

Reference of the published article:

Soguel L, Vaucher C, Bengough T, Burnand B, Desroches S. **Knowledge Translation and Evidence-Based Practice: A Qualitative Study on Clinical Dietitians' Perceptions and Practices in Switzerland.** *J Acad Nutr Diet.* 2019;119(11):1882-1889.

DOI: <https://doi.org/10.1016/j.jand.2019.04.017>

Title: *Knowledge translation and evidence-based practice: a qualitative study on clinical dietitians' perceptions and practices in Switzerland.*

Authors: Soguel L.^{1,2}, Vaucher C.^{3,4}, Bengough T.^{3,5,6}, Burnand B.³, Desroches S.¹

1. Institute of Nutrition and Functional Foods (INAF), School of Nutrition, Faculty of Agriculture & Food Sciences, Laval University, Pavillon des services, 2440, boul. Hochelaga, Quebec city, QC, Canada, G1V 0A6
2. Nutrition and Dietetics Department, University of Applied Sciences Western Switzerland (HES-SO) Geneva, rue des Caroubiers 25, 1227 Carouge, Switzerland
3. Institute of Social and Preventive Medicine (IUMSP) and Cochrane Switzerland, Lausanne University Hospital (CHUV), Route de la Corniche 10, 1010 Lausanne, Switzerland
4. University of Lausanne, Faculty of social and political sciences, Institute of social sciences, THEMA lab, Unil-Mouline, Géopolis, 1015 Lausanne, Switzerland
5. Austrian Public Health Institute, Stubenring 6, 1010 Vienna, Austria

6. Catholic University Leuven, Centre for Sociological Research, Faculty of Social Sciences, KU Leuven, Parkstraat 45, 3000 Leuven, Belgium

Authors contributions

LS, TB and BB designed the study; LS and TB collected the data; LS, TB and CV analyzed the data; SD and LS discussed the synthesis of the analyses; All authors discussed the results; LS wrote the first draft of the manuscript under the supervision of SD; All authors reviewed and commented on the first and subsequent drafts of the manuscript.

Acknowledgments: We are grateful to Julia Miéville and Tania Carron, IUMSP, for their help on the interviews and focus groups transcription.

Funding/financial disclosure

This project was funded by the Geneva School of Health Sciences, University of Applied Sciences Western Switzerland (HES-SO); the Institute of Social and Preventive Medicine (IUMSP) and Cochrane Switzerland, Lausanne University Hospital (CHUV); and the Swiss Foundation for Nutrition Research (SFEFS) which supported L. Soguel with a 1 year PhD Scholarship.

The Swiss Association for Registered Dietitians (ASDD) offered a fifty percent reduction on the fee for the congress Nutridays 2014 to all participants and sent the recruitment email to all the members for free.

Conflict of interest disclosure: there are no conflict of interest to report.

RESEARCH SNAPSHOT

Research question: What are dietitians' perceptions and practices about information sources in clinical practice, knowledge translation (KT), and evidence-based practice in Switzerland?

Key Findings: This qualitative study highlights specificities of KT in clinical dietetics practice: 1) the wide range of information sources used to keep up-to-date, 2) the importance of opinion leadership when facing unfamiliar situations, 3) the perceived ease of integrating patients' knowledge and values during consultation, 4) the important role of activities such as knowledge dissemination and tailoring to diverse audiences (e.g. patients, other health care professionals) to justify time spent reading scientific literature at work, 5) the perceived lack of evidence-based information on counselling and communication.

Title of the manuscript: Knowledge translation and evidence-based practice: a qualitative study on clinical dietitians' perceptions and practices in Switzerland.

ABSTRACT

Background. Knowledge translation (KT) in healthcare is essential to promote quality of care and reduce the knowledge-to-practice gap. Little is known about KT among dietitians and a better understanding of how this process pans out is fundamental to support their clinical practice.

Objective. To explore clinical dietitians' perceptions and practices concerning preferences, and access to information sources in clinical practice; KT activities; research in nutrition and dietetics and evidence-based practice (EBP).

Design, Participants and Setting. 8 interviews and 2 focus groups involving a total of 15 participants were conducted in 2013 among members of the Swiss Association for Registered Dietitians in the French- and German-speaking regions of Switzerland.

Analysis performed. Thematic analysis drawn from a constructivist grounded theory approach.

