International Health 2022; **14**: 280–287
https://doi.org/10.1093/inthealth/ihab042 Advance Access publication 27 July 2021

ORIGINAL ARTICLE

Use of social media for the improvement of radiation safety knowledge among Saudi Arabian radiographers

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Received 14 April 2021; revised 17 June 2021; editorial decision 28 June 2021; accepted 30 June 2021

Background: Radiographers have used social media networks for education, research, professional development and other purposes. However, in Saudi Arabia, there are no studies on the use of social media by radiographers. Therefore, the objective of this research was to evaluate the use of social media for the improvement of radiation safety knowledge among Saudi Arabian radiographers.

Methods: A questionnaire was designed to collect the data from Saudi Arabian radiographers. The questionnaire was created using Google Forms and was sent to 530 radiographers using WhatsApp. In total, 159 participants completed and returned the questionnaire through WhatsApp. The response rate was 30%. Basic descriptive statistics were employed to analyse the data.

Results: Most of the participants (79.9%) thought that social media could be used as a tool for the improvement of radiation safety knowledge. Also, almost half of participants (49.7%) employed social media when they needed to obtain information about radiation protection. Similarly, a majority of respondents (69.2%) used social media when they required information related to radiation safety. In addition, 81.7% of participants observed on video the existing information on radiation safety. Also, 71.7% of them were disposed to expand the use of social media to obtain information for radiation protection in their professional activities.

Conclusion: The results indicate that social media can help to improve radiation safety knowledge among Saudi Arabian radiographers. Consequently, participants were willing to increase the use of these tools in their professional work.

Keywords: radiation safety, radiographer, Saudi Arabia, social media.

Introduction

The number of users of social media has reached extraordinary figures around the world. For example, the most recent statistics (January 2021) indicate that the numbers of active users of Facebook, YouTube, WhatsApp, Instagram, Telegram, Snapchat and Twitter were 2740, 2291, 2000, 1221, 500, 498 and 353 million people, respectively.[1]

This enormous use of social media has also reached different fields of medicine and healthcare systems influencing the ways of sharing information, communication, knowledge dissemination and interaction between users such as doctors and patients.[2–5] Likewise, the use of social media has served to improve the knowledge, education, training, teaching abilities, professional skills, learning environments and performance of healthcare professionals.[2,6–10] Furthermore, these tools are beneficial to raise awareness and help the physical and psychological treatments of patients affected by various illnesses such as cancer, cardiovascular diseases, diabetes, HIV, dermapathologies, urological sicknesses, surgical interventions, mental disorders and pulmonary diseases.[11–21] It should be noted that in addition to the

benefits provided by social media, its use presents ethical and legal risks such as the possibility of breaching the confidentiality of patients, damaging the image of healthcare professionals and the handling of inadequate or imprecise information, among other problems.[3,4,22–27]

Regarding radiographers, these professionals have used social media networks for education, research, professional development and other purposes.[3,4,26,28–34] In general, social media platforms such as LinkedIn, Facebook, YouTube, Instagram, Twitter and other networks publish radiological images and procedures, anatomical descriptions, as well as various educational and scientific topics related to radiological techniques that are important for the education, training and professional practices of radiographers.[3,4,6,26,28–33,35–37]

On the other hand, a few studies have suggested the possibility of using social media as a tool to promote radiological safety because the materials and equipment used by radiographers and other professionals generate radiation levels that can be harmful to health.[32,38,39] In this sense, radiographers work with a wide range of apparatus that emit dangerous radiations such as x-ray equipment, fluoroscopy systems, CT, angiography devices, mammography procedures, ultrasound techniques, MRI and nuclear medicine methods.[20,27,40–42] Concerning this topic, these specialists must share and disseminate the concept of radiation safety among medical staff and patients because exposure to excessive doses of radiation during medical interventions can seriously affect the health of both patients and radiographers. These professionals must develop a culture of radiation protection to minimise the use of unsafe practices, reduce radiation doses and be aware that ionising radiation can lead to the development of cancer and other diseases if they do not use adequate training and protection equipment when performing medical procedures and treatments.[33,43,44] One study indicated that radiographers need to increase their knowledge of radiological procedures and their awareness of radiation safety.[45] By this action, social media can contribute to sharing and disseminating information and knowledge to improve the radiation protection of these professionals and their patients.

