

## Risk communication in Arabic news, The case of radon gas



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### Abstract

Risk communication has acquired special relevance following the COVID-19 pandemic. Despite being a cross-border concept, risk is also a social and cultural construct in which the media have great influence. This study analyzes the creation of risk in a scarcely studied area, the Arab world. Based on the concept of risk as a social construct and communication as a prevention factor, a case study is carried out: radon gas. The objective is to analyze media coverage and awareness through the media of Iraq, Jordan, Lebanon, Palestine, Kuwait, and the Emirates.

The results advance the conceptualization of risk as a social construction that fluctuates between illness and health tourism. Within this framework, local information for prevention stands out, the low

presence despite the seriousness of the risk and the origin and role of expert sources.

**Keywords:** journalism, digital communication, radon, gas, cancer.

### \* Introduction

Researchers in the field of risk and crisis management have come to conceptualize risk and crisis as transboundary (for example, (Boin et al., 2014; Falkheimer, 2013; Olsson, 2015), meaning that the origins and effects of threats and adverse events cross functional, national and cultural boundaries (Rasmussen and Ihlen, 2017). However, previous studies insist they have identified a wide range of personal and contextual factors that can influence risk perception (Barnett & Breakwell, 2001; Bickerstaff, 2004). Risk is a social and cultural construction, and a type of perception that involves the

judgment of individuals and the evaluation of dangers, which are determined by norms, values and culture (Renn, 1998; Rohrmann, 1999).

This article uses a specific case study, radon gas, to obtain information on risk in Arab countries that will allow comparison with previous studies carried out in other latitudes on the same subject and advance in the conceptualization of risk in each culture.

Specifically, we shed light on the media coverage in some Arab media outlets about radon gas, its dangers, and its association with lung cancer, as well as the educational role played by the media in this field. The focus is on radon gas because exposure to it leads to health and environmental problems (Ali, 2017; Kazem & Hassan, 2016; Karim, 2010), and it is considered a cause of lung cancer (Karim, 2010) (Kazem & Hassan, 2016; Alfakhar et al., 2016; Abdullah, 2021; Al-Khafaji & Al-Attiyah, 2013; Hussain et al., 2013; Al-Atabi et al., 2008; Awwad et al., 2015; Jawad & Tamimi, 2020; Tawfiq et al., 2009; Shawar, 2010).

However, public awareness of radon risks is low and the presence in traditional and digital native media is low and ineffective (Bouder et al., 2021).

Radon gas is an invisible gas that has no taste or smell, water and natural gas are other sources from which radon is emitted in homes (Kazem & Hassan, 2016). And it enters homes through cracks and gaps in the walls of homes and the floor sewage (Kazem & Hassan, 2016).

Soil is also the most important source of radon in the environment, and water plays a major role in transmitting its pollution (Abdullah, 2021). This gas, which can spread over large areas, is one of the heaviest known gases in nature, it was discovered in 1900 by researcher's Dron (Karim, 2010) (Tawfiq et al., 2009) and is the leading cause of death from lung cancer among non-smokers.

The study aims to monitor the Arab media coverage of radon gas and its awareness role by showing the dangers of the gas, by answering two questions: -

- 1- Q1: What is the volume of media coverage about radon gas in the Arab media?
- 2- Q2: Does the media, through the news materials that are published, play an awareness role about gas and its dangers?
- 3- Q3: How do the media construct risk?
- 4- Q4: Do they create a shared or individual venture?

5- Q5: Is the use of clear and understandable risk messages?

#### \* **Health and Risk communication**

The media is one of the basic tools that are used during crises and disasters to raise awareness and spread information and facts that help people overcome disasters and protect themselves from their consequences. No one denies the role of digital media in influencing the public and shaping public awareness towards the dangers facing societies, also, the importance of digital media increases in times of crisis and it is one of the most reliable sources of information (Mahmoud, 2020; Al-Azmi, 2021; Mazari, 2022; Hussein, 2016). Disasters and crises have also become the focus of social media attention, as most of the users of these means are interested in these types of events, whether they were concerned with it or not, such as crises of the spread of diseases or epidemics, natural disasters and terrorist acts (Salem, 2016). Therefore, we may need specialized media about that, such as health communication and risk communication. The following is a brief overview of recent literature on the subject.

Health communication is defined as communication efforts and activities aimed at disseminating health information, developing

knowledge on public health issues, and raising awareness of peaceful health behavior (Radwan, 2020). The importance of the role of health communication emerges according to Radwan (2020) during periods of health crises and the risks to which humans are exposed, as happened in 2020 and the spread of the Covid-19 virus. Healthy communication is not only related to health aspects but also to the nature of society, its culture, the habits of its members, and their lifestyle, and behaviors (Radwan, 2020).

We also need risk communication.

Internationally, risk has been defined as the likelihood that some actions or events will have negative consequences (Rasmussen & Ihlen, 2017; McComas, 2006) and is often described in terms of the probability of a loss occurring (Stern & Fineberg, 1996) but is also influenced by the product of probability and magnitude, to integrate the influence of psychological, social, institutional and cultural factors, and therefore may or may not be amplified by public discourse (Rasmussen & Ihlen, 2017).

