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Research Article

Examining moral distress and injury resulting from the COVID-19 pandemic: Insights from the Ghanaian radiography workforce

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ABSTRACT

Background: Moral distress has been an issue under consideration in healthcare practice. The COVID-19 pandemic became a critical factor that contributed to heightened moral distress and injury among healthcare professionals, including radiographers. Despite the substantial engagement of radiographers in the management of COVID-19 patients, the consequent moral distress and injury states experienced by this critical frontline workforce have not been widely explored. This study investigated the level of moral distress and the coping mechanisms employed by radiographers in Ghana during the pandemic to provide valuable information to support radiographers and prepare the workforce better against any future pandemics.

Methods: Utilising a cross-sectional design, a survey approach was employed for data collection between June 2023 and August 2023 from clinically-active radiographers who worked before and during the pandemic in Ghana. Both descriptive and inferential statistics were generated using Microsoft Excel 2019 and the Statistical Package for the Social Sciences (v.26).

Results: Hundred (100) radiographers participated in the study. The result demonstrated that the COVID-19 pandemic escalated the risk of moral distress among radiographers from 22 % ($n = 22$) to 43 % ($n = 43$), with 33 % ($n = 33$) exhibiting signs of moral injury. This escalation impacted the mental health of 12 % ($n = 12$) of respondents and was reported as a contributor to career-changing decisions among radiographers. Notably, many of those affected did not seek formal support but relied on personal coping strategies and family support. Inadequate resources (69 %, $n = 69$), particularly regarding consumables, emerged as the primary cause of moral distress. The study underscored that the most effective means of mitigating moral distress in radiographers was through the provision of resources and additional staff support (66 %, $n = 66$).

Conclusion: This study sheds light on the state of moral distress and injury among radiographers during the COVID-19 pandemic, impacting the mental health of a minority and contributing to career-changing decisions. The findings emphasise the importance for healthcare institutions to proactively implement systems, such as resource provision, improved staffing, and emotional support, now and during similar future pandemics. This is crucial to address moral distress and cater to the mental health needs of radiographers, ensuring a resilient clinical radiography workforce.

Résumé

Contexte: La détresse morale est une question qui fait l'objet d'une attention particulière dans la pratique des soins de santé. La pandémie de COVID-19 est devenue un facteur critique qui a contribué à accroître la détresse t les blessures morales parmi les professionnels de la santé, y compris les radiographes. Malgré l'engagement important des radiographes dans la prise en charge des patients atteints de COVID-19, la détresse et les blessures morales subies par ce personnel de première ligne n'ont pas fait l'objet d'une étude approfondie. Cette étude

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a examiné le niveau de détresse morale et les mécanismes d'adaptation utilisés par les radiographes au Ghana pendant la pandémie afin de fournir des informations précieuses pour soutenir les radiographes et mieux préparer le personnel à d'éventuelles pandémies futures.

Méthodologie: Utilisant une conception transversale, une approche d'enquête a été employée pour recueillir des données entre juin 2023 et août 2023 auprès des radiographes travaillant au Ghana et cliniquement actifs. Des statistiques descriptives et inférentielles ont été générées à l'aide du Statistical Package for the Social Sciences (v.26) et de Microsoft Excel 2019.

Résultats: Cent (100) radiographes ont participé à l'étude. Les résultats ont montré que la pandémie de COVID-19 a augmenté le risque de détresse morale chez les radiographes de 22 % ($n = 22$) à 43 % ($n = 43$), 33 % ($n = 33$) présentant des signes de préjudice moral. Cette escalade a eu une incidence sur la santé mentale de 12 % ($n = 12$) des répondants et a contribué aux décisions de changement de carrière de certains radiographes. Notamment, les personnes concernées n'ont pas cherché de soutien formel, mais se sont appuyées sur des stratégies d'adaptation personnelles et sur le soutien de leur famille. L'insuffisance des ressources (69 %, $n = 69$) est apparue comme la principale cause de détresse morale. L'étude souligne que le moyen le plus efficace d'atténuer la détresse morale chez les radiographes est la mise à disposition de ressources et d'un soutien supplémentaire du personnel (66 %, $n = 66$)).

Conclusion: Cette étude met en lumière l'état de la détresse et des blessures morales chez les radiographes pendant la pandémie de COVID-19, qui ont eu une incidence sur la santé mentale d'une minorité et ont contribué à des décisions de changement de carrière. Les résultats soulignent l'importance pour les établissements de santé de mettre en œuvre de manière proactive des systèmes tels que la fourniture de ressources, l'amélioration de la dotation en personnel et le soutien émotionnel, aujourd'hui et lors de futures pandémies similaires. Ces mesures sont essentielles pour remédier à la détresse morale et répondre aux besoins des radiographes en matière de santé mentale, afin de garantir la résilience du personnel de radiographie clinique.

Keywords: Moral distress; Moral injury; Psychological impact; Radiographers; Ethical Dilemma

Introduction

The concept of moral distress was formulated by Andrew Jameton, a bio-ethicist, as an emotional phenomenon [1]. It occurs when 'one knows the right thing to do for the patient, but institutional constraints make it impossible to pursue that action' [1]. This emotional phenomenon could simply be the unease, discomfort, frustration, and self-blame that practitioners experience resulting from the inability to ensure a patient receives optimal care at the speed, quality, or type of care that their skills, training, and judgment tell them is required for the well-being of the patient [1-4]. These constraints can stem from various sources within an institution, including internal factors like inadequate team communication or external factors such as hospital policies, which impede the prompt and quality provision of patient care [2]. According to Jameton[1], the three elements required and sufficient for moral distress to occur include (1) the experience of a moral event, (2) the occurrence of 'psychological distress,' and (3) a clear causal relationship between (1) and (2).

