

## Information behaviour of French-speaking speech-language therapists in Belgium: results of a questionnaire survey

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### ABSTRACT

*Background:* Speech-language therapists (SLTs) are encouraged to implement evidence-based practice (EBP). Nevertheless, EBP use by practitioners can be questioned.

*Objectives:* The objective of this study was to explore Belgian French-speaking SLTs' information behaviour and their awareness of EBP. The collected data allow one to determine how far they have embraced this approach.

*Methods:* The two Belgian French-speaking SLT professional associations promoted an online questionnaire survey by email. Additionally, clinical supervisors of students were asked to participate. In March 2012, 2068 emails were sent.

*Results:* The participation rate was at least 20% ( $n = 415$ ). The reported information needs mainly concerned treatment or diagnosis. Most of the time, to attempt to fulfil their information needs, SLTs relied on their own resources (personal experience and libraries) and on colleagues in the workplace.

When they searched on the Internet, they preferred to use a general search engine rather than a specialized bibliographic database. Barriers to obtaining scientific information are highlighted. Only 12% of the respondents had already heard about EBP.

*Conclusion:* This study provides the first overview of the information behaviour of SLTs working in the French community of Belgium. Several recommendations are suggested for SLTs and librarians.

**KEYWORDS:** evidence-based practice; information literacy; information seeking behaviour; questionnaires

### KEY MESSAGES

- Most of the respondents, who were French-speaking speech-language therapists in Belgium, had never heard of evidence-based practice.
- French-speaking speech-language therapists expressed information needs, mostly centred on the treatment or the diagnosis of various disorders specific to the discipline.
- French-speaking speech-language therapists did not currently follow the best practice recommendations when they searched for information intended to support evidence-based decision making.
- Academic librarians should play a key role in the initial and continued training of speech-language therapists, using their expertise to remove obstacles to the knowledge and application of evidence-based practice principles.

## Background

Evidence-based practice (EBP) is seen as a promising way to improve health care processes and patient outcomes. This approach was initially developed in medicine and has been broadened to other health professions.<sup>2</sup> Its definition has evolved over the years but also across disciplines, such as medicine<sup>3-5</sup> or speech-language therapy.<sup>6-8</sup> The variations in the definitions reveal features specific to each discipline, while maintaining the overarching philosophy of EBP, which is the integration of three main components into the decision making process: (i) current, high-quality research evidence; (ii) practitioner expertise; and (iii) patient perspectives.

In speech-language therapy, the number of papers, books and conferences about EBP is increasing, showing the growing interest in this approach since the early 2000s. Nevertheless, its implementation by practitioners can be questioned. As the EBP approach requires several steps,<sup>5,8</sup> its use can be analysed as a whole or with a particular focus on certain parts of the process, such as (i) the recognition of information needs, (ii) information seeking and (iii) information usage. This set of three activities is named either information behaviour, information practice or information activities. Even if a debate exists over the appropriateness of this nomenclature,<sup>10, 11</sup> these concepts refer to the ways in which people 'do things' or 'deal with information'.<sup>11</sup> The term 'information behaviour' will be used in this paper according to the following definition: 'the study of how people need, seek, give and use information in different contexts, including the workplace and everyday living'.<sup>12</sup>

### *Information needs*

A survey conducted in the United States showed that most speech-language therapists (SLTs)' information needs are about patient care. However, SLTs are also challenged by the questions voiced by patients and families or by colleagues; the other less cited reasons are as follows: (i) preparing a presentation for a professional meeting; (ii) writing a journal article or another similar contribution; and (iii) other various purposes, such as grant application preparation.<sup>13</sup>

Once the information need is identified, the practitioners have to transform it into a question. Two types of questions can be asked: (i) background questions addressing general knowledge and (ii) foreground questions addressing specific knowledge to inform clinical decisions or actions.<sup>5</sup> Several frameworks have been put forward aiming at assisting practitioners to formulate foreground questions. The original template is known by its acronym PICO, which stands for patient or problem, intervention or exposure, comparison (when relevant) of intervention or exposure and outcomes of interests. Several adaptations have emerged,<sup>15</sup> such as the PESICO template (which stands for person, environments, stakeholders, intervention, comparison and outcomes) which is used in augmentative and alternative communication.

### *Information seeking*

The general process of information seeking is always adapted according to the information needs and the required type of data. Some questions can be answered by research (such as questions about prognosis, diagnosis or treatment), and some cannot (such as questions about the preferences of a particular patient or about the opening hours of a hospital).<sup>7,17</sup> Regarding foreground questions, EBP recommends that the best current evidence, gained through systematic reviews or reliable original studies, is considered.<sup>18-20</sup> Several specialised tools, such as the Cochrane Database of Systematic Reviews or the publication type filter in MEDLINE, have been developed to provide or allow the selection of these kinds of publications.

