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## **A Study of Grey Literature in the Field of Nutrition, Health and Food Safety Quantity, Retrievability and Scientist's Point of View**

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### **Author's contribution**

*This work was carried out in collaboration between all authors. Authors LF, MLH, ASM vdH, LCMG and MACS contributed equally to this work as first authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aims:** Grey literature covers all reports from public research institutes, which are not peer-reviewed scientific papers. The aim of this article is to explore the amount and extent of grey literature in the field of nutrition, health and food safety, the retrievability and the view of several scientists on this matter.

**Study Design:** An explorative descriptive, semi-quantitative study.

**Methodology:** During a three week survey in June 2013, a questionnaire was sent to 97 scientists in the field of nutrition, health and food safety, of which 44 were returned. Most of the scientists were working in European governmental, academic or research institutes. Questions included an estimation of the quantity and retrievability of the grey literature at that institute, as well as questions about better ways to make grey literature more accessible. To compare the current needs for grey literature and its accessibility with future needs, a questionnaire was also designed and distributed via email and social media among students in the Netherlands; in total 134 replies were received of which 96

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were included in the analysis. Outcomes of the research were compared with literature.

**Results:** Scientists were aware of the existence of grey literature, but had mostly no idea about the amount and extent of it within their own institutes, which was an important drawback in this study. Also, the reported number by scientists did not match the number found on websites of the institutes, which may be due to language barriers, costs and the use of passwords. Although there are various repositories especially for the storage of grey literature, most scientists are not aware of them. The results also gave some insight in the perceived needs and problems with retrievability.

**Conclusion:** This study should be considered as a first attempt to explore the grey literature in the field of nutrition, health and food safety. The main finding was that the quantity and impact of grey literature is not to be underestimated. Scientists indicated that they want to improve retrievability of the documentation since they are considered often very valuable to the scientific community and the general public. Increasing the awareness of the amount grey literature and ways to improve the accessibility are points of attention for further research.

*Keywords: Grey literature; nutrition; health; food safety; quantity; needs; retrievability.*

## 1. INTRODUCTION

The most common way to disseminate scientific data to the scientific community and other interested parties is by publication in peer-reviewed journals. These published articles are easily identifiable and traceable via available literature search systems. However, a considerable amount of scientific data is never published in this way. Instead, they are reported and stored in documents which currently do not easily reach a broad scientific audience; which is also called grey literature, previously known as reports literature [1].

During the York seminar of 1978, the recognition of the grey literature as a primary source of information led to the creation of the System for Information on the Grey Literature in Europe (SIGLE) database [2]. The aim was to provide access to European grey literature and to improve bibliographic coverage. This was initially funded by the Commission of the European Communities and later by the non-profit network called European Association for Grey Literature Exploitation (EAGLE) [1]. Thereafter a lot of new repositories or other ways to make grey literature more accessible were established. More detailed information on this can be found in Appendix III.

Nowadays, the definition that has been most accepted in academia is the one put forward on the Third Conference on Grey Literature (1997) as “material which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers” [3]. In this sense, all scientific reports which are produced but not published in scientific journals (costs of publication paid either on a subscription basis or as Open Access) become part of the grey literature. This may on the one hand be the result of insufficient quality of the work, but on the other hand, it can also be the result of lack of time, money or attention for wider dissemination of the work outside the original website or repository.

Discrepancies between grey literature and published (‘white’) literature can for example result in different forms of bias in meta-analyses, which in turn can affect the outcome. For example, bias against the null hypothesis can occur, because published research is more likely to contain statistically significant results. Since grey literature is possibly more likely to

contain negative or non-significant results compared to published literature, exclusion of grey literature can cause a considerable limitation of the validity and value of meta-analyses [4]. It has been suggested for some studies that the overestimation can be of an order of magnitude of 12% [5,6].

Although the importance of grey literature is realized, there is currently no proper uniform system to store, search and retrieve grey literature [1]. Because grey literature is not published in recognized peer-reviewed scientific journals, it has low accessibility and can remain unnoticed. This may lead to loss of time and credit for the scientists who carried out research not published via the system of peer-reviewed journals. Moreover, it contributes to an inadequate use of financial and material resources when institutes duplicate research which has already been conducted [5].

The present study aims to provide an inventory of the status and dimension of grey literature, its retrievability and the expectations and demands of scientists. This was addressed by interviewing scientists and students active in the field of nutrition, health and food safety, about their opinion in the different matters as well as a literature study.

## **2. METHODS**

Most of the contacts were received from the National Institute of Public Health and the Environment (RIVM the Netherlands), and are employed in one of the three categories: governmental institutes, research institutes or academic institutes. Scientists who were not working in one of the three different categories like freelancer or representative of a NGO were included in "other". In addition, some contacts were received via Wageningen University or via the contacted scientists. The accessibility scientists indicated in the questionnaire was compared to the observed online accessibility of grey literature of that institute.