Moral distress can cause ethical dilemmas, compassion fatigue and burnout outcomes, including emotional exhaustion, cynicism, detachment from the job, and decreased productivity [4]. If experienced repeatedly and left unresolved, this distress can escalate into moral injury, which is defined as harm to one's conscience when a person perpetrates, witnesses, or fails to prevent acts contrary to their moral beliefs, values, or ethical codes of conduct [1,4,6]. This may potentially cause long-term psychological harm, including depression and post-traumatic stress disorder (PTSD) [5,6]. The impact can also lead to sleep difficulties, persistent negative behavioural changes, errors, isolation, compulsive behaviour, diminished empathy and low morale [4,7]. It is also argued that moral distress and injury lead to negative self-talk, feelings of shame, guilt, mistrust, betrayal, anger in one's role, doubt about personal value and a desire to quit practice, often resulting in familial breakdown and unemployment [4,7,8].

Despite the existence of moral distress before the COVID-19 pandemic, studies indicate that the problem has escalated among healthcare professionals during and post-pandemic [9-11]. These were attributed to various factors, including the scarcity of crucial resources such as personal protective equipment (PPE) [10,12]. This scarcity forced healthcare professionals to make critical decisions about resource allocation and face ethical dilemmas that conflicted with their professional values and principles [12]. The pandemic also resulted in heightened workload and fatigue among healthcare workers, impeding their ability to provide the desired level of care [13]. The fear of contracting the virus and transmitting it to their families further exacerbated the situation [14,15]. Additionally, lack of administrative action or support[4], communication challenges and witnessing the suffering and death of very unwell patients who have needed repeated imaging to effectively manage their complex needs in an attempt to aid recovery, combined with the aforementioned issues, added an extra layer of moral distress during the pandemic [13,15,16].

In Ghana, despite the substantial engagement of radiographers in the management of COVID-19 patients, the consequent moral distress and injury states of this critical frontline workforce are not understood. Of note, understanding these concepts in sub-Saharan Africa is complex as cultural influences mean that people do not often like to report or discuss their mental health issues due to stigmatisation and religious reasons [17-19]. The lack of studies regarding COVID-19 and radiographers in this setting may negatively impact the receipt of needed support to deal with some challenges encountered.

This study investigated the level of moral distress and injury experienced, and coping mechanisms adopted by radiographers in Ghana during the COVID-19 pandemic. The purpose was to provide valuable information to support radiographers and prepare the workforce better against any future pandemics.

Methods

Study design

This study employed an exploratory cross-sectional design, utilising a survey approach for the data collection. Data collection was carried out from June 2023 to August 2023 among Ghanaian radiographers across the sixteen regions in the country.

Study population

The study population comprised Ghanaian radiographers who were clinically engaged before and during the pandemic. Student radiographers and clinically inactive radiographers were excluded. At the time of the study, there were 709 clinical radiographers registered with the Allied Health Professions Council (AHPC), the professional board which regulates the practice of radiographers in Ghana. To ensure that all radiographers who worked before and during the pandemic were given the opportunity to participate in the study, they were invited through the communication platforms of the Ghana Society of Radiographers (GSR), the society to which all radiographers in Ghana belong.

Data collection tools and procedure

Structured questionnaires were utilised for data collection. The questionnaire (see attached supplementary file) comprised three sections: consent, demographics, and the section addressing moral distress and moral injury questions. Prospective respondents were asked to provide consent by clicking the consent button before proceeding to answer the rest of the questions. The demographic section included questions on age, gender, experience, religious affiliations, level of education, and hours spent in the isolation ward area for COVID-19 patients (IWACP). The primary section of questions focused on exploring moral distress and moral injury which included 5-point Likert Scale statements (strongly agree, agree, neutral, disagree, strongly disagree).

The questionnaire was developed after conducting a literature review on moral distress and injury. It underwent assessment for content validity and pilot testing among 5 radiographers by one of the authors, who has extensive experience in conducting surveys, before its use in the study. Test-retest was employed to evaluate the reliability of the questionnaire before its use. A convenience sampling method [20] was employed to distribute survey questionnaires to radiographers via online platforms of the Ghana Society of Radiographers, including WhatsApp and Telegram. This allowed participation based on availability and willingness to participate [20]. This process was facilitated by hosting the questionnaire on Google Forms (Google, Mountain View, CA). More questionnaires were shared online via a snowball sampling approach [21].

The questionnaire included a research information sheet detailing its objectives and methodology, along with direct access links to the survey. It also clarified that the inclusion criteria involved radiographers who had worked before and during the pandemic. Consent was obtained from participating radiographers before the commencement of data collection.

Ethical considerations

The Ethics and Protocol Review Committee of the School of Biomedical and Allied Health Sciences (SBAHS), College of Health Sciences, University of Ghana, provided ethical approval (SBAHS/AA/RAD/10,832,601/2022–2023). Participants were assigned IDs, and the collected data were kept confidential and anonymous. To secure data from external access, all information was password-protected and encrypted. Participants were explicitly instructed to proceed only if they had consented to participate in the study after being offered the information sheet, which explained the study and outlined the ethical engagement.