Speech-language therapists use an average of five different sources when seeking information for patient management. The most frequently cited are personal experience,<sup>22-24</sup> colleagues or experts,<sup>13, 21-25</sup> and continued training.<sup>13, 21-23</sup> The specialised tools are poorly utilised by SLTs<sup>9, 13, 25</sup> who seem to lack the necessary knowledge and skills.<sup>25</sup>

### *Information use*

A recent study showed that Australian SLTs treating adults with functional voice disorders are aware of the hierarchies of evidence, although they report that they frequently use treatments with lower levels of evidence.<sup>23</sup> SLTs have a positive attitude towards research and EBP,<sup>24</sup> but barriers prevent them from using EBP in their professional practice.<sup>26,27</sup> The lack of time to search for<sup>13,23</sup> and to read the appropriate scientific literature<sup>13,21,23,26</sup> are the most frequently cited obstacles. The others are the scarcity of high-quality research in the discipline, including pre-appraised literature (systematic reviews, metaanalyses, practice guidelines)<sup>13,23,24,26,28</sup> and a lack of skills,<sup>26</sup> such as the difficulty in using information search techniques. The difficulty in accessing full texts is also an important obstacle.<sup>23, 26</sup> It is also observed that SLTs are not

accustomed to collecting clinical data and communicating about their practices in order to accumulate new evidence.

## Objectives

A literature review revealed that there are more studies about the information behaviour of physicians and nurses than about rehabilitation therapists' attitudes.<sup>29</sup> Differences in educational backgrounds, in working environments and in the types of provided health care interventions do not allow to extrapolate the conclusions to the SLTs' population whose characteristics need further investigation.<sup>29</sup>

Furthermore, most of the existing studies about SLTs were conducted in English-speaking countries, where the EBP culture has been established for a decade. No information is available about the situation in Belgium, a country with some specific features. The Belgian Federal State has three communities: the Flemish-, French- and German-speaking communities. Each of them has its own governance, which leads to differences between the communities. Also, cultural factors and traditions seem to play a role in health practice.<sup>31, 32</sup> Another characteristic is that different institutions and different education levels coexist in Belgium for SLTs, in contrast to other European countries.<sup>33</sup> SLTs can be qualified as such after the completion of a first cycle programme delivered by a higher education institution which is not a university: they have a professional bachelor's degree. They can also graduate from university with a bachelor's degree and a master's degree. So, Belgian SLTs can exercise their profession with a professional bachelor's degree or with a master's degree. A progression from a bachelor's degree to a doctoral degree via a master's degree is possible. In 2011, there were about 6000 active SLTs in Belgium, of which there are about 2200 French-speaking SLTs, and 8 of 10 SLTs had a professional bachelor's degree.<sup>34</sup>

This study explores information behaviour and opinions about EBP in the Belgian French-speaking SLTs' community by means of a questionnaire survey. It is important indeed to understand the factors that influence or limit the implementation of EBP before asking practitioners to embrace EBP<sup>21</sup> and before thinking of updating the academic curricula and lifelong learning programmes.

## Methods

### *Participant recruitment*

The authors sought the cooperation of the two professional associations of Belgian French-speaking SLTs. The *Association scientifique et éthique des logopèdes francophones* (ASELF) and the *Union professionnelle des logopèdes francophones* (UPLF) agreed to invite their members who had an email address (256 ASELF members and 1772 UPLF members) to participate in an online survey conducted by researchers from the University of Liege. Additionally, 40 SLTs working in collaboration with the University of Liege as clinical supervisors of students were also asked to contribute. In total, 2068 email addresses were available.

### *Data collection*

A questionnaire (see Appendix) based on previous studies was developed,<sup>13,35</sup> taking into account the Belgian context. An internal review committee composed of therapists and academic librarians ensured that the relevant topics were thoroughly and properly covered.

The questionnaire was published online through the Qualtrics software program (Qualtrics, Provo, UT, USA). It consisted of 26 items arranged into three main sections. The first section collected general information related to the profile of the respondents (Q1-Q12). The second addressed their information needs (Q13) and their information seeking behaviour (Q14-Q18) and the third explored the way they use information (Q19-Q21). SLTs' awareness of and opinions about EBP (Q22, Q23) were also examined in this later section, as well as their interest in developing skills in information seeking, critical appraisal and EBP (Q24, Q25), along with professional attitudes. Finally, the respondents had the opportunity to add a comment (Q26). The displaying/hiding of some of the questionnaire items (Q15-Q18, Q23, Q24) was conditional upon the response given to a previous question.

The items were presented in a multiple-choice format, except for three items in the second section. The respondents were invited to describe the most recent problem encountered in their professional practice (Q13). They were also asked to provide an explanation when they did not attempt to solve the problem (Q15) or when they were not satisfied with a process they used (Q18). If appropriate, the respondents could specify an answer other than those listed. Multiple answers were sometimes possible, and in all cases, the respondents were

allowed to skip a question.