Results. Information from colleagues and experts of the field, were favored when facing unfamiliar situations in clinical practice. Critically selecting evidence-based information was considered challenging, but dietitians declared they were at ease to integrate patients' preferences and values, and their clinical expertise and judgement, in decision-making, which are fundamental elements of EBP. A major reported barrier to KT was the perception that time to identify and read scientific literature was not expected during working hours, and that instead, this time should be spent in clinical activities with patients. On the other hand, dietitians identified that their frequent involvement in educational activities such as knowledge dissemination or tailoring, favored the integration of evidence into practice. Finally, dietitians

struggled more to identify evidence-based information about counselling and communication than about biomedical knowledge.

Conclusions. Dietitians mentioned to be involved in each step of the KT process i.e. synthesis, dissemination, exchange and ethically-sound application of knowledge. Barriers and facilitators identified in this study need to be explored in a larger population to develop strategies to facilitate KT, and EBP in dietetics practice.

MANUSCRIPT

Title of the manuscript: Knowledge translation and evidence-based practice: a qualitative study on clinical dietitians' perceptions and practices in Switzerland.

Introduction

Knowledge translation (KT) in healthcare has been described as "*a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system*".¹ Research in KT is emerging and great efforts are made to provide guidance and tools to support the uptake of evidence into practice.²⁻⁴ However, there are still important discrepancies between recommendations and practice, not only in medicine⁵ but also in nutrition and dietetics.⁶⁻⁸

The "*ethically-sound application of knowledge*"¹ requires searching, accessing, selecting and critically appraising knowledge to make valuable use of it. It is also the very basis of evidence-based practice (EBP), encouraged worldwide including by dietetics associations.⁹⁻¹¹ In dietetics practice, it has been described as the combination of three dimensions to guide decision-making: 1) evidence-based information (critically appraised evidence), 2) dietitian's expertise and judgment, and 3) patient's/client's or community's unique values and circumstances.¹² Accordingly, dietitians must handle knowledge coming from different sources, including their professional expertise and the experiential knowledge of the patients. Regarding evidence, due to the huge amount of information published each year, professionals¹³ and in particular health clinicians,¹⁴ are experiencing "information overload". Several KT strategies may be helpful to reduce this burden by facilitating the translation of research into practice.¹⁵ However, little is known about their effectiveness among allied health care professionals.¹⁶

In healthcare, lack of time, insufficient perceived skills in critical reading, conflicting results in the literature and language of publication for non-English speakers, are commonly cited barriers to KT.¹⁷⁻¹⁹ Few studies have investigated it among dietitians and most of them are focused on the application of scientific knowledge and EBP. They showed that dietitians value research and have an overall positive opinion towards EBP. To facilitate the KT process and to narrow the know-do-gap in dietetics practice, it is essential to better understand how dietitians perceive and handle KT in their practice. Thus, we conducted a qualitative study including individual interviews and focus groups among clinical dietitians based in Switzerland to explore their perceptions and practices concerning (a) preferences and access to information's sources, (b) KT activities, and (c) research in nutrition and dietetics and EBP.

Methods

Our methodology is inspired by a constructivist approach of the Grounded Theory that supposes the construction of theories by going back and forth between the data collection and analysis, and the literature.²⁰ This approach is particularly suited when the research focuses on a process²¹, such as KT in our study. We took a relativist position, considering KT perceptions as socially built, and the researchers' subjectivity as part of the study process.²² The research team members have, and are known to have, the objective to ease KT and to promote the integration of research findings into clinical decision-making. This influenced the analyses and exchanges within the research team and with the participants.

Research context

We interviewed dietitians in the French- and German-speaking regions of Switzerland. In this country, according to the ASDD statistics²³, more than half of the dietitians have a hospital-based practice and 44% worked in private practice, of which three quarters had their own practice.

Recruitment

Recruitment of a convenience sample of volunteers was conducted by email among the 832 ASDD active members. The objective of the study was clearly stated on the invitation: to explore how dietitians keep up-to-date and to determine their needs for support related to KT. The intention of the research team to promote the integration of research into clinical decision-making was acknowledged. Inclusion criteria were: (a) having a diploma that allows to practice as a dietitian in Switzerland, (b) practicing in a non-university hospital or private practice, (c) being in contact with patients, and (d) not teaching more than 12 hours/year in a higher education program. Criteria (b) and (d) were chosen as these contexts are assumed to ease access to scientific information; also, few dietitians work in such conditions in Switzerland. Participants could commit themselves for an individual interview, a focus group, or one or the other. To facilitate the exchanges of ideas and experiences we organized homogenous focus groups²⁴: one with dietitians working in hospitals and a second with dietitians working in private practice.