Data analysis

Data were analysed using descriptive and inferential statistics, powered by the Statistical Package for the Social Sciences (Armonk, NY: IBM Corp) version 26 and Microsoft Excel 2019. Frequencies, percentages and means were the outputs of the descriptive statistics. To undertake the inferential analysis, the responses to Likert scale items were assigned scores 1–5, (strongly agree = 5, agree = 4, neutral = 3, disagree = 2, strongly disagree = 1). Spearman's correlation was used to test correlation of demographic characteristics such as years of practice, clinical hours per day in the IWACP, and age with moral distress and moral injury levels. Moreover, the Mann Whitney U test was used to compare the differences between the rate of moral distress and moral injury among gender groups. Statistical significance was set at $p < 0.05$. To facilitate the result presentation, responses categorised as "strongly agreed" and "agreed" were grouped into an "agreement response," while those categorised as "strongly disagree" and "disagree" were combined as a "disagreement" response.

Results

A total number of hundred participants ($n = 100$) took part in the study, with the majority (45 %) aged 20–25. Males constituted 60 %, which is not surprising as they form the majority of the radiography workforce in Ghana. Further demographic statistics are detailed in Table 1. When asked about their experience of moral distress 12 months before the pandemic, the majority (35 %) indicated uncertainty about their status, 32 % reported no moral distress, and 22 %

Table 1
Demographic statistics of the respondents.

Demographic variable	Category	Frequency (%)
Age	20–25 years	45(45.0 %)
	26–30 years	29(29.0 %)
	31–35 years	12(12.0 %)
	36–40 years	9(9.0 %)
	40 years +	5(5.0 %)
Gender	Male	60(60.0 %)
	Female	40 (40.0 %)
*Years of practice as a radiographer	3 years plus internship*	54(54.0 %)
	4–6 years plus internship*	27(27.0 %)
	7–10 years plus internship*	8(8.0 %)
	10 years + (including internship*)	11(11.0 %)
Religious affiliation	Christianity	85(85.0 %)
	Islam	12(12.0 %)
	Traditionalist	2(2.0 %)
	None	1(1.0 %)
Highest educational status	BSc degree	82(82.0 %)
	Diploma	10(10 %)
	Postgraduate Certificate/Diploma	1(1.0 %)
	MSc/MPhil	7(7.0 %)
	PhD	0(0.0 %)
Clinical hours spent per day doing imaging in the IWACP during the COVID-19 pandemic.	None	22(22.0 %
	1–4 h	27(27.0 %)
	5–8 h	41(41.0 %)
	9–12 h	10(10.0 %)
	12 h +	0(0.0 %)

BSc: Bachelor of Science; MSc: Master of Science; MPhil: Master of Philosophy; PhD: Doctor of Philosophy; IWACP: isolation ward area for COVID-19 patients.

* In Ghana, newly graduated radiographers undergo a one-year full-time internship, often referred to as national service, at the radiology department before being formally employed. As a result, both the internship year and subsequent employment are considered as part of their professional experience.

had experienced moral distress (Fig. 1). However, forty-three participants (43 %) acknowledged experiencing moral distress while providing patient care during the pandemic, and 33 (33 %) remained neutral (Fig. 2). In a separate question, however, 69 % believed that the COVID-19 pandemic heightened the risk of moral distress, 10 % disagreed, 19 radiographers (19 %) expressed uncertainty, and 2 % did not respond.

When further asked about how they experienced moral distress during the pandemic, the majority (49 %) reported they felt moral distress due to colleagues' inability to provide standard care. Some participants were neutral (34 %) while others (17 %) reported disagreement with the statement. Additionally, a significant portion (34 %) noticed changes in their ethical decision-making due to moral distress. However, most were neutral (42 %), with some disagreeing (22 %) that they noticed changes in their ethical decision-making due to moral distress. Regarding changes in their values or beliefs due to ethical challenges in the pandemic, 37 % remained neutral, while 32 % were in agreement with the statement (Table 2).

In follow-up questions regarding the impact of moral distress on participants' mental/psychological health during the COVID-19 pandemic, the majority (47 %) reported experiencing neither high nor low stress on their mental health. Additionally, 41 % indicated a low impact, while 12 % reported a high impact on their mental health.

The respondents identified many factors to be contributing factors to moral distress. The chief among them was the inadequacy of resources for treating all patients (such as spirits, wool, gloves, immobilizers, etc.) (69 %). The lack of sufficient staff to appropriately treat all patients (63 %), lack of personal protective equipment (PPE) (66 %), feeling guilty about potentially exposing their friends and family to COVID-19 or other infectious diseases (53 %), insufficient time to provide emotional support to patients (49 %), patients' mental and physical fatigue (45 %) and insufficient training to offer necessary treatment or support (39 %) (Fig. 3) contributed immensely to the distress.

The measures identified by radiographers to alleviate moral distress are presented in Fig. 4 and include the provision of sufficient resources in the radiology department (such as spirits, wool, gloves, immobilisers, etc.) (66 %), improved staffing levels (62 %), increased availability of personal protective equipment (PPE) (60 %), and the provision of emotional and psychological support (52 %) and training (48 %).

Radiographers experienced diverse moral injury encounters throughout the COVID-19 pandemic. In particular, 33 % of the radiographers acknowledged experiencing profound guilt, shame, anger, and worry due to their inability to provide patient support as desired during the COVID-19 pandemic, while 34 % remained neutral (Fig. 5).