The 2068 emails were sent in March 2012. A reminder was sent in April. The survey was open for two months and closed on 15 May 2012. As announced in the description of the survey, the data were anonymised; only the IP address connections were registered.

The hospital and medical school ethics committee of the University of Liege approved the survey.

### ***Data analysis***

Results were expressed as means  $\pm$  standard deviations (SDs) for quantitative variables and as counts and proportions (%) for categorical variables. A Student's *t*-test was applied to compare the mean values between EBP aware and EBP unaware SLTs. A chi-squared test or a Fisher's exact test when appropriate was applied to compare the proportions between subgroups. All results were considered to be significant at the 5% critical level ( $P < 0.05$ ). Statistical analyses were carried out using SAS (version 9.4 for Windows).

A qualitative analysis of the responses to the questions Q13, Q15 and Q18 was conducted in three steps. At first, the different topics covered by each respondent were identified and organised into a coding plan. Then, the data were coded and ordered by categories. Finally, the recurrent themes were identified. For Q13, it has also been determined whether it was appropriate to search an answer to the reported problem in the scientific literature.

## **Results**

### ***Response rate***

For reasons of privacy protection, ASELF and UPLF did not communicate their mailing lists so it has not been possible to count the number of SLTs who belonged to both associations. From the 2068 sent emails, 415 questionnaires were filled out, corresponding to a minimum participation rate of 20%. This value is underestimated because of duplicate affiliations (30 respondents stated that they belong to both UPLF and ASELF) and because of invalid email addresses (108 of 1772 email addresses from the UPLF list; unknown data for the ASELF list).

### ***Respondent profile***

All the 415 respondents were qualified SLTs (the first item of the questionnaire allowed students and people who were not SLTs to be excluded from the survey). Table 1 presents their characteristics. Most of the respondents were women, had a professional bachelor's degree as the highest level of education, worked within a team of professionals and saw patients in clinical consultations. They had several years of professional experience. Half of the respondents had already tutored students in speech-language therapy during training courses in professional practice.

A small majority of the 415 SLTs reported spending more than 30 hours per year in continuing professional development. Regardless of the time devoted to training, several means were used to keep up to date: participation in professional conferences, lectures or workshops (96.4%); reading the journal published by the professional associations (95.7%); consulting websites, including discussion lists (74.7%); reading books (62.4%); and reading scientific papers (57.3%). Other ways were also mentioned (6.27%), such as maintaining contact with other professionals.

Of the 409 respondents, 67.5% had a computer with Internet access at the workplace, 16.4% had a computer but no access to the Internet, and 16.1% had no computer at all. Nevertheless, 99.3% of 413 SLTs had a computer with Internet access at home.

**Table 1.** *Characteristics of the respondents*

Criteria	<i>n</i>	<i>N (%)</i>
<b>Gender</b>	321	
Female		312 (97.2)
Male		9 (2.80)
<b>Highest degree obtained</b>	415	
Professional bachelor's degree		312 (75.2)
Master's degree		100 (24.1)
PhD degree		3 (0.70)
<b>Work context</b>	415	
Working in a team of professionals, possibly multidisciplinary		299 (72.0)
Seeing patients in clinical consultation		266 (64.1)
Working for a health care organisation (government agency, insurance, etc.)		30 (7.22)
Training other professionals		35 (8.43)
Teaching in a higher education institution which is not a university		22 (5.30)
Teaching in an academic setting		8 (1.93)
Participating in scientific research		21 (5.06)
Contributing actively to the development of a professional association		39 (9.40)
<b>Clinical supervisor of SLT students during training courses in professional practice (at least once during professional career)</b>	414	
Yes		209 (50.5)
No		205 (49.5)
<b>Time devoted to continuing professional development</b>	413	
More than 30 hours per year		211 (51.1)
Between 15 and 30 hours per year		162 (39.2)
Less than 15 hours per year		40 (9.70)
<b>Years of professional practice (mean ± SD)</b>		12.7 ± 10.7

*The sample size can be different from 415 because of missing values.*

### **Information needs**

Speech-language therapists were asked to report the most recent problem they had encountered in their professional practice. In total, 83.1% of the 415 respondents answered this open question. Most of the SLTs' concerns were about treatment (50.7%) (e.g. 'How to treat attention-deficit hyperactivity disorder?') and diagnosis (25.5%) (e.g. 'Does my patient have verbal dyspraxia or a phonological disorder?'). Other questions were intended to update knowledge about a specific population (e.g. 'Need an update about implanted prostheses for total laryngectomy'); to improve teaching or to prepare a presentation (e.g. 'I was contacted by the director of a social-medical-psychological centre to participate in an educational conference, with teachers, about dyslexia'); to receive information about assessment tools (e.g. 'What test should be used to assess the oral language skills of a 7-year-old child?'); or to obtain procedural information such as the conditions for reimbursement by a health care insurer (e.g. 'Does the health care insurer reimburse the treatment of multiple articulation disorders?'). Several questions (8.12%) covered two or three areas of focus (e.g. 'How to treat hypernasal speech and what reimbursement can be expected from the health care insurer?'). Various topics were approached, such as language disorders, dyspraxia, swallowing disorders, school learning disorders, articulation disorders and voice disorders.

