

University of Groningen

Developing and pilot testing a comprehensive health literacy communication training for health professionals in three European countries

Kaper, Marise S; Sixsmith, Jane; Koot, Jaap A R; Meijering, Louise B; van Twillert, Sacha; Giammarchi, Cinzia; Bevilacqua, Roberta; Barry, Margaret M; Doyle, Priscilla; Reijneveld, Sijmen A

Published in:
Patient Education and Counseling

DOI:
[10.1016/j.pec.2017.07.017](https://doi.org/10.1016/j.pec.2017.07.017)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Final author's version (accepted by publisher, after peer review)

Publication date:
2018

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Kaper, M. S., Sixsmith, J., Koot, J. A. R., Meijering, L. B., van Twillert, S., Giammarchi, C., ... de Winter, A. F. (2018). Developing and pilot testing a comprehensive health literacy communication training for health professionals in three European countries. *Patient Education and Counseling*, 101(1), 152-158. <https://doi.org/10.1016/j.pec.2017.07.017>

Copyright

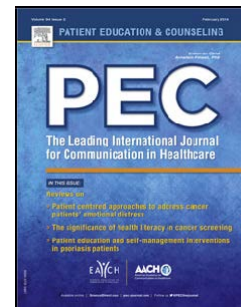
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Accepted Manuscript



Title: Developing and pilot testing a comprehensive health literacy communication training for health professionals in three European countries.

Authors

Marise S. Kaper^{*a}, Jane Sixsmith^b, Jaap A.R. Koot^a, Louise B. Meijering^c, Sacha van Twillert^d, Cinzia Giammarchi^e, Roberta Bevilacqua^f, Margaret M. Barry^b, Priscilla Doyle^b, Sijmen A. Reijneveld^a, Andrea F. de Winter^a.

Corresponding author: Marise S. Kaper, Department of Health Sciences, University Medical Center Groningen, University of Groningen, PO Box 30.001, FA10, 9700 RB Groningen, The Netherlands. Telephone number: +31 50 361 6968. E-mail address: m.s.kaper@umcg.nl

Co-authors:

a. University of Groningen, University Medical Center Groningen, Department of Health Sciences, PO Box 30.001, FA10, 9700 RB Groningen, Netherlands. Jaap A.R. Koot, email: j.a.r.koot@umcg.nl. Sijmen A. Reijneveld, email: s.a.reijneveld@umcg.nl. Andrea F. de Winter, email: a.f.de.winter@umcg.nl

b. Health Promotion Centre, National University of Ireland Galway, University Road, H91 TK33, Galway, Ireland. Jane Sixsmith, email: jane.sixsmith@nuigalway.ie. Margaret M. Barry, email: Margaret.barry@nuigalway.ie. Priscilla Doyle, email: priscilla.doyle@nuigalway.ie

- c. University of Groningen, Urban and Regional Studies Institute, Population Research Center, PO Box 800, 9700 AV, Groningen, Netherlands. Louise B. Meijering, email: l.b.meijering@rug.nl
- d. University of Groningen, University Medical Center Groningen, Center for Rehabilitation, PO Box 30002, 9750 RA Haren, Netherlands. Sacha van Twillert, email: s.van.twillert@umcg.nl
- e. The Regional Agency for Health (ARS of the Marche region), Palazzo Rossini, Via Gentile da Fabriano 3, 60125, Ancona, Italy. Cinzia Giammarchi, email: cinzia.giammarchi@gmail.com
- f. National Institute of Health and Science on Aging (INRCA), Via S. Margherita 5, 60124 Ancona, Italy. Roberta Bevilacqua, email: R.Bevilacqua@inrca.it

DOI: <http://dx.doi.org/10.1016/j.pec.2017.07.017>

Received Date: 23 January 2017

Revised Date: 12 July 2017

Accepted Date: 14 July 2017

Available online 19 July 2017

Please cite this article as:

Kaper Marise S, Sixsmith Jane, Koot Jaap AR, Meijering Louise B, van Twillert Sacha, Giammarchi Cinzia, Bevilacqua Roberta, Barry Margaret M, Doyle Priscilla, Reijneveld Sijmen A, de Winter Andrea F. Developing and pilot testing comprehensive health literacy communication training for health professionals in three European countries. *Patient Education and Counseling*. <http://dx.doi.org/10.1016/j.pec.2017.07.017>

Keywords:

- Health literacy
- Patient-centred communication
- Professional education
- Multidisciplinary training

Highlights

- We identified evidence-based Health Literacy Communication training components
- We developed a patient-centred training to address various health literacy problems
- The training developed fits the needs of health professionals from multiple disciplines
- Professionals reported perceived improvement in health literacy communication

1 **Abstract**

2 Objective: Skills to address different health literacy problems are lacking among health professionals.

3 We sought to develop and pilot test a comprehensive health literacy communication training for
4 various health professionals in Ireland, Italy and the Netherlands.

5 Methods: Thirty health professionals participated in the study. A literature review focused on
6 evidence- informed training-components. Focus group discussions (FGDs) explored perspectives from
7 seventeen professionals on a prototype-program, and feedback from thirteen professionals following
8 pilot-training. Pre-post questionnaires assessed self-rated health literacy communication skills.

9 Results: The literature review yielded five training-components to address functional, interactive and
10 critical health literacy: health literacy education, gathering and providing information, shared decision-
11 making, enabling self-management, and supporting behaviour change. In FGDs, professionals
12 endorsed the prototype-program and reported that the pilot-training increased knowledge and
13 patient-centred communication skills in addressing health literacy, as shown by self-rated pre-post
14 questionnaires.

15 Conclusion: A comprehensive training for health professionals in three European countries enhances
16 perceived skills to address functional, interactive and critical health literacy.

17 Practice implications: This training has potential for wider application in education and practice in
18 Europe.

19 **1. Introduction**

20 Forty-seven percent of people surveyed in eight European countries [1] reported lower health literacy,
21 referring to problems with accessing, understanding, appraising and applying health information [2].

22 Low health literacy is consistently associated with poor health outcomes [3]. Health professionals can

23 underestimate health literacy [4,5], or lack recommended communication skills [6,7], increasing
24 misunderstanding among patients [8].