Data collection

A thematic interview guide developed in French (available upon request from the corresponding author), was adapted from a guide developed to assess Swiss family physicians' perceptions and attitudes towards knowledge translation practices.²⁵ The following themes, detailed in **Table 1**, were addressed: (a) preferences and access to information's sources (b) KT activities

(c) views on research in nutrition and dietetics and on EBP. Participants were welcomed to discuss any additional topics they judged relevant and were asked to present themselves (year and educational institution of dietetic diploma, postgraduate education, current work setting, position and percentage of work). Interviews were conducted in French and in German. They took place before the focus groups to examine the areas of interest and to define the themes that would later be discussed in groups. Both were conducted by one female researcher with previous experience in leading interviews, in her native language (xx in German, yy in French). As xx was bi-lingual, the interview guide was not translated in German. To favor a coherent process of going back and forth between the data collection and the analysis, both focus groups and one German and two French interviews were observed by the second researcher. Besides participants, nobody else was present at these meetings. Conversations were audio taped, anonymized and transcribed verbatim.

Data analysis

In a constructivist grounded theory approach, as applied to this study, the analysis of the first interviews have enriched the following interviews and the final focus groups.^{20,21} The initial inductive thematic coding was performed independently by two researchers from the team (yy and xx or zz). Transcriptions were in French or in German but the codes were all set in French. The three researchers coded both the French and the German transcriptions using the French codes. Each transcription was coded by at least one researcher whose native language was that of the transcription. zz and xx had previous extensive experience in conducting qualitative research and were involved in the study among Swiss physicians.²⁵ The quoted codes were then grouped into categories and discussed within the research team. The NVivo software (NVivo 10, QSR International) was used to synthesize the analyses. Memos were written and completed through the entire research process and were used to write the manuscript.

Subsequently, as KT is essential to support EBP¹⁵, we further explored the barriers and enablers of KT mentioned by participants and categorized them within the 3 dimensions of EBP:¹² 1) evidence-based information, 2) dietitian's expertise and judgment, 3) patient's/client's or community's unique values and circumstances.

Ethical consideration

The Ethics committee of Canton Vaud ruled that, according to the Swiss law on research among human beings, the project did not require a formal approval in Switzerland. Oral informed consent was obtained from each participant to record, transcribe and analyze the interviews or discussions and to present the results anonymously. The Ethic Committee of research involving humans of Université Laval approved the use of the data collected in this project for the additional categorization of barriers and enablers to KT according to the EBP dimensions.

Results

On the 832 ASDD members who received the invitation, only 15 contacted the research team to participate to an interview or a focus group during the planned study period (May to July 2013). Eight interviews and two focus groups were organized in the French- (7 interviews, and 1 focus group with 4 participants) and German- (1 interview, and 1 focus group with 3 participants) speaking regions of Switzerland, at dietitians' workplaces or meeting rooms. The interviews lasted 66 ± 10 minutes (mean \pm SD) and both focus groups 109 minutes.

Most of the 15 participating dietitians, all women, had a long professional experience: more than 20 years for half of them and 11 to 20 years for one third. Two thirds had undertaken a

postgraduate course. Sixty percent worked over 0.7 full-time equivalent, and 40% held a managerial position. About half of the interviewees worked in a hospital and half in a private practice or public health. They were working alone (7/15), in a very small team (5/15), or larger team but still frequently alone in multiple sites hospitals (3/15). As the ASDD is a small association and as one of the interviewers (yy) is involved in dietitian's education in Switzerland, professional interactions occurred prior to the interviews in the context of other dietetic-related endeavors, but no current professional relationship existed.

Preferences for information's sources

During the interviews and focus groups, dietitians cited many different sources of professional information they relied on (synthesis in **Table 2**). Interestingly, the same sources were cited to keep up-to-date and to handle familiar clinical situations. Formal continuing professional development (CPD) was mentioned by each interviewee. It was described as the easiest way to acquire knowledge as an uninterrupted time was dedicated to it.

“That is why I do a lot of continuing education... because at least I know that I will stop [my work] to learn...” (interview 2)

When facing unfamiliar clinical situations, seeking information directly from colleagues and experts of the domain was mentioned as the easiest KT strategy to quickly access reliable and targeted information.