Answers to 70.7% of these questions could be searched for in the scientific literature. The other submitted cases (29.3%) required the consultation of specific sources such as health care insurance programmes or could not be interpreted because they presented a situation without giving the elements of the problem encountered by the therapist (e.g. 'I consulted a teenager who wondered if he was dyslexic')

### Information seeking

The questionnaire item about the actions taken to solve the reported question or problem was filled by 392 participants (94.5%). A few of them (3.10%) admitted to having done nothing (and only two SLTs explained their reasons); the others (96.9%) attempted one or several processes. These are summarised in Table 2, along with their frequency of use, and the SLTs' satisfaction with the solution found in this way.

Most of the SLTs relied on their own resources (personal experience and libraries) and on colleagues in the workplace. When they searched for information on the Internet, they usually used a general search engine rather than a specialised bibliographic database. Approaches other than those included in the questionnaire were reported by some respondents. The most frequently mentioned were participation in a training programme, attendance at a conference and consultation of official health care administrations. Referring the patient to another professional was also mentioned.

Speech-language therapists were usually satisfied with the solution they found. Nevertheless, 112 examples of dissatisfaction were disclosed. The perceived reasons for dissatisfaction were personal or other professionals' lack of knowledge/competence (29.5%); lack of precision in the responses, too much theory, not enough concrete cases (22.3%); and the absence of response (14.3%), mostly when the information is searched for in personal libraries and on the Internet, or sought from other professionals. Other reasons (33.9%) were given such as the lack of certainty or the lack of time.

**Table 2.** Actions taken by SLTs to solve the most recent problem faced and satisfaction with the reached solution

Processes	Usage frequency N (%)	Satisfaction N (%)
<b>Consulting their own resources</b>		
Personal experience	310 (82.2)	198 (63.9)
Personal library	273 (72.4)	233 (85.3)
<b>Consulting external resources</b>		
Colleagues (at the workplace)	294 (78.0)	244 (83.0)
Colleagues (outside the workplace)	124 (32.9)	101 (81.5)
Experts	179 (47.5)	167 (93.3)
Academic libraries	25 (6.63)	20 (80.0)
Public libraries	11 (2.92)	8 (72.7)
Delegation of the search process to a third party	18 (4.77)	11 (61.1)
<b>Using search engines or specialised databases</b>		
General Web search engines (scientific articles)	184 (48.8)	135 (73.4)
General Web search engines (other types of document)	163 (43.2)	121 (74.2)
Bibliographic databases	19 (5.04)	13 (68.4)
<b>Using an approach other than those cited above</b>		
	69 (18.3)	56 (81.2)

Column 2 (Usage frequency) reports the percentage of SLTs who used the listed processes. These percentages were calculated for 377 participants (=100%) because of missing data. Column 3 (Satisfaction) reports the number and percentage of satisfied SLTs with each process.

### Use of scientific information in routine professional practice

Generally speaking, 14.0% of the 415 respondents reported using scientific information at least once a week, 37.3% once a month and 32.3% once every three months. Some of them (16.4%) declared that they never or occasionally use it.

The main barriers to obtaining quality scientific information are listed in Table 3. Difficulties were perceived at almost every step in the EBM process of acquiring, appraising and applying evidence. Only a few respondents did not perceive any obstacle.

The respondents were also asked to estimate their own level of competence (on a scale of 1 to 10, 1 being the lowest level and 10 the highest level). Average scores were as follows: (i) 6.9 for searching for scientific information, (ii) 6.7 for appraising information and (iii) 7.3 for applying the retrieved information to the context of professional practice.

**Table 3.** Reported barriers to obtaining quality scientific information (n = 415)

Barriers	N (%)
Lack of time	225 (54.2)
Lack of knowledge of available resources in the discipline	182 (43.9)
Lack of competence in the English language	176 (42.4)
Difficulty in accessing specialised search tools	159 (38.3)
Cost of accessing information	155 (37.3)
Difficulty in selecting relevant documents	149 (35.9)
Difficulty in assessing the scientific quality of information	135 (32.5)
Lack of skills in using specialised search tools	112 (27.0)
Obstacles other than those cited	7 (1.69)
No obstacles	33 (7.95)

### **Awareness of and opinion about EBP**

The majority of the 414 respondents (88.2%) had never heard about EBP before. The remaining 11.8% rated the importance of the EBP approach as essential (16.3%), interesting (24.5%) or interesting but not feasible (22.5%), and 36.7% did not know enough about EBP to give an opinion. Nobody said that EBP is without interest. Among the SLTs who were aware of EBP, 26.5% had already taken a course or attended a conference on this topic.