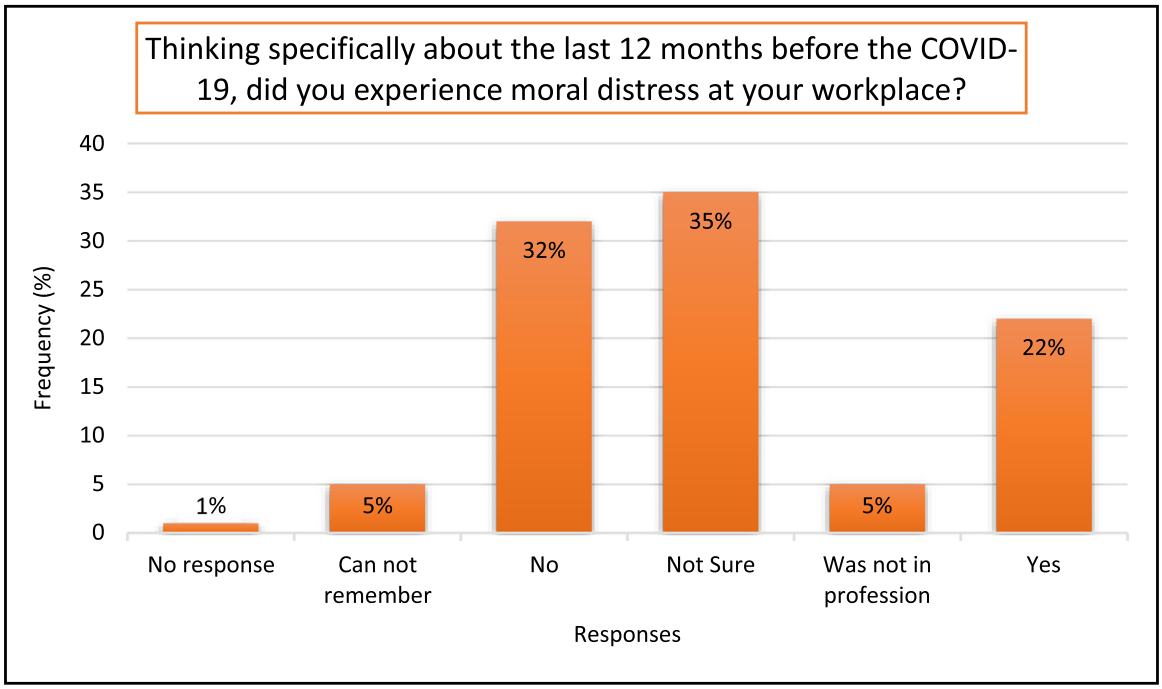

Fig. 1. Moral distress 12 months before the pandemic.

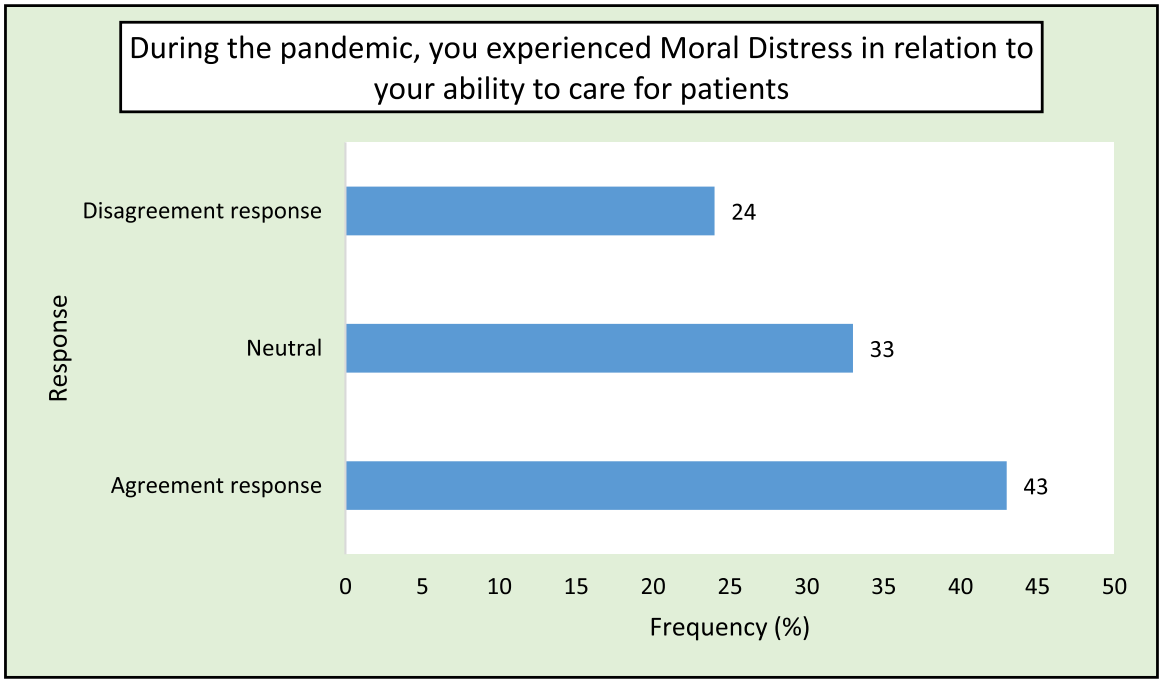

Fig. 2. Radiographers with moral distress during the pandemic.

In response to whether radiographers plans had shifted due to the pandemic, 63 % said no, 19 % were uncertain, and 16 % affirmed changes. Regarding the upcoming year, out of those who indicated that their career plans had changed, 29 % considered working abroad, 26 % aimed for reduced hours, 9 % planned a career switch, 5 % sought a change in specialisation, and 12 % eyed early retirement. Only 1 % reported unchanged plans, while 3 % opted for a sabbatical (Fig. 6).