It is pertinent to point out that the International Atomic Energy Agency (IAEA) recommends promoting the diffusion of medical radiation protection using social media tools.[46] This recommendation implies that social media can contribute to improving the knowledge of radiographers about the safe handling of radiation emitted by the instruments used in medical procedures. Other studies have suggested that the internet and social media can be useful tools for disseminating information to the public about preventive behaviours in radiological emergencies and nuclear accidents.[47,48]

Also, it should be noted that several authors and colleges of radiographers have considered the ethical and legal aspects linked to the use of social media by these professionals. In particular, they have emphasised the need to preserve the confidentiality of patients and the certainty of information published on social media.[3,4,6,25–27,30]

Regarding Saudi Arabia, there are no studies on the use of social networks by radiographers in this region, despite the high dissemination of WhatsApp, YouTube, Facebook, Instagram, Twitter and other applications, whose penetration rates reached 73%, 71%, 66%, 54% and 52% in 2017, respectively.[49] In this sense, this is the first study carried out in Saudi Arabia on the use of social networks to improve the radiological safety knowledge of radiographers. So the research question was: Can the use of social media help improve the radiation safety knowledge and skills of radiographers in Saudi Arabia? The importance of this study for the scientific community is that it will reveal whether social media can help disseminate information to promote the knowledge, skills and awareness of radiation safety among radiographers in Saudi Arabia. This information will be important to radiographers in every country in the world, including Saudi Arabia. Therefore, due to the dangerous impact on human health caused by radiation emitted by materials and equipment used in radiological medical procedures, the objective of this research was to evaluate the use of social media for the improvement of radiation safety knowledge among Saudi Arabian radiographers.

Participants and Methods

A cross-sectional study was carried out to evaluate the use of social media for the improvement of radiation safety knowledge among Saudi Arabian radiographers. The participants were selected from a WhatsApp group of Saudi Arabian radiographers that exchanges ideas on the professional advances of radiography. The questionnaire was designed using Google Forms by the research team at Imam Abdulrahman Bin Faisal University University.[50]

The questionnaire was distributed among 530 Saudi Arabian radiographers through a link using WhatsApp.[51] In total, 159 radiographers completed and returned the questionnaire through WhatsApp. The response rate was 30%.

All male and female radiographers from Saudi Arabia who completed the questionnaire were included in this study.

The questionnaire is shown in Appendix 1. It contained four questions to obtain the demographic data of the participants and nine questions to obtain information about the use of social media as a tool for the improvement of radiation safety knowledge among Saudi Arabian radiographers. The first four questions about the demographic information revealed the gender, experience, education and region of origin of the participants; the next nine questions related to the use of social media for the improvement of radiation safety knowledge obtained the following information: type of social media used by Saudi Arabian radiographers; purposes, place and frequency of use of social media; and the opinions of radiographers about the utilisation of social media for radiological safety. To test the effectiveness of the questionnaire, a pilot study with a small number of participants was carried out before surveying the selected sample. Basic descriptive statistics using frequencies and percentages were used to analyse the survey data.

Results

The demographic information of the participants in this study conducted to evaluate the use of social media for the improvement of radiation safety knowledge among Saudi Arabian radiographers is shown in Table 1. From this table it can be observed that 62.9% (n=100) of the radiographers were female and that the

Table 1. Demographic information (n=159)

Variable	n	%
Gender		
Male	59	37.1
Female	100	62.9
Region		
East	102	64.1
Central	27	16.9
Other	30	18.9
Education		
Bachelor	86	54.1
Diploma	54	33.9
Master	17	10.7
Doctorate	2	1.3
Experience, y		
<2	21	13.2
2–5	32	20.1
5–10	35	22.0
>10	71	44.7

Table 2 Place and frequency of using social media (n=159).

	n	%
What do you use social media for?		
Entertainment	15	9.4
Education	9	5.7
Both	142	89.3
Where do you use social media?		
Home	52	32.7
Work	18	11.3
Travelling	17	10.7
All places	116	73
How long do you use social media daily?		
<1 h	10	6.3
1–3 h	70	44.0
>3 h	79	49.7

majority of them (64.1%; n=102) belonged to the eastern region of Saudi Arabia. Also, 55.3% (n=88) of respondents had <10 y of experience and 54.1% (n=86) had an educational background reaching Bachelor level. It should be noted that this information was collected to find out the main demographic characteristics of the surveyed radiographers. This information is relevant because it enables identifying who the participants were.