We also believe that how knowledge, awareness and misconceptions influence risk perception and behavior change

depend on country, population, and societal characteristics after analyzing 149 primary studies on five major current and past global pandemics or outbreaks: SARS, influenza A/H1N1, MERS, EVD and COVID-19 (Majid et al., 2020).

Specifically, in the literature coming from the Arab countries risk communication is defined as the intended efforts to inform the public about the risks and persuade individuals to modify their behavior in order to reduce the risks (Ajwa, 2020). Risk communication and crisis communication as Ajwa (2020) explains, share a primary goal of risk reduction and containment. Risk communications also according to Salem (2016) are usually related to efforts to warn the public of the risks associated with the environment or health, the spread of a specific infection or disease, or behaviors that cause problems or negatively affect the general public or a specific group of the public. Also in practice, communication efforts cannot be separated from crises, risks, emergencies and disasters, because there are risks that result in crises and emergencies that turn into disasters that result in risks and crises (Salem, 2016). Therefore, the efforts of researchers and practitioners tended to combine the previous trends

(crises, disasters, emergencies and risks) in a comprehensive approach to achieve communication between crises, emergencies and risks (Salem, 2016). Communicating risk information is essential in health management, and health risk information is a necessary component of public health activities (Strelakova & Krieger, 2017).

That's why according to Mahmoud (2020) many individuals build their perceptions of the dangers that societies are exposed to, according to what is published by the media, including electronic news websites, which are an effective means of shaping public awareness. This responsibility requires great care in dealing with medical information because publishing undocumented information leads to confusion in society (Al-Azmi, 2021). Also, mass communication through its media campaigns to deliver health messages has contributed to changing the social climate to encourage healthy behaviors and create awareness (Youssef et al., 2011). However, environmental media does not receive sufficient and in-depth studies in the field of journalism and media, as Arab media often ignore coverage of environmental issues in order to get a scoop on political and economic issues (Hussein, 2016).

There has become an urgent need for awareness-raising media it spreads through multiple media, as awareness has become a prerequisite for achieving human security (Ali Abdul Karim Rahil, 2015).

#### \* The media role in health awareness

In health awareness, the media plays a prominent role in disseminating information among people and spreading public awareness on some issues in addition to creating awareness in society (Pandey & Kumar, 2020). The media contributed significantly to spreading awareness during the eradication of polio, AIDS, swine flu, and many other diseases (Pandey & Kumar, 2020). The media can also play an important role in influencing the supply and demand for medical treatment (Benelli, 2003). It also has the potential in the future to play an important strategic role in disseminating accurate information on health-related issues (Benelli, 2003). Several scholars have also explored the role of communication in reducing, maintaining, and extending health disparities (Niederdeppe et al., 2013).

The literature indicated in a study (Noar, 2006) that well-researched health campaigns in the media can have a small to medium

effect on knowledge, beliefs, health attitudes, and behaviors as well. Large-scale health campaign efforts can also have a broad public health impact.

Really, despite the change in role and the supposed loss of centrality in the public debate, the media continue to play a relevant role (Zhao et al., 2019). If there is an increase in public debate or media coverage of a given risk, it may increase the likelihood that an individual will perceive that risk (Rowe et al., 2000; Yim & Vaganov, 2003). In addition, the positive effect of information on risk perception has also been verified (Hong et al., 2019; Frewer et al., 2002).

#### \* Arabic media

This article discusses the Arab media, and how to cover the news and raise awareness about radon gas and its association with lung cancer. Arab studies on health risks and crises discussed “The educational role of the media about the dangers and addiction of drugs among young people” and limiting their spread. (Theeb et al., 2020) found that the media bears great and fundamental responsibilities in public awareness, also the media is the first line of confrontation for the dangers of drug abuse. In (Alla, 2020) study titled “The role of the new media in

developing Literacy Health and combating global health crises in light of the spread of the Coronavirus (Covid.19) A field study“ The researcher aimed to verify the possibility of predicting the role of new media in shaping health awareness and combating global health crises in light of the spread of the Covid-19 virus in Algeria, and found that it is possible to predict the positive role of new media in developing health awareness and combating global crises. In his study "Television and electronic newspapers' treatment of security crises in Egyptian society and their relationship to the level of political discontent among adolescents" (Al-Nahhas et al., 2020) aimed to identify the television and electronic newspapers' treatment of security crises in Egyptian society. The study found that the most important sources that a respondent resort to learn about current events are social networking sites, then television, followed by electronic newspapers. Electronic newspapers also rely on the news template in presenting crises, followed by reports, and thirdly, investigations. (Farhat, 2022) study about the "Egyptian daily newspapers treatment of national health initiatives "from July 2018 to December 2021- Analytical study",

after analyzing the content of a sample of three Egyptian newspapers found that the most important topics published in health initiatives do not correspond to the importance of topics for human life, preserving his health, and protecting him from widespread diseases. In her study on "The role of the Jordanian daily press in spreading health awareness" (Kiswani, 2016) found that interest in health issues increased dramatically after recording an unprecedented spread of some communicable diseases in 2014 (the year of the study), as health issues became a matter of concern to society. The study also found that Jordanian newspapers do not adopt a clear systematic plan within their media agenda to publish health issues.