Participants' responses to seeking assistance for distress during the COVID-19 pandemic are depicted (Fig. 7). Of the respondents, 66 % did not seek help, 20 % sought assistance, and 13 % planned to seek help. The preferred sources of support were family (34.5 %), counselling services (24.1 %), support

Table 2
Radiographers' experience with moral distress during the pandemic.

Statements	Responses to Statements ($N = 100$)			
	Agreement response *n*	Neutral *n*	Disagreement response *n*	No response *n*
During the pandemic, you experienced Moral Distress in relation to the inability of some colleagues to provide standard care for patients due to COVID-19-related challenges	49	34	17	0
You noticed changes in your ethical decision-making that concerns your patient, as a result of the moral distress experienced during the pandemic	34	42	22	2
You observed changes in your personal values, beliefs, or moral framework as a result of the ethical challenges faced during the pandemic	32	37	28	3

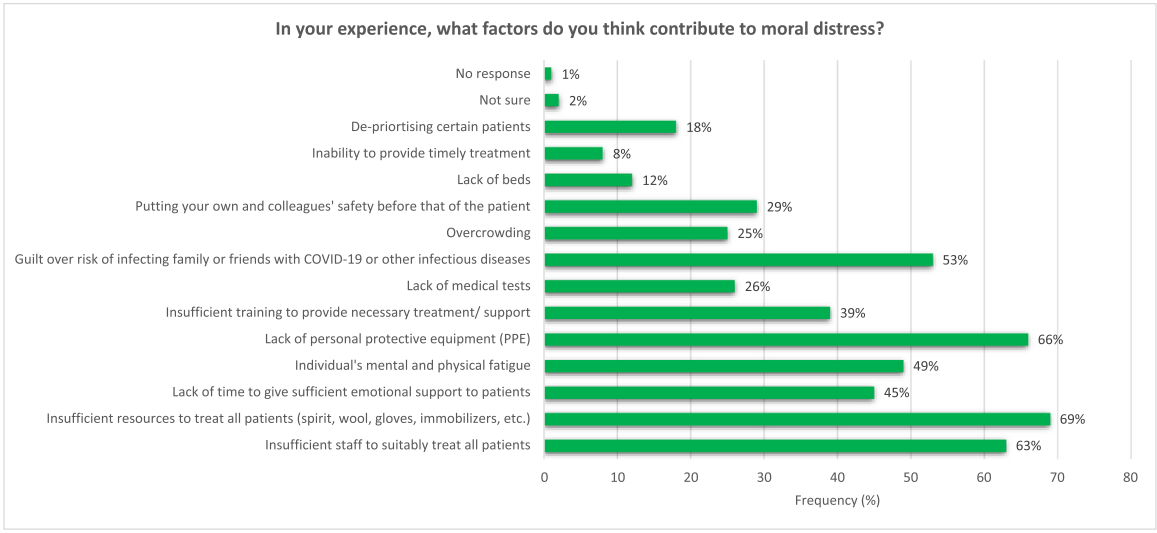

Fig. 3. Factors contributing to moral distress.

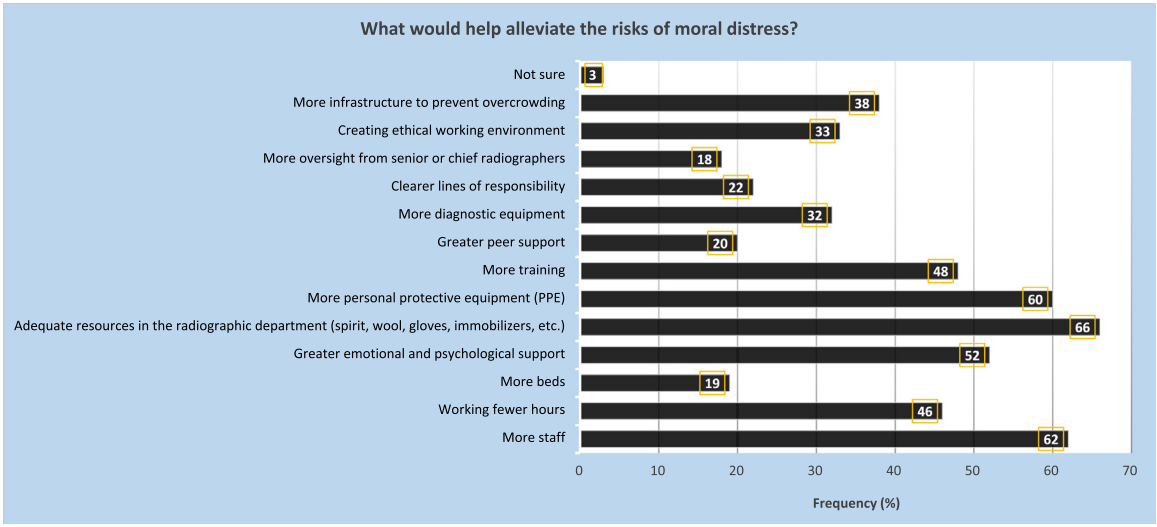

Fig. 4. Radiographers' suggestions for alleviating moral distress.