Figure 1 depicts the social media used by the participants and it shows that they utilised, in descending order, WhatsApp (96.2%; n=153), YouTube (67.9%; n=108), Snapchat (64.8%; n=103), Twitter (60.4%; n=96), Instagram (57.9%; n=92), Facebook (46.5%; n=74) and other platforms (1.9%; n=3).

Table 2 presents the place and frequency of the use of social media. Here, it can be seen that 32.7% (n=52) of participants employed social media at home. Likewise, 49.7% (n=79) of respondents used social media >3 h per day, and the rest of them used social media <3 h per day. Also, it was detected that 9.4% (n=15) of participants employed social media for entertainment and 5.7% (n=9) for education; 89.3% (n=142) of them used social media for both activities (i.e. entertainment and education).

Figures 2–6 describe the opinions of the participants about the utilisation of social media as a tool for the improvement of radiation safety knowledge among radiographers. Figure 2 indicates that 79.9% (n=127) of participants thought that social media contributed to improving knowledge about radiation safety among radiographers; only a small percentage of them (3.1%; n=5) believed that social media networks were not useful for this purpose. Figure 3 shows that more than half of participants (69.2%; n=110) used social media when they needed information related to radiation safety during work hours. From Figure 4 it can be observed that 49.7% (n=79) of participants employed social media when information about radiation protection was required; the others used books (20.1%; n=32), journal articles (10.1%; n=16), short notes (16.4%; n=26) or other sources (3.7%; n=6). Figure 5 indicates that 81.7% (n=130) of participants used videos to view the existing information on radiation protection. Figure 6 illustrates that 71.7% (n=114) of respondents were

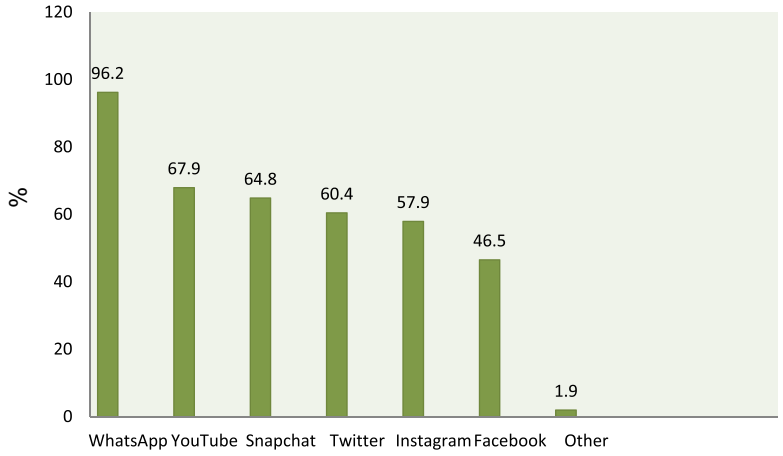

Figure 1. Type of social media used by the participants (n=159).

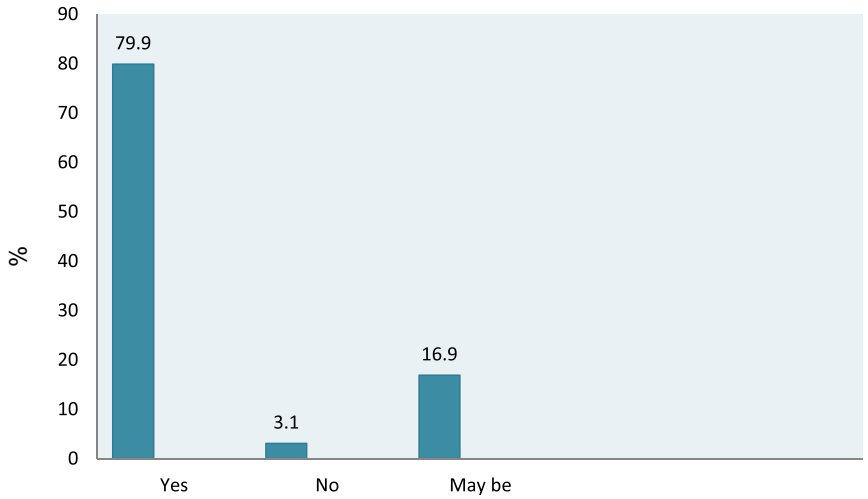

Figure 2. Use of social media to improve knowledge and skills about radiation safety (n=159).