### **2.1 Online Accessibility of Grey Literature**

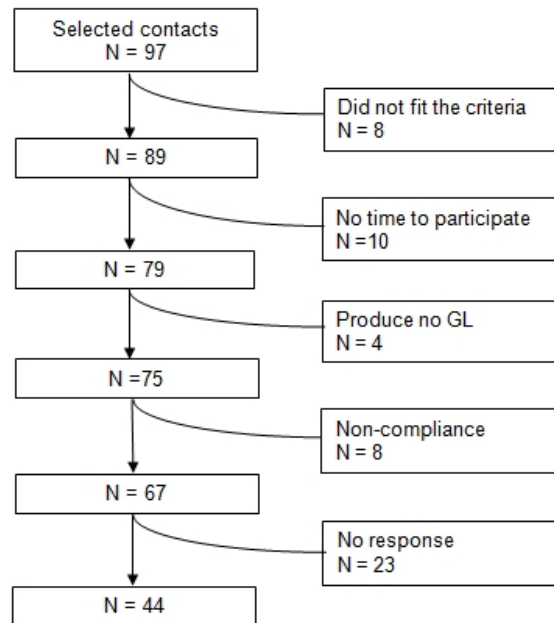
To grade the accessibility of grey literature from the different institutes, the websites from selected institutes (see Appendix IV for a list) were visited and databases containing reports were searched (e.g. in libraries, repositories, documents). The website accessibility was later compared to the perception of 44 scientists (see section 3.2) on the difficulty to retrieve grey literature from the institute they were employed at. It was also compared to their impression of grey literature accessibility from other institutes.

### **2.2 Questionnaire to Scientists**

In order to obtain insight in the quantity and accessibility of grey literature in institutes active in this area, as well as scientists' demands, questionnaires were sent to various scientists. With some of them, appointments for a telephone interview were made. Names and contact details of scientists in the area of nutrition, health and food safety were supplied mostly by RIVM. During a period of three weeks in June 2013, a total of 97 scientists from different types of institutes were contacted. Exclusion criteria were: not working in the field of nutrition, health and/or food safety and/or not producing grey literature (or not working at an institute that produces grey literature). First, an email was sent to ask if they were willing to cooperate and whether they preferred to conduct the interview via email or via phone. After one week, a reminder was sent. When there was still no response after one week, the

scientists were phoned to ask if they received the questionnaire and were willing to cooperate. The questionnaire can be found in Appendix I.

In the end, 44 out of the 97 scientists provided a response that could be used in the assessment (response rate = 45%). As can be seen in the flow chart (Fig. 1), scientists had different reasons not to participate within the short time period. See Appendix IV for a list of included institutes.



**Fig. 1. Flow chart showing the selection of scientists, and the reasons scientists gave for exclusion**

Data were analysed using IBM SPSS Statistics19.0 for analysis. Descriptive statistics were used to describe the measures of central tendency for the questions with quantitative variables. Questions that contained qualitative variables were described with frequency and percentage measures.

### 2.3 Student Questionnaire

In order to compare the opinions of the scientists with those of students in the same area, a short digital questionnaire was made with QUALTRICS ([www.qualtrics.com](http://www.qualtrics.com)). Current students, mostly recruited from Wageningen University were asked to complete the questionnaire which was distributed by Facebook and email. It was online for a week in June 2013. This questionnaire can be found in Appendix II. In total 134 students participated, of which 20 were excluded since they were not studying in the field of nutrition, health and food safety. Another 18 students were excluded because they did not complete the whole questionnaire.

### 3. RESULTS

It proved difficult to assess the quantity of grey literature. From the 44 questionnaires of participating scientists, only 17 could be used to calculate the amount of grey literature produced by each institute (Table 1). This small number was due to the fact that most scientists could not give an estimate of their institute's grey literature production. Others gave a percentage or an unspecified number, which made it unclear for which timeframe the stated amount applied. All incomplete answers had to be excluded, leaving a total of 17 questionnaires for analysis. An average of 66 reports per year was produced by the institutes. Governmental institutes reported a much higher number on average (125 per year), while the group 'other' reported much lower numbers.

**Table 1. Amount of grey literature produced *per year* in each type of institute. N = number of participants that answered this question. Other institutes included scientists who work as freelancer or as representative of a NGO**

Type of institute	N	Mean	Minimum	Maximum
Academic institute	3	23	5	38
Governmental institute	6	125	5	360
Research institute	6	49	4	100
Other*	2	1	1	1
Total	17	66	1	360