The comparison of the respondents' profiles according to whether they had already heard about EBP or not is presented in Table 4. The length of professional experience was found to be comparable between both groups of respondents ( $P = 0.78$ ). However, a significant difference was observed for the educational level ( $P < 0.0001$ ). SLTs aware of EBP typically had a master's degree or a PhD in speech-language therapy, whereas the others had a professional bachelor's degree. The time devoted to continuing education training differed significantly between both groups ( $P < 0.0001$ ). Indeed, majority of the SLTs aware of EBP devoted more than 30 hours per year to continuing training as compared to SLTs unaware of EBP (81.6% vs 47.1%).

**Table 4.** Comparison of SLT profiles according to their awareness of EBP

SLTs profile	SLTs of EBP aware (n= 49) N (%)	SLTs of EBP unaware (n=365) N (%)	P-value
<b>Highest degree in speech-language therapy</b>			<0.0001
PhD	2 (4.10)	1 (0.30)	
Master	30 (61.2)	70 (19.2)	
Professional bachelor	17 (34.7)	294 (80.5)	
<b>Time devoted to continuing education training</b>			<0.0001
>30 hours per year	40 (81.6)	171 (47.1)	
15-30 hours per year	9 (18.4)	153 (42.2)	
<15 hours per year	0 (0.00)	39 (10.7)	
<b>Duration of professional experience (years)</b>	12.3 ± 11.4 [1-40]	12.7 ± 10.6 [1-42]	0.78

The sample size varies in Column 3 because of missing values.

The comparisons of the working context according to EBP awareness are summarised in Table 5. It appears that 'Teaching in a higher education institution which is not a university' ( $P = 0.047$ ), 'Teaching in an academic setting' ( $P = 0.010$ ), 'Training other professionals' ( $P < 0.0001$ ), 'Contributing actively to the development of a professional association' ( $P = 0.0003$ ) and 'Participating in scientific research' ( $P = 0.0023$ ) differed significantly between both type of respondents. The SLTs aware of EBP were significantly more present in all aforementioned work contexts, as compared to SLTs unaware of EBP.

**Table 5.** *Speech-language therapist distribution according to their awareness of EBP and their context of work*

Work context	Awareness of EBP N (%)		P-value
	Yes	No	
Working within a team of professionals	39 (83.0)	259 (72.3)	0.12
Seeing patients in clinical consultation	37 (80.4)	228 (66.1)	0.051
Working for a health care organisation	4 (9.30)	26 (8.41)	0.77
Teaching in a higher education institution which is not a university	6 (13.3)	16 (5.21)	0.047
Teaching in an academic setting	4 (9.30)	4 (1.33)	0.010
Training other professionals	12 (26.1)	23 (7.44)	<0.0001
Contributing actively to the development of a professional association	13 (29.6)	26 (8.50)	0.0003
Participating in scientific research	8 (17.8)	13 (4.28)	0.0023

### **Interest in continued training**

The respondents ( $n = 411$ ) reported an interest in the suggested trainings: EBP (73.0%), professional attitudes (69.8%), information retrieval (65.2%) and critical reading of scientific information (49.9%).

### **Discussion**

This study provides the first description of the information behaviour of Belgian French-speaking SLTs and their awareness of EBP. It is based on an online form filled out by 415 practitioners, most of whom belong to one of the two French-speaking professional associations that supported the survey. Considering the number of sent emails, the participation rate is at least 20%. The characteristics of the studied sample match those of the Belgian French-speaking SLTs population whose 97% are women with a professional bachelor's degree (85%) and a mean duration in professional practice of 13.7 years. The sample could be considered as representative of the population.

### **Information needs**

Most of the respondents took the time necessary to fill an open field of the survey questionnaire with a brief description of the most recent problem they have encountered in their practice. Most of their questioning focused on a single topic and was centred on the treatment or the diagnosis of various disorders specific to the discipline. That is consistent with a recent Canadian study, which has identified twelve foci and a maximum of eight possible structural elements in the clinical questions asked by rehabilitation therapists.<sup>36</sup> It is important to observe that Belgian SLTs lack precision and structure when they have to spontaneously present a problematic situation. This highlights the difficulty in translating a need for information into a question.<sup>15,37</sup>

### **Information seeking**

The majority of the respondents search for solutions to the problems encountered in their professional practice, yet they do not follow the recommendations of EBP, particularly in terms of research strategies. Like the Australian SLTs,<sup>21</sup> they undertake several processes to fulfil their needs. As with many health professionals,<sup>38</sup> SLTs prefer using general search engines rather than bibliographic databases when they search the Internet, perhaps because these tools are easier to access and use and/or because SLTs do not know the specialised resources - which is actually reported in the survey as a barrier to obtaining quality scientific information. While answers to many of their questions could be searched for in the scientific literature, the Belgian SLTs refer mostly to their own experience and to other professionals. These observations are consistent with those of other studies about SLTs,<sup>13, 23-25</sup> rehabilitation therapists, physicians and nurses. The surveyed SLTs also consult documentation that they have on hand in their personal libraries rather than going to a public or an academic library. It should be noted that the survey did not enable them to specify the content and relevance of their personal libraries.