25 Two reviews [9,10], with studies predominantly from the US and Canada, reported that training
26 increased professionals' communication skills to address health literacy. Nutbeam distinguishes three
27 health literacy domains [11]: "functional" (basic reading and writing skills), "interactive"
28 (communication and applying health information) and "critical health literacy" (information analysis
29 and controlling one's health). Training frequently addresses functional health literacy through clear
30 communication and checking patients' understanding [12–14], whereas interactive and critical health
31 literacy are rarely addressed.

32 Professionals can address functional, interactive and critical health literacy [15–17] with patient-
33 centred communication [18– 20]. Patient-centred communication involves a shared under- standing
34 of the patients' perspective on the problem and empowering patients regarding shared decision
35 making and managing their health [19,21]. Effective patient-centred communication is associated with
36 improved participation and health outcomes [18,22].

37 This study, part of the European research project "Intervention Research On Health Literacy among
38 Ageing population" (IROHLA), aimed to develop and pilot test a comprehensive health literacy
39 communication training for health professionals in Italy, Ireland and the Netherlands. We investigated
40 which training-components and educational techniques best promote patient-centred communication
41 to address functional, interactive and critical health literacy.

42 **2. Methods**

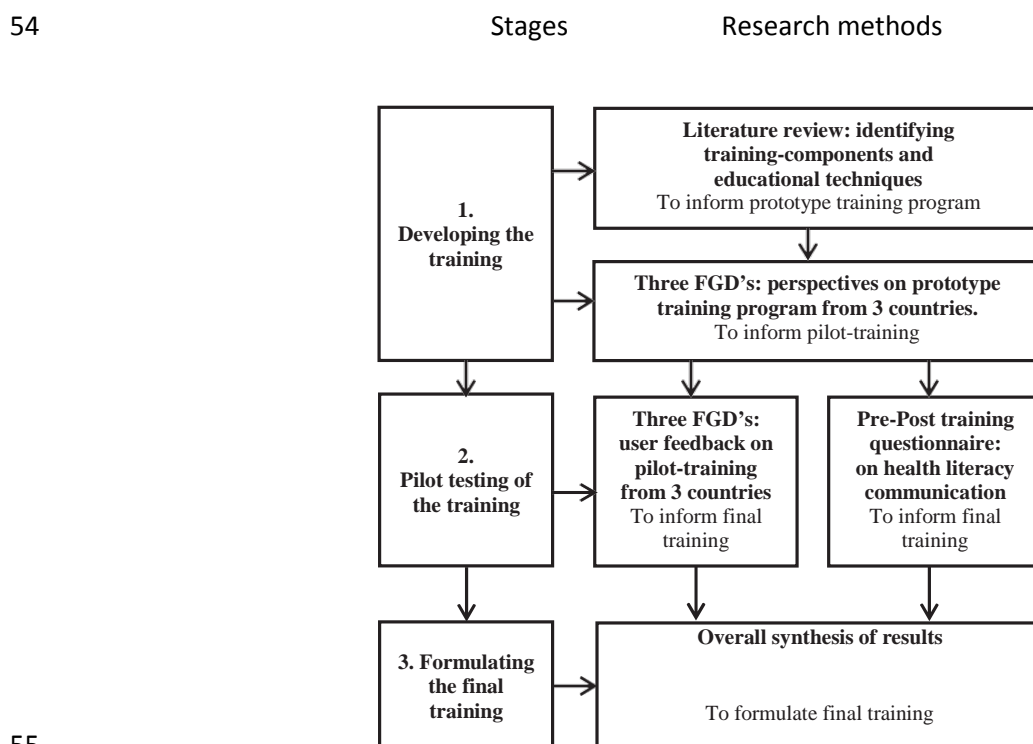
43 *2.1 Design*

44 We used various methods to develop the training in three stages (Fig. 1).

45 *2.2 Literature review*

46 A two-step literature review investigated evidence-informed training-components and educational
 47 techniques. First, we select- ed patient-centred communication interventions to address people’s
 48 health literacy, from the IROHLA literature survey [23]. Second, we searched professional health
 49 literacy training-pro- grams. The databases PubMed, CINAHL, and Psych Info were searched from
 50 January 2003 to December 2015. We combined “health literacy” with “education”, “training”,
 51 “professional”, “health care provider” and “students”. Researchers MSK, PD and RB contributed to the
 52 search, selection and review of interventions.

53 Fig. 1. Design to develop the health literacy communication training.



55
56 *2.3 Focus group discussions*

57 *2.3.1 Participants*

58 Similar prevalence rates of low health literacy were reported across Europe [1]. Various field reported
 59 European differences in professional trainings [24], organisation of health care [25], and preferences
 60 of professionals [26]. To facilitate harmonisation of health literacy training we involved partners from

61 North, West and Southern Europe who could join the study. It was not possible to include Eastern
62 European partners.

63 We used convenience sampling to involve various health professionals (e.g. medical, nursing,
64 physiotherapy). Professionals cared for older adults with chronic or complex health problems in
65 different settings, being hospitals, medical rehabilitation, and primary care (Appendix A). Health
66 settings had no health literacy policy but paid, to a lesser or greater extent, attention to involvement
67 of patients and patient-centred care.

68 We conducted three FGDs in stage 1 with in total seventeen professionals (Ireland N = 6; Italy N = 6,
69 Netherlands N = 5). In stage

70 2 we conducted three FGDs with thirteen other professionals (Ireland N = 3; Italy N = 5; Netherlands
71 N= 5). We followed guide- lines for ethical review in each country. Professionals provided written
72 informed consent.

73 2.3.2 *Data collection*

74 FGDs lasted 1–2 h and were audio-recorded. Detailed topic- guides probed discussions (Appendix B).
75 Professionals reviewed the prototype-program in stage 1, and provided feedback in stage 2,
76 immediately after the pilot-training. To decrease probability of a positive bias, we asked professionals
77 for comments to increase the quality of the training and probed them on improvements. Discussions
78 were transcribed verbatim in country-specific languages.

79 2.3.3 *Data analysis*

80 In five steps, we standardised analysis of FGDs across countries using qualitative content analysis
81 [27,28]. 1) We developed an a priori English coding scheme derived from each topic guide. 2) One
82 researcher per country coded the Irish transcript (English language). 3) We discussed inconsistencies
83 in coding and reached consensus on a final coding Scheme. 4) Native speakers coded Dutch and Italian

84 transcripts and added country-specific codes, reviewed by a second researcher. 5) Each country
85 developed an English summary of FGDs, exploring differences between countries and linking codes to
86 overarching themes.

