiológico, ante ao desrespeito dos princípios de proteção radiológica e perante a falta de autonomia para fazer cumprir os preceitos éticos do emprego da radiação ionizante. **Conclusão:** O desrespeito dos princípios legais, assim como dos princípios de proteção radiológica e bioéticos levam o profissional das técnicas radiológicas ao sofrimento moral.

Palavras-chave: Radiologia. Serviço hospitalar de radiologia. Proteção radiológica. Ética. Saúde do trabalhador.

SUFRIMIENTO MORAL DE LOS PROFESIONALES DE LAS TÉCNICAS RADIOLÓGICAS EN SERVICIO DE RADIOLOGÍA CONVENCIONAL DE SANTA CATARINA

RESUMEN

Introducción: el uso de la radiación ionizante en la práctica médica puede ocasionar eventos nocivos a la salud del individuo expuesto. Frente a ello, el empleo ético de la radiación ionizante debe contemplar lo que propugna la legislación nacional e internacional, así como los principios de protección radiológica y de la bioética. El sufrimiento moral se relaciona a la dimensión ética en la práctica de la salud, pudiendo afectar a los profesionales de las técnicas radiológicas. **Objetivo:** identificar las situaciones desencadenadoras de sufrimiento moral en los profesionales de las técnicas radiológicas en un servicio de radiología convencional. **Metodología:** se trata de una investigación cualitativa, descriptiva y exploratoria. Se utilizaron como técnicas de recolección de datos la observación participante, la entrevista semiestructurada y la validación consensual. Los datos fueron analizados por medio del análisis temático. **Resultados y discusión:** se observaron situaciones de sufrimiento moral cuando el profesional de la técnica radiológica se encontraba con pacientes en condiciones clínicas de dirigirse a unidad de diagnóstico e imagen, delante de la no indicación clínica del examen radiológico, ante al desprecio de los principios de protección radiológica y ante la falta de autonomía para cumplirse los principios éticos del empleo de la radiación ionizante. **Conclusión:** el desprecio de los principios legales, así como de los principios de protección radiológica y bioéticos llevan al profesional de las técnicas radiológicas al sufrimiento moral.

Palabras clave: Radiología. Servicio hospitalario de radiología. Protección radiológica. Ética salud laboral.

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