“For me, what is interesting is what do specialized dietitians in the field say. What is the position of dietitians in the field. That's what interests me.” (interview 4)

However, dietitians expressed feeling uncomfortable to always count on the same colleagues for information. They considered, concise, refined, and up-to-date professional information that

also includes recommendations from dietitians' experts in the field, as essential. Yet, they perceived such resources as rare in dietetics. Participants mentioned NutriPoint®, an Internet platform developed by the ASSD for its members and allowing them to upload professional information they consider useful for dietetics practice. The current content of this platform was however judged insufficient to guide clinical decision-making by participants.

Access to information's sources: barriers and enablers to KT

Interviewed dietitians mentioned several barriers in finding the appropriate scientific information to inform their practice (**Table 3, column 1**). Of interest, they explained that time allotted to the identification and reading of scientific information was rarely explicitly stated as part of their workload. Although it was perceived as something expected by their employers, it was described by participants as not planned or not possible within their daily activities. Dietitians reported reading outside of their work hours, at home or in the train/bus to work. Some of them even used the word “past-time” or “hobby” to describe the time dedicated to reading scientific literature. The part of their work spent with patients was highly valued and considered as the most urgent and important.

“This [reading professional information] will give the impression that I'm not working... it is a bit... yes... the impression that it will give...so... I'd rather do that at home... or in-between... that's it... reading some stuff.” (interview 1)

Dietitians also mentioned several enablers to KT (**Table 3, column 1**). They highlighted that they were strongly involved in the synthesis and tailoring of knowledge for different end-users, namely when developing educational or information tools for patients or other healthcare professionals. These activities were described as the main ones during which they would actively seek and read scientific information during their work hours. These were even

perceived as the only valid reason for not being with patients without feeling guilty, judged or blamed.

“I have to set some time aside to create my course or do some [literature] search or develop this course or else. So... here, in that case... to set time aside does not bother me, with regards to my colleagues or anyone because I have a reason to set it aside.” (interview 2)

Views on research in nutrition and dietetics and on EBP.

Dietitians perceived a lack of research matching their “daily practice” issues and this was seen as a major obstacle to basing their clinical practice on evidence. They also described their participation in research projects as instrumental, suggesting a lack of their implication, as knowledge users, in the knowledge creation steps.

One can say that the use of drugs to lose weight is a nutritional aspect but the researchers were not dietitians, they were pharmaceutical industries. So, they did not have the skills to set up an adapted protocol I think... or it did not interest them to develop these aspects. [...] it was uncomfortable for me to have to do this [the nutritional intervention defined in the study] knowing that it was not suitable. (focus group 2)

EBP was generally considered positively and as “the good practice to be achieved”. It was often mentioned as the way to justify clinical decisions towards colleagues and partners. Indeed, the idea that the advocacy for the profession entails the justification of practices based on the scientific literature, strongly emerged from the interviews.

I think, to position ourselves, to assert ourselves in our environment, it is important that we precisely have scientific knowledge. Especially here in the hospital, if we precisely have to go to the doctors, then that's very important...” (interview 5)

EBP requires to identify what information needs to be searched for, to judge its quality, and lastly to combine it with one's own expertise and patients' values¹². In our study, biomedical and nutritional knowledge was classified by dietitians as information they needed to retrieve from the scientific literature. On the other hand, knowledge about communication strategies and interviewing skills was mostly defined as "know-how", acquired from formal CPD. It was not considered as evidence-based and the effectiveness, appropriateness or the selection of communication strategies were not recognized as requiring search in the scientific literature.

"Obviously, if I'm going to be interested in motivational interviewing, it's because I read or I was taught that there is some evidence, thus a study or a process that showed that it was the best way or one of the best approaches to use. ... I'm not going to search for the confirmation of that, but I will rather be interested in the technical aspects... besides, recommendation such as the maximal consumption of grams of a nutrient allowed, well yes, that I'll have to search for it." (focus group 2)

The categorization of the barriers and enablers to KT cited in our study, within the three domains of EBP, highlighted the unequal distribution of these factors (**Table 3**). Indeed, dietitians did not mention difficulties in combining evidence-based information with their own expertise and judgement; and the integration of patients' values and unique circumstances was considered as a foundation of their activity. In contrast, the major barriers to KT were found in the identification and integration of scientific evidence.

Discussion

Our study aimed to explore clinical dietitians' perceptions and practices concerning (a) preferences for and access to information's sources, (b) KT activities, and (c) research in nutrition and dietetics, and EBP in the German and the French speaking parts of Switzerland.

