

# Gender differences in information behavior during the Covid-19 health crisis in Spain

Michela Montesi<sup>(a)</sup>

a) Universidad Complutense de Madrid, <http://orcid.org/0000-0002-5509-2075>

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Contact: Michela Montesi, [mmontesi@ucm.es](mailto:mmontesi@ucm.es)

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## ABSTRACT

The Covid-19 pandemic has produced numerous deaths throughout the planet, although in general it has been deadlier in older people, in people with previous conditions and in males. The biomedical literature explains the difference in terms of mortality between men and women pointing to genetics and social and cultural reasons. The aim of this work is to explore information behavior, among the other sociocultural variables possibly influencing health outcomes in men and women. For this, we analyze the results of a survey with 95 people administered in Madrid the last week of strict lockdown for Covid-19 (April 2020). Questions were asked about the reasons for using traditional mass media and social media, the use of official and institutional information, the characteristics of the information that was considered useful, and different dimensions of information behavior during lockdown. Results show that the differences between men and women affect certain dimensions of information behavior and especially the information characteristics that are considered useful. Slight differences were also perceived between the two sexes regarding social media, that men appeared to use more for entertainment than communication.

## KEYWORDS

Information behavior; Health information seeking; Gender differences; Usefulness of information.

## CITATION

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## 1. Introduction

The global and unexpected nature of the 2020 Covid-19 health crisis has generated an intense period of research activity which has not limited to the search for effective treatments against the virus, but has dealt with all facets of human existence, from economics to psychology, education and politics. A problem that has been treated from different disciplinary perspectives is the greater severity and mortality of Covid-19 in men compared to women. Although, according to Griffith *et al.* (2020), the coronavirus pandemic would be highlighting the neglect of men's health at the local, national and global levels, at the beginning of the crisis, the scientific community has expressed concerns about the situation of women. Indeed, past experiences demonstrated that the "tyranny of the urgent" and the need to attend to basic health care first often lead to neglecting women (Wenham, Smith, and Morgan, 2020). Normally, women are more exposed to infections for their role in caring for family members and as first-line health staff and tend to respond worse to acute illnesses. However, available data suggest that the severity and the mortality of Covid-19 has been higher for men (Alkhouli *et al.*, 2020). In general, this difference has been explained by immunological reasons, but also cultural and gender-related reasons have been put forward, such as the habit of smoking which is more prevalent in men (Wenham, Smith, and Morgan, 2020).

Available data are still insufficient for providing satisfactory explanations of the different response of men and women to the SARS-CoV-2 infection. In the first months of the pandemic, Wenham, Smith, and Morgan (2020) and Gebhard *et al.* (2020) complained about the absence of data disaggregated by sex, and Ruiz Cantero (2020) pointed to a possible bias in data collection, as, she argued, women may present different symptoms of Covid-19 as opposed to men and thus result in more undiagnosed cases. On the other hand, in order to appreciate the global impact of the pandemic, Castellanos-Torres, Tomás Mateos and Chilet-Rosell (2020) contend that data disaggregated by sex should be provided not only for confirmed cases and deaths, but also for gender patterns in the economic and social spheres, so that, in this way, the incidence of the pandemic on well-being and health can be observed in all its extent. Over the course of the pandemic, the lack of data disaggregated by sex has been corrected and the greater severity and mortality in males are now supported by robust data. The initiative sponsored by the University College London, Global Health 50/50, collects data published by national governments and, where possible, disaggregated by sex since March 2020. The data in this portal until November 16<sup>th</sup> 2020 show that in most countries where data are collected for the two sexes, mortality is higher in men, while there may be differences between men and women in the number of tests carried out (Global Health 50/50, 2020). Ahrenfeldt *et al.* (2020), drawing on data from the *Institut National D'Études Démographiques* for different European countries including Spain and Italy, conclude that mortality from Covid-19 is higher in men compared to women in all countries and practically in all age ranges, although the differences between the sexes decrease in older age groups (60-69 years).