It was noted that the previous studies that were referred to focus on one country when analyzing the data and, sometimes, referred to a specific crisis. In recent years, numerous investigations have pointed to the importance of knowing the risk and being aware of its influence on health for its long-term solution (Khan & Chreim, 2019). Therefore, in this article, we will seek a cross-sectional analysis of a risk without a specific crisis and in a comparative way in different countries.

## \* Methodology

The study aims to monitor the Arab media coverage of radon gas and its awareness role by showing the dangers of the gas, which, according to studies, leads to cancer, specifically lung conditions.

### 1- Method

The study used the content analysis methodology for a representative sample of 12 Arab news websites from six Arab countries (Iraq, Jordan, Lebanon, Palestine, Kuwait, and UAE). The analyzed media represents digital native media and newspaper websites. Content analysis, as defined by Perlson 1952, is a research method that is applied in order to arrive at a meaningful and organized quantitative description of the content of the communication style (Al Assaf, 1989). Content analysis is also one of the commonly used scientific research methods in the field of studying communication materials, which aims to know the trends of the material being analyzed (Al-Mashhadani, 2017). The use of content analysis is considered an appropriate method for describing and analyzing information systems in the media and its components (Abdel-Hamid, 2000) (Al Assaf, 1989) (Al-Mashhadani, 2017). Content analysis is also a major tool

for research and investigation to answer the many questions about the reasons for selecting and publishing content (Al-Mashhadani, 2017).

The authors prepared analysis tables that were designed to classify the news and facilitate the analysis of its content, where several categories were developed that include: the type of news, the source, the number of paragraphs, the section in which it was published, the date of publication, what the content of the news focuses on (health and prevention, housing and planning, investigations or policies and regulations), and the value of the news if it is related to the subject of the research or not, in addition, categories to the experts and specialized institutions that have been relied upon in the news, and the geographical location to which the content refers if it is global or local (national).

### 2- Source and the selected data

To answer the research questions, twelve online media were chosen from the six Arabic countries in the Middle East (Iraq, Jordan, Lebanon, Palestine, Kuwait, and UAE). One online media represents daily printed newspapers, and one online media represents electronic media that had never been published before and started from the Internet or

as it called "Digital Native Media". From Iraq, Al-Sabah newspaper is one of the oldest newspapers published after 2003 by the Iraqi Media Network. It is considered one of the oldest Iraqi newspapers and is an official newspaper that expresses the official approach of the Iraqi government. Al-Mada News website was launched in 2003 and is considered the first independent news website that mainly deals with the Iraqi issue. Jordan Alrai newspaper, which was issued in 1971, and Ammon News Agency website which is owned by the private sector, was launched in 2006 as the first electronic newspaper in Jordan. From Lebanon, BintJbeil website was chosen, which was established in 2003 and deals with Lebanese and international affairs. It was launched by a group of Lebanese youth and is considered a highly professional media institution. An-Nahar newspaper, an independent Lebanese political newspaper, was published in 1933. It was founded by Gebran Tueni. The newspaper is considered to have a liberal political line. From Palestine, Al-Ayyam newspaper is an independent daily newspaper founded in 1995 and published by Al-Ayyam Printing and Press Company in Ramallah. Ma'an News Agency was established in 2005 and is

considered one of the largest telegram services in Palestine. From Kuwait, the Kuwaiti newspaper Al-Rai Al-Aam was chosen, which was launched in 1998 and is considered the first Kuwaiti daily newspaper established two months before Kuwait declared its independence from Britain. And Kuwait News website was established in 2006 and publishes local and international news around the clock. Finally, from UAE, Al-Khaleej newspaper was chosen, which was published in 1970 its message is to defend all national and national issues and to advocate for truth everywhere. Eremnews was launched in 2013 owned by Eremnews Media and registered with the Abu Dhabi Media Authority.

Newspapers from these countries were chosen as a representative sample of the Middle East region, in which there is oil and suffering from wars and explosions, which may affect the quality of soil, air, and water, and thus affect the health of the people who live in them.

Data collection was based on what was published on the 12 websites, and on what is provided by the online archive of these sites.

The sample of the study was 133 media subjects after using the word (radon) (راديون) in the search in the online archive of websites. We

used the word (radon) only without using the word (gas) because the results using this word give different results and are far from the subject of the study. Media materials were distributed on the 12 sites, as shown in Table No. (1).

**Table (1) The study sample**

Name of the media	Analyzed time	Number of the data	Number of analyzed data	Stories related to the research subject
Ammon news	2022-2006	3	3	1
Alrai	2022-1971	67	67	10
Al-ayyam	2022-1995	8	8	0
Maannews	2022-2005	6	6	2
Alisabah	2022-2003	1	1	0
Almadapaper	2022-2003	4	4	4
Annahar	2022-1933	1	1	0
Bintjbeil	2003-2022	2	2	1
Alkhaleej	2022-1970	26	26	11
Eremnews	2022-2013	4	4	0
Alraimedia	2022-1998	11	11	6
Kuwaitnews	2022-2006	0	0	0
Total	-	133	133	35

Designed by the research group.