Generally speaking, respondents are satisfied with their strategies. The highest satisfaction levels are experienced when they discuss a problem with an expert, when they consult their personal libraries and when they confer with colleagues. It appears that they prefer to use fast processes, which is consistent with the general complaint of lack of time. Moreover, most of the Belgian SLTs work in a fee-for-service system. Searching for information



is a time-consuming activity that is not recognised as being part of a clinical act and therefore not financially rewarded.<sup>40</sup>

In view of the above, it may seem contradictory that the main reasons for dissatisfaction are personal or other professionals' lack of knowledge or competence and the fact that accurate answers cannot be found. Possible causes of failure are that there is no answer to the question or that the search was not conducted properly.

### ***Information use***

Half of the SLTs use scientific information in professional practice at least once a week or once a month. Consistent with previous studies,<sup>13,21-23,26</sup> the survey highlights several barriers to obtaining quality scientific information: the lack of time, the lack of skills in information literacy and the cost of information. Belgian French-speaking SLTs also considered the English language as a barrier. Not mentioned in the questionnaire is the lack of evidence in the area of speech-language therapy, including pre-appraised literature which could help SLTs in applying research conclusions in their professional practices. The respondents did not raise this difficulty, probably due to their limited experience of EBP.

### ***Awareness of and opinions about EBP***

Only 12% of the respondents had already heard about EBP. That is less than the percentages obtained in Australia in 2004<sup>21</sup> and in the United States in 2008.<sup>25</sup> EBP is less developed in Belgium than in these countries, where the English language is not a barrier. Moreover, the American Speech-Language-Hearing Association<sup>6</sup> and the Speech Pathology Association of Australia<sup>41</sup> promote EBP and encourage its implementation in professional practice. In Belgium, professional associations do not yet support EBP as effectively. The 12% of respondents who were aware of EBP have a similar average length of professional experience to those who had never heard of it. However, most of them have a master's degree, while there is a greater proportion of professional bachelor's degree in the group which was unaware of EBP. It seems that some professional activities - such as teaching in a higher education institution which is not a university, teaching in an academic setting, training other professionals, contributing actively to the development of a professional association and participating in scientific research - and the time devoted to continuing professional development are related to familiarity with EBP. Clinical practice does not appear to increase the chance of being aware of EBP. These 12% of SLTs who had already heard about EBP generally reported a positive attitude towards this approach. However, the questionnaire did not enable them to objectivise their understanding of EBP.

### ***Limitations of the study***

This study suffers from objective limitations. Firstly, the response rate of 20% and a selection bias due to the sampling that was restricted to the members of professional associations who had an email address and an Internet connection can be brought into question. There is a risk that the sample over-represents the SLTs who are comfortable with information and communication technologies and who felt concerned with the evolution of their profession. Therefore, the results cannot be generalised to the entire population of Belgian SLTs without further investigation. Secondly, the results were based on self-reports and cannot accurately characterise individual skills and knowledge. Thirdly, no definition of scientific literature was given in the questionnaire, so no information is available about what exactly respondents referred to regarding this term. The fact that the questionnaire was not validated is another limitation. Nevertheless, despite these limitations, this exploratory survey allowed more specific questions to be raised and highlighted certain professional practices.

### ***Recommendations: EBP and education***

Most of the obstacles to obtaining quality scientific information, and therefore to applying EBP, could be overcome by training.<sup>42-44</sup> The lack of time and the lack of skills in information literacy and in the English language are somewhat related: the application of the EBP process could be less time-consuming if some skills were acquired. Asking 'well-built' questions is important because the other steps hinge upon it.<sup>45</sup> Therefore, a high value should be attached in SLTs' education to the importance of systematically analysing the problems and the different elements that composed the questions. SLTs should also be trained to seek and to critically appraise information in order to use the best current evidence in their practice. These skills should be integrated into the speech-language therapy curriculum of Belgian French-speaking students. This recommendation is consistent with a previous study showing that exposure to research and EBP during graduate training and the clinical fellowship year significantly impact later attitudes.<sup>24</sup> Continuing professional development should also be the occasion of exploring this practice more deeply. Even if they feel relatively competent in searching for, evaluating and using scientific information, SLTs report a lack of competence and express interest in EBP or information literacy. It is time to organise training for the practitioners. The training location and cost must be chosen carefully, since organisational factors may prevent participation if they are not appropriate. SLTs may have a preference for workshops or for online courses, thus various complementary teaching approaches must be

considered to allow all types of learning.