According to whether the purpose is to keep knowledge up-to-date or to quickly find information when faced with an unusual clinical situation, participants mentioned two preferred information sources: formal CPD and colleagues experts of the field. This is shared by Swiss physicians who declared contacts with colleagues and specialists as the primary source of information for clinical decisions.²⁵ However, for almost 40% of Australian pediatric dietitians, Medline was the main information source used to “answer clinical questions arising in their practice”.¹⁹ This may be partly due to the English language barrier, not relevant for Australian professionals, but cited by dietitians in our study, and reported in a study conducted among Taiwanese dietitians.¹⁸

Accessing information from education or from colleagues-experts can be classified in two distinct categories of interventions to promote KT, as proposed by Straus et al.²⁶: “formal educational interventions”, and “linkage and exchange interventions”, in particular opinion leadership. For the latter, participants mentioned that they felt uncomfortable to seek experts’ opinion repeatedly from the same colleagues. This may point to an opportunity for improvement in the network organization to recognize the work done by experts in different dietetics fields. Communities of practice, described by Wenger as social entity of people sharing a same practice and implying a joint enterprise, mutual engagement and shared resources developed over time by members^{27,28} may be a promising avenue to pursue in dietetics practice.²⁹

In our study, dietitians considered the integration of patient’s knowledge and values in clinical decision-making as usual care. This is consistent with the definition of nutrition counselling as “a supportive process, characterized by a collaborative counselor-patient relationship”,³⁰ the widespread practice or nutrition counseling³¹ and the high intention to adopt behaviors related to shared decision making among dietitians.³²

The majority of the barriers to KT expressed by the interviewees related to the identification and integration of relevant and reliable evidence-based information, which is one of the EBP dimensions. The mentioned lack of time is a common barrier cited in healthcare worldwide.³³⁻
³⁵ Among dietitians, Byham-Gray et al. showed that even if these professionals highly valued research, they reported insufficient time to integrate it: 43% of the 258 dietitians read professional publications weekly, but most of them performed a literature search less than once a month.¹⁷ Similarly, among 59 pediatric dietitians, Thomas et al. reported that of those who performed literature searches, more than 80% did less than five searches per month.¹⁹

Another barrier described in our study, is the perceived lack of critically appraised and synthesized documentation in nutrition and dietetics. To counter this gap, the ASDD developed NutriPoint® but this tool is still in its infancy and available information was perceived as limited by our study participants. Some other dedicated databases have been developed to support dietitians in finding timely evidence-based information. Typically, the Practice-based Evidence in Nutrition® tool (PEN®) or the Evidence Analysis Library® (EAL®) are valuable resources and well implemented worldwide. However, none of these databases have been mentioned by our participants, which may be explained, as least partly, by the fact that they are only available in English.

Interestingly, evidence-based information was mainly recognized as belonging to the biomedical field by the participants, whereas knowledge about communication and counselling was seen as “know-how” and “interpersonal skills” and not questioned after the acquisition of the skills to perform it. Though, in models describing dietetics practice,^{36,37} counseling is defined as a category of possible interventions that should be selected according to the best

available evidence, just as the others. We assume that the difference in this perception may be due to the type of research question and research methods used for advancing knowledge in the different categories of interventions. Indeed, quantitative methods are particularly suited for biomedical research and dietitians may be more familiar with these methods, especially since these have been highly valued in EBP. Qualitative methods, particularly well-suited to understand why and how an intervention such as counselling and communication works or not, may be less familiar and are still less frequent in publications related to dietetic practice.

Dietitians pointed out that their implication in education activities legitimates that they dedicate time to search and read evidence-based information. Given that clinical dietitians are not all involved in educational activities, KT interventions to promote contact with scientific literature during the working day should also be considered at the organizational level. However, the benefit of learning-by-teaching is undeniable as learning and searching evidence to teach, prompts one to form a mental picture of the subject much more complex than when learning for oneself and as being confronted to questions from an audience highlight the gaps of knowledge that need to be answered.³⁸

Finally, the implication of dietitians in the development of research projects has been mentioned as rare but of importance by the interviewees. KT science suggests that knowledge production may poorly answer questions often faced in clinical practice, when it is disconnected from end users.³⁹ The development of integrated knowledge translation research, where end users are involved in each step of a research project³⁹, could consequently be an important strategy to advance dietetics practice. In support of this assumption, the Nutrition Care Process has been described as the “missing link between research and evidence-based practice”⁴⁰, favoring the

knowledge exchange between researchers and clinicians by the production of data directly from dietetics practice.