The table shows the study sample that was collected and analyzed, which amounted to 133 stories. The table also shows each media outlet and the date of its establishment, the search was carried out as we referred to the websites of newspapers to collect the sample.

This data was analyzed by distributing it to analysis sheets to classify this data through categories that include the type of stories, the section in which it was published, the sources of the stories, the number of paragraphs that the stories included, the category of whether the stories are related to the research topic or not, in addition to the geographical location to which the content of the stories refers, and if there are opinions of

experts or specialized institutions in the field of radiation and gases and their risks.

### \* Results

The study collected 133 stories that mentioned radon gas and talked about it, distributed in 11 stories websites, but only 35 stories related to the subject of the research and talked about the risk of this gas on the people, representing 26.3% of the total published stories.

The results showed that the Jordanian newspaper Alrai was the most prominent stories website publishing stories, stories, and reports about radon gas, and it reached 67 stories with 50% of the total sample collected. Following by Alkhaleej newspaper website with 26 stories with 20% of the total sample, while Kuwait news didn't publish any stories about radon gas as table (2) showed.

**Table (2) the sample and percentage**

Name of the media	Number of the stories	Percentage
Ammon news	3	2%
Alrai	67	50%
Al-ayyam	8	6%
Maannews	6	5%
Alisabah	1	1%
Almadapaper	4	3%
Annahar	1	1%
Bintjbeil	2	1%
Alkhaleej	26	20%
Eremnews	4	3%
Alraimedia	11	8%
Kuwaitnews	0	0%
Total	133	100%

### Source: Own elaboration

As for the type of stories that were published in all media outlets, stories about environment and tourism were the largest with 58 stories at a rate of 44%, followed by

health stories with 32 stories at a rate of 24%, and political stories that mentioned radon gas was equal to stories about science and technology with a number of 18 stories with 14%, and the various stories that were not related to the previous genres were 6 stories with a rate of 4%, as shown in Table 3.

**Table (3) type of the stories in the media**

Type of the stories	Number of the stories	Percentage
Political	18	14%
Health	32	24%
Environment/tourism news	58	44%
Entertainment news	6	4%
Technology/ science news	18	14%
Total	133	100%

### **Source: Own elaboration**

Table (4) shows the distribution of political, health, environment/tourism, and Entertainment stories on news websites. The highest stories were about environment and tourism in Alrai newspaper with 41 stories with a percentage of 70%, followed by the Emirati newspaper Alkhaleej with 8 stories, 14% from all environment/tourism stories.

**Table (4) the sample distribution in all media**

Name of the media	Political	Health	Environment/ tourism stories	Entertainment stories	Technology / science stories	Total
Ammon news	0	1	0	0	2	3
Alrai	6	9	41	4	7	67
Al-ayyam	6	0	1	0	1	8
Maannews	0	1	1	0	4	6
Alsabaah	0	0	0	1	0	1
Almadapaper	0	1	3	0	0	4
Annahar	1	0	0	0	0	1
Binjbeil	0	2	0	0	0	2
Alkhaleej	0	14	8	0	4	26
Eremnews	3	0	0	0	1	4
Alraimedia	2	4	4	1	0	11
Kuwaitnews	0	0	0	0	0	0
Total	18	32	58	6	19	133

### **Source: Own elaboration**

Most of the environmental stories in the Jordanian Al-Rai newspaper focused on the local side

and on specific areas where hot waters contain radon gas (Significantly) as the newspaper points out, which can be used in medical tourism.

Health stories about lung cancer and radon gas came in second place in terms of the number of stories, the highest number of stories was in the UAE newspaper Alkhaleej, with 14 stories with a percentage of 44% for health stories, and the Jordanian Al-Rai newspaper came in second place with 9 stories with 28%, followed by the Kuwaiti newspaper Alrai media with 4 stories with 13%, while the news websites: Alsabaah, Eremnews, Annahar, Al-ayyam, and Kuwaitnews did not publish any health stories related to radon gas.

The political stories related to radon gas were focused on one issue, the late Palestinian President Yasser Arafat and the suspicion of poisoning behind his death. The political stories among all news sites reached 18 stories, accounting for 14% of the total research sample. The number of stories in the Jordanian Alrai newspaper and the Palestinian Al-Ayyam newspaper equaled 6 stories, with a rate of 33% of all political stories, followed by Eremnews with 17%, the Kuwaiti Alrai media with

11%, and finally the Lebanese Annahar with 6%.

Technology and science stories were about scientific conferences, inventions, and devices specialized in radiation, including radon gas. Alrai came first in publishing news about this aspect with 7 stories with 37%, followed by the Emirati newspaper Alkhaleej and the Palestinian Ma'an Agency which publish 4 stories with 21% of all stories about technology and science.

The Entertainment stories published on websites, which amounted to 4% of the total published stories, referred to radon, but within social stories such as the names of the radio device in Iraq, where people used to call it "radon", and stories about with the extinction of Arab manhood, and other stories about the death of Three brothers in an agricultural pond.

The stories related to the subject of the research, which amounted to 35 stories out of the total stories, at a rate of 26.3%, were distributed between health, technical and environmental stories. Including 14 local stories that discussed radon gas, its effects, radiation, and lung cancer. The Jordanian Alrai newspaper highlighted in an extensive journalistic investigation the pollution in the Jordanian city of

Rusaifa and the concentration of radon in the areas where phosphate residues are present. The newspaper pointed out that "exposure to radon and other radioactive substances present in phosphates in small amounts may lead to mutations in the body that cause cancer." The Iraqi website Almada paper also published 4 local news about radon gas and radiation and its impact on the Iraqi citizen and the risks of kidney, liver, lung and bladder cancer. Table (5) shows the distribution of stories that were close and related to the research topic.

**Table (5) the stories related to the research subject.**

Name of the media	Stories related to the research subject
Ammon news	1
Alrai	10
Al-ayyam	0
Maan news	2
Alsabaah	0
Almada paper	4
Annahar	0
Bintjbeil	1
Alkhaleej	11
Ercnews	0
Alraimedia	6
Kuwaitnews	0
Total	35

#### **Source: Own elaboration**

In general, the results of the study showed that the stories that discussed radon gas, its dangers, and its association with lung cancer amounted to 35 stories, 14 were local. While 73.7% of the stories were discussing radon gas in general with 98 stories, it was quickly referred to without delving into its risks and impact on human health. The study found that the Jordanian Alrai newspaper had the most published

stories that included radon gas by 50% of the total research sample. 44% of the stories published by the newspaper were about local areas that are rich in hot water that contain radon gas and called "radon water", which can be used in medical tourism. Health stories published on news sites referring to radon amounted to 32 stories, with a rate of 24% that discussed lung cancer, with reference to radon and radiation as one of the causes of infection. The study also found that the stories that are published focus on specific areas and specific events, and their sources are limited, and mostly official and not scientific bodies that want to provide specific information to readers.

As for the focus of the media on the dangers of gas and the awareness role, the news that focused on gas and its impact locally was 14 stories, and the news websites did not do any awareness and guiding work for people about the dangers of gas. Rather, reference is generally made to the effects of pollution and radiation and their dangers to human health.

In the field of technological innovations related to radiation, the media also did not provide a large and sufficient coverage, but rather focused on scientific conferences and the scientific papers that were

presented in them without clearly indicating these innovations and their importance or the importance of these studies. It also mentioned briefly the devices that are used in the field of radiation, which were responsible for universities or official institutions in these countries as activities of these institutions and not within the talk about the dangers of radiation.

Also, the study found that the scientific studies on the media and the dangers of radiation in general and radon gas -in particular- were not many, but most of these studies were in the field of physics and the others are master's theses.

The study also found that the mechanism used by the media in constructing risk news was not clear, it published stories in a general context and not within specific campaigns. Also, the process of publishing news about the risks was not part of a joint project, whether between the media with specialized or official bodies or between multiple media to raise awareness of the risks, which makes it an individual work for the media organization and within journalistic work in general. This journalistic work presented messages about the risk in understandable and clear language, but as we indicated, it was not part of large public

campaigns about the dangers of radon gas.

### \* Discussion and Conclusion

After the COVID-19 pandemic, the risk society in which we were immersed has been enhanced. In this context, the research advances in the study of risk communication in digital media through a comparative study in a geographical area that has been scarcely studied. The starting point was the conception of risk as a social construct in which the media are fundamental agents and the need for an external study of a specific crisis that can disfigure the participation of each social agent and even create the crisis itself according to the interests of one of them.

Previous studies showed that media coverage of a certain risk can increase the likelihood of an individual perceiving that risk (Sjöberg, 2000; Yim & Vaganov, 2003), and the positive effects of information are common to many researchers (Hong et al., 2019). Against this, the results of the study indicate, firstly, superficial coverage of risk in tune with previous studies in traditional media in other areas of risk communication (Post & Diltz, 1986). The results coincide with this study in the orientation of the articles towards specific events and a limited

number of sources, although, unlike previous studies, in this case, the sources are mostly scientific.

The scarce presence of radon gas in the media agenda also coincides with the results of previous studies carried out on digital media in other areas. Also, it coincides with the relevance of local information in risk communication (Negreira & Vázquez, 2022). Within the main elements of risk communication in relation to radon the analyzed media covered risk communication has the following elements: a) giving risk information; b) advice on harm reduction, less in c) providing information eliminates risk and d) ensuring continuity of cities (Gunn et al., 2021). Particularly noteworthy is the framing of radon gas in the media analyzed. While a high percentage of the information is reported as a health risk, in other cases, it is reported as a tourist attraction where the hot waters that contain radioactive gases are considered a reason for tourist and therapeutic attractions.

Therefore, despite the confirmation of its link to cancer, the information is very scarce, superficial, rarely linked to the risk and, in other cases, even related to the health benefits. From the point of view of the production of information, we must highlight the

scarce technological innovation and use of the resources offered by the web and the production of brief informative pieces, without contextualization and with little useful information. However, unlike the treatment of other risks, it is a subject that is dealt with and, on many occasions, provoked by expert sources. It is expert knowledge that frames and puts in the public opinion information on radon, mostly linked to university studies.

The following trends emerged from the study: -

- 1- Within the media agenda, the concealment of the risk from public opinion despite the seriousness of its consequences is noteworthy.
- 2- Within the framing, the case analyzed presents a great deal of flexibility.
- 3- One of the elements that differentiate risk communication from news pieces in other areas is the predominance of expert sources as the origin and protagonists of the information.
- 4- The previous conclusion could imply a disconnection from the interests of the audience, focusing the topic only on the issues that experts consider relevant.
- 5- The importance of local information in awareness raising
- 6- Technological innovation is low.

7- Concerning to previous studies carried out in other geographical areas, the invisibilisation of risk, the limited use of digital innovations and the link to expert knowledge are common to this research. The link to the field of health also coincides but, in this case, the presence of the positive concept of radon stands out.

Therefore, future studies may contribute to urging the Arab media to play a greater awareness role of health risks from radiation and radon gas. Also, future studies can expand research on radon gas in specific countries with a high percentage of radiation risks and their impact on human health.

#### \* **Limitations**

The limitations that the study faced were that some media outlets did not publish any news about radon over the years since its start on the web. Also, the research provides relevant advances on the construction of risk in the media that differ from the usual production of news in other areas, such as the predominance of expert sources, and at the same time offers some clues that could be useful in the event of a new global health crisis such as the recent pandemic, it has some limitations.

The research analyses a specific geographical area because it is one of the least studied in the field

of risk communication, but comparative analyses of risk communication in other areas and different media systems will be sought in the future. Understanding risk as a complex element, the study will be extended with the analysis of other social agents that influence its construction. At the same time, the possibility of a joint study of other aspects of public health and the space of radon gas in public opinion will be relevant.

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and by "ERDF A way of making Europe.

#### \* References

Abdel-Hamid, M. (2000). Scientific research in media studies (First). Alam Al Kotob.

Abdullah, E. M. (2021). Designing and modeling the cost structure using the "CBS" technique to measure the costs of radioactive radon gas treatment in groundwater wells and the costs of complying with the US Environmental Protection Agency pollution levels using the "closed inte. Journal of University of Babylon, 24(3), 1675–1715.

Ajwa, N. A. (2020). Health Risk Communication Strategies on Social Media Towards Covid-19 Pandemic (Analytical study on Egyptian Ministry of Health official pages). Journal of Mass Communication Research «J M C R», 4(54), 2433–2494.

Al-Atabi, N. R., Muhammad, H. J., & Issa, B. H. (2008). The use of solid state nuclear trace detectors in measuring radon gas concentrations in the soil in the Tuwaitha area. Al-Nahrain Journal of Science, 11(3), 26–32.

<https://doi.org/10.22401/JNUS>

### .11.3.24

Al-Azmi, I. (2021). The risks of digital fabrication in new media (Corona pandemic via social media as a model). *Journal of Mass Communication Research «J M C R»*, 26, 1207–1230.

Al-Khafaji, E., & Al-Attiyah, K. (2013). Measurement and study of radioactive radon gas concentrations in selected samples of drinking water in the city of Hilla-Iraq. *Journal of University of Babylon*, 21(7), 2432–2443. <https://www.iasj.net/iasj?func=fulltext&aId=80926>

Al-Mashhadani, S. S. (2017). Media research methods. University Book House.

Al-Nahhas, N., Mouawad, M., Elsayed, H., & Roshdy, H. (2020). Television and electronic newspapers' treatment of security crises in Egyptian society and their relationship to the level of political discontent among adolescents. *Journal of Childhood Studies*, 23(10), 1–5. <https://doi.org/10.21608/JSC.2020.145618>

Al Assaf, S. M. (1989). Introduction to Research in Behavioral Sciences. Obeikan Library.

Alfakhar, M. K., Shafik, S. S., & Hussein, K. S. (2016). Measurement the concentrations of the Radon for drinking water samples in Kut city. *Wasit Journal for Science & Medicine*, 8(4), 111–116.

Ali Abdul Karim Rahil. (2015). The role of the media in raising security awareness of the dangers of drugs in Jordan-2013-2014. Alzaiem Alazhri University.

Ali, M. A. (2017). Determining the concentration of radon gas emitted from the wastes of crude oil production and refining in the oil fields in southern Iraq. *Journal of Petroleum Research and Studies JPRS*, 7(13), 1–13. <https://doi.org/https://doi.org/10.52716/jprs.v7i1.181>

Alla, A. (2020). The role of the new media in developing Literacy Health and combating global health crises in light of the spread of the Coronavirus(Covid.19( -A field study –. *Journal of Media Studies*, 11, 496–515.

Awwad, T., Awad, A., & Salameh, D. (2015). The leakage of radon to residential buildings in

active tectonic regions. *Tishreen University Journal for Research and Scientific Studies*, 37(2), 362–376.

Barnett, J., & Breakwell, G. M. (2001). Risk perception and experience: Hazard personality profiles and individual differences. *Risk Analysis*, 21(1), 171–178. <https://doi.org/10.1111/0272-4332.211099>

Benelli, E. (2003). The role of the media in steering public opinion on healthcare issues. *Health Policy*, 63(2), 179–186. [https://doi.org/10.1016/S0168-8510\(02\)00064-7](https://doi.org/10.1016/S0168-8510(02)00064-7)

Bickerstaff, K. (2004). Risk perception research: Socio-cultural perspectives on the public experience of air pollution. *Environment International*, 30(6), 827–840. <https://doi.org/10.1016/j.envint.2003.12.001>

Boin, A., Rhinard, M., & Ekengren, M. (2014). Managing transboundary crises: The emergence of European Union capacity. *Journal of Contingencies and Crisis Management*, 22(3), 131–142. <https://doi.org/10.1111/1468-5973.12052>

Bouder, F., Perko, T., Lofstedt, R., Renn, O., Rossmann, C., Hevey, D., Siegrist, M., Ringer, W., Pölzl-Viol, C., Dowdall, A., Fojtíková, I., Barazza, F., Hoffmann, B., Lutz, A., Hurst, S., & Reifenhäuser, C. (2021). The Potsdam radon communication manifesto. *Journal of Risk Research*, 24(7), 909–912. <https://doi.org/10.1080/13669877.2019.1691858>

Falkheimer, J. (2013). Terrorism, medier och propaganda. In *Vetenskapssocieten i Lund Årsbok 2013* (pp. 44–56).

Farhat, H. M. (2022). Egyptian daily newspapers treatment of national health initiatives “from July 2018 to December 2021- Analytical study.” *Journal of Mass Communication Research* «J M C R», 61, 1915–1990.

Frewer, L. J., Miles, S., & Marsh, R. (2002). The media and genetically modified foods: Evidence in support of social amplification of risk. *Risk Analysis*, 22(4), 701–711. <https://doi.org/10.1111/0272-4332.00062>

Gunn, C. M., Maschke, A., Harris, M., Schoenberger, S. F., Sampath, S., Walley, A. Y., & Bagley, S. M. (2021). Age-

based preferences for risk communication in the fentanyl era: 'A lot of people keep seeing other people die and that's not enough for them.' *Addiction*, 116(6), 1495–1504. <https://doi.org/10.1111/add.15305>

Hong, Y., Kim, J. S., & Xiong, L. (2019). Media exposure and individuals' emergency preparedness behaviors for coping with natural and human-made disasters. *Journal of Environmental Psychology*, 63, 82–91. <https://doi.org/10.1016/j.jenvp.2019.04.005>

Hussain, A. alredha, Ali, M. abd alla, Ahwal, J., & Hameed, W. (2013). Determining the concentration of radon gas in the cores of selected oil wells from the governorates of Wasit and Dhi Qar - Iraq. *Journal of Petroleum Research and Studies*, 4(2), 1–10. <https://doi.org/10.52716/jprs.v4i2.100>

Hussein, K. A. (2016). The role of the media in raising awareness about environmental issues. *Journal of Islamic Sciences and the Arabic Language*, 2, 79–92.

Jawad, S. T., & Tamimi, B. (2020). Radon gas concentration in some two-story houses in Baghdad. *Journal of Basic Education College*, 26(109), 346–353.

Karim, M. S. (2010). Determining radon gas concentrations for different environmental samples (aerosols, water, soil) in Baghdad governorate using the nuclear trace detector (CR-39). *Journal of College of Education*, 1, 343–354. <https://www.iasj.net/iasj?func=fulltext&aid=36758>

Kazem, E. H., & Hassan, I. M. (2016). Measurement and study of radioactive radon gas concentrations in selected samples of water in Al-Qasim district / Iraq. *Journal of University of Babylon*, 24(6), 1601–1609. <https://doi.org/https://iasj.net/iasj/article/112210>

Khan, S. M., & Chreim, S. (2019). Residents' perceptions of radon health risks: A qualitative study. *BMC Public Health*, 19(1). <https://doi.org/10.1186/s12889-019-7449-y>

Kiswani, H. Al. (2016). The role of the Jordanian daily press in spreading health awareness. *The Scientific Journal of*

Journalistic Research, 2016(5), 357–392.

Mahmoud, A. I. (2020). The role of Egyptian electronic newspapers in educating the public about the societal risks of the corona pandemic (Empirical Study). *Journal of Mass Communication Research* «J M C R», 55, 2446–2379.

Majid, U., Wasim, A., Bakshi, S., & Truong, J. (2020). Knowledge, (mis-)conceptions, risk perception, and behavior change during pandemics: A scoping review of 149 studies. In *Public Understanding of Science* (Vol. 29, Issue 8, pp. 777–799). SAGE Publications Ltd. <https://doi.org/10.1177/096362520963365>

Mazari, N. (2022). Global health crisis “Corona Covid 19” in the media. *The Journal of Social Science Development*, 14(2), 175–195.

McComas, K. A. (2006). Defining moments in risk communication research: 1996-2005. In *Journal of Health Communication* (Vol. 11, Issue 1, pp. 75–91). <https://doi.org/10.1080/10810730500461091>

Negreira, M. C., & Vázquez, J. (2022). Media Coverage on Radon Gas in Galician Digital News Media. *Prisma Social*, 39, 4–24.

Niederdeppe, J., Bigman, C. A., Gonzales, A. L., & Gollust, S. E. (2013). Communication About Health Disparities in the Mass Media. *Journal of Communication*, 63(1), 8–30. <https://doi.org/10.1111/jcom.12003>

Noar, S. M. (2006). A 10-year retrospective of research in health mass media campaigns: Where do we go from here? *Journal of Health Communication*, 11(1), 21–42. <https://doi.org/10.1080/10810730500461059>

Olsson, E. K. (2015). Transboundary crisis networks: The challenge of coordination in the face of global threats. *Risk Management*, 17(2), 91–108. <https://doi.org/10.1057/rm.2015.9>

Pandey, H. K., & Kumar, S. (2020). Role of print media in spreading awareness on Coronavirus Disease (COVID-19). *Journal of Xi'an University of Architecture & Technology*, 12(4), 5203–5212.

<https://doi.org/10.37896/JXA-T12.04/1255>

Post, G. V., & Diltz, J. D. (1986). A Stochastic Dominance Approach to Risk Analysis of Computer Systems. *MIS Quarterly*, 10(4), 363–375.

Radwan, A. F. (2020). Health contact in time of danger. *Arab Journal of Media and Communication Research*, 2020(31), 4–13. <https://doi.org/10.21608/jkom.2020.148293>

Rasmussen, J., & Ihlen, Ø. (2017). Risk, crisis, and social media: A systematic review of seven years' research. In *Nordicom Review* (Vol. 38, Issue 2, pp. 1–18). Nordicom. <https://doi.org/10.1515/nor-2017-0393>

Renn, O. (1998). Three decades of risk research: accomplishments and new challenges. *Journal of Risk Research*, 1(1), 49–71. <http://www.informaworld.com/10.1080/136698798377321>

Rohrmann, b. (1999). risk perception research: review and documentation (studies in risk communication 69; also published as www version: [http://www.kfa-juelich.de/mut/hefte/heft\\_69.pdf](http://www.kfa-juelich.de/mut/hefte/heft_69.pdf)). juelich: research center juelich.

Rowe, G., Frewer, L., & Sjöberg, L. (2000). Newspaper reporting of hazards in the UK and Sweden. *Public Understanding of Science*, 9(1), 59–78. <https://doi.org/10.1088/0963-6625/9/1/304>

Salem, S. A.-S. (2016). The role of social media in crisis and disaster communications management. *The Egyptian Journal of Media Research*, 2016(56), 313–386. <https://doi.org/10.21608/ejsr.2016.90487>

Shawar, A. S. S. (2010). Assessment of Radon Concentration in Dwellings in East Jerusalem, Hebron and Jericho. Al- Quds University.

Sjöberg, L. (2000). Factors in Risk Perception. *Risk Analysis*, 20(1), 1–11.

Stern, P. C., & Fineberg, H. V. (1996). Understanding Risk: Informing Decisions in a Democratic Society. In *Bmj* (Vol. 329, Issue 7474). NATIONAL ACADEMY PRESS. <https://doi.org/10.1136/bmj.329.7474.1086>

Strelakova, Y. A., & Krieger, J. L. (2017). Beyond Words: Amplification of Cancer Risk

Communication on Social Media. *Journal of Health Communication*, 22(10), 849–857.  
<https://doi.org/10.1080/10810730.2017.1367336>

Tawfiq, N. F., Al-Hamdani, N., & Karim, M. S. (2009). Finding radon gas concentrations in the soils of areas southeast of Baghdad using the nuclear trace detector (CR-39). *Journal of College of Education*, 6, 18–25.

Theeb, M., Knight, S., & Hijam, A. (2020). The educational role of the media about the dangers and addiction of drugs among young people.

Yim, M. S., & Vaganov, P. A. (2003). Effects of education on nuclear risk perception and attitude: Theory. *Progress in Nuclear Energy*, 42(2), 221–235.  
[https://doi.org/10.1016/S0149-1970\(03\)80010-0](https://doi.org/10.1016/S0149-1970(03)80010-0)

Youssef, N. A. R., Ghani, A. A., El-Gohary, A., & Mahmoud, A. F. (2011). Health programs on Arab satellite channels and their role in providing university students with information, an analytical field study. *Journal of Specific Education Research*, 2011(23), 359–382.

Zhao, M., Rosoff, H., & John, R. S. (2019). Media Disaster Reporting Effects on Public Risk Perception and Response to Escalating Tornado Warnings: A Natural Experiment. *Risk Analysis*, 39(3), 535–552.  
<https://doi.org/10.1111/risa.13205>