### **Challenges for Belgian SLTs and academic librarians**

Similar challenges to those already identified by Reilly in 2004<sup>46</sup> can be highlighted inside the French-speaking community of Belgium: (i) challenges for SLTs to become evidence-based practitioners; (ii) challenges for employers to create an EBP culture in the workplace; (iii) challenges for higher education institutions (universities or otherwise) to produce lifelong learners; (iv) challenges for researchers to fill the gap between research and clinical practice; and (v) challenges for professional bodies to promote EBP among their members. For their part, academic librarians, who are at the forefront in all the matters relating to information, also have to meet several challenges. Firstly, they should take part in SLT education in academic settings due to their expertise, especially in information literacy. Second, as clinical practice does not appear to increase the chance of being aware of EBP, they should go outside the libraries to meet the practitioners and draw their attention to EBP and its applicability. They could go further by becoming part of clinician teams.<sup>47</sup> They could also become active contributors by writing papers about resources specialised in speech-language therapy for the journals of the professional associations. Thirdly, librarians should also participate in collecting evidence about how to educate students and professionals about EBP.<sup>13</sup> The educational interventions should be described in the literature more often and more rigorous research methods should be used to draw conclusions about training effectiveness. In the same vein, librarians could conduct further studies about SLTs' information needs by assembling specific data in order to answer questions such as (i) how do SLTs formulate questions? (ii) Are the EBP tools (e.g. PESICO format) effectively helpful in formulating a question? (iii) How do SLTs search for information? (iv) To what kind of scientific papers do they refer when they encounter a problem in their professional practice and how do they precisely appraise the evidence? and generally speaking, (v) What are SLTs' concerns in regard to their needs? Fourthly, librarians should gain expertise in the preparation of systematic reviews and meta-analyses<sup>49</sup> and in this way therefore collaborate with SLT researchers on collecting new evidence in the discipline.

Because the cost of accessing scientific publications remains a difficulty, librarians and SLTs should support the movement towards open access to the scientific literature and promote open access resources to facilitate the implementation of EBP in professional practice.

### **Conclusions**

This study provides the first overview of the information behaviour of SLTs working in the French-speaking community of Belgium and their awareness of EBP. Most of the SLTs' information needs were centred on the treatment or the diagnosis of various disorders specific to the discipline. SLTs did not use recommended best practices when building search strategies to find evidence that would optimise their decision making. Several barriers to obtaining scientific information were identified. Only a few respondents had already heard about EBP. The analysis of their profiles emphasises some variables that seem to have an influence on the awareness of EBP, such as the level of education. In the light of the findings, several recommendations are suggested. Academic librarians should play a key role in the promotion of EBP. They should be proactive and collaborate with clinicians, educators, researchers and professional associations.

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## Appendix

The main objective of the survey is to explore how speech-language therapists (SLTs) seek information in their professional practice. This survey is being sent to (i) members of the *Association scientifique et éthique des logopèdes francophones*, (ii) members of the *Union professionnelle des logopèdes francophones* (UPLF) and (iii) SLTs who collaborate with the University of Liege as supervisors for students trained in clinical practice. Therefore, you may receive this survey via different pathways, for which we apologise. Please only respond once.

This study is exploratory. It is being conducted as preparation for a further larger investigation which will try to determine precisely how SLTs seek and use information in their professional practice. Your participation is important. If you are not a SLT, please indicate this when answering the first question. Your participation would end at that point. The results of this survey will be published in respecting the anonymity of each participant and all data will be treated confidentially.

### General information

Q1. You are a qualified speech-language therapist

Yes

No

If the answer is NO, the survey is finished.

Q2. You are...

A man

A woman

Q3. In what year did you graduate in speech-language therapy?

[Pull-down menu: from 1960 to 2010]

Q4. How many years have you practiced professionally as a speech-language therapist?

[Pull-down menu: from 1 year to 45 years]

Q5. What is your highest degree obtained in the field of speech-language therapy and where did you gain it?

	I do not have this degree	I gained this degree at the University of Liege	I gained this degree at another university or at a higher education institution
Bachelor's degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Master's degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PhD degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6. Have you tutored students in speech-language therapy during training courses in professional practice?

Yes, university students

Yes, students from a higher education institution which is not a university

Yes, students from university and students from higher education institution

No

Q7. Do you belong to a professional association? (multiple answers are possible)

Yes, to the *Association scientifique et éthique des logopèdes francophones* (ASELF)

Yes, to the *Union professionnelle des logopèdes francophones* (UPLF)

Yes, to another association (not those mentioned above). Please, specify: \_\_\_\_\_

No

Q8. Do you work in an environment that allows you:

	Yes	No
To work within a team of professionals, possibly multidisciplinary	<input type="radio"/>	<input type="radio"/>
To see patients in clinical consultation	<input type="radio"/>	<input type="radio"/>
To work for an organiser of health care (government, insurance etc.)	<input type="radio"/>	<input type="radio"/>
To teach in a higher education institution which is not a university	<input type="radio"/>	<input type="radio"/>
To teach in an academic setting	<input type="radio"/>	<input type="radio"/>
To train other professionals	<input type="radio"/>	<input type="radio"/>
To contribute actively to the development of a professional association	<input type="radio"/>	<input type="radio"/>
To participate in scientific research	<input type="radio"/>	<input type="radio"/>

Q9. What means do you use for your continued professional development? Note all relevant resources.