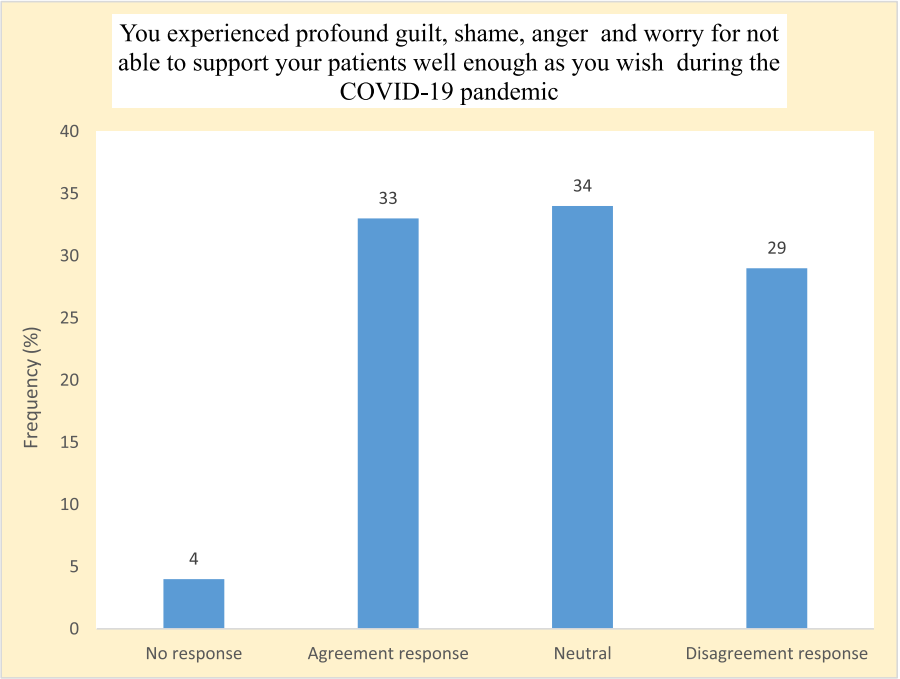

Fig. 5. Radiographers with Moral Injury Experience.

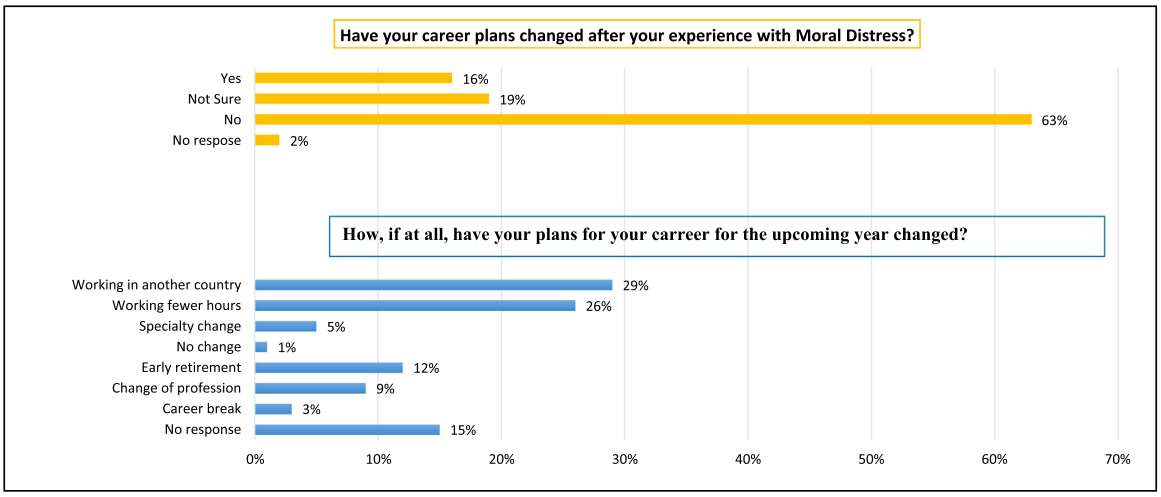

Fig. 6. Career plans change after encountering moral distress during the pandemic.

groups (24.1 %), and religious resources (3.4 %). Additionally, 13.8 % sought help through therapeutic interventions.

Mann-Whitney U test between the rate of moral distress and moral injury among gender groups demonstrated no statistically significant differences (moral distress: p-value= 0.896, moral injury: *p*-value= 0.816) between the two groups. Moreover, Spearman's correlations between moral distress and injury, and demographic characteristics such as years of practice and age yielded no statistically significant values. However, there was a statistically positive significant correlation between moral distress and clinical hours spent per day in the IWACPICU (*rho* =0.242, $p = 0.015$)(Table 3).

Discussion

Prevalence and impact of moral distress

In Ghana, newly graduated radiographers undergo a one-year full-time internship (also known as national service) at the radiology department before securing employment. Therefore, by comparing the years of employment and internship work among radiographers (Table 1) with the onset of Ghana's first COVID-19 cases on March 12, 2020, it becomes evident that approximately 50 % of radiographers in this study were serving as interns in the 12 months leading up to the pandemic. Interestingly, the findings reveals that 22 % of the study partici-

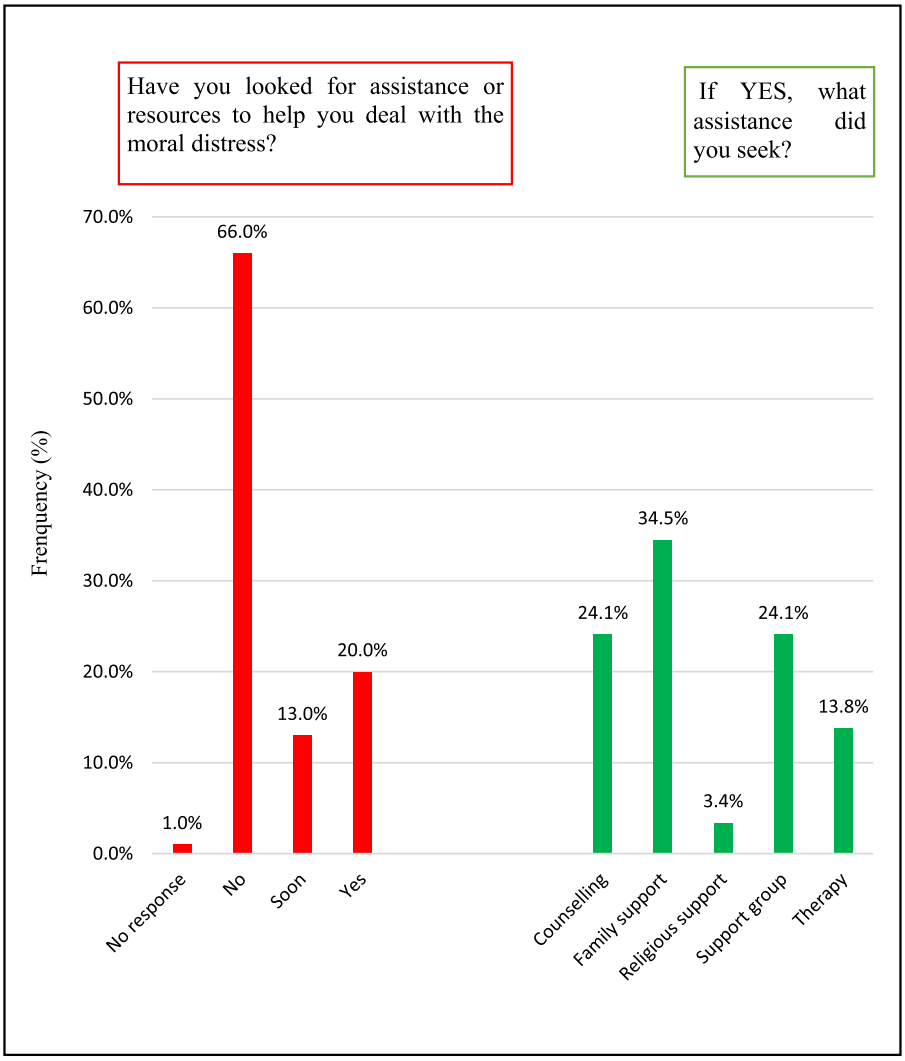

Fig. 7. Radiographers seeking assistance during the pandemic.

Table 3
Correlation of demographic factors with moral distress and moral injury levels.

Variable	*rho*	*p*-value
Moral Distress		
Moral distress rating **vs** years of practice	0.145	0.149
Moral distress **vs** clinical hours in the IWACP	0.242	0.015
Moral distress **vs** age	0.109	0.281
Moral Injury		
Moral injury **vs** age	−0.062	0.539
Moral injury **vs** clinical hours in the IWACP	0.192	0.056
Moral injury **vs** years of practice	0.073	0.470

pants reported experiencing moral distress in the year preceding (12 months before 12th March 2020) the pandemic (Fig. 1). However, the number of people who experienced the condition (43 %) increased during the pandemic (Fig. 2), indicating a notable escalation in the prevalence of moral distress among radiographers. This situation has the potential to cause psychological issues, including depression and PTSD[22], among these radiographers. This finding aligns with a recent study by Bow et al. [23], where 45 % of public health professional workforce reported moral distress.

The majority (69 %) of the radiographers also reported an elevated risk of moral distress due to the pandemic, emphasising its profound influence. The pandemic-induced surge in moral distress is consistent with previous research, as crises and disasters amplify these challenges, especially with resource limitations[24]. Healthcare professionals faced heightened moral distress during the COVID-19 pandemic, navigating ethical dilemmas amid constrained resources[24].

About 3 in 25 radiographers reported a high impact on their psychological well-being. However, the majority did not undergo such challenges, underscoring the resilience of a substantial portion of the participants (47 %). Of note this study did not inquire about staff experience in the previous pandemic; therefore, it cannot guarantee that any prior experience contributed to resilience to moral distress. Nevertheless, the distress did indeed impact moral injury of some of them (33 %). This

contrasts with the study by the British Medical Association[5], which revealed that some healthcare professionals (51.1 %) experienced a moral injury. It is worth noting that moral injury is not a mental illness, and it differs from post-traumatic stress disorder, which requires a psychiatrist to diagnose; however, suffering from moral injury may raise one's risk of developing mental health issues[25]. This emotional burden forms a critical aspect of the broader psychological impact on healthcare professionals.

In alignment with the results of the study of Ezema et al. [26], most of the participants (63 %) were not affected to the extent of changing their career plans. A few (16 %) had considered a career change, particularly with about 29 % of this number considering working abroad, which can contribute to the burden of migration of highly skilled health professionals from Ghana to more developed or high-income countries[27]. Among the other factors (Fig. 6), including early retirement, draw attention to the possible long-term effects of moral distress on radiography career paths and workforce strength.

Factors contributing to moral distress

Radiographers identified five main contributors to moral distress in the current study. Inadequate resources for patient treatment were identified among the majority of the participants (69 %) as the most prevalent issue. The lack of sufficient staff, personal protective equipment (PPE), feelings of guilt about the potential exposure of friends and family to infectious diseases, insufficient time for emotional support, patients' fatigue, and inadequate training were significant contributors(Fig. 3). Participants, as indicated in the findings (Fig. 3), acknowledged a shortage of PPE in response to the pandemic, which aligns with the findings of a study by Ezema et al [26]. Additionally, 69 % of participants identified insufficient resources to treat all patients as the main source of moral distress (Fig. 3), contrary to a study by Defilippis et al. [28], which acknowledged poor teamwork as the main source. Although the battle against COVID-19 has increased public awareness of moral distress, this issue is not unique to the pandemic and may also result from responses to insufficient staffing or an unsuitable skill mix at work[25]. This is supported in this study, which showed that 63 % of participants believed moral distress resulted from a lack of staff to treat patients (Fig. 3).

The study further delved into other factors causing moral distress amid the pandemic, revealing that 49 % of participants pointed to their colleagues' inability to deliver standard care as a noteworthy factor (Table 2). This discovery aligns with the overarching healthcare conversation during the pandemic, underscoring the pressure faced by healthcare systems and the ethical challenges and dilemmas confronting front-line workers. This outcome also contrasts with a prior study by Bow et al. [23] and the British Medical Association[5], which indicated a percentage of 26 % and 70.8 % respectively. These findings underline the need for structural changes in staff support and resource allocation, as well as systemic issues that lead to moral distress.

The positive correlation ($rho = 0.242$, $p = 0.015$) between moral distress and clinical hours spent in IWACP suggests a potentially meaningful link between time spent in the IWACP and the occurrence of moral distress. In the study setting, the IWACP accommodated many individuals who were seriously ill and highly infectious, putting radiographers working there at an elevated risk of contracting the virus. Consequently, the significantly positive correlation between the number of clinical hours spent in this environment and the levels of moral distress emphasises the necessity for additional support. This support is particularly crucial for those who worked during the peak of the pandemic in these isolation wards or continue to work in similar environments. They are responsible for caring for cases that come to these facilities, and addressing their moral distress and its associated consequences is essential.

Alleviating moral distress and coping strategies

Moral distress is increasingly recognised as an important problem that threatens the integrity of healthcare providers and healthcare systems[22]. Despite this, a few reliable and valid measures of moral distress are currently in use in research or clinical practice[29]. Recognising the severity of moral distress and the dearth of measures to alleviate the situation, this research independently sought radiographers' input on how to mitigate its effects. In response to moral distress, radiographers selected five top measures to alleviate their challenges. Notable suggestions included the provision of sufficient resources, improved staffing levels, increased availability of PPE, and emotional and psychological support (Fig. 4). The mitigating factors identified in this study differ from the findings of a study conducted by Nyashanu et al. [5]. The latter study suggested that additional staff, a streamlined NHS bureaucracy, increased flexibility in patient interactions daily, and a greater emphasis on fostering a work culture that encourages the sharing of feelings and concerns were the primary mitigating factors. The differences in suggestions highlight the difficulty of dealing with moral distress and emphasise the importance of customising interventions to specific situations within the healthcare industry.

Radiographers individually addressed moral distress and injury in different ways. The majority (66 %) did not actively seek assistance (Fig. 7). This was attributed to a lack of awareness about their moral distress situation, as recognising moral distress is one of the most challenging aspects of dealing with it[7],[25].

Among those who actively sought assistance (20 %), radiographers used self-identified coping mechanisms and strategies to deal with the moral distress. Particularly, the majority (34.5 %) relied mainly on their families. Apart from family, counseling services, support groups, therapeutic help, and religious resources were identified as preferred sources of support by the study participants. This outcome differs from the findings of the study of Naylor et al. [30], which revealed that peer support from colleagues, enhanced teamwork, and increased resilience among radiographers served as effective support systems to deal with distress during the COVID-19 pandemic.

Radiographers reported seeking solace in their families as a means of emotional support throughout the pandemic because sharing their experiences, fears, and challenges with loved ones provided an outlet for their emotions, allowing them to receive validation and understanding[31]. This family-centered support structure played a vital role in alleviating the psychological burden of moral distress, even though the radiographers were concerned about the potential of contracting the virus and passing it on to their families.

According to the Ghana Statistical Services[32], over 70 percent of Ghanaians are Christians, roughly one-fifth are Muslims, and a small portion follows traditional indigenous religions. This clarifies why some, albeit a small percentage (3.4 %), sought assistance from their religious leaders and backgrounds.

Study limitations

The sample size for the study might not adequately reflect the variety of moral distress experienced among the radiographers in Ghana, therefore the perspectives expressed might not generalise what all radiographers went through during the pandemic. The study relied on participants' recollections of their experiences during the pandemic, which may be subject to recall bias. Participants' memories of events and emotions could be influenced by their current emotional state or the passage of time, potentially affecting the accuracy of their accounts. Moreover, the study did not inquire about staff experience in the previous pandemic; therefore, it cannot guarantee that any prior experience contributed to resilience to moral distress. Finally, a qualitative exploration of this phenomenon could potentially highlight in detail the emotional and actual experiential challenges of radiographers during the critical acute phases of the pandemic.

Conclusion

The study findings reveal that radiographers encountered moral distress during the pandemic, with a minority progressing to moral injury, a reported contributor to shifts in career plans of some radiographers. Moreover, a significant number of radiographers did not actively seek formal support, instead relied largely on their families and personal coping mechanisms to navigate moral distress. The study identified inadequate resources as the key source of moral distress, highlighting that the most effective means of mitigating moral distress was through the provision of resources and additional staff support. The findings emphasise the importance for healthcare institutions, policymakers and professional bodies to proactively implement systems, such as resource provision, improved staffing, and emotional support, now and during similar future pandemics. This is crucial to address moral distress and cater to the mental health needs of radiographers, ensuring a resilient clinical radiography workforce and retention of radiographers. The study's insights also provide valuable information for researchers aiming to enhance the well-being of front-line healthcare workers and improve patient care in times of crisis.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jmir.2024.101448.

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