Our study presents some limitations. First, because very little was known about KT in our population, we used a convenience sampling technique to recruit participants. A purposive sampling, and in particular a maximum variation sampling,⁴¹ could have put into light wider views and practices. Indeed, participants had a quite homogenous positive attitude towards research and EBP which may not be representative of all dietitians in Switzerland, whether in the German or in the French speaking region. They were particularly engaged in their continuous professional development: 60% of them had undertaken a postgraduate course, and 40% held a managerial position, in comparison to respectively 26% of the dietitians and 22% of the one working in a hospital, in the ASDD statistics.²³ We must also mention that while it is a strength to have involved the French and the German parts of Switzerland in our study, the use of materials in two languages, as well as English for the publication, may have led to the loss of subtle information.

Conclusion and perspectives

In our study, dietitians mentioned to be involved in each step of the KT process i.e. synthesis, dissemination, exchange and ethically-sound application of knowledge¹ and that it favors the integration of evidence into clinical practice. However, the perception that the identification and reading of professional information was difficult to integrate within working hours was highlighted and information in the field of communication was not recognized as evidence-based. These findings could be used as a starting point for the development and evaluation of targeted strategies to favor KT and EBP in dietetics practice.

References

1. Canadian Institutes for Health Research (CIHR). Knowledge Translation - Definition. <http://www.cihr-irsc.gc.ca/e/29418.html>. Accessed 2016-11-25.
2. Tabak RG, Khoong EC, Chambers DA, Brownson RC. Bridging research and practice: models for dissemination and implementation research. *Am J Prev Med*. 2012;43(3):337-350.
3. Nilsen P. Making sense of implementation theories, models and frameworks. *Implement Sci*. 2015;10:53.
4. Graham ID, Logan J, Harrison MB, et al. Lost in knowledge translation: time for a map? *J Contin Educ Health Prof*. 2006;26(1):13-24.
5. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003;348(26):2635-2645.
6. Hall-McMahon EJ, Campbell KL. Have renal dietitians successfully implemented evidence-based guidelines into practice? A survey of dietitians across Australia and New Zealand. *J Ren Nutr*. 2012;22(6):584-591.
7. Rice TW, Swope T, Bozeman S, Wheeler AP. Variation in enteral nutrition delivery in mechanically ventilated patients. *Nutrition*. 2005;21(7-8):786-792.
8. Yoon PW, Tong X, Schmidt SM, Matson-Koffman D. Clinical preventive services for patients at risk for cardiovascular disease, National Ambulatory Medical Care Survey, 2005-2006. *Prev Chronic Dis*. 2011;8(2):A43.
9. International Confederation of Dietetics Association (ICDA). *International Code of Ethics and Code of Good Practice*. September 7, 2008, amended November 13, 2010.
10. European Federation of the Associations of Dietitians (EFAD). *Revised Dietetic Competence and the six domains of dietetic competency in Europe. Attained at the*

- point of qualification and entry to the profession of Dietetics (European Dietetic Competence or EDC)*. 2016.
11. International Confederation of Dietetics Association (ICDA). *International Competency Standards for Dietitian-Nutritionists*. 2016.
 12. International Confederation of Dietetics Association (ICDA). *Final Report of the International Confederation of Dietetic Associations (ICDA) Evidence-based Practice Working Group*. 2010.
 13. Wilson T. Information overload: implications for healthcare services. *Health Informatics Journal*. 2001;7:112*-117.
 14. Hall A, Walton G. Information overload within the health care system: a literature review. *Health Info Libr J*. 2004;21(2):102-108.
 15. Grimshaw JM, Eccles MP, Lavis JN, Hill SJ, Squires JE. Knowledge translation of research findings. *Implement Sci*. 2012;7:50.
 16. Scott SD, Albrecht L, O'Leary K, et al. Systematic review of knowledge translation strategies in the allied health professions. *Implement Sci*. 2012;7:70.
 17. Byham-Gray LD, Gilbride JA, Dixon LB, Stage FK. Evidence-based practice: what are dietitians' perceptions, attitudes, and knowledge? *J Am Diet Assoc*. 2005;105(10):1574-1581.
 18. Chiu YW, Weng YH, Wahlqvist ML, Yang CY, Kuo KN. Do registered dietitians search for evidence-based information? A nationwide survey of regional hospitals in Taiwan. *Asia Pacific journal of clinical nutrition*. 2012;21(4):630-637.
 19. Thomas DE, Kukuruzovic R, Martino B, Chauhan SS, Elliott EJ. Knowledge and use of evidence-based nutrition: a survey of paediatric dietitians. *J Hum Nutr Diet*. 2003;16(5):315-322.
 20. Charmaz K. *Constructing Grounded Theory*. 2nd ed. London: Sage Publishing; 2014.