- Participation in professional conferences, lectures or workshops
- Reading scientific papers (review articles, original studies, etc.)
- Reading a journal published by professional associations (*UPLF-info*, *Cahiers de l'Aself*, *Orthophoniste*, etc.)
- Reading books
- Consulting websites, including discussion lists
- None, because of lack of time
- Other(s). Please, specify: \_\_\_\_\_

Q10. How much time do you spend on your training?

- Less than 15 hours per year
- Between 15 and 30 hours per year
- More than 30 hours per year

Q11. Do you have a computer in your workplace?

- Yes, with Internet access
- Yes, without Internet access
- No

Q12. Do you have a computer at home?

- Yes, with Internet access
- Yes, without Internet access
- No

### ***Questions about your professional practice***

We are seeking information about the last time that you asked a clinical question (related to a diagnosis, a treatment or other).

Q13. Could you please describe the last question, problem or clinical case you encountered in your professional practice (five lines maximum)?

Q14. Did you attempt to search for information or obtain an answer from another person to solve the problem?

- Yes
- No

If the answer to Q14 is NO:

Q15. You answered that you did not attempt to answer. Please could you explain why?

If the answer to Q14 is YES

Q16. Which process(es) did you use to solve this problem (several solutions are possible)? Were you satisfied with the solution?

	I did not use this process	I used this process and I obtained an answer or a satisfactory response to this problem	I used this process but I did not obtain an answer or a satisfactory response to this problem
You relied on your personal experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You discussed it with colleagues in the workplace (for example, during a team meeting)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You discussed it with colleagues (not in the workplace)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You consulted an expert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You consulted your own library (lecture/training notes, journal you subscribe to, scientific books, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You used a general search engine (for example, Google) to find scientific papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You used a general search engine (for example, Google) to find documents other than scientific papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You used a specialised bibliographic database (in English, for example, PubMed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You went to or you contacted a public library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You went to or you contacted an academic library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You delegated research to a third party	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You used a process other than those cited above	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If the respondent answered he/she used another process than those cited:

Q17. You answered that you used another process than those cited to find an answer to your question. Could you please indicate the approach used as well as your satisfaction with the response?

If the respondent answered he/she did not receive an answer or a satisfactory response by using certain processes:

Q18. You answered that you did not receive an answer or a satisfactory response by using certain processes. Could you please explain your main reason for dissatisfaction?

Questions about access to scientific information

***We are seeking your views on access to scientific literature (research article, review article or other).***

Q19. Do you use scientific information in your professional activity?

- Yes, at least once a week
- Yes, once a month
- Yes, once every three months
- Never or occasionally

Q20. Do you perceive barriers to obtaining quality scientific information? (multiple answers are possible)

- Yes, lack of knowledge of available resources in the discipline
- Yes, difficulty in accessing specialised search tools
- Yes, lack of skills in using specialised search tools
- Yes, cost of accessing information
- Yes, difficulty in selecting relevant documents
- Yes, difficulty in assessing the scientific quality of information
- Yes, lack of time
- Yes, lack of competence in the English language
- Yes, other obstacles than those cited. Please specify: \_\_\_\_\_
- No

Q21. On a scale of 1 to 10 (1 being the lowest level and 10 the highest level), how do you assess your competence?

	1	2	3	4	5	6	7	8	9	10
To search for scientific information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To appraise scientific information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To apply the retrieved information to the context of professional practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. Have you ever heard of evidence-based medicine (EBM), evidence-based practice (EBP) or evidence-based health care (EBHC)?

- Yes
- No

If the answer is YES: Q23 and Q24

Q23. How do you rate the importance of the EBP approach?

- An essential approach
- An interesting approach
- An interesting approach but not feasible
- An approach that is not of interest to my field
- I do not know enough about EBP to give an opinion

Q24. Have you ever taken a course or attended a conference on EBM/EBP/EBHC?

- Yes
- No

Q25. Would you be interested in training on:

	Yes	No
Improving skills in information retrieval	<input type="radio"/>	<input type="radio"/>
Critical reading of scientific information	<input type="radio"/>	<input type="radio"/>
Evidence-based practice in speech-language therapy	<input type="radio"/>	<input type="radio"/>
Professional attitudes	<input type="radio"/>	<input type="radio"/>
Others, please specify:	<input type="radio"/>	<input type="radio"/>

Q26. Would you like to add a comment (related to your answers or to the survey...)?