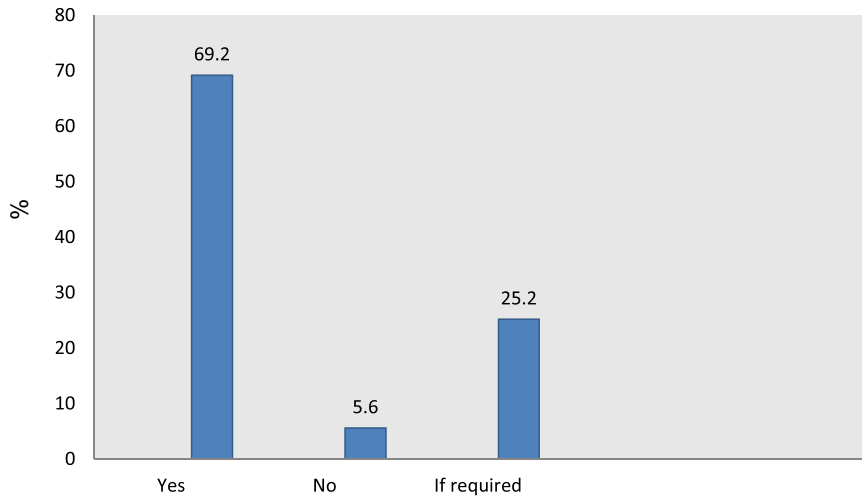

Figure 3. Use of social media in the workplace (n=159).

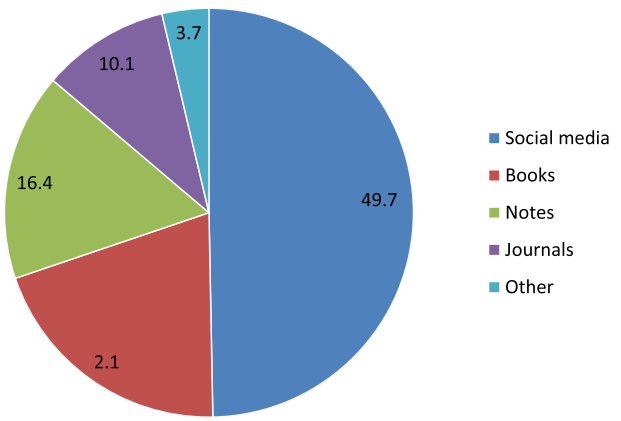

Figure 4. Sources used to obtain information about radiation safety (%; n=159).

disposed to increase the use of social media to find out information about radiation protection in their professional activities.

Discussion

This study provides a profile of the use of social media for the improvement of radiation safety knowledge among Saudi Arabian radiographers. In this sense, the results illustrated in Figure 1 show that WhatsApp was the social media most used by the respondents (96.2%). This result is in agreement with the fact that WhatsApp was the most widely used social media in Saudi Arabia in 2017.[49] Additionally, radiographers sequentially used YouTube, Snapchat, Twitter, Instagram and Facebook. Other studies have also shown the use of these social media platforms in the context of radiography or in topics related to nuclear radiation organisations.[6,26,33–35,52,53]

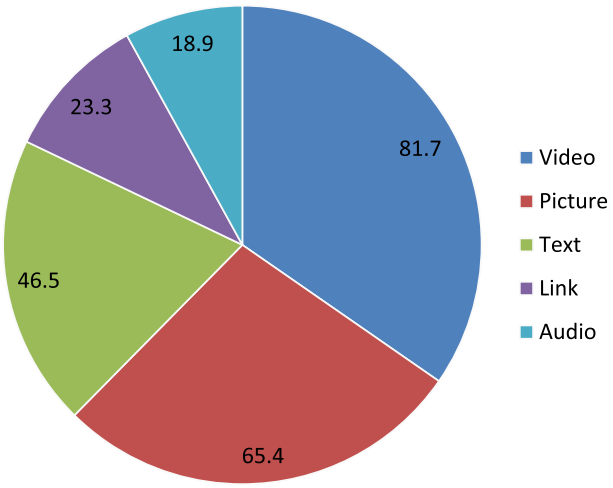

Figure 5. Modes to observe information about radiation safety (%; n=159).