21. Creswell J. *Qualitative inquiry and research design: choosing among five approaches*. 3rd ed. USA: Sage Publications, Inc; 2013.
22. Swift JA, Tischler V. Qualitative research in nutrition and dietetics: getting started. *J Hum Nutr Diet*. 2010;23(6):559-566.
23. Soguel L. *Statistiques professionnelles des membres de l'Association Suisse des Diététicien-ne-s Diplômé-e-s : résultats 2010*. 2010.
24. Liamputtong P. Focus Group Methodology and Principles. *Focus Group Methodology: Principles and Practice*. Los Angeles: Sage; 2011:31-49.
25. Bengough T, Bovet E, Becherraz C, Schlegel S, Burnand B, Pidoux V. Swiss family physicians' perceptions and attitudes towards knowledge translation practices. *BMC Fam Pract*. 2015;16:177.
26. Straus SE, Tetroe JM, Graham ID, eds. *Knowledge Translation in Health Care. Moving from Evidence to Practice*. 2 ed. UK: John Wiley & Sons; 2013.
27. Wenger E. Communities of Practice: Learning as a Social System. *The Systems Thinkers*. 1998;9(5):1-5. <https://thesystemsthinker.com/communities-of-practice-learning-as-a-social-system/>.
28. Wenger E. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge, UK: Cambridge University Press; 1998.
29. Holden S, Ferguson M, Brimblecombe J, Palermo CE. Can a community of practice equip public health nutritionists to work with remote retail to improve the food supply? *Rural Remote Health*. 2015;15(4):3464.
30. Academy of Nutrition and Dietetics. *International Dietetics & Nutrition Terminology (IDNT) Reference Manual: Standardized Language for the Nutrition Care Process*. 4th ed: Academy of Nutrition and Dietetics,; 2012.

31. Taylor LM, Moriartey S, Stadnyk J, Basualdo-Hammond C. Assessment of Registered Dietitians' Beliefs and Practices for a Nutrition Counselling Approach. *Canadian journal of dietetic practice and research : a publication of Dietitians of Canada = Revue canadienne de la pratique et de la recherche en dietetique : une publication des Dietetistes du Canada*. 2016;77(3):140-147.
32. Deschenes SM, Gagnon MP, Legare F, Lapointe A, Turcotte S, Desroches S. Psychosocial factors of dietitians' intentions to adopt shared decision making behaviours: a cross-sectional survey. *PloS one*. 2013;8(5):e64523.
33. Zwolsman S, te Pas E, Hooft L, Wieringa-de Waard M, van Dijk N. Barriers to GPs' use of evidence-based medicine: a systematic review. *Br J Gen Pract*. 2012;62(600):e511-521.
34. Upton D, Stephens D, Williams B, Scurlock-Evans L. Occupational therapists' attitudes, knowledge, and implementation of evidence-based practice: a systematic review of published research. *British Journal of Occupational Therapy*. 2014;77(1):24-38.
35. Condon C, McGrane N, Mockler D, Stokes E. Ability of physiotherapists to undertake evidence-based practice steps: a scoping review. *Physiotherapy*. 2016;102(1):10-19.
36. ADA (American Dietetic Association). Nutrition care process and model part I: the 2008 update and part II : using the International Dietetics and Nutrition Terminology to document the nutrition care process. *J Am Diet Assoc*. 2008;108(7 and 8):1113-1117 and 1287-1193.
37. The British Dietetic Association. Model and Process for Nutrition and Dietetic Practice. 2016.
https://www.bda.uk.com/publications/professional/model_and_process_for_nutrition_and_dietetic_practice_. Accessed 2017.07.13.

38. Duran D. Learning-by-teaching. Evidence and implications as a pedagogical mechanism. *Innovations in Education and Teaching International*. 2016;54(5):476-484.
39. Bowen S, Graham ID. Integrated knowledge translation. In: Straus SE, Tetroe JM, Graham ID, eds. *Knowledge Translation in Health Care. Moving from Evidence to Practice*. 2 ed. UK: John Wiley & Sons; 2013:14-23.
40. Thompson KL, Davidson P, Swan WI, et al. Nutrition Care Process Chains: The "Missing Link" between Research and Evidence-Based Practice. *J Acad Nutr Diet*. 2015;115(9):1491-1498.
41. Patton MQ. Designing qualitative studies. *Qualitative evaluation and research methods*. 2 ed. Beverly Hills, CA: Sage; 1990:169-186.

Title of the manuscript: *Knowledge translation and evidence-based practice: a qualitative study on clinical dietitians' perceptions and practices in Switzerland.*

TABLES

Table 1. Themes addressed in the thematic interview guide of the qualitative study exploring clinical dietitians' perceptions and practices concerning (a) access and preferences for information' sources, (b) knowledge translation (KT) activities, and (c) research in nutrition and dietetics and Evidence-based practice (EBP), in Switzerland.

Major themes	Subthemes
Preferences for information's sources	<ul style="list-style-type: none"> - sources of information used to keep knowledge up-to-date <li style="padding-left: 40px;">- information that led to a change in her practice - sources of information used to answer clinical questions
Access to information sources	<ul style="list-style-type: none"> - search, access and selection of professional scientific information <li style="padding-left: 40px;">- role of the professional association <li style="padding-left: 40px;">- reason to search for scientific literature <li style="padding-left: 40px;">- difficulties encountered <li style="padding-left: 40px;">- critical appraisal
KT activities	<ul style="list-style-type: none"> - to patients <li style="padding-left: 40px;">- shared decision making - to students

<p>Views on research in nutrition and dietetic</p>	<ul style="list-style-type: none"> - participation to research project - perceived importance, evolution of the perception - research versus practice (opposition) or research and practice (complementarity) - knowledge creation
<p>Views on EBP</p>	<ul style="list-style-type: none"> - good practice - EBP : practice that is desirable? achievable? - perceived pressure to practice according to EBP - professional autonomy and expertise - Nutrition Care Process

Table 2. Preferences for information sources to keep knowledge up-to-date cited by clinical dietitians in the qualitative study exploring their perceptions and practices concerning (a) access and preferences for information' sources, (b) KT activities, and (c) views on research in nutrition and dietetics and Evidence-based practice (EBP), in Switzerland (in order of frequency mentioned).

Formal continuing professional development (CPD) activities
Scientific journals or articles from general to specific domains
Colleagues, experts and professional networks
Publications, newsletters and web sites of scientific societies
Teaching material, publications and positions from Universities' Departments of Nutrition and Dietetics
Information from food industry and distribution, and from pharmaceutical industry
Vocational politics information
Information for the public and patients
Mass media publications
Reference books

Table 3: Barriers and enablers to knowledge translation (KT) related to the three domains of Evidence-based dietetics decision-making,¹² that were cited by clinical dietitians in the qualitative study exploring their perceptions and practices concerning (a) access and preferences for information' sources, (b) KT activities, and (c) views on research in nutrition and dietetics and Evidence-based practice (EBP), in Switzerland.

	evidence-based information	dietitian's expertise and judgment	Patient's unique values and circumstances
Cited barriersto KT	3 dimensions of EBP		
Too many sources of information to integrate	X		
Lack of concise, refined and up-to-date professional information	X		
Unconfident in skills and lack of familiarity with the process to access and critically appraise scientific literature	X		
Lack of time to search and critically appraise scientific literature	X		
Priority to the clinical practice and time to search or read professional literature considered as not legitimate	X		
Difficulties in accessing the scientific literature (e.g. cost of subscription)	X		
Language of the publication (mainly English)			
Lack of research answering dietitians' specific questions	X		
Lack of implication of dietitians in developing research projects	X		

Importance of evidence-based information perceived for bio-medical knowledge but not for communication strategies	X		
Cited enablers to KT			
Network and colleagues as source of information	X	X	
Formal continuing education	X	X	
Opinion leader	X	X	
Integration of patients' knowledge in the consultation seen as the foundation of the work to be done			X
Supervision of students	X		
Involvement in activities requiring synthesis, tailoring, dissemination and exchange of knowledge: teaching, production of a brochure for patients, etc.	X		
Positive opinion regarding integration of research findings into practice	X		

Reference:

12. International Confederation of Dietetics Association (ICDA). *Final Report of the International Confederation of Dietetic Associations (ICDA) Evidence-based Practice Working Group*. 2010.