\* Question was only answered by freelancer

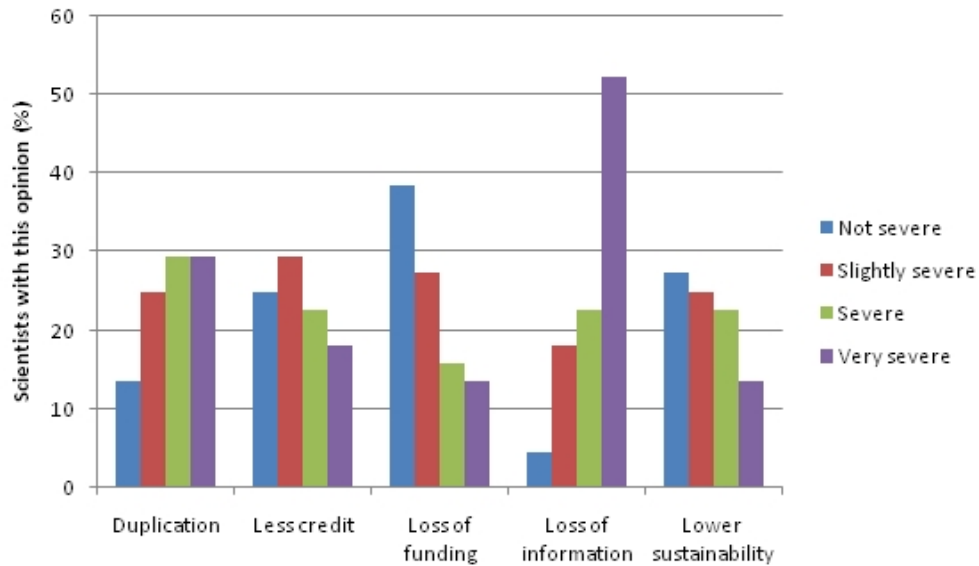
When asked which amount of the produced grey literature would be of sufficient quality to be published in a scientific journal, an average of 48% was reported. NGOs and other institutes indicated that a larger percentage (85%) would qualify for publication in a scientific journal. Academic institutes indicated a slightly lower percentage (38%). When asked what percentage of scientists would like to publish their results in a scientific journal if time and/or money would have been available, 78% was given as an average. Specifically, other institutes reported lower values (66%), academic institutes stated 89% on average. An overview of the results per type of institute is provided in Table 2.

**Table 2. Percentage of grey literature that would qualify for publication in a scientific journal and percentage of scientists that would like to publish their work in a scientific journal**

Type of institute	% grey literature that would qualify for scientific paper		% scientists that wants to publish	
	N	%	N	%
Academic institute	6	38	8	89
Governmental institute	12	47	12	77
Research institute	12	41	11	81
Other	4	85	5	66
Total	34	48	36	78

It was also investigated whether the institutes represented in the interviews applied some kind of reward system for employees that managed to publish their work in a scientific journal. On average, 25% of all institutes rewarded the employees that published, whereas 73% did not give rewards or credits.

Possible consequences of the low accessibility of grey literature were identified, and the severity of these consequences was assessed. Consequences could be duplication of work, less credit for the scientists of the original research, loss of funding, lower sustainability because more resources (test animals, radioactive isotopes etc.) were used and loss of information and knowledge; results are summarized in Fig. 2. The loss of information and knowledge is seen as the most severe consequence, followed by duplication of work. Loss of funding is seen as least severe.



**Fig. 2. Consequences of grey literature and their severity. Questions about duplication, credit, funding and information were answered by 43 participants, the question about sustainability by 40 participants**

The perception of the scientists was assessed on the accessibility of grey literature from their own institute for people not employed at their institute. In addition, their perception of the accessibility to other institute's grey literature was asked. In both cases, the majority of scientists placed their perceptions between the categories slightly difficult (25% and 34% respectively) and difficult (both 32%).

Scientists from 44 institutes answered the question about the degree of difficulty for external scientists to access their institute's website. Only 38 websites were checked, because there were no language barriers or passwords required. Of these, 10 met similar levels of accessibility as compared to the levels perceived by the respondents, while 28 produced different values. However, from those that were different, only 3 were completely opposite (e.g. score 1 reported while score 4 was found in the website search). More information can be found in Table 3.

**Table 3. Retrievability of grey literature and website accessibility**

Accessibility	Difficulty for external people to access grey literature from their institute		Website accessibility		Difficulty to access grey literature from external institutes	
	Freq.	%	Freq.	%	Freq.	%
High	1	8	16	36	4	9
Medium	2	11	9	21	15	34
Low	3	14	4	9	14	32
Not	4	9	11	25	7	16
No answer		2	4	9	4	9
Total		44	44	100	44	100

Participants were asked if they knew about the existence of databases specifically for grey literature. Slightly more than one third of the scientists (36%) knew of their existence, but only around one quarter (23%) of the scientists actually used these databases (Table 4). The same question was asked to the sample of students. From these students, only 9% was aware of the existence of databases specifically for grey literature (Table 5).

**Table 4. Awareness of databases for grey literature and usage of these databases among scientists**

	Awareness of grey literature databases		Usage of grey literature databases	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	16	36	10	23
No	27	61	32	73
No answer	1	3	2	4
Total	44	100	44	100

**Table 5. Comparison of awareness of grey literature databases between students and scientists**

(%)	Students	Scientists
Yes	9	36
No	91	61
No answer	0	3
Total	100	100

In order to assess the transition in information dissemination which is needed for future generations, the question about ways of dissemination grey literature was posed to the scientists as well as the students. The ways of dissemination which were assessed by both groups are meetings, newsletters by email, newsletters by regular mail, social media and direct publication, meaning a publication of (an abstract of) a grey literature report in a peer-reviewed scientific journal, together with a hyperlink to the original data.

Both scientists and students (respectively 51% and 40%) thought a peer-reviewed scientific journal was the best way to spread grey literature. According to 26% of the scientists, special meetings or congresses for grey literature were considered to be effective. According to 26%

of students social media were considered effective. Regular newsletters were seen as not effective by 42% of scientists and 28% of students.