Regarding the use of social media for education and entertainment, Table 2 indicates that participants used social networks for these activities at home, at work and elsewhere. However, the percentage of use of social networks for educational purposes is very low. Only 5.7% of radiographers used these tools for this objective. This low percentage of the use of social networks for educational purposes indicates the need to raise awareness among the radiographers in Saudi Arabia about the use of social networks as an alternative for their educational training. On this subject, different studies carried out around the world have suggested that social media can be used to improve the education and practices of radiographers.[6,29,30,33,37] In general, all these reports have proposed that social networks are an important tool to promote the continuing education, training and professional development of radiographers. In this regard, a recent survey of a group of medical radiation professionals in Canada and Australia found that online media can be used for professional development and education.[54] Similar results can be seen from a study conducted among a group of participants from several countries, including radiographers, radiotherapists, nuclear medicine technologists and other professionals who belong to the Twitter Journal Club, 'MedRadJournalClub'.[33] Other studies on this subject have shown comparable results, suggesting that social media can provide a positive learning environment for medical radiation professionals.[3,4,6,26,28–34,36]

It is pertinent to mention that social media contributes to facilitating education and professional development because these platforms allow global participation of professionals and people interested in analysing, discussing, sharing and exchanging information, ideas, knowledge and experiences on a particular topic. In this process, the information found on the internet and other sources can be enriched by the overall contribution, participation and interaction of many specialists. As Bogdanou et al. point out, '...social media has revolutionised the use of the internet, transforming it from a source of information to an opportunity for participation...social media enables empowerment of individuals as they cannot only access digital information but also publish and share content'.[55] By contrast, simply looking for information on the internet is almost always a 'solitary act', in which the information obtained is analysed individually without the participation of others.

Figures 2–6 suggest that most of the participants used social media networks to promote the dissemination of knowledge about radiation safety in their professional occupations. They also used these platforms when radiation safety information was required in the workplace. Furthermore, it can be seen that most radiographers are willing to increase the use of social media for radiation safety and protection in their professional practice. Participants also employed books, videos and pictures to obtain and observe information on radiation safety.

Regarding this research, no similar investigations were found that enabled comparisons with the views of the radiographers surveyed in this study. However, some general references suggest that social media can be a useful tool with which to disseminate information and opinions about the safe management of radiation emitted by the instruments used by radiographers.[32,56] For example, Medina proposed the use of social media such as Facebook to discuss and exchange opinions on protection against dangerous radiation emitted by equipment installed in different institutions around the world.[56] In addition, Lau and Ng, the IAEA and the International Radiation Protection Association have suggested the use of social networks to disseminate information on the safe management of radiation.[32,46,57]

Based on the aforementioned observations, the most significant inference of this study was that the majority of participants believed that social media can help disseminate information to promote knowledge, skills and awareness about radiation safety among radiographers in Saudi Arabia and other countries of the world.

The main limitation of this investigation was related to the fact that most of the participants were a small sample from the eastern region of Saudi Arabia, which indicates that in future studies it is necessary to make efforts to incorporate a greater number of participants from all regions of the Kingdom of Saudi Arabia. Also, it would be interesting to examine the possible statistical association between demographic information and the use of social media for radiation protection. Besides, it is recommended to create and evaluate the effectiveness of a group on WhatsApp to disseminate information on radiation protection and on creating awareness about the dangers of radiation emitted by the instruments used by radiographers in Saudi Arabia.

Conclusions

The results suggest that most of the participants believed social media could help disseminate information to improve radiation safety knowledge among radiographers in Saudi Arabia. Consequently, they are willing to increase their use of social media for this purpose in their future professional activities.

Furthermore, the literature review indicated that only a few studies on the use of social media to increase radiological safety