87 *2.4 Pre-post questionnaire*

88 We assessed health literacy communication skills with a self- rated pre-post questionnaire of five
89 domains. Twenty questions were based on Mackert et al. [29] and additional items. We analysed
90 outcomes using the Wilcoxon signed rank test in SPSS.

91 **3. Results**

92 *3.1 Training development*

93 *3.1.1 Literature review*

94 The literature review yielded 24 professional training-programs and 16 patient-centred interventions
95 to address health literacy. Five training-components informed the prototype-program (Table 1). Most
96 training-programs incorporated “knowledge and awareness of health literacy”. Studies were reviewed
97 on patient- centred components [20] to address various health literacy domains [11].

Table 1. Objectives and components of the Health Literacy Communication Training

Objective A. To inform and educate: Professionals know about health literacy problems, their impact, and interventions to tackle health literacy problems

1. Knowledge and awareness of health literacy

- Definition and overview of health literacy [29–48]
- Prevalence and risk factors of limited health literacy [29–32,34–36,40,48,49]
- Relation of health literacy to health outcomes [29–35,46,49,50]
- Cues to identify low health literacy [29–37,40,42,51]
- Formal identifiers of health literacy [34,35,38,39,41,42,45,48,49]
- Impact of limited health literacy on patients [29–32,34,36,39,41–45,49,50,52]

Objective B. To teach skills: Professionals develop patient-centred communication skills to address problems with health literacy.

2. Gathering and providing information to address functional health literacy.

Gathering information

- Active listening [32,42,53,54]
- Observing non-verbal communication [32,35,53,54]
- Asking open-ended questions [32,37,47,53–55]
- Encouraging patients to ask questions [32,39,42,47,53–55]
- Create a shame-free environment and responding to emotions [29,39,40,42,43,47,53,55]

Providing information

- Communicate clearly through plain language, avoidance of jargon, prioritization of information [29–35,37–40,42,44,47–49,51,55–57]
- Using teach-back to check understanding [34,37–39,42,47,49,50,52,56,57]
- Assess and write comprehensible patient information [29–31,34,35,39–41,47–49,51]
- Show or draw simple pictures [34,35,37,57]

3. Shared decision-making to address interactive health literacy.

- Involve patients in shared decision-making [37,41,43,47,49,55,58–60]
- Educate patients to participate in shared decision-making [46,53,57,61].

4. Enabling self-management to address critical health literacy

- Discuss and facilitate patients' preparation for a consultation [53,59,62–65]
- Educate patients on self-management skills by repeating information and tailored education leaflets [33,39–41,45–47,53,56,57,59,62–68]
- Personal approach with exploring barriers to adherence, formulating treatment goals, co-design an action plan, monitor self-care [37,41,43,46,52,53,55,59,62–68]
- Use (telephone) follow-up consultations to monitor understanding and self-care [33,47,53,55,56,59,62,64–67]

Objective C. To support behaviour change: Professionals adopt, change and maintain behaviour to address health literacy problems

5. Changing behaviour to apply health literacy communication

- Supporting behaviour change of professionals by influencing: Attitudes [69], Subjective norms [69] and Self-efficacy [70]:
 - Counselling low health literate patients [33,47,51]
 - Practice based assignment [40,41,43–45]
 - Feedback on clinical encounters with (standardized) patients [37,46,53,57,60].

Table 2. Citations illustrating focus group themes of Stage 1 and 2.

Focus group theme	Citations
Stage 1: Perspectives on prototype-program	
1) Raising awareness on health literacy	<p><i>"I also think you can use situations from practice. Yesterday I had an intake with someone of whom I think: hmmm. And when I spoke to my colleagues of social work and they think: hmmm.. [...] and I encounter that regularly". (P2, Netherlands, Activity therapist)</i></p>
2) Addressing Patient-centred communication	<p><i>"But you prefix it by saying well I have to say this to all the patients, your knowledge might be above this and you can come back to me and ask me more questions if you want more information. [...] it's how you deliver it as much as what you say. I think if you prefix it with a sentence that fits the context of who you're talking to". (P3, Ireland, nurse)</i></p> <p><i>"You know, it's kind of understanding it in context of the whole person because you know the health issue might be smoking but that's probably her only support if she is in isolation and I think to incorporate that [...] to discuss that within the training". (P1, Ireland, medical consultant)</i></p>
3) Applying health literacy communication	<p><i>"Hmmm, by taking part in this focus group I become more aware and you get questions, yes now we have such a person (with low health literacy), what are we going to do about it? [...] There is the relevance, because there is just to gain in rehabilitation if you have good interventions and you can tailor (to the patient), and I think we all are very motivated for this". (P2, Netherlands, Activity therapist)</i></p>
4) Various educational techniques	<p><i>"I think there needs to be role-plays, patients are at different stages, that patients are taking on board the information they're given and I think a good way of learning that for the people been taught is by role-play and interactive; sometimes showing videos that medium works too". (P2, Ireland, social worker)</i></p>
99	Stage 2: Feedback on pilot-training

1) Valued training-components
 “Yes, [...] I look at it differently now [...] because of the theoretical (insights) I think I am more aware of the impact of having low health literacy and that it can cause, yes a lot of misunderstanding”. (P1, Netherlands, social worker)

“On the video I was using my, the word theory and no patient would understand what I mean by that. So I’m just more conscious of words I’m using now as well. So I’m hoping I’ll be able to use, work out plainer language. If I ever want to use a term I’ll explain myself, I wouldn’t have done that before”. (P3, Ireland, nurse)

2) Experiential techniques
 “Before the role playing I thought to be good about listening the patient. Now I know that it’s not true. I wasn’t be able to put myself in my patient’s shoes. Now I’m more careful when my patient talk with me”. (P1, Italy, researcher in diabetes)

100

101 Most training-programs [29–34,38–40,49,55] combined educational techniques: didactic techniques
 102 to develop knowledge and experiential techniques (roleplay, discussion) to develop skills [71,72].

103 3.1.2 Perspectives on prototype-program

104 Professionals of three countries provided rather similar responses, although they worked in various
 105 disciplines and health settings. In stage 1, professionals in three FGDs endorsed the prototype-program
 106 involving five training-components. Professionals recommended four themes for training: raising
 107 awareness of health literacy, addressing patient-centred communication, applying health literacy
 108 communication and various educational techniques (Table 2). In patient-centred communication, Irish
 109 professionals emphasized understanding the context of the whole person with low health literacy.
 110 Dutch professionals especially suggested exploring potential barriers and facilitators to application of
 111 health literacy communication in practice. Combining educational techniques promoted
 112 understanding of patients’ health literacy problems and feedback on skills development.