## **4. DISCUSSION**

### **4.1 Quantity**

Many of the scientists who completed the questionnaire could not indicate the amount of grey literature produced per year at their institute or department. Some of them gave a percentage, or just a number without specifying if it was e.g. per week, month or year. No real quantitative measure of grey literature could be obtained, but results suggest that the quantity should not be underestimated. Databases on websites of the institutes containing grey literature are sometimes hard to reach. Some grey literature is stored in offices or physical repositories, and is not accessible to the outside world. As a result, knowledge is lost which can lead to duplication of work and inefficient spending of money and resources, including experimental animals.

Therefore, it was attempted to make an estimation of the amount of grey literature produced in one year, based on the websites of the organisations. However, it again was difficult to estimate the quantity in this way, due to various reasons. First, some websites could not show the results for one year only, but showed all results, which complicated the search. Second, the websites were mostly in English, but the search option or database was mostly in the native language or switched automatically back to this. Third, on some websites, grey literature could not be distinguished from white literature. Finally, the web search did not take into account the grey literature which was stored in physical repositories only, which is not available on the internet.

It was also attempted to estimate the quantity of grey literature through literature search, however, few studies on the quantity of grey literature have been done, and none of them gave a number of reports produced by institutes. It is concluded that an estimate of the quantity of grey literature in the area of nutrition, health and food safety cannot be made reliably. The data on number of reports of grey literature produced per institute indicate that the quantity of grey literature is higher than expected. This warrants further investigation to open accessibility of grey literature to a wider (scientific) audience.

### **4.2 Scientist's perception**

Publication in a peer-reviewed journal is still seen as the best platform of exposure and validation for scientific work [7]. The fact that grey literature is not peer-reviewed generally raises questions such as about quality, validity of information, intellectual property, copyright and stability of the information. At the moment 30% of the editors indicated that they would not publish a meta-analysis that includes unpublished references. Probably this is caused by the lack of peer-review, although there is no evidence of the effectiveness of peer-review [6]. A systemic review even revealed that grey literature tended to be better at specifying the time frame for analysis, defining the populations of study, identifying alternative interventions for comparison and considering sustainability compared to widely disseminated literature [8]. Schöpfel [9] also underpins the need for quality control. Unfortunately, there is no proper standard for assessing the quality of the studies [10].



“Wider and more consistent dissemination of all research is essential to ensure that the scientific community takes advantage of the cumulative power of research for the benefit of humanity” [4] There are two main needs; first, the need to manage grey literature in a similar way as white literature. Second, the need to market, advertise and disseminate grey literature to provide greater access [11]. An important mean to increase its exposure and familiarity is scholarly interaction, through partnerships, communities and regular meetings. These interactions may increase both awareness about quality of grey literature and awareness of the need of publishing [7,9]. Alerts like The Grey Literature Report from the New York Academy of Medicine, which inform scientists about the existence of grey literature, can also help to increase the awareness of grey literature publications [12].

The interviewed scientists indicate that circa half of the produced grey literature (48%) would qualify for publication, supporting previous statements about the quality of grey literature [4,5,7]. However, publication is not the primary means to increase dissemination of grey literature. Although it is necessary to include grey literature in a review or meta-analysis in order to prevent bias [4], this can also be achieved by increasing retrievability of grey literature. The percentage of grey literature that would qualify for publication is the lowest in academic institutes (38%, see Table 2), probably because a lot of BSc and MSc theses are produced, which are often not published due to lack of quality (R. Witkamp, personal experience). Governmental institutes claim to have reports of higher quality because these are already made in a professional way and are intended to be disseminated to a larger public.

On the other hand, the percentage of scientists that would like to publish is the largest in academic institutes (89%; Table 2). Scientists from academic institutes indicated that there are no direct rewards because they are obligated to publish a certain amount of literature per year. In the case of governmental institutes and research institutes, there are sometimes bonuses or other rewards for publication available. In the case of NGOs, freelancers and other institutes, the freelancers said not to receive rewards directly, whereas NGOs and other institutes might have a bonus for publishing, albeit not a significant one. Overall, only 25% of the institutes reward their employees for publishing. The existence of rewards for publishing can be a crucial factor for increasing the exposure of grey literature. This notion is reinforced by previous research showing that motivation of scientists to publish is very important [13].

### **4.3 Retrievability**

The main problem of grey literature is its low retrievability and accessibility. Besides the fact that grey literature is often difficult to find, its accessibility is also hampered by financial, copyright and language barriers. F.N. Okoroma [14] states that grey literature is “absolutely essential to knowledge and the development of any nation”. Therefore the dissemination and retrievability of grey literature needs to be increased.

In this survey, low accessibility to the grey literature of institutes was seen as a problem for scientists as most of them found it difficult to find reports within and outside the institutes. When finding grey literature on websites, scientists face barriers such as language, passwords, unorganized websites, or the complete absence of database. As time is a limitation for them, this kind of extensive search is not feasible. In addition, some of the reports are stored in offices or other physical repositories and are not digitized to be accessible to the external public through the internet.