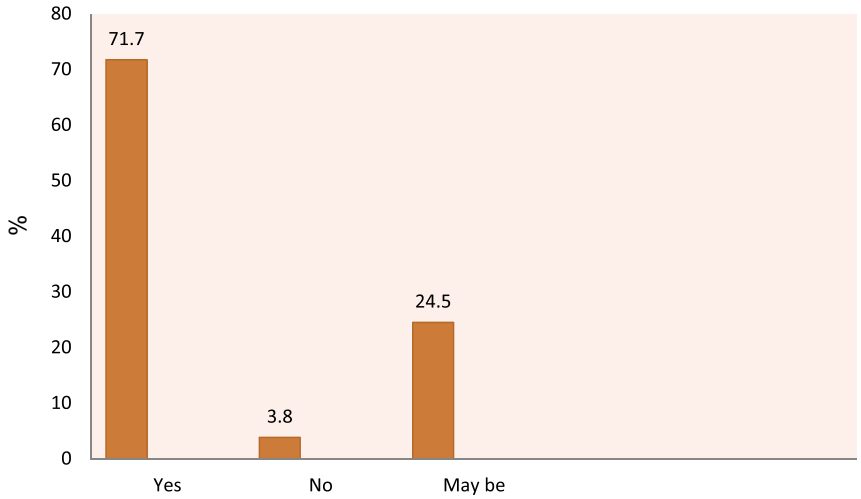

Figure 6. Willingness to use social media in the future (%; n=159).

knowledge among radiographers have been conducted worldwide, excluding the Kingdom of Saudi Arabia.

Authors' contributions: Each author made an equal contribution to the study.

Funding: None.

Competing interests: None declared.

Ethical approval: Completion of the questionnaire was considered to imply informed consent to participate in the study. Ethical approval was obtained from Imam Abdulrahman Bin Faisal University.

Data availability: None.

References

1 Most popular social networks worldwide as of January 2021, ranked by number of active users (in millions). Available at: https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/ [accessed June 7, 2021].

2 Fehring K, De Martino I, McLawhorn A, et al. Social media: physicians-to-physicians education and communication. Curr Rev Musculoskelet Med. 2017;10:275–7.

3 Makary M, Miller R. Radiology is primed for social media. Diagn Imaging. 2018. Accessed June 7, 2021. https://www.diagnosticimaging.com/view/radiology-primed-social-media.

4 Bibault J, Katz M, Motwani S. Social media for radiation oncologists: a practical primer. Adv Radiat Oncol. 2017;2(3):277–80.

5 Zhou H, Zhang J, Su J. Internet access, usage and trust among medical professionals in China: a web-based survey. Int J Nurs Sci. 2020;7(1):38–45.

6 Kassamali R, Palkhi E, Hoey E. Social media in clinical radiology: have you updated your status? Quant Imaging Med Surg. 2015;5(4):491–3.

7 Fitzgerald R, Radmanesh A, Hawkins C. Social media in medical education. Am J Neuroradiol. 2015;36:1814–5.

8 Sterling M, Leung P, Wright D, et al. The use of social media in graduate medical education: a systematic review. Acad Med. 2017;92:1043–56.

9 Latif M, Hussain I, Saeed R, Qureshi M, et al. Use of smart phones and social media in medical education:trends, advantages, challenges and barriers. Acta Inform Med. 2019;27(2):133–8.

10 Nimavat N, Singh S, Fichadiya N, et al. Online medical education in India – different challenges and probable solutions in the age of COVID-19. Adv Med Educ Pract. 2021;12:237–43.

11 Prochaska J, Coughlin S, Lyons E. Social media and mobile technology for cancer prevention and treatment. Am Soc Clin Oncol Educ Book. 2017;37:128–37.

12 Alanzi T, Alobrah A, Reem Alhumaidi R, et al. Evaluation of the SnapChat mobile social networking application for breast cancer awareness among Saudi students in the Dammam Region of the Kingdom of Saudi Arabia. Breast Cancer. 2018;10:113–9.

13 Alanzi T, Istepanian Philip N. Design and usability evaluation of social mobile diabetes management system in the Gulf Region. JMIR Res Protoc. 2016;5(3):e93.

14 Taggart T, Grewe M, Conserve D, et al. Social media and HIV: a systematic review of uses of social media in HIV. Comm Med Internet Res. 2015;17(11):e248.

15 Jain K, Fervaha G, Fuoco M, et al. A new wave of urologists? Graduating urology residents' practices of and attitudes toward social media. Can Urol Assoc J. 2018;12(7):E298–E313.

16 Carlquist E, Lee N, Shalin S, et al. Dermatopathology and social media. A survey of 131 medical professionals from 29 countries. Arch Pathol Lab Med. 2018;142:184–90.

17 Walsh M. Social media and cardiology. J Am Coll Cardiol. 2018;71(9):1044–47.

18 Antonoff M. Using social media effectively in a surgical practice. J Thorac Cardiovasc Surg. 2016;151(2):322–6.

19 Santoro E, Castelnuovo G, Zoppis I, et al. Social media and mobile applications in chronic disease prevention and management. Front Psychol. 2015;6:567.