113 3.2 Pilot training

114 We pilot-tested the training in three countries among thirteen health professionals. The training-
 115 program (Table 4) involved five training-components, offered during five 2-h workshops in the local

116 language. Immediately after the last workshop professionals joined the FGDs and completed the post-
117 questionnaire.

118 3.2.1 Positive feedback on pilot-training

119 In stage 2, professionals in three FGDs valued training- components and experiential techniques (Table
120 2). They perceived patient-centred components helped them to address health literacy. Training
121 resulted in more understanding of low health literacy, awareness of their jargon, improved self-efficacy
122 and some adaptations in patient-interaction. Especially, experiential techniques helped professionals
123 to relate health literacy to their practice and train oral and written communication skills. Peer
124 supervision was perceived as too intangible to reflect on low health literacy issues encountered in
125 patient interaction. Some profes- sionals preferred roleplaying their own patient-scenarios. Profes-
126 sionals explicitly mentioned increased motivation and intention to apply health literacy
127 communication.

128 3.2.2 Pre-post questionnaire

129 Thirteen professionals completed the pre-post questionnaire, reporting improved self-rated health
130 literacy communication skills. Table 3 shows domain-scores. Item-scores are provided in Appendix C.

131 **Table 3.** Domain scores of the Pre-post Training Questionnaire.

Domains	No. of items	Pre training Median (IQR)c	Post training Median (IQR)	Pd
a. Health Literacy Knowledgea	4	2.8 (2.3-3.4)	4.0 (3.8-4.1)	.003
b. Gathering informationa	5	4.0 (3.4-4.2)	4.4 (3.9-4.5)	.006
c. Providing informationa	5	3.2 (2.8-3.3)	3.6 (3.4-4.0)	.010

d. Shared decision-making ^b	3	3.3 (2.7-3.8)	3.7(3.3-4.0)	.024
e. Enabling self-management ^b	3	3.3 (3.0-4.3)	4.2 (3.3-4.3)	.077

132 a Number of participants: N=12, b Number of participants: N=13, c IQR means Interquartile range, d P-
 133 values are based on the Wilcoxon signed rank test. Scale domain a: 1) very poor to 5) excellent. Scale
 134 domain b-e: 1) never to 5) always.

135 3.3 Final training

136 The final training maintained the five training-components. Based on professionals' feedback we
 137 enhanced experiential techniques in workshops 2–4 by briefly presenting each skill alternated with
 138 roleplay (Table 4).

Table 4. Final Health Literacy Communication Training Program, including adjustments.

Program overview	Adjustment ^a
<i>Workshop 1. Being aware of health literacy</i>	=
- Introduction to health literacy: Video explaining health literacy and review of factsheet.	=
- Impact of low health literacy: Video of a patient with low health literacy, and group discussion.	=
- Assessment of the comprehensibility of written education materials for people with low health literacy.	+
- Identifying low health literacy using formal and informal identifiers	=
- Preparation of own roleplay scenario for workshops 2-4	+
<hr/>	
<i>Workshop 2. Gathering and providing information to address functional health</i>	

139

literacy

- Gathering information: presentation and roleplay. =
- Providing information: presentation and roleplay. =

Workshop 3. Shared decision-making to address interactive health literacy

- Involving patients in shared decision-making: presentation, roleplay, visual recording of roleplay. =
- Educating patients to participate in shared decision-making: presentation, roleplay, visual recording of roleplay. =

Workshop 4. Self-management to address critical health literacy

- Enabling self-management: presentation, roleplay, visual recording of roleplay. =

Workshop 5. Applying health literacy communication

Activities to enhance positive attitudes, social norms, self-efficacy and motivation so as to strengthen intentions and support behaviour change of professionals:

- Summary of health literacy communication skills and sharing experiences with reviewing visual recording. =
- **Peer supervision to reflect on low health literacy issues encountered in patient interaction.** x
- **Practice assignment to develop a health literacy action plan or communication tool** +
- Power pitch; brief presentation how to anticipate barriers and apply health literacy communication in practice. =

140 ^aAn “=” indicates the activity remained, “+” indicates an added activity, “x” means a deleted activity.

141 4. Discussion

142 We developed and piloted a comprehensive health literacy communication training with health
 143 professionals of three European countries. Five evidence-informed training-components were
 144 selected. Professionals expressed positive and consistent opinions regarding training-components and
 145 educational techniques. They reported strengthened knowledge and patient-centred skills to address
 146 functional, interactive and critical health literacy. Similar to other studies [9,10,29,30,73,74], our
 147 training involves health literacy education and clear communication. Moreover, our training improves
 148 professionals’ skills to enhance patient autonomy in decision-making [15,17,18,23,75], and
 149 strengthens intention to apply health literacy communication [69,70]. Professionals reported
 150 improved self-rated skills, comparable to studies from the US and Canada [10,29,31].

151 Although we expected differences, professionals of three European countries reported comparable
 152 perceptions with only minor variations. Another European study reported consensus on core-

153 objectives in professional education [76]. The consensus in our study suggests potential for
154 implementation of the training in other European countries.

155 Strength of this study is the diverse methods enabling us to develop an evidence-informed training in
156 accordance with professionals' practice experiences. A limitation is that we conducted only one FGD
157 per stage in each country, so we cannot assume data saturation [77]. The same partners were involved
158 in developing and pilot-testing of the training, which may have introduced positive bias. Pre-post skills
159 were self-reported, with limited power to detect changes. Study outcomes need confirmation in a
160 larger professional sample and its impact on interaction with patients and health literacy levels should
161 be evaluated.

162 **5. Conclusion**

163 A comprehensive health literacy communication training for health professionals in three European
164 countries enhances perceived skills in addressing functional, interactive and critical health literacy.

165 **Practice implications**

166 This training has potential for wider application in education and practice in Europe.

167 **Disclosure**

168 Marise S. Kaper wrote the first draft and subsequent versions of the manuscript. All authors listed
169 declare that they are responsible for this manuscript, and that they have participated in the (1) concept
170 and design, (2) collection, analysis and interpretation of the data, (3) revision of the article, and all
171 have approved the final article as submitted. The authors agree with its submission to Patient
172 Education and Counseling.