A suggestion would be to add all these non-public reports to free repositories that already exist on the internet. However, when asked if scientists and students knew of the existence of these databases, only a very small percentage was aware of the existence of these kind of open access digital grey literature databases and repositories, as shown in Tables 4 and 5.

As shown in Table 3, most of the scientists perceive it as quite difficult for others to access their institutes' grey literature. A majority also perceives it as difficult to very difficult for themselves to access grey literature produced by others. Eight of the interviewed scientists indicated the language barrier as main reason, whereas eight others attributed the difficulty to unawareness of the existence of grey literature. Six scientists mentioned that it is mainly due to difficulties in retrieving or lack of searching skills, and five additional scientists indicated grey material is not always accessible through internet. Comparing the scientist's perception of the accessibility to grey literature within their own institute with the website accessibility assessed in this study, it is clear that scientists have many difficulties in finding grey literature due to a variety of reasons.

New ways to increase the dissemination of grey literature have to suit both the old and new generations in order to optimize the usage. Both scientists and students were asked to give their opinion on several ways to disseminate grey literature, as can be seen in Figs. 3 and 4. Direct publication in a peer-reviewed journal was seen as 'very effective' by the largest amount in both groups. In the second place, scientists preferred meetings to disseminate grey literature, while students thought social media to be more feasible. This could represent the increasing influence of the internet on communication issues. Social media or social network sites (SNS) can be defined as "platforms that provide the ability and tools to create and publish information accessed via the internet. Generally these platforms have three characteristics with content user generated, high degree of interaction between creator and viewer, and easily integrated with other sites" [15]. An increasing amount of institutes and companies now see the necessity and benefits of the use of SNS. This is not only because they allow them to reach a much larger number of people, but also because they offer the possibility of interactivity and giving of feedback [16].

#### **4.4 Limitations**

The present study has its inherent limitations. Even though the number of contacts provided was large, not all contacted scientists cooperated or answered the questionnaire adequately. This resulted in a limited sample which complicated the provision of statistical analysis of the results. In addition, as the contacts for this study were provided almost solely by one source, the sample selection is likely to be subjective which could lead to biased results. Also the representativeness of the contacts within the institutes could create a bias when extrapolating the answers of one scientist to the situation in an entire, sometimes large and diverse institute.

Another problem, which is also addressed in most of the articles about grey literature, is the quantification of the grey literature. Most of the contacted scientists were not aware of the precise number of grey literature documents produced in their department or institute. Therefore they often did not provide a number, or indicated that it was a very rough estimation. In addition, the questions where a grading had to be performed are prone to variation across persons. So it is important to highlight that the results from this questionnaire represent the perception of the scientists towards grey literature. Overall, this is not a quantitative study, at most a explorative descriptive, semi-quantitative study on a

limited number of selected individuals and with a non-validated questionnaire. However, in the absence of data the present study does provide valuable insight into the quantity, dissemination and retrievability of grey literature in the area of nutrition, health and food safety. For future research, a study using a larger sample is recommended, in which potential bias of selection of scientists is smaller and in which questionnaires are more validated.

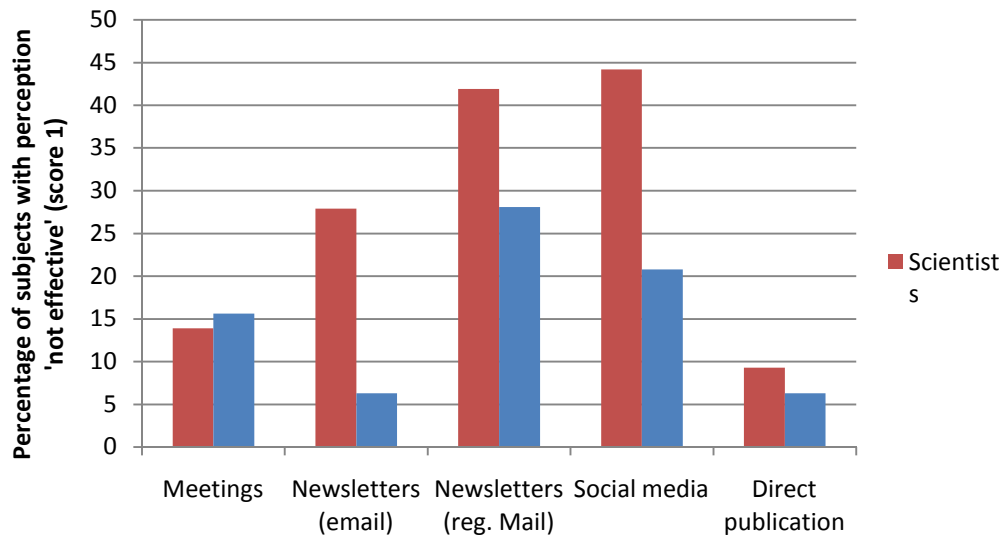


Fig. 3. Comparison between the scientists and students on how they rate the different ways to make grey literature more accessible, for the score 1 (not effective)

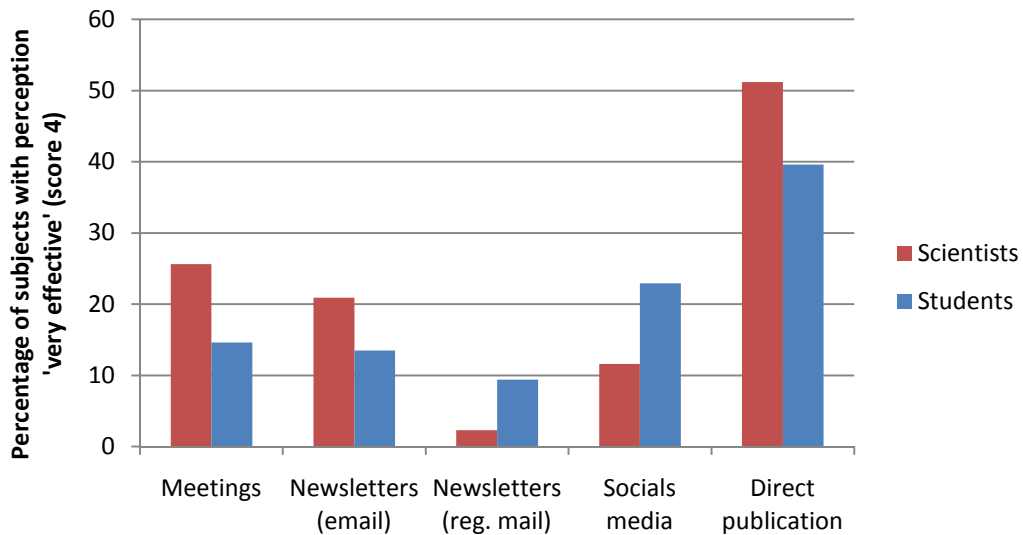


Fig. 4. Comparison between the scientists and students on how they rate the different ways to make grey literature more accessible, for score 4 (very effective)

## **5. CONCLUSION**

To our knowledge, this is the first study that aims to provide an insight in scientists' perception of grey literature in the area of nutrition, health and food safety. Scientists from different types of institutes were interviewed in order to obtain an estimate about the quantity, dissemination and retrievability of grey literature, which may contain detailed and up-to-date information of high scientific quality and can be of great value to the scientific community and to society. However, wide dissemination of the grey literature is not always a priority for scientists and institutes. As a result, the amount of non-public grey literature increases and valuable information is lost.

As a way to make the grey literature available, scientists still consider the peer-reviewed journal as the best way to disseminate the grey literature. In this way, open access journals offer a general solution for the grey literature producers, but motivation to publish work in these journals must be increased. Furthermore, the future generation of scientists appears to have a more positive view on communication via social media when compared to the current scientists. Next to the direct publication in a peer-reviewed journal, the use of social media can be seen as a promising way to increase the dissemination of grey literature.

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## **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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## **APPENDIX I**

### **Questionnaire to scientists**

Grey literature is defined as “scientific literature that is not published in scientific journals addressing peers and therefore is hard to find”. This includes technical or research reports, doctoral dissertations, some conference papers, some official publications, and other types of documents. Also documents that are not available on the website are included.

With the term ‘institutes’ we mean universities, governmental institutes, non-governmental organizations (NGOs) etcetera.

1. Does your institute produce/publish grey literature?
2. If yes, can you give an estimation of the amount of grey literature your institutes produces? Please give a number.
3. What percentage of this grey literature that would qualify for a scientific paper if time and/or money were available?
4. What percentage of the scientists in your institute do you think would like to publish in a scientific journal approximately?
5. Do you know if the scientists in your institute are rewarded in some way if they do publish their work? For example by providing a bonus, or any other encouragement.
6. Can you indicate, with a number between 1 and 4 how difficult it is for external scientists to find or access grey literature from your institute? With 1 being not difficult at all and 4 being very difficult. Why?
7. Can you indicate, with a number between 1 and 4 how difficult it is for your institute to find or access grey literature from other institutes? With 1 being not difficult at all and 4 being very difficult. Why?
8. The low accessibility of grey literature can have consequences on several points. How severe do you consider the low accessibility of grey literature to be for the following points? On a scale of 1 to 4, 1 being not severe at all and 4 being very severe.
  - a. The duplication of work
  - b. Less credit for scientists
  - c. Loss of funding
  - d. Loss of information
  - e. Lower sustainability (due to extra use of test animals, radioactive isotopes etc.)
9. Are you aware that there are several databases and networks specifically for grey literature, for example Open Grey, Grey Net and LIBER? Do you use them? Why or why not?
10. Below are several ways to increase the exposure to grey literature. Please indicate with a number between 1 and 4 how you grade this way of exposure on effectiveness. 1 being not effective at all and 4 being very effective.
  - a. Meetings (e.g. congresses)
  - b. Newsletters via email
  - c. Newsletters via regular mail
  - d. Social media (e.g. Twitter)
  - e. Direct publication of grey literature in a peer-reviewed scientific journal
11. According to you, which of the above ways would be the most attractive way to increase the exposure to grey literature? Or do you know of other/better ways to increase the exposure of grey literature?

## APPENDIX II

### Questionnaire students

Our ACT project is about grey literature and ways to make it more accessible.

*Grey literature is defined as “scientific literature that is not published in scientific journals addressing peers and therefore is hard to find”. This includes technical or research reports, doctoral dissertations, some conference papers, some official publications, and other types of documents. Also documents that are not available on the website are included.*

As future scientists, this is a topic that already addresses you. During your time in the University, you have written various reports, like your thesis, which are all grey literature. When publishing this, more information can be gathered, which results in less duplication of work.

We have the opinion of various scientists, so now we want to focus on the next generation. Therefore, we have some questions for you to answer.

First of all, do you study something related to nutrition and food (technology, safety)?

- Yes  
 No

Answered no → end of questionnaire!

---

Are you a:

- Applied science student (HBO)  
 Bachelor student  
 Master student  
 PhD student

What age are you?

---

Can you indicate, with a number between 1 and 4, how difficult it is to find information that is not in COMMERCIAL/scientific journals for your study?

With 1 being not difficult at all and 4 being very difficult.

- 1  
 2  
 3  
 4

Are you aware that there are different databases especially for grey literature, like Open Grey, LIBER, etc.?

- Yes
- No

Below are several ways to increase the exposure to grey literature. Please indicate with a number between 1 and 4 how you grade this way of exposure on effectiveness. 1 being not effective at all and 4 being very effective.

Meetings (e.g. congresses)

- 1
- 2
- 3
- 4

Newsletter via email

- 1
- 2
- 3
- 4

Newsletter via regular mail

- 1
- 2
- 3
- 4

Social media, like twitter

- 1
- 2
- 3
- 4

Direct publication of grey literature in a peer-reviewed scientific journal

- 1
- 2
- 3
- 4

Thank you!



## APPENDIX III

## Databases, networks and search engines

	<i>Description</i>	<i>URL</i>
		<b>Overview databases and repositories</b>
<i>OAIster</i>	Catalogue of digital resources from open-archive collections of libraries worldwide	<a href="http://oaister.worldcat.org/">http://oaister.worldcat.org/</a>
<i>Open DOAR</i> <sup>1</sup>	Directory of open access repositories	<a href="http://www.opendoar.org/">http://www.opendoar.org/</a>
<i>Open Grey</i>	Grey literature produced in Europe (paper documents until 1996) Grey literature conferences preprints in full text (to date)	<a href="http://www.opengrey.com">http://www.opengrey.com</a>
<i>MEDLINE/PubMed</i>	U.S. National Library of Medicine's (NLM) bibliographic database that contains references to journal articles on life sciences and biomedical topics	<a href="http://www.ncbi.nlm.nih.gov/pubmed">http://www.ncbi.nlm.nih.gov/pubmed</a>
<i>SciVerse Scopus</i>	Contains abstracts and citations for academic journal articles	<a href="http://www.scopus.com/home.url">http://www.scopus.com/home.url</a>
<i>Web of Science</i>	Multidisciplinary database that covers the highest impact journals worldwide, including Open Access journals and conference proceedings	<a href="http://apps.webofknowledge.com/WOS">http://apps.webofknowledge.com/WOS</a>
<i>Med Line Plus</i>	Provides health information	<a href="http://www.nlm.nih.gov/medlineplus/">http://www.nlm.nih.gov/medlineplus/</a>
<i>WHO</i> <sup>2</sup> <i>Library</i>	Public health information from WHO and other scientific literature produced around the world	<a href="http://disei.who.int/">http://disei.who.int/</a>
<i>NIH research portfolio (RePORT)</i>	Access to reports, data and analyses of NIH research activities	<a href="http://report.nih.gov">http://report.nih.gov</a>
<i>RASFF</i> <sup>3</sup> <i>Portal</i>	Access to Reports on food and feed issues in the European Union	<a href="http://webgate.ec.europa.eu/resff-">http://webgate.ec.europa.eu/resff-</a>

<sup>1</sup> Directory of Open Access Repositories

<sup>2</sup> World Health Organization

<sup>3</sup> Rapid Alert System for Food and Feed

		<a href="#">window/portal/</a>
<i>DART-Europe portal</i>	Full text access to research theses of Europe	<a href="http://www.dart-europe.eu/">http://www.dart-europe.eu/</a>
<i>NARCIS</i> <sup>4</sup>	Gateway to open access publications from Dutch universities and scientific institutes.	<a href="http://www.narcis.nl/">http://www.narcis.nl/</a>
<i>DOAJ</i> <sup>5</sup>	Search for open access scientific and scholarly journals and articles	<a href="http://www.doaj.org/">http://www.doaj.org/</a>
<b>Organizations and networks</b>		
<i>Open Archives Initiative</i>	Promote dissemination e-print archives	<a href="http://www.openarchives.org/">http://www.openarchives.org/</a>
<i>Grey Net International</i>	Research on grey literature	<a href="http://www.greynet.org">www.greynet.org</a>
<i>NIH</i> <sup>6</sup> <i>Public Access project</i>	Provide access to published results of publicly-funded research	<a href="http://publicaccess.nih.gov">http://publicaccess.nih.gov</a>
<i>OCLC</i> <sup>7</sup>	Improve access to worldwide libraries	<a href="http://www.oclc.org">http://www.oclc.org</a>
<i>LIBER</i> <sup>8</sup>	Support to research libraries in Europe	<a href="http://www.libereurope.eu">www.libereurope.eu</a>
<i>NDLTD</i> <sup>9</sup>	Promote dissemination and preservation of electronic theses and dissertations in Europe	<a href="http://www.ndltd.org/">http://www.ndltd.org/</a>
<i>Creative Commons</i>	Promote dissemination of files providing copyright licenses	<a href="http://creativecommons.org/">http://creativecommons.org/</a>
<i>DSpace</i>	Most used software for building open digital repositories	<a href="http://www.dspace.org">http://www.dspace.org</a>
<i>Eprints</i>	Widely used software for building open digital repositories	<a href="http://www.eprints.org/">http://www.eprints.org/</a>

<sup>4</sup> National Academic Research and Collaborations Information System

<sup>5</sup> Directory of Open Access Journals

<sup>6</sup> National Institute of Health

<sup>7</sup> Online Computer Library Center

<sup>8</sup> Ligue de Bibliothèques Européennes de Recherche (Association of European Research Libraries)

<sup>9</sup> Networked Digital Library of Theses and Dissertation

### Search engines

<i>Googrey literaturee Scholar</i>	Search engine that indexes the full text of scholarly literature, includes most peer-reviewed online journals, books and other non-peer reviewed journals.	<a href="http://scholar.googrey literaturee.com/">http://scholar.googrey literaturee.com/</a>
<i>Scirus</i>	Focused on scientific information (scientists' homepages, pre-prints, conference proceedings, etc.)	<a href="http://www.scirus.com/">http://www.scirus.com/</a>
<i>World Cat</i>	Search for collections in libraries worldwide, including articles, books, audio and video files.	<a href="http://www.worldcat.org/">http://www.worldcat.org/</a>
<i>World Wide Science</i>	find scientific databases and portals	<a href="http://worldwidescience.org/">http://worldwidescience.org/</a>
<i>NLM<sup>10</sup> Gateway</i>	Search for meeting abstracts and Health Services Research Projects in Progress (HSRProj) databases	<a href="http://gateway.nlm.nih.gov/">http://gateway.nlm.nih.gov/</a>
<i>TRIP database</i>	Find and use high-quality medical research evidence	<a href="http://www.tripdatabase.com/">http://www.tripdatabase.com/</a>

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<sup>10</sup>National Library of Medicine

## APPENDIX IV

### List of institutes

Some institutes noted that they did not want to be included in the article. Therefore, not all institutes of which answers were received are included here.

Applied Scientific Research (TNO), the Netherlands; [www.tno.nl](http://www.tno.nl)  
Institutul National de Sanatate Publica, Romania; <http://www.insp.gov.ro>  
Bundesinstitut für Risikobewertung, Germany; <http://www.bfr.bund.de>  
Food Safety Authority, Ireland; <https://www.fsai.ie>  
European Food Safety Authority, Italy; <http://www.efsa.europa.eu>  
Itä-suomen yliopisto, Finland; <http://www.uef.fi>  
Leibniz-rechenzentrum, Germany; <http://www.lrz.de>  
Health Canada, Canada; <http://www.hc-sc.gc.ca>  
MTT agrifood research, Finland; [www.mtt.fi](http://www.mtt.fi)  
University of Ulster, Northern-Ireland; <http://www.ulster.ac.uk>  
Polish Academy of sciences, Poland; <http://www.engrey.literatureish.pan.pl>  
University of Sao Paulo, Brazil; <http://www5.usp.br>  
University college Cork, Ireland; <http://www.ucc.ie>  
National Food and Nutrition Institute, Poland; <http://www.food4me.org>  
National public health institute, Finland; <http://www.thl.fi>  
Food standards, Australia; <http://www.foodstandards.gov.au>  
INRAN, Italy; [www.inran.it](http://www.inran.it)  
Food and environment research agency, UK; <http://www.fera.defra.gov.uk>  
Federal office of public health, Switzerland; <http://www.bag.admin.ch>  
Technical University of Denmark, Denmark; <http://www.dtu.dk>  
RIKILT, the Netherlands; <http://www.wageningenur.nl/nl/Expertises-Dienstverlening/Onderzoeksinstituten/rikilt.htm>  
The George institute for grey literatureobal health, Australia; <http://www.georgeinstitute.org/>  
Nofima AS, Norway; <http://www.nofima.no>  
Food research, innovation and food safety, Iceland; <http://www2.matis.is>  
ESNA, Switzerland;  
Office for dietary supplement – NIH, USA; <http://www.nih.gov>  
FAO, Italy; <http://www.fao.org>  
IARC, France; <http://www.iarc.fr>  
Institute of Food Sciences, Italy; <http://www.ispa.cnr.it>  
University of Athens, Greece; <http://en.uoa.gr>  
RIVM, the Netherlands; [www.rivm.nl](http://www.rivm.nl)  
CEBAS-CSIC, Spain; <http://www.cebas.csic.es>

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