20 Tsuya A, Sugawara Y, Tanaka A, et al. Do cancer patients tweet? Examining the twitter use of cancer patients in Japan. J Med Internet Res. 2014;16(5):e137.

21 Petosic A, Sunde K, Beekman D, et al. Use of social media for communicating about critical care topics: a Norwegian cross-sectional survey. Acta Anaesthesiol Scand. 2019;63:1398–405.

22 Ventola CL. Social media and health care professionals: benefits, risks, and best practices. PT. 2014;39(7):491.

23 Yousuf R, Bakar S, Haque M, et al. Medical professional and usage of social. BJMS. 2017;16(4):606–9.

24 Panahi S, Watson J, Partridge H. Social media and physicians: exploring the benefits and challenges. Health Informatics J. 2016;22(2):99–112.

25 Bagley J, DiGiacinto D, Hargraves K. Imaging professionals' views of social media and its implications. Radtech. 2014;85(4):4377–89.

26 Ranschaert E, Van Ooijen P, Lee S, et al. Social media for radiologists: an introduction. Insights Imaging. 2015;6(6):741–52.

27 A career in radiography. SOR. The society of radiographers. Available at: https://www.sor.org/about-radiography/career-radiography [accessed August 18, 2018].

28 SoMeRAD: Guidance for the radiography workforce on the professional use of Social Media. 2015. Available at: https://www.sor.org/getmedia/0c5900a9-cd73-4019-ac0b-ff170708eb61/some_guidelines_finalv5_1.pdf_1 [accessed June 11, 2021].

29 Lawson C, Cowling C. Social media: the next frontier for professional development in radiography. Radiography. 2015;21(2):74–80.

30 Ranginwala S, Towbin A. Use of social media in radiology education. J Am Coll Radiol. 2018;15(1):190–200.

31 Scragg B, Shaikh S, Shires G, et al. An exploration of mammographers' attitudes towards the use of social media for providing breast screening information to clients. Radiography. 2017;23(3):249–55.

32 Lau L, Ng K. Radiological safety and quality:paradigms in leadership and innovation. Dordrecht, Germany: Springer Science Business Media, 2014.

33 Bolderston A, Watson J, Woznitza N, et al. Twitter journal clubs and continuing professional development: an analysis of a #MedRadJClub tweet chat. Radiography. 2018;24:3–8.

34 Currie G, Woznitza N, Bolderston A, et al. Twitter journal club in medical radiation science. J Med Imaging Radiat Sci. 2017;48(1):83–9.

35 Palkhi A. Social media and radiology. 2017. Available at: https://www.radiologycafe.com/blog/social-media-and-radiology [accessed August 5, 2019].

36 St. John-Matthews J. Harnessing social media to network and share research. J Med Imaging Radiat Sci. 2016;47(2):121–3.

37 Zanon M, Altmayer S, Pacini G, et al. Facebook as a tool to promote radiology education: expanding from a local community of medical students to all of South America. Radiol Bras. 2018;51(4):242–7.

38 Medical radiation: uses, dose measurements and safety advice. Available at: https://www.gov.uk/government/collections/medical-radiation-uses-dose-measurements-and-safety-advice [accessed August 22, 2018].

39 Goske M, Applegate K, Boylan J, et al. Image gently SM: A national education and communication campaign in radiology using the science of social marketing. J Am Coll Radiol. 2008;5(12):1200–5.

40 Jakovljević M, Ranković A, Rančić N, et al. Radiology services costs and utilization patterns estimates in southeastern Europe - a retrospective analysis from Serbia. Value Health Reg Issues. 2013;2(2):218–25.

41 Khorasani R, Goel PK, Ma'luf NM, et al. Trends in the use of radiology with inpatients: what has changed in a decade? Am J Roentgenol. 1998;170(4):859–61.

42 Jakovljevic M, Zugic A, Rankovic A, et al. Radiation therapy remains the key cost driver of oncology inpatient treatment. J Medical Econ. 2015;18(1):29–36.

43 Ploussi A, Efstathopoulos E. Importance of establishing radiation protection culture in Radiology Department. World J Radiol. 2016;8(2):142–7.

44 Girgin R. An Anatolian study on the current knowledge and attitudes of urology operating room staff on ionizing radiation. Afr J Urol. 2021;27:21.