173 **Financial support**

174 This work was supported by the European Union's Seventh Framework Program [FP7/2007-2013 under
175 Grant agreement No. 305831], co-ordinated by the University Medical Centre Groningen. The views
176 expressed here are those of the authors and not the funders.

177 **Conflicts of interest**

178 None.

179 **Ethics**

180 The authors confirm that all personal identifiers have been removed or disguised so that person(s)
181 described are not identifiable and cannot be identified through the details of the story.

182 **Acknowledgements**

183 The authors would like to thank the participants involved in this study and J. Jansen, W. Paans, J.M.
184 Smit, H. Veenker and M. Franssen for their contribution to the study and collaboration in the IROHLA
185 project.

186 **Appendix A Supplementary data**

187 Supplementary data associated with this article can be found, in the online version, at
188 <http://dx.doi.org/10.1016/j.pec.2017.07.017>.

189 **References**

190 [1] K. Sørensen, J.M. Pelikan, F. Rothlin, K. Ganahl, Z. Slonska, G. Doyle, J. Fullam, B. Kondilis, D.
191 Agrafiotis, E. Uiters, M. Falcon, M. Mensing, K. Tchamov, S. v. d. Broucke, H. Brand, Health literacy in
192 Europe: comparative results of the European health literacy survey (HLS-EU), *Eur. J. Public Health*.
193 (2015) 1–6. doi:10.1093/eurpub/ckv043.

- 194 [2] K. Sørensen, S. Van den Broucke, J. Fullam, G. Doyle, J. Pelikan, Z. Slonska, H. Brand, Health
195 literacy and public health: a systematic review and integration of definitions and models., *BMC Public*
196 *Health*. 12 (2012) 80. doi:10.1186/1471-2458-12-80.
- 197 [3] N.D. Berkman, S.L. Sheridan, K.E. Donahue, D.J. Halpern, A. Viera, K. Crotty, A. Holland, M.
198 Brasure, K.N. Lohr, E. Harden, E. Tant, I. Wallace, M. Viswanathan, Health literacy interventions and
199 outcomes: an updated systematic review, *Ann. Intern. Med.* (2011) 97–107. doi:10.1059/0003-4819-
200 155-2-201107190-00005.
- 201 [4] P.A. Kelly, P. Haidet, Physician overestimation of patient literacy: A potential source of health
202 care disparities, *Patient Educ. Couns.* 66 (2007) 119–122. doi:10.1016/j.pec.2006.10.007.
- 203 [5] A. Macabasco-O’Connell, E.K. Fry-Bowers, Knowledge and perceptions of health literacy
204 among nursing professionals, *J. Health Commun.* 16 Suppl 3 (2011) 295–307.
205 doi:10.1080/10810730.2011.604389.
- 206 [6] J.G. Schwartzberg, A. Cowett, J. VanGeest, M.S. Wolf, Communication techniques for patients
207 with low health literacy: a survey of physicians, nurses, and pharmacists, *Am J Heal. Behav.* 31 Suppl 1
208 (2007) S96–104. doi:10.5555/ajhb.2007.31.suppl.S96.
- 209 [7] H.K. Seligman, F.F. Wang, J.L. Palacios, C.C. Wilson, C. Daher, J.D. Piette, D. Schillinger,
210 Physician Notification of Their Diabetes Patients’ Limited Health Literacy A Randomized Control Trial,
211 *J. Gen. Intern. Med.* 20 (2005) 1001–1007. doi:10.1111/j.1525-1497.2005.0189.x.
- 212 [8] M. Zwarenstein, J. Goldman, S. Reeves, Interprofessional collaboration: Effects of practice-
213 based interventions on professional practice and healthcare outcomes, *Cochrane Database Syst. Rev.*
214 (2009) Art. No. CD000072. doi:10.1002/14651858.CD000072.pub2.
- 215 [9] C. Coleman, Teaching health care professionals about health literacy: a review of the literature,
216 *Nurs. Outlook.* 59 (2011) 70–8. doi:10.1016/j.outlook.2010.12.004.

- 217 [10] C.E. Toronto, B. Weatherford, Health Literacy Education in Health Professions Schools: An
218 Integrative Review, *J. Nurs. Educ.* 54 (2015) 669–676. doi:10.3928/01484834-20151110-02.
- 219 [11] D. Nutbeam, Health literacy as a public health goal : a challenge for contemporary health
220 education and communication strategies into the 21st century, *Health Promot. Int.* 15 (2000) 259–268.
- 221 [12] S. Kripalani, B.D. Weiss, Teaching About Health Literacy and Clear Communication, *J GEN*
222 *INTERN MED.* (2006) 888–890. doi:ii0.1iil/J.1525-i497.2006.00543.x.
- 223 [13] C.A. Coleman, S. Hudson, L.L. Maine, Health literacy practices and educational competencies
224 for health professionals: a consensus study, *J. Health Commun.* 18 Suppl 1 (2013) 82–102.
225 doi:10.1080/10810730.2013.829538.
- 226 [14] A. Coulter, J. Ellins, Effectiveness of strategies for informing, educating, and involving patients,
227 *BMJ Br. Med. J.* 335 (2007) 24–27. doi:10.1136/bmj.39246.581169.80.
- 228 [15] I. van der Heide, M. Heijmans, A.J. Schuit, E. Uiters, J. Rademakers, Functional, interactive and
229 critical health literacy: Varying relationships with control over care and number of GP visits, *Patient*
230 *Educ. Couns.* 98 (2015) 998–1004. doi:10.1016/j.pec.2015.04.006.
- 231 [16] M. Heijmans, G. Waverijn, J. Rademakers, R. van der Vaart, M. Rijken, Functional,
232 communicative and critical health literacy of chronic disease patients and their importance for self-
233 management, *Patient Educ. Couns.* 98 (2015) 41–48. doi:10.1016/j.pec.2014.10.006.
- 234 [17] H. Ishikawa, E. Yano, S. Fujimori, M. Kinoshita, T. Yamanouchi, M. Yoshikawa, Y. Yamazaki, T.
235 Teramoto, Patient health literacy and patient-physician information exchange during a visit, *Fam.*
236 *Pract.* 26 (2009) 517–523. doi:10.1093/fampra/cmp060.
- 237 [18] L. Sudore, D. Schillinger, Interventions to improve care for patients with limited health literacy,
238 *J Clin Outcomes Manag.* 16 (2009) 20–29.

- 239 [19] L.A. McCormack, K. Treiman, D. Rupert, P. Williams-Piehot, E. Nadler, N.K. Arora, W.
240 Lawrence, R.L. Street, Measuring patient-centered communication in cancer care: a literature review
241 and the development of a systematic approach, *Soc. Sci. Med.* 72 (2011) 1085–95.
242 doi:10.1016/j.socscimed.2011.01.020.
- 243 [20] H. de Haes, J. Bensing, Endpoints in medical communication research, proposing a framework
244 of functions and outcomes, *Patient Educ. Couns.* 74 (2009) 287–94. doi:10.1016/j.pec.2008.12.006.
- 245 [21] R.M. Epstein, P. Franks, K. Fiscella, C.G. Shields, S.C. Meldrum, R.L. Kravitz, P.R. Duberstein,
246 Measuring patient-centered communication in patient-physician consultations: theoretical and
247 practical issues, *Soc. Sci. Med.* 61 (2005) 1516–28. doi:10.1016/j.socscimed.2005.02.001.
- 248 [22] M.A. Stewart, Effective physician-patient communication and health outcomes: a review, *Can*
249 *Med Assoc J.* 152 (1995) 1423–1433.
- 250 [23] J. Brainard, Y. Loke, C. Salter, T. Koós, P. Csizmadia, A. Makai, B. Gács, Healthy ageing in Europe:
251 prioritizing interventions to improve health literacy, *BMC Res. Notes.* 9 (2016) 1–11.
252 doi:10.1186/s13104-016-2056-9.
- 253 [24] F. Sivera, S. Ramiro, N. Cikes, M. Dougados, L. Gossec, T.K. Kvien, I.E. Lundberg, P. Mandl, A.
254 Moorthy, S. Panchal, J.A.P. da Silva, J.W. Bijlsma, Differences and similarities in rheumatology specialty
255 training programmes across European countries., *Ann. Rheum. Dis.* 74 (2015) 1183–1187 5p.
256 doi:10.1136/annrheumdis-2014-206791.
- 257 [25] I.R. Hallberg, E. Cabrera, D. Jolley, K. Raamat, A. Renom-Guiteras, H. Verbeek, M. Soto, M. Stolt,
258 S. Karlsson, Professional care providers in dementia care in eight European countries; their training
259 and involvement in early dementia stage and in home care, *Dementia.* 15 (2016) 931–957.
260 doi:10.1177/1471301214548520.

- 261 [26] Z. Vokó, K.L. Cheung, J. Józwiak-Hagymásy, S. Wolfenstetter, T. Jones, C. Muñoz, S.M.A.A.
262 Evers, M. Hiligsmann, H. de Vries, S. Pokhrel, Similarities and differences between stakeholders'
263 opinions on using Health Technology Assessment (HTA) information across five European countries:
264 results from the EQUIPT survey, *Heal. Res. Policy Syst.* 14 (2016) 38. doi:10.1186/s12961-016-0110-7.
- 265 [27] H.-F. Hsieh, S.E. Shannon, Three approaches to qualitative content analysis, *Qual. Health Res.*
266 15 (2005) 1277–88. doi:10.1177/1049732305276687.
- 267 [28] F. Moretti, L. van Vliet, J. Bensing, G. Deledda, M. Mazzi, M. Rimondini, C. Zimmermann, I.
268 Fletcher, A standardized approach to qualitative content analysis of focus group discussions from
269 different countries, *Patient Educ. Couns.* 82 (2011) 420–8. doi:10.1016/j.pec.2011.01.005.
- 270 [29] M. Mackert, J. Ball, N. Lopez, Health literacy awareness training for healthcare workers:
271 improving knowledge and intentions to use clear communication techniques, *Patient Educ. Couns.* 85
272 (2011) e225–8. doi:10.1016/j.pec.2011.02.022.
- 273 [30] S. Kripalani, K.L. Jacobson, S. Brown, K. Manning, K.J. Rask, T.A. Jacobson, Development and
274 implementation of a health literacy training program for medical residents, *Med. Educ. Online.* 11
275 (2006) 1–8.
- 276 [31] C.A. Coleman, A. Fromer, A Health Literacy Training Intervention for Physicians and Other
277 Health Professionals, *Fam. Med.* 47 (2015) 388–392.
- 278 [32] J.A. Green, A.M. Gonzaga, E.D. Cohen, C.L. Spagnoletti, Addressing health literacy through clear
279 health communication: A training program for internal medicine residents, *Patient Educ. Couns.* 95
280 (2014) 76–82. doi:10.1016/j.pec.2014.01.004.
- 281 [33] S.M. Bradley, D. Chang, R. Fallar, R. Karani, A Patient Safety and Transitions of Care Curriculum
282 for Third-Year Medical Students, *Gerontol. Geriatr. Educ.* 36 (2015) 45–57.
283 doi:10.1080/02701960.2014.966903.

- 284 [34] R. Devraj, L.M. Butler, G. V Gupchup, T.I. Poirier, Active-learning strategies to develop health
285 literacy knowledge and skills, *Am. J. Pharm. Educ.* 74 (2010) 137.
- 286 [35] A.M.H. Chen, M. Noureldin, K.S. Plake, Impact of a health literacy assignment on student
287 pharmacist learning, *Res. Soc. Adm. Pharm.* 9 (2013) 531–541. doi:10.1016/j.sapharm.2013.05.002.
- 288 [36] H. Ha, T. Lopez, Developing health literacy knowledge and skills through case-based learning,
289 *Am. J. Pharm. Educ.* 78 (2014) 17. doi:10.5688/ajpe78117.
- 290 [37] E.G. Price-Haywood, K.G. Roth, K. Shelby, L.A. Cooper, Cancer risk communication with low
291 health literacy patients: a continuing medical education program, *J. Gen. Intern. Med.* 25 Suppl 2
292 (2010) S126–9. doi:10.1007/s11606-009-1211-6.
- 293 [38] P. Pagels, T. Kindratt, D. Arnold, J. Brandt, G. Woodfin, N. Gimpel, Training Family Medicine
294 Residents in Effective Communication Skills While Utilizing Promotoras as Standardized Patients in
295 OSCEs: A Health Literacy Curriculum, *Int. J. Family Med.* 2015 (2015) 1–9. doi:10.1155/2015/129187.
- 296 [39] K. Bloom-Feshbach, D. Casey, L. Schulson, P. Gliatto, J. Giftos, R. Karani, Health Literacy in
297 Transitions of Care: An Innovative Objective Structured Clinical Examination for Fourth-Year Medical
298 Students in an Internship Preparation Course, *J. Gen. Intern. Med.* (2015) 2–6. doi:10.1007/s11606-
299 015-3513-1.
- 300 [40] K.H. Evans, S. Berekyei, G. Yeo, N. Hikoyeda, M. Tzuang, C.H. Braddock, The Impact of a
301 Faculty Development Program in Health Literacy and Ethnogeriatrics, *Acad. Med.* 89 (2014) 1640–
302 1644. doi:10.1097/ACM.0000000000000411.
- 303 [41] T.I. Poirier, L.M. Butler, R. Devraj, G. V. Gupchup, C. Santanello, J.C. Lynch, A cultural
304 competency course for pharmacy students, *Am. J. Pharm. Educ.* 73 (2009). doi:10.5688/aj730581.

- 305 [42] D.M. Roberts, J.R. Reid, A.L. Conner, S. Barrer, K.H. Miller, C. Ziegler, A Replicable Model of a
306 Health Literacy Curriculum for a Third-Year Clerkship, *Teach. Learn. Med.* 24 (2012) 200– 210.
307 doi:10.1080/10401334.2012.692261.
- 308 [43] M.F. Sullivan, W. Ferguson, H.-L. Haley, M. Philbin, T. Kedian, K. Sullivan, M. Quirk, Expert
309 Communication Training for Providers in Community Health Centers, *J. Health Care Poor Underserved.*
310 22 (2011) 1358–1368. doi:10.1353/hpu.2011.0129.
- 311 [44] J. Hess, J.S. Whelan, Making health literacy real: adult literacy and medical students teach each
312 other, *J Med Ical Libr. Assoc.* 97 (2009) 221–224. doi:10.3163/1536-5050.97.3.012.
- 313 [45] R. Lennon-Dearing, J. Florence, L. Garrett, I.A. Click, S. Abercrombie, A Rural Community- Based
314 Interdisciplinary Curriculum: A Social Work Perspective, *Soc. Work Health Care.* 47 (2008) 93–107.
315 doi:10.1080/08841240801970177.
- 316 [46] M.R. Ferreira, N.C. Dolan, M.L. Fitzgibbon, T.C. Davis, N. Gorby, L. Ladewski, D. Liu, A.W.
317 Rademaker, F. Medio, B.P. Schmitt, C.L. Bennett, Health care provider-directed intervention to
318 increase colorectal cancer screening among veterans: Results of a randomized controlled trial, *J. Clin.*
319 *Oncol.* 23 (2005) 1548–1554. doi:10.1200/JCO.2005.07.049.
- 320 [47] G.R. Grice, A. Tiemeier, P. Hurd, T.M. Berry, M. Voorhees, T.R. Prosser, J. Sailors, N.M. Gattas,
321 W. Duncan, Student Use of Health Literacy Tools to improve Patient Understanding and Medication
322 Adherence, *Consult. Pharm.* 29 (2014). doi:10.1055/s-2004-815600.
- 323 [48] A. Sz wajcer, K. Macdonald, B. Kvern, Health Literacy Training for Family Medicine Residents, *J.*
324 *Can. Heal. Libr. Assoc.* 35 (2014) 128–132. doi:10.5596/c14-033.
- 325 [49] W. Harper, S. Cook, G. Makoul, Teaching Medical Students About Health Literacy: 2 Chicago
326 Initiatives, *Am J Heal. Behav.* 31 (2007) S111–S114.

- 327 [50] C. Kornburger, C. Gibson, S. Sadowski, K. Maletta, C. Klingbeil, Using “teach-back” to promote
328 a safe transition from hospital to home: an evidence-based approach to improving the discharge
329 process, *J. Pediatr. Nurs.* 28 (2013) 282–91. doi:10.1016/j.pedn.2012.10.007.
- 330 [51] J.M. Trujillo, T.A. Figler, Teaching and learning health literacy in a doctor of pharmacy program,
331 *Am. J. Pharm. Educ.* 79 (2015) 1–9. doi:10.5688/ajpe79227.
- 332 [52] S. Kripalani, C.Y. Osborn, V. Vaccarino, T.A. Jacobson, Development and evaluation of a
333 medication counseling workshop for physicians: Can we improve on “take two pills and call me in the
334 morning”?, *Med. Educ. Online.* 16 (2011) 1–7. doi:10.3402/meo.v16i0.7133.
- 335 [53] L.A. Cooper, D.L. Roter, K.A. Carson, L.R. Bone, S.M. Larson, E.R. Miller, M.S. Barr, D.M. Levine,
336 A randomized trial to improve patient-centered care and hypertension control in underserved primary
337 care patients, *J. Gen. Intern. Med.* 26 (2011) 1297–1304. doi:10.1007/s11606-011-1794-6.
- 338 [54] A. Six-Means, T.K. Bauer, R. Teeter, D. Segraves, L. Cutshaw, L. High, Building a Foundation of
339 Health Literacy with Ask Me 3™, *J. Consum. Health Internet.* 16 (2012) 180–191.
340 doi:10.1080/15398285.2012.673461.
- 341 [55] G.R. Grice, N.M. Gattas, J. Sailors, J.A. Murphy, A. Tiemeier, P. Hurd, T. Prosser, T. Berry, W.
342 Duncan, Health literacy: use of the Four Habits Model to improve student pharmacists’
343 communication, *Patient Educ. Couns.* 90 (2013) 23–8. doi:10.1016/j.pec.2012.08.019.
- 344 [56] S.C. Blake, K.L. Jacobson, A qualitative evaluation of a health literacy intervention to improve
345 medication adherence for underserved pharmacy patients, *J. Health Care Poor Underserved.* 21 (2010)
346 559–567.
- 347 [57] N.C. Dolan, V. Ramirez-Zohfeld, A.W. Rademaker, M.R. Ferreira, W.L. Galanter, J. Radosta,
348 M.M. Eder, K.A. Cameron, The Effectiveness of a Physician-Only and Physician–Patient Intervention on

- 349 Colorectal Cancer Screening Discussions Between Providers and African American and Latino Patients,
350 *J. Gen. Intern. Med.* 30 (2015) 1780–1787. doi:10.1007/s11606-015-3381-8.
- 351 [58] G. Elwyn, D. Frosch, R. Thomson, N. Joseph-Williams, A. Lloyd, P. Kinnersley, E. Cording, D.
352 Tomson, C. Dodd, S. Rollnick, A. Edwards, M. Barry, Shared Decision Making: A Model for Clinical
353 Practice, *J. Gen. Intern. Med.* 27 (2012) 1361–1367. doi:10.1007/s11606-012-2077-6.
- 354 [59] S. Laforest, K. Nour, M. Parisien, M.-C. Poirier, M. Gignac, H. Lankoande, “I’m Taking Charge of
355 My Arthritis”: Designing a Targeted Self-Management Program for Frail Seniors, *Phys. Occup. Ther.
356 Geriatr.* 26 (2008) 45–66. doi:10.1080/02703180801963816.
- 357 [60] E.G. Price-Haywood, J. Harden-Barrios, L.A. Cooper, Comparative effectiveness of audit-
358 feedback versus additional physician communication training to improve cancer screening for patients
359 with limited health literacy, *J. Gen. Intern. Med.* 29 (2014) 1113–1121. doi:10.1007/s11606-014-2782-
360 4.
- 361 [61] W.-H. Lu, D. Deen, D. Rothstein, L. Santana, M.R. Gold, Activating community health center
362 patients in developing question-formulation skills: a qualitative study, *Health Educ. Behav.* 38 (2011)
363 637–45. doi:10.1177/1090198110393337.
- 364 [62] E.L. Carter, G. Nunlee-Bland, C. Callender, A patient-centric, provider-assisted diabetes
365 telehealth self-management intervention for urban minorities., *Perspect. Heal. Inf. Manag.* 8 (2011)
366 1b.
- 367 [63] S. Pruthi, E. Schmidt, M.M. Sherman, L. Neal, D. Wahner-roedler, Promoting a breast cancer
368 screening clinic for underserved women: a community collaboration, *Ethn. Dis.* 20 (2010) 463– 466.
- 369 [64] D.A. DeWalt, D. Schillinger, B. Ruo, K. Bibbins-Domingo, D.W. Baker, G.M. Holmes, M.
370 Weinberger, A. Macabasco-O’Connell, K. Broucksou, V. Hawk, K.L. Grady, B. Erman, C.A. Sueta, P.P.
371 Chang, C.W. Cene, J.R. Wu, C.D. Jones, M. Pignone, Multisite randomized trial of a single-session versus

- 372 multisession literacy-sensitive self-care intervention for patients with heart failure, *Circulation*. 125
373 (2012) 2854–2862. doi:10.1161/CIRCULATIONAHA.111.081745.
- 374 [65] T. Brennan, C. Spettell, V. Villagra, E. Ofili, C. McMahonill-Walraven, E. Lowy, P. Daniels, A.
375 Quarshie, R. Mayberry, Disease management to promote blood pressure control among African
376 Americans., *Popul. Health Manag.* 13 (2010) 65.
- 377 [66] J.F. Robare, C.M. Bayles, A.B. Newman, K. Williams, C. Milas, R. Boudreau, K. McTigue, S.M.
378 Albert, C. Taylor, L.H. Kuller, The “10 Keys” to Healthy Aging: 24-Month Follow-Up Results From an
379 Innovative Community-Based Prevention Program, *Heal. Educ. Behav.* 38 (2011) 379–388.
380 doi:10.1177/1090198110379575.
- 381 [67] D. Schillinger, H. Hammer, F. Wang, J. Palacios, I. McLean, A. Tang, S. Youmans, M. Handley,
382 Seeing in 3-D: Examining the reach of diabetes self-management support strategies in a public health
383 care system., *Heal. Educ. Behav.* 35 (2008) 664–682. doi:10.1177/1090198106296772.
- 384 [68] G. Mathews, J. Alexander, T. Rahemtulla, R. Bhopal, Impact of a cardiovascular risk control
385 project for South Asians (Khush Dil) on motivation, behaviour, obesity, blood pressure and lipids, *J.*
386 *Public Health (Bangkok)*. 29 (2007) 388–397. doi:10.1093/pubmed/fdm044.
- 387 [69] I. Ajzen, The theory of planned behavior, *Organizational Behav. Hum. Decis. Process.* 50 (1991)
388 179–211. doi:10.1016/0749-5978(91)90020-T.
- 389 [70] A. Bandura, Toward a unifying theory of behavioral change, *Psychol. Rev.* 84 (1977) 191–215.
390 doi:10.1037/0033-295X.84.2.191.
- 391 [71] W. May, J.H. Park, J.P. Lee, A ten-year review of the literature on the use of standardized
392 patients in teaching and learning: 1996-2005, *Med. Teach.* 31 (2009) 487–492.
393 doi:10.1080/01421590802530898.

- 394 [72] S. Shin, J.H. Park, J.H. Kim, Effectiveness of patient simulation in nursing education: Meta-
395 analysis, *Nurse Educ. Today*. 35 (2015) 176–182. doi:10.1016/j.nedt.2014.09.009.
- 396 [73] C.A. Coleman, S. Peterson-perry, T. Bumsted, Long-Term Effects of a Health Literacy Curriculum
397 for Medical Students, *Fam. Med.* 48 (2016) 49–53.
- 398 [74] C.A. Coleman, S. Appy, Health literacy teaching in US medical schools, 2010, *Fam. Med.* 44
399 (2012) 504–7.
- 400 [75] H. Veenker, W. Paans, A dynamic approach to communication in health literacy education,
401 *BMC Med. Educ.* 16 (2016) 280. doi:10.1186/s12909-016-0785-z.
- 402 [76] C. Bachmann, H. Abramovitch, C.G. Barbu, A.M. Cavaco, R.D. Elorza, R. Haak, E. Loureiro, A.
403 Ratajska, J. Silverman, S. Winterburn, M. Rosenbaum, A European consensus on learning objectives for
404 a core communication curriculum in health care professions, *Patient Educ. Couns.* 93 (2013) 18–26.
405 doi:10.1016/j.pec.2012.10.016.
- 406 [77] A. Hennink, M.; Hutter, I.; Bailey, Qualitative research methods, Sage, 2011.