Gebhard *et al.* (2020), analyzing the clinical and epidemiological evidence for Europe and China, explain that the different mortality and severity of Covid-19 in men lies in the intersection between sex and gender, understanding gender as social and cultural norms, roles, attributes and behaviors that society considers appropriate for men and women. According to Griffith *et al.* (2020), the problem can be understood only from a biopsychosocial perspective covering biological,

psychological and behavioral factors at the same time and their interaction with each other. Moreno-Tetlacuilo and Gutiérrez Juárez (2020), among other socio-cultural factors, mention the fact that men are less inclined to seek health care and usually access health services at more serious stages of diseases, whilst society expects that they should be strong and defiant of risk. Certain risk behaviors more common in men, such as tobacco and alcohol consumption, produce comorbidity as an element of vulnerability to Covid-19 (Gebhard *et al.*, 2020). However, Alkhouli *et al.* (2020), who analyze the medical records from 41 hospitals mainly in the US through TriNetX, conclude that neither comorbidity nor advanced age can fully explain the different mortality between men and women, and clinical data alone appear insufficient to clarify it. The inclination towards risk behaviors as part of the psychosocial causes of the gender difference in the response to Covid-19, also include underestimating the gravity of the pandemic and the possible health complications of the infection, as well as a lower adherence to the norms of social distancing and care (use of mask faces and hand washing), according to some studies carried out during the pandemic and cited in (Griffith *et al.*, 2020). Hiding fear also affects males' response to Covid-19. Barber and Kim (2020) document differences in the emotional response to the pandemic in terms of gender and age, based on a survey with 300 US participants. If, in general, older people perceived the risk of Covid-19 as higher than younger people, older men were found to be less concerned about the pandemic than young people, confirming previous studies, and declared to have implemented fewer behavioral changes as an adaptation strategy compared to the rest of participants (young people and women).

It is important to distinguish primary and secondary consequences of the pandemic in relation to sex and gender. While primary consequences are related to the incidence and mortality of the disease, secondary consequences include all those of a social and economic nature, such as the risk of domestic violence, the increased workload or job insecurity (Gebhard *et al.*, 2020). According to Castellanos-Torres, Tomás Mateos and Chilet-Rosell (2020), the “tyranny of the urgent” leads to focus mainly on biomedical data, setting aside the consequences on women in other spheres as well as those in the medium and long term, such as job loss, an increased burden of caring for children, dependents and the elderly, and the psychological effects of distancing measures. According to Power (2020), the consequences of the pandemic in women can last for years. She mentions that the unpaid workload for women during the pandemic has increased and, although emotional ties within the family have become stronger in many cases, the negative consequences for women include stress and reduced productivity and consequent delays in job promotion processes.

Although we are far from clarifying the reasons for the difference between men and women in their response to Covid-19, there is agreement in the scientific community about the convergence of biological and socio-cultural factors. Among the various psycho-socio-cultural factors that have been put forward, factors related to information behavior are not usually mentioned, whilst their role may be essential in adaptation processes including the response to crises such as the current pandemic. In this line goes Xie *et al.*'s (2020) contribution arguing that every health crisis should be considered an information crisis and that studying information behavior in these circumstances is essential to know the possibilities of response. According to Spink and Cole (2006), the search for information is an innate behavior and information and information needs occupy a central position in human adaptation to the environment for survival. The role of information or an active behavior in information appears to be equally central for getting back to normality after a traumatic event such as

a disease (Genuis and Bronstein, 2017; Patel *et al.* 2019). Informational exchanges in a social setting seem to be essential to manage the return to normality and make sense of unexpected and novel situations (McKenzie and Willson, 2019). Naveh and Bronstein (2019), after analyzing the activity in social media of women with gestational diabetes, conclude that exchanging information about the disease in a social framework allows the community as a whole to negotiate a new concept of normality. The information behavior that can produce changes in other facets of human behavior, and in this way support the response to critical events, is characterized by information exchanges in a social framework of mutual support (Meadowbrooke *et al.*, 2014; Wolf and Veinot, 2015). Research in other branches of social sciences emphasizes the role of information in behavioral change and capacity to respond to natural disasters, adding that the availability and use of information, for example on health, can play an important role, both cognitively and behaviorally. However, information alone does not appear enough to produce behavioral changes, for example in health habits or in the intention to prepare for natural disasters (Kelly and Barker, 2016; Abunyewah *et al.* 2020). It should be added, in passing, that the main public health models reviewed in (Greyson and Johnson, 2016) understand information as an object or resource, conceiving information practices as implicit and disregarding specific contexts. By the same token, the provision of information on disaster risks and possible response actions does not in itself improve the capacity to prepare for natural disasters. Only when accessible, comprehensive and tailored information is integrated into a community participation framework, intentions to prepare for disaster are significantly affected, as emerges from the study by Abunyewah *et al.*, (2020). Reviewing the various reasons why it is difficult to change certain health-related behaviors, Kelly and Barker (2016) also use information-related reasons. On the one hand, it might be a mistake to prioritize information from expert sources, especially for chronic diseases and for prevention purposes, as the limited results obtained by educational programs based on the dissemination of specialized information demonstrate. Changes in habits such as smoking, alcohol consumption and physical activity are not events produced by the simple availability of information, but processes and practices strongly conditioned by non-rational reasons and integrated into social life and human relationships.

Research has also been carried out on gender differences in information practices, especially in health information seeking. According to the theoretical contribution of Urquhart and Yeoman (2010), viewing information behavior from the perspective of women underlines the importance of the situation and context in informational processes, as these are conditioned by socio-cultural factors including gender itself. The differences between men and women documented in the literature covers evaluation processes, the use of information and the inclination to seek information, as well as the perception of different barriers to access information. In general, in health information seeking, women tend to seek more information, show greater interest in health-related issues and have a more active information behavior (Bidmon and Terlutter, 2015; Baumann, 2017; Escoffery, 2018). Rowley, Johnson, and Sbaffi (2017), in a survey with 484 participants on information practices, detected differences in the credibility judgments of the two groups, and while men were more concerned about the completeness and precision of the information and ease of access to it, women showed greater interest in the ability to understand it. In this study, differences also emerged in terms of information sources and in the circumstances of the search. Whereas women tended to consult a greater number of sources, men searched more frequently for long-term health problems. However, women's searches

do not only appear to cover more sources, but, according to Yom-Tov's (2019) analysis of queries in general-purpose Internet search engines, women's queries tend also to be longer, and possibly more complex. Bidmon and Terlutter (2015) confirm that women highly value the ease of understanding information but also add usability as a highly valued property from the point of view of women. Urquhart and Yeoman (2010) speak of a female preference for sources more "accessible" and for informal information. In addition, the search for information in contexts of daily life may produce more often in women than in men the perception of conflicting information that, according to Sin (2016), can also be explained by women's holistic way to process information and their greater sensitivity and retention of data found during the search. On the side of male peculiarities, Saab *et al.*'s (2018) review on men's health information seeking highlights their low propensity to seek information on cancer, its prevention and risks. The studies gathered by this team allow to describe men as "passive collectors" of information, not inclined to seek health information, being their main impediments emotional factors such as information overload, shame and fear.

Information behavior presents gender differences in social media use as well, and Liu, Sun, and Li (2018), studying an online community about diabetes, find that women are more likely to seek emotional support, while men tend to publish more professional content, to include more medical terms, and finally to be more central and influential in the community network. The study by Baumann, Czerwinski and Reifegerste (2017), on the search for online health information in Germany, highlights different reasons to search for health information online, since, while women may seek emotional and informational support at the same time, men are mostly driven by purely informational goals. Bidmon and Terlutter (2015) confirm, based on a survey with 958 German patients, women's social motivations for searching online and their greater inclination to use the Internet to seek information, even if in general they perceive themselves as less digitally competent or less "self-effective" with technology (He and Freeman, 2019). On the other hand, men are better disposed towards online medical consultations. As research into men's information behavior advances, we are also better equipped to characterize this behavior. In (Patel *et al.*, 2019), the analysis of the conversations in a forum of men with infertility and some interviews with them, shows that their preferences for different sources of information change according to the stages they are going through in the management of the health problem: the men participating in the study opt for the recommendations of health staff when it is necessary to make decisions; however, they look to social media to understand personal feelings and manage expectations.

Finally, in the specific context of the Covid-19 crisis, activity on social media has revealed differences in the topics of major interest to men and women. In the work of Thelwall and Thelwall (2020), who analyze more than 3 million tweets about Covid-19 in English, female accounts tended to tweet more often topics related to family, social distancing measures and health care, while tweets posted by men tended to address issues related to sports events, the global spread of the virus and political reactions. The gender analysis of conversations about Covid-19 on Reddit by Aggarwal, Rabinovich and Stevenson (2020) confirms the differences, highlighting males' inclination for economic and political issues and females' preference for social issues. Additionally, the authors find different emotional connotations in the two genders, as men made a greater use of negative and emotionally charged language than women, showing a grayer vision of the pandemic, while these differences appeared to have increased compared to the situation before the pandemic. At the moment, we do not know

studies that analyze other facets of the information behavior of men and women during the health crisis and the aim of this study is to explore the differences between men and women in information behavior during the pandemic and specifically during the period of lockdown. For this, the data collected in a survey with 95 people residing in Spain and partially analyzed in Montesi, 2020 are examined with the specific purpose of looking for differences between men and women.

## 2. Methodology

Data were collected through a self-administered questionnaire that was published on a social neighbors platform (<https://tienes-sal.es/>) and disseminated among students of the Degree in Information and Documentation of the Complutense University of Madrid and respective families, between April 22 and 25, 2020. A pilot test was carried out with two participants and, after this, some modifications were added in order to clarify the comprehensibility of the questions. Sampling was accidental and the survey was open to those who wanted to participate during the 4 days mentioned. The questionnaire consists of 14 open and closed questions, including multiple-choice and Likert-type questions. Data were analyzed with Excel and SPSS to produce descriptive and inferential statistics. The Chi-square test was applied to find associations between different variables and gender. A total of 95 responses were collected and the demographics of the sample are reported in Table 1. Even though it is a small sample, in no way representative of the Spanish population, and made up mainly of women with university educational background, the results obtained point to gender differences largely consistent with previous studies, as explained in the results, and serve to document certain characteristics of information behavior in a specific and significant circumstance such as the Covid-19 health crisis of 2020.

<b>Education</b>			<b>Age groups</b>		
<i>University education</i>	66	69,5%	18-25	32	33,7%
<i>Secondary Education</i>	17	17,9%	26-40	18	19%
<i>Vocational training</i>	10	10,5%	41-55	39	41%
<i>Primary education</i>	1	1,1%	56-65	4	4,2%
<i>Does not reply</i>	1	1,1%	older than 65	2	2,1%
	95	100%		95	100%
<b>Residence</b>			<b>Sex</b>		
<i>Comunidad de Madrid</i>	75	78,9%	Women	67	70,5%
<i>Other Autonomous Communities</i>	19	20,0%	Men	28	29,5%
<i>Does not reply</i>	1	1,1%		95	100%
	95	100%			

Table 1. Demographics of the surveyed sample

### 3. Results

The main differences encountered between men and women are shown in the following aspects: (a) use of traditional mass media (digital or printed newspapers, television news and other television programs); (b) use of social media (such as Facebook, Twitter, WhatsApp, or YouTube); (c) use of official information from national or local institutions, hospitals, research centers, the police, or the civil guard; (d) characteristics of the information considered useful during lockdown; and (e) dimensions of information behavior during lockdown.

#### *a. Use of traditional mass media*

Regarding the use of traditional media, there are no important differences between the two groups, except for the fact that men appear more likely than women to use traditional means of communication to “seek relief”, being this difference not significant. Figure 1 shows the percentage of responses corresponding to “most of the times” or “some of the time” for the two groups. In general, a higher percentage of women use traditional media “most of the times” or “some of the time” for practically all reasons except to seek relief and feel part of a group.

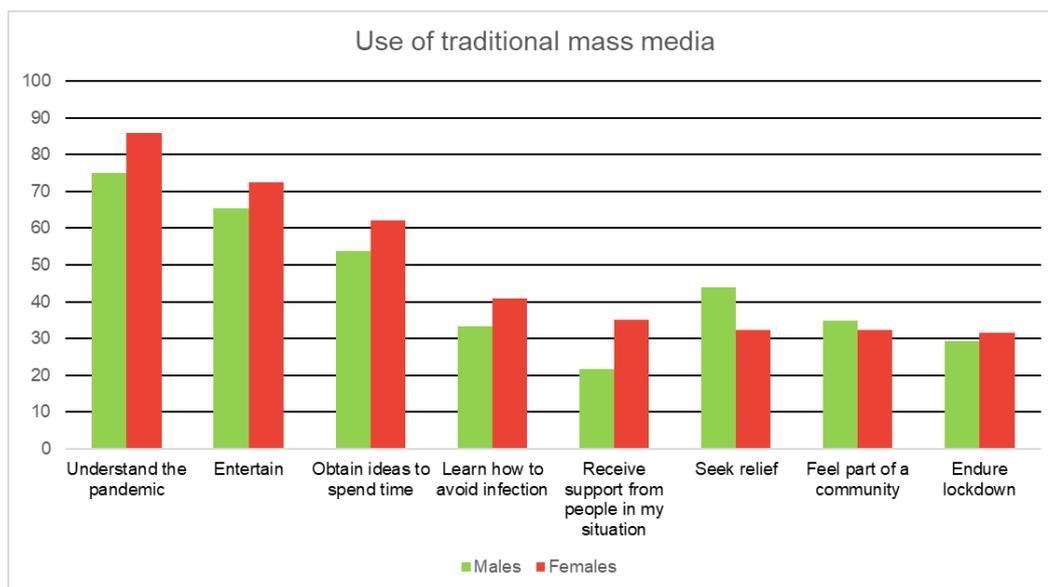


Figure 1. Reasons for using traditional mass media “most of the times” or “some of the time”. Percentage data

#### *b. Use of social media*

As in the previous case, there are no major differences between the two groups in the use of social media, except for the fact that men tend to use them more frequently than women to “get ideas to spend time”. This preference is also significant, occurring more often than expected and the Chi-square test allows to reject the null hypothesis of no difference between the two groups (Pearson’s Chi-square = 4.572, p value = .033). It is worth underscoring that using social media to get ideas to spend time, in the male group, is more frequent than other more specific functions of these media,

especially those related to their social component, such as feeling part of a community. However, in general, entertainment stands out as the main use of social media in both groups.

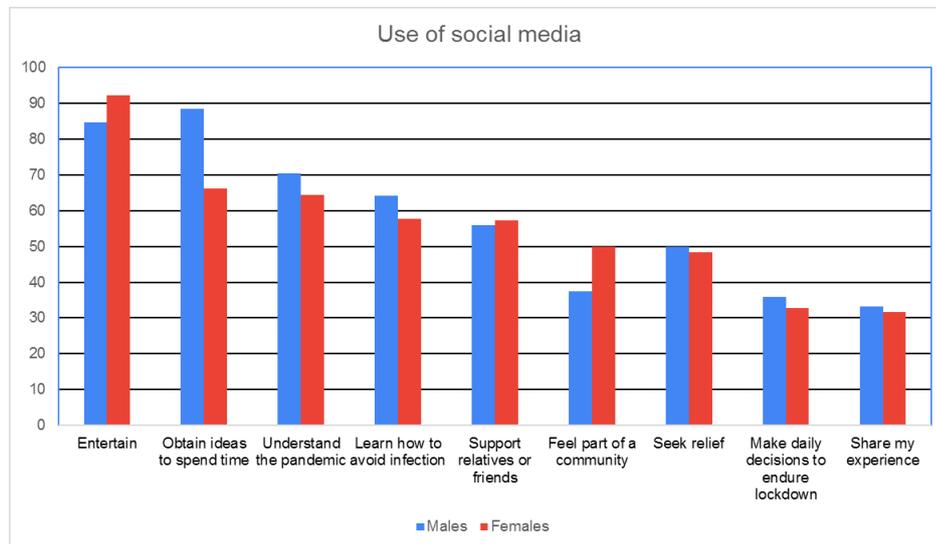


Figure 2. Reasons for using social media “most of the times” or “some of the time” (Facebook, Twitter, WhatsApp, or YouTube). Percentage data

*c. Use of official information*

As for official information, from national and local institutions, hospitals, research centres, the police or the Civil Guard (more than one answer allowed):	Males	Females
Somebody else looked up institutional webpages for me	0,0	3,7
I did not consider using this sort of information	8,2	6,5
I did not need to use this sort of information	6,1	9,3
I accessed institutional webpages to conduct some procedure	14,3	7,5
I called a specific phone number for queries about Covid-19	10,2	9,3
I obtained institutional information exclusively from newspapers and the news	16,3	16,8
I obtained institutional information from the institutions social media accounts	16,3	18,7
I accessed institutional webpages to obtain information	28,6	28,0
	100	100

Table 2. Use of official information. Percentage of responses out of the total for each group

Regarding the use of official information, from national or local institutions, hospitals, research centers, the police, or the Civil Guard, results (Table 2) show that women access institutional webpages to conduct procedures less frequently than men, whereas in 3.7% of cases, compared to 0% of men, somebody else looked up information in institutional webpages for them. This fact may

be related to the concept of self-efficacy, or beliefs about personal abilities to perform certain tasks. According to the concept of self-efficacy, women tend to perceive themselves as less competent in the use of information and communication technologies, mainly due to their lower experience and practice in the use of computers and technology (He and Freeman, 2019).

The percentage of people who did not use information from official sources is similar in the two groups, although it is slightly higher in women (15.8%) than in men (14.3%) and it tends to occur in both sexes for different reasons, as a higher percentage of men “have not considered” using this type of information while a higher percentage of women “have not needed” to use it.

*d. Characteristics of useful information during lockdown*

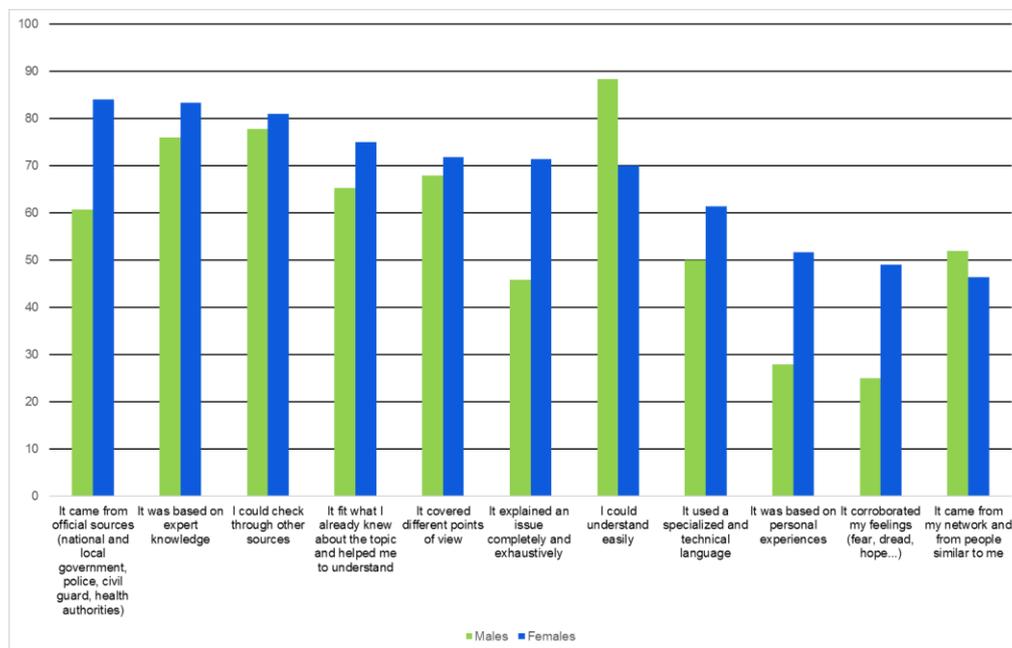


Figure 3. Aspects valued as always or often useful in the information consumed during lockdown. Percentage data

In the information valued as useful during lockdown, it is possible to appreciate greater differences among the two sexes (Figure 3). For four of the eleven characteristics of useful information, the null hypothesis could be rejected, showing differences to a great extent consistent with the previous studies mentioned in the introduction. Men and women valued as useful, always or often, different characteristics of the information, and the differences are significant for the 4 dimensions of Table 3. In all cases, women indicated having valued these four characteristics as useful more frequently than expected.

Characteristics of information valued as useful	Chi-square score	P value
It came from official sources (national and local government, police, civil guard, health authorities)	5,986	,014
It was based on personal experiences	3,960	,047
It corroborated my feelings (fear, dread, hope...)	4,035	,045
It explained an issue completely and exhaustively	4,763	,029

Table 3. Characteristics of information valued as useful significantly different between men and women

In general, women are more likely to value information from official sources, based on personal experiences, consistent with their feelings, and fully and exhaustively explained.

Regarding the information that can be easily understood, although men valued it as useful always or often more than women, the difference is not significant even if it is approaching significance values (Chi-square score = 3,350 and p value = .067). Comprehensibility is a property of information that in previous studies tends to be valued more by women (Rowley, Johnson & Sbaffi, 2017). In this sense, it is worth highlighting an aspect potentially influential in this result, i.e. the fact that in the sample studied women have a higher level of education than men (74.6% and 57.1% have university studies, respectively).

#### *e. Information behavior dimensions*

Finally, it was measured how often different dimensions of information behavior had been experienced during lockdown. Figure 4 shows the percentages of the two groups that “often” experienced the indicated situations.

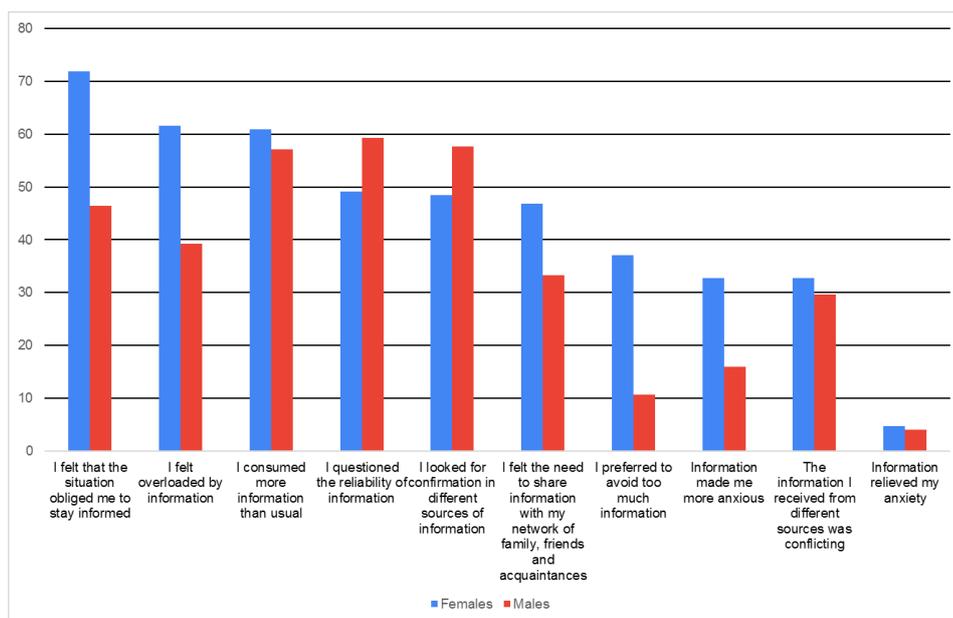


Figure 4. Dimensions of information behavior that have occurred very often. Percentage data

Significant differences were found in the dimensions reported in Table 4. The fact that men felt less, compared to women, the obligation to stay informed and, complementarily, the need to avoid information seems to indicate that, in general, they were less exposed to sources of information. On the other hand, although women more often experienced being overloaded by information and the need to share it, the difference with men is only close to significance levels (Chi-square score, respectively, 3.708 and 3.293 and p-value, respectively, .054 and .070). Even with these limitations, the greater though not significant inclination of women to share information is consistent with the data related to the use of social media (Figure 2).

Dimensions of information behaviour during lockdown	Chi-square score	P value
I felt that the situation obliged me to stay informed	5,176	,023
I preferred to avoid too much information	7,657	,006

Table 4. Dimensions of information behaviour significantly different in men and women

## 4. Conclusions

We carried out a survey with 95 participants in order to describe the information behavior of a sample of the Spanish population during the lockdown for Covid-19. Although the survey has a limited number of participants and it cannot be considered representative of a particular group, the data collected allow to characterize a different information behavior in men and women, corroborating previous studies. If no significant differences are detected in the use of traditional mass media between the two groups, men's use of social media, such as Facebook, Twitter, WhatsApp, or YouTube, appeared more focused on entertainment. The more entertaining and, in a certain sense, evasive use of social media appears in a previous study of conversations about Covid-19 on Twitter, cited in the introduction (Thelwall and Thelwall, 2020). On the other hand, the lower inclination to use social media to exchange information compared to women is corroborated by the fact that men perceived the need to share information with less intensity, resulting altogether in a less relational and social information behavior in men compared to women. As for the characteristics of useful information, men considered less useful than women information based on personal experiences and consistent with their feelings (fear, dread, hope), or what can be called "intrapersonal knowledge" (Genuis, 2012). On the other hand, women more often than men valued information from official sources, based on personal experiences, consistent with their emotions and feelings, and fully and exhaustively explained. Finally, the fact that men felt less, compared to women, the obligation to stay informed and the need to avoid information seems to indicate that they were less exposed to information sources. Overall, the differences in the use of social media, the lower value attached to intrapersonal knowledge, and a more limited exposure to information allow to picture a more evasive and less engaged information behavior in men as compared to women.

The fact that men's global information behavior in this survey appears less social and relational, less engaged and more evasive, and that they value less the experience of others or feelings as sources of information may represent differences of particular relevance in the context of the Covid-19

pandemic. As we saw in the introduction, in order to result in behavioral changes in other spheres, information behavior should be active, occurring in a social framework and in relationships with other people (Meadowbrooke *et al.*, 2014; Wolf and Veinot, 2015), and combine expert knowledge with other types of knowledge, such as experiential knowledge (Kelly and Barker (2016). In addition, some literature attaches to emotions and affect the function of informing and conditioning different information practices, in particular its selection and filtering in situations of conflict and polarization (Montesi and Álvarez Bornstein, 2017).

Finally, information from official sources is perceived as useful significantly less often by men, who, when they do not use it, indicate more often than women that they have not *considered* using it. These results are consistent with previous studies on communication in social media, such as, for example Holmberg and Hellsten (2015), who, analysing conversations on Twitter about climate change, pointed out that women tended to mention campaigns and organizations, while men tended to mention rather individuals from the world of politics and science. The lower value that men attach to the information coming from official sources in comparison with women may point to certain limitations of this kind of information. According to Saab *et al.* (2018), the low propensity of men to seek health information might create a vicious circle and men may end up marginalized from prevention campaigns of health service providers who address mainly women. This is also the point of view of Griffith *et al.* (2020) who argue that it is necessary to face the Covid-19 pandemic in conditions of equity, attending to the different needs of men and women in health policies and interventions.

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