45 Paolicchi F, Miniati F, Bastiani L, et al. Assessment of radiation protection awareness and knowledge about radiological examination doses among Italian radiographers. Insights Imaging. 2016;7(2):233–42.

46 Protection of Patients. International Atomic Energy Agency. Available at: http://www-ns.iaea.org/tech-areas/radiation-safety/patients.asp [accessed August 19, 2018].

47 Kanda H, Takahashi K, Sugaya N, et al. Internet usage and knowledge of radiation health effects and preventive behaviours among workers in Fukushima after the Fukushima Daiichi nuclear power plant accident. Emerg Med J. 2014;31:60–5.

48 Perko T, Tomkiv Y, Prezelj I, et al. Communication with media in nuclear or radiological emergencies: general and practical recommendations for improvement. Radioprotection. 2016;51:S163–9.

49 Penetration of leading social networks in Saudi Arabia as of 3rd quarter 2017. Available at: https://www.statista.com/statistics/284451/saudi-arabia-social-network-penetration/ [accessed August 22, 2018].

50 Alanzi T, Shah S. Design of the radiographers´ survey. (HIMT- DMCT) KSA, 2017.

51 Radiographers´survey. 2018. Available at: https://docs.google.com/forms/d/e/1FAIpQLSemg3IAxp8G5bU0ELTF0HCHv2hDFPMLA-wa0rni042R7jJCSow/viewform?c=0&w=1 [accessed August 20, 2018].

52 Nuclear Regulatory Organisations, the Internet and Social Media: The What, How and Why of Their Use as Communication Tools. OECD Nuclear Energy Agency (NEA). Available at: https://www.oecd-nea.org/jcms/pl_28639/nuclear-regulatory-organisations-the-internet-and-social-media-the-what-how-and-why-of-their-use-as-communication-tools [accessed June 14, 2021].

53 The Evolving Use of Social Media as a Communication Tool by Nuclear Regulatory Organisations. Available at: https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=NEA/CNRA/R(2019)5&docLanguage=En [accessed June 14, 2021].

54 Boyd L, Lawson C, DiProspero L, et al. Use of online media for professional development amongst medical radiation practitioners in Australia and Canada. J Med Imaging Radiat Sci. 2018;49:187–93.

55 Bogdanou T, Starr C, Weatherall A. Use of the internet and social media in the forestry profession in the United Kingdom. International Forestry Review. 2013;15(2):147–159.

56 Medina E. Experience in the use of social networks in radiation protection. Available at: http://www.irpa.net/docs/IRPA14%20Proceedings%20Volume%201.pdf [accessed August 6, 2019].

57 International Radiation Protection Association (IRPA). Practical guidance for engagement with the public on radiation and Risk. Available at: https://www.irpa.net/members/IRPA%20Guidance%20Public%20Engagement.pdf [accessed June 14, 2021].

Appendix 1: Radiation safety questionnaire distributed among Saudi Arabian radiographers

1. Gender
   - Male
   - Female
2. Educational level
   - Doctorate
   - Master
   - Bachelor
   - Diploma
   - Other
3. Number of years in the carrier of radiology
   - 0–2 y
   - 2–5 y
   - 5–10 y
   - >10 y
4. Region of practice:
   - Eastern
   - Central
   - South
   - West
   - North
   - Other
5. Do you use any of the following social media applications?
   - WhatsApp
   - YouTube
   - Snapchat
   - Twitter
   - Facebook
   - Instagram
   - I don't use any
   - Other
6. You use social media for:
   - Entertainment
   - Education
   - Entertainment and education
   - Other
7. You use social media when you are at:
   - Home
   - Work
   - Travel
   - All Places
   - Other
8. Do you think social media can help you to improve your knowledge and skills about radiation safety?
   - Yes
   - No
   - Maybe
9. How long do you use social media daily?
   - <1 h
   - 1–3 h
   - >3 h
   - Other
10. In which form do you like to have information about radiation safety?
    - Video
    - Picture
    - Text
    - Audio
    - Link to an article
    - Other
11. Do you go back to social media if you need any information during work hours?
    - Yes
    - No
    - Maybe
12. If you need information about radiation safety, what source do you use?
    - Social media
    - Book
    - Journal article
    - Short notes
    - Other
13. Are you willing to increase the use of social media in your professional practice about radiation protection in the future?
    - Yes
    - No
    - Maybe
14. Please add any other comment: