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Training healthcare professionals in LGBTI cultural competencies: Exploratory findings from the Health4LGBTI pilot project

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ABSTRACT

Objectives: Lesbian, gay, bisexual, trans and intersex (LGBTI) people experience health inequalities and barriers to accessing healthcare at a greater rate than the general population. This paper aims to present the Health4LGBTI training course for healthcare workers and the results of its pilot implementation.
Methods: Funded by the European Parliament, the training course was developed by a multidisciplinary team including LGBTI organisations as part of the Health4LGBTI Project. 110 healthcare professionals from diverse medical fields attended the pilot training in six European Member States. Knowledge and attitudes were compared on the basis of a pre-post evaluation design utilising an ad hoc questionnaire.
Results: Knowledge scores increased after the training, irrespective of age and sexual orientation of participants. Attitudes scores generally improved, particularly in terms of inclusivity and a greater acknowledgement of LGBTI health needs and self-competence.
Conclusion: The Health4LGBTI training course is both feasible and effective in training healthcare professionals and support staff to improve cultural competence and thereby promoting inclusive healthcare practice.
Practice Implications: The Health4LGBTI training course can be implemented in different healthcare contexts. Piloting of the course provided an opportunity for healthcare professionals and for support staff to improve their knowledge of, and attitudes towards, LGBTI people.
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1. Introduction

Evidence demonstrates that lesbian, gay, bisexual, trans and intersex (LGBTI)[1] people experience health inequalities including discrimination in healthcare settings and barriers to accessing healthcare [1–5]. Stigma and discrimination combined with minority stress, and cultural and social norms that give preference to heterosexuality, cisgenderism and endosexism, are some of the root causes that contribute to these health inequalities [1,3]. Gaps in cultural competencies regarding LGBTI health, lack of awareness and knowledge of the unique health and healthcare needs of LGBTI patients, along with non-inclusive attitudes have been identified as potential contributing factors amongst healthcare professionals and undergraduate students [1,2,6–14].

The training of healthcare workers to improve cultural competencies regarding the health needs of LGBTI people is a fundamental step to addressing health inequalities in healthcare settings. It is both a key component of learning for students in healthcare sectors and an essential continuing professional development (CPD) opportunity for healthcare workers to provide health services that are truly inclusive and equally accessible to all [14,15]. The belief expressed by some health professionals that "we treat everyone the same" provides an erroneous rationale for not learning about LGBTI health needs [2,5,16] leading to a lack of both training and training standards [4,12,17–19]. Results from a series of focus groups in 6 EU Member States as part of the European Health4LGBTI project found that both healthcare professionals and LGBTI patients were concerned by this lack of training [2].

Several examples of educational interventions that demonstrate potential for increasing knowledge of LGBTI health and enhancement of inclusive attitudes toward LGBTI patients have recently been published. These interventions have been created and evaluated in different healthcare sectors for example see [6,12,20–23]. However, to the best of our knowledge, these existing approaches are less frequently studied in Europe [19], where the health inequalities for LGBTI people persist with substantial differences between countries [1,2,24,25]. Moreover, they were not evaluated in international and multi-centred studies, did not include support staff and have not focused on specific LGBTI subgroups [14,19]. Specific areas of LGBTI health are poorly represented in training for healthcare professionals, such as trans or intersex health, yet these are critically important given the observed gaps in evidence for these fields [25–27].

The Health4LGBTI training course has been created in the context of a European Commission funded pilot project aimed at reducing health inequalities experienced by LGBTI people. This paper presents the training course and explores the results of a pilot evaluation to understand the impact of the training on the knowledge and attitudes of healthcare professionals, whilst considering the differences across healthcare professionals' socio-demographic and professional characteristics, as well as their experiences of healthcare provision. We hypothesise that the level of knowledge and inclusive attitudes will improve significantly after the training, independently of the professional and other characteristics of the participants.

[1] The acronym "LGBTI" stands for lesbian, gay, bisexual, trans, and intersex. This paper will also use other configurations of the acronym when the cited reference reports results specifically emerged in the context of those subgroups within this population, such as LBQ (lesbian, bisexual, and queer women), LBT, LGBT, etc. or when Health4LGBTI results/contents referring to specific subgroups (i.e. LGB or T or I). Otherwise, when contents of a cited reference potentially refer to the target population of the study or the cited reference reported general consideration applicable to the LGBTI health field or general term have been used (e.g. LGBTI+) here in the paper we refer to all the LGBTI group, as this is the more inclusive terminology adopted by ILGA Europe – the European region of the International Lesbian, Gay, Bisexual, Trans and Intersex Association.

2. Material and methods

2.1. The Health4LGBTI training course

The EU funded Health4LGBTI training course was developed by a Consortium of European partners (EuroHealthNet in Belgium; Verona University Hospital in Italy; National Institute of Public Health – National Institute of Hygiene in Poland; the University of Brighton in the UK and the International Lesbian, Gay, Bisexual, Trans and Intersex Association – ILGA Europe in Belgium). The course aims to increase healthcare professionals' knowledge of LGBTI health needs, and healthcare inequalities, as well as at improving their attitudes and skills to provide inclusive healthcare for LGBTI patients. The training course is not dedicated to any single health profession or a specific country/region. Moreover, support staff working in healthcare settings (e.g. front-line staff who are in contact with patients) may also benefit from the training course. See Fig. 1 for course development, content and topics.

The results reported in this paper emerged in the context of piloting the training between September and November 2017 in six EU Member States (Belgium, Bulgaria, Italy, Lithuania, Poland, and the UK). The pilot evaluated both the effectiveness of the training and healthcare professionals' satisfaction, as well as the feasibility of implementing the training course. Participants at the final conference of the Health4LGBTI project, the Advisory Board and the funding Agency (EC-DG SANTE) reviewed the training material, whilst the piloting phase served to adjust the final version of the training in collaboration with training facilitators. The final training materials are available in the public domain on the DG SANTE webpage (https://ec.europa.eu/health/social_determinants/projects/ep_funded_projects_en#fragment2) and can be freely used provided the source (© European Union, 2018) is acknowledged.

2.2. Piloting procedure

In each pilot site, a member of the Consortium was responsible for the organisation, recruitment and delivery of the training course. Recruitment strategies, adapted to local settings, included a mix of different methods: working with gatekeepers, sending invitations, utilisation of social media, direct recruitment through personal and professional contacts, recruitment via LGBTI formal networks and within health care settings, universities and/or involvement of the management of the local hospitals. A purposeful recruitment strategy was used to ensure that there was a representation of different professional categories. In order to facilitate the recruitment procedure in Italy and in Poland, Continued Medical Education credits were offered to attendees. No formal power analysis was performed and a convenience sample of approximately 20 trainees per site were recruited with the aim to maximise inclusion of a broad range of different healthcare professionals and non-clinical support staff. The group size was selected to optimise available resources whilst at the same time ensuring that the training itself could be interactive.

Inclusion criteria were: being a health professional or support staff in healthcare services; conversant in the training language specific to each country, and; the capacity to sign informed consent. Only participants who completed both the pre- and post-test questionnaires were included in the analysis for this paper.

At each of the six sites, all four modules of the training course were delivered to approximately equal numbers of participants. Flexibility in scheduling was allowed (i.e. in one full day or split into two shorter parts) in order to maximise participation.

Health4GBTI training main characteristics

Training developing steps

Phase 1: a state-of-the-art review of health inequalities and barriers faced by LGBTI people in healthcare setting [1,25];

Phase 2: an analysis of healthcare professionals' and LGBTI people's perspectives through qualitative methods [2];

Phase 3: a preliminary pre-piloting phase of a draft version of the training involving healthcare professionals and staff;

Phase 4: a piloting phase across EU MS*;

Phase 5: consultation with DG SANTE and the Advisory Board of the Health4LGBTI project.

Training contents: 4 Modules (of around two hours each)

Module 1 "awareness raising, LGBTI main concepts and terms"

Aim: raising awareness of the relevance of cultural **competencies** training in the LGBTI field for healthcare workers

Module 2 "health inequalities"

Aim: addressing the main health needs for LGBTI people, as emerged from an updated literature review, and **leading** to reflect on the root causes of LGBTI health inequalities, discussing the role of attitude, internalised stigma and minority stress

Module 3 "inclusive communication and promising practice"

Aim: focusing on practical activities to improve healthcare worker-patient relationships and reflections on possible practical changes in the trainees health contexts

Module 4 "trans and intersex health needs"

Aim: addressing some core contents **which are** useful in taking care of these patients

Training methods

The training integrates theoretical and practical sections, including for example small group activities, large group discussion, role playing, case studies, videos, questions, reflective practice, according to adult learning approach.

Through continuous interactions centred on **trainees'** needs, trainers motivate the learning process, stimulate reflective practice, solve trainees' potential doubts and help them to contextualise the contents in their specific healthcare setting.

Trainers

Two trainers per pilot site were identified to implement the training course: a healthcare professional with knowledge and expertise in the area of health inequalities and a LGBTI NGO/community member with experience in training **delivery**.

** the piloting phase results are reported in the paper*

Fig. 1. Health4GBTI training main characteristics.

2.3. Evaluation procedure

The training has been evaluated using different approaches (see the evaluation report for details [28]). This paper presents the results of the pre- and post-evaluation using a purposively designed questionnaire completed by participants immediately before and after the training course. Apart from socio-demographics and professional profile information, the questionnaire comprised 9 knowledge items and 11 attitudes items including behavioural intentions (as it was not possible to evaluate real behaviour, we asked for the subjective probability that participants will engage in a given behaviour) and self-perceived competencies. The questionnaire development is described fully in the Evaluation Tool Annex reported in the Trainers Manual [29]. Briefly, the knowledge questions were developed based on the content of the modules and the attitudes items were adopted from existing tools, which we identified as relevant from the published literature. Items were selected, discussed, and adapted by the project team and tested in the pre-piloting phase of the project. Ethical approval to conduct the piloting was provided by the Ethics Committee of the Verona University Hospital (1258CESC).

2.4. Variables

The following data were included in the analysis: age group (18–30, 31–50, and 51–64 years old), sexual orientation (collapsed into 'LGB' - i.e. asexual, bisexual, homosexual, other - and "heterosexual") and professional healthcare profile (collapsed into "physician", "nurse", "psychologist", and "other"). Other sample sociodemographic characteristics are available in Rosinska et al. [28]. In the paper, the information on gender identity and sex characteristics were excluded from the analysis due to the scarce representation of T or I participants, but also to a lack of clarity of the question which made the results unreliable.

Before the training, participants' self-assessments of their attitudes towards LGBTI people were collected through a Likert scale from 1- inclusive to 10- negative. In addition, a set of variables called "past professional experience with" LGBTI patients aimed to describe the service provision to them according to the professionals' own judgment (Appendix A). Although healthcare needs are radically different for the L, G, B, T and I groups, we did not focus specifically on any one particular group, instead collapsing these variables into a single variable "past professional experience with LGBTI patients". Additionally, there was only a limited number of participants who provided care specifically to intersex patients, which would limit statistical power for the analysis. Participants were considered to have "experience with LGBTI patients" if they declared to have past experience of caring for at least one of the groups of LGBTI patients; otherwise they were coded as having had "no experience".

The knowledge questions (use of inclusive communication, basic knowledge of LGBTI concepts and terminology, and specific issues concerning trans and intersex health) were recoded into binary variables (1 = "correct answer"; 0 = "wrong or missing answer"). An overall knowledge score was calculated as the sum of eight recoded knowledge items.

The attitudes questions were evaluated on a five-point Likert scales (from "more inclusive attitude or greater skill" to "less inclusive attitude or fewer skills") coded in a scale of -2 (the least inclusive attitude) through 0 (neutral) to 2 (the most inclusive). In order to explore the underlying components of attitudes studied, we used principal-component factor method followed by varimax rotation. We identified factors with eigen values exceeding 1, which were used to create simplified scales; the factor loadings were replaced by 0 if the loading was <-0.4, by 1 in case it was between -0.4 and 0.4, and by 2 for loadings >0.4 [30].

2.5. Statistical analysis

We used chi-square test to compare distributions of categorical variables, univariable ordered logistic regression for comparing items on an ordinal scale (i.e. questions on a Likert scales), and Wilcoxon rank-sum test for comparing median score values. Knowledge scores and attitude scores were modelled with mixed Poisson regression, with random effect of the study site and fixed effects of timing of the measurement (pre- or post-training) and socio-demographic characteristics of participants. The following explanatory variables were considered in the regression analysis: age groups, sexual orientation, profession, "past professional experience with LGBTI patients" and whether the questionnaire was filled out before or after the training. Additionally, knowledge score was considered as predictor for the attitude scores. All available explanatory variables were entered into initial models. Backwards selection was applied to identify the important predictors. The indicator of whether the questionnaire was filled out before or after the training was retained in all models. Two-way interactions with time of measurement were investigated in order to identify factors that could modify the effectiveness of the training. Score ratios (SR) are reported. All analyses were performed in STATA 14.2 [31].

3. Results

3.1. Socio-demographic and professional characteristics of the training participants

Out of 110 participants attending the training across all piloting sites, 102 health professionals and support staff working in healthcare settings were included in the analysis. Eight participants were excluded as they submitted only pre-test questionnaire (6 participants), or only post-test questionnaire (2 participants). Approximately 38.6% of participants were 30 years old or less and 45.5% were LGB. The largest professional group were psychologists (30.4%), followed by nurses (22.5%) and physicians (20.6 %). The composition of the groups differed significantly across countries with respect to sexual orientation, profession and reported "past professional experience with LGBTI patients" (Appendix A). Before the training, only 6.8% of the participants placed themselves in the upper part of the Likert scale (score >5) in terms of attitude towards LGBTI people with no significant differences between sites.

3.2. Knowledge on LGBTI topics before and after the training

Before the training the proportion of correct answers exceeded 70% for the two 'inclusive communication' questions but was variable for 'terminology and concepts' questions (34.3 %–66.7 %) and 'trans and intersex health' questions (45.1 %–74.5 %) (Table 1). For all the knowledge questions (except two), the proportion of correct answers increased significantly in the post-test. For one of

Table 1
Differences in pre- and post-test knowledge scores[a].

Question[b]	Correct answer	Correct answers N (%)		p-value[c]
		Pre-test	Post-test	
Inclusive communication:				
Using a neutral language (e.g.: "partner" instead of "husband/wife", "parent" instead of "mother/father" etc.):	is one of the things that a health professional can do in order to set an inclusive environment	82 (80.4)	95 (93.1)	0.007
When speaking with patients/clients, health professionals should:	be aware both of the medical terms and the terms preferred by the LGBTI community, but they should ask the patients themselves how they want to be addressed	73 (71.6)	80 (78.4)	0.258
Terminology and concepts:				
The terms "gay" and "MSM (men-who-have-sex-with-men)" are:	different, because "MSM" refers to a sexual behaviour that does not necessarily imply that the person identifies as gay or bisexual	68 (66.7)	89 (87.3)	<0.001
Intersectionality. When speaking about LGBTI people, this concept highlights social disadvantages and factors other than being LGBTI that people can face:	true	35 (34.3)	80 (78.4)	<0.001
The terms "sexual orientation", "gender identity" and "sex characteristics" are:	different, and they are not necessarily related nor do necessarily affect/imply certain specific development of the other ones	60 (58.8)	68 (66.7)	0.247
Trans and intersex health:				
Corrective surgeries and other medical, hormonal and psychological treatments for intersex people are:	not always necessary, as in many cases an intersex body is a perfectly healthy body	76 (74.5)	93 (91.2)	0.002
The fact that someone has an intersex body	will not certainly become apparent, it is possible that some intersex people never find out at all	46 (45.1)	62 (60.8)	0.025
"Maria is a trans woman":	Maria identifies as a woman: her gender identity is female. However, at birth her assigned sex was male	64 (62.7)	89 (87.3)	<0.001

[a] One knowledge item "appropriateness of terms gay, gay man, homosexual" was excluded due to cross-cultural and translation issues, because in some countries multiple correct terms were identified.
[b] question included in the table have been **synthesised** from the original one; the full questionnaire is available on the evaluation report [27].
[c] chi-square test.

Table 2
Pre- and post- knowledge score and the predictors of the knowledge score.

		Pre-test knowledge score		Post-test knowledge score		Multivariate predictors of knowledge score	
	N	median (IQR)	p-value	median (IQR)	p-value	IRR (95% CI)	p-value
Time of the test							
Pre-test	102	5.0 (4.0-6.0)		not relevant		Ref.	0.044
Post-test	102	not relevant		7.0 (5.0–8.0)		1.18 (1.0–1.38)	
Age group							
18-30	39	5.0 (4.0–7.0)	0.06	7.0 (6.0–8.0)	0.107	Ref.	0.1306
31-50	43	5.0 (4.0–6.0)		7.0 (5.0–8.0)		0.92 (0.81–1.05)	
51–64	19	4.0 (3.0–5.0)		7.0 (4.0–7.0)		0.84 (0.71–1.00)	
Sexual orientation							
LGB	53	6.0 (5.0–7.0)	<0.001	7.0 (6.0–8.0)	0.382	Ref.	
heterosexual	49	4.0 (3.0–5.0)		7.0 (5.0–7.0)		0.75 (0.62–0.91)	0.003
Profession							
Physician	21	5.0 (4.0–7.0)	0.674	7.0 (6.0–7.0)	0.005		
Nurse	23	5.0 (4.0–6.0)		7.0 (5.0–8.0)			
Psychologist	31	5.0 (3.0–6.0)		7.0 (5.0–7.0)			
Other	27	5.0 (4.0–7.0)		7.0 (6.0–8.0)			
Past professional experience with LGBTI patients							
No	22	5.0 (3.0–6.0)	0.384	7.0 (5.0–8.0)	0.791		
Yes	69	5.0 (4.0–6.0)		7.0 (6.0–8.0)			
Interaction sexual orientation*time of test							
Heterosexual & post-test						1.27 (1.00–1.61)	0.047
Accounting for interaction							
In heterosexual group:							
Post-test vs pre-test						1.49 (1.25–1.78)	<0.001
In post-test:							
Heterosexual vs LGB						0.95 (0.81–1.12)	0.583

them, concerning understanding of the terms "sexual orientation", "gender identity" and "sex characteristics", the original proportion of correct answers (58.8%) only improved slightly and remained relatively low (66.7%). Although a significant increase in the proportion of correct answers emerged for both intersex questions, "the fact that some intersex people may never find out that they have an intersex body" remained at 60.8% of correct answers even after the training.

The median knowledge score (i.e. the number of correct answers out of the 8 knowledge questions) increased from 5 to 7 ($p < 0.001$) (Table 2). The median pre-test knowledge score was higher among LGB (6) than among heterosexual people (4) in the pre-test ($p < 0.001$). However, in the post-test the differences were not significant and the median score was 7 in both groups ($p = 0.382$). There were no specific differences related to past professional experience with LGBTI patients.

In the final multivariable model (Table 2), a higher knowledge score was predicted by post-test compared to pre-test and by LGB identification, with a significant two-way interaction between these two variables. Taking into account this interaction a post-test knowledge score increased by almost 50% in the heterosexual group and by 18% in LGB group. Of note knowledge score post training was comparable between the LGB and heterosexual groups, although heterosexual orientation predicted lower knowledge score at the pre-test.

3.3. Attitudes before and after the training

Despite generally positive attitudes before the training (Table 3), less than half of participants were very likely or most likely to ask about sexual orientation, gender identity or sexual characteristics (36.3%). Likewise, less than half disagreed or strongly disagreed that knowing a person is LGBTI did not affect their role at work (37%), and 31.4% disagreed or strongly disagreed that LGBTI people have the same access to healthcare. Only 51% agreed or strongly agreed that they felt competent to provide services to LGBTI patients.

After training (Table 3), the data showed a trend towards more inclusive attitudes with significant results occurring for five questions. In particular, a higher proportion of participants declared that they were likely to "ask about sexual orientation, gender identity and sexual characteristics" ($p = 0.001$), to acknowledge that "LGBTI persons do not have the same access to healthcare as everybody" ($p = 0.001$), and reported having " . . . competences and skills to provide service to LGBTI people" ($p = 0.001$).

3.4. Indicators of improvement in the attitude after the training

Based on the factor analysis of the attitude questions (Appendix B), three scores created as follows: "Willingness" (*willingness to inclusive practice;* questions Q10, Q11, Q18, Q20); "Self-competence" (*self-competence in care provision for LGBTI people*; questions Q9, Q14, Q17), and; "Acknowledgement" (*acknowledgement of LGBTI need in healthcare;* questions Q12, Q13, Q16). After the training, in general more inclusive attitudes emerged for all three factors (Table 4).

Before the training, differences emerged across age groups and professions in the "*Self-competence*" factor (p-values respectively 0.001 and 0.044). Whilst these differences turned out to be not significant across professions after the training, a different self-assessed competence remained after the training across ages. Despite an improvement in all attitudes' scores, heterosexual participants reported a lower "*Willingness*" score both in pre- and post-test (p-values <0.001, 0.004 respectively) as well as lower "*Acknowledgement*" score in the pre-test ($p = 0.039$). Before the training, a higher "*Willingness*" score ($p = 0.019$) and

Table 3
Differences in pre- and post- self-assessed attitude.

Question[a]	Scale	Pre-test Distribution of answers N (%)	Post-test Distribution of answers N (%)	P value
Q8: How likely are you to intervene if you witness a stigmatizing or discriminatory behaviour against an LGBTI person at your work place?	Very likely	56 (55.4)	63 (62.4)	0.518
	Most likely	34 (33.7)	33 (32.7)	
	Somewhat likely	7 (6.9)	4 (4.0)	
	Not very likely	3 (3.0)	1 (1.0)	
	I do not know	1 (1.0)	0 (0.0)	
Q9: How likely are you to ask about the sexual orientation, gender identity, and/or sex characteristics of a patient/client?	Very likely	18 (17.6)	16 (15.7)	0.001
	Most likely	19 (18.6)	44 (43.1)	
	Somewhat likely	21 (20.6)	22 (21.6)	
	Not very likely	42 (41.2)	19 (18.6)	
	I do not know	2 (2.0)	1 (1.0)	
Q10: How often do you use a neutral language (e.g.: "partner" instead of "husband/wife", "parent" instead of "mother/father" etc.) when asking about the family relations?	Very often	34 (33.7)	41 (40.6)	0.538
	Often	24 (23.8)	28 (27.7)	
	Somewhat often	29 (28.7)	22 (21.8)	
	Not very often	11 (10.9)	9 (8.9)	
	Not often at all	3 (3.0)	1 (1.0)	
Q11: "I would like all my patients/clients to know that I care about the specific needs of LGBTI patients/clients."	Strongly agree	52 (52.0)	56 (54.9)	0.386
	Agree	34 (34.0)	38 (37.3)	
	Neither agree nor disagree	13 (13.0)	7 (6.9)	
	Disagree	1 (1.0)	0 (0.0)	
	Strongly disagree	0 (0.0)	1 (1.0)	
Q12: "I do not see how knowing that a person is lesbian, gay, bisexual, trans or intersex might affect my role at work."	Strongly agree	19 (19.0)	15 (14.7)	0.579
	Agree	21 (21.0)	21 (20.6)	
	Neither agree nor disagree	23 (23.0)	22 (21.6)	
	Disagree	24 (24.0)	22 (21.6)	
	Strongly disagree	13 (13.0)	22 (21.6)	
Q13: "I think it is better if patients/clients keep information on their sexual orientation, gender identity and/or sex characteristics for themselves."	Strongly agree	2 (2.0)	0 (0.0)	0.234
	Agree	6 (5.9)	4 (3.9)	
	Neither agree nor disagree	34 (33.3)	31 (30.4)	
	Disagree	29 (28.4)	42 (41.2)	
	Strongly disagree	31 (30.4)	25 (24.5)	
Q14: "At this point in my professional development, I feel that I have the competences and skills to provide service to LGBTI patients/clients."	Strongly agree	10 (10.0)	20 (19.6)	0.001
	Agree	41 (41.0)	59 (57.8)	
	Neither agree nor disagree	30 (30.0)	19 (18.6)	
	Disagree	17 (17.0)	4 (3.9)	
	Strongly disagree	2 (2.0)	0 (0.0)	
Q16: "Generally speaking, in my country LGBTI people have the same access to healthcare as any other patient/client."	Strongly agree	13 (12.7)	4 (3.9)	0.001
	Agree	38 (37.3)	18 (17.6)	
	Neither agree nor disagree	19 (18.6)	25 (24.5)	
	Disagree	20 (19.6)	38 (37.3)	
	Strongly disagree	12 (11.8)	17 (16.7)	
Q18: "I think that LGBTI perspective should be an integral part of the medical staff education curriculum."	Strongly agree	57 (56.4)	76 (74.5)	0.011
	Agree	37 (36.6)	25 (24.5)	
	Neither agree nor disagree	6 (5.9)	0 (0.0)	
	Disagree	1 (1.0)	0 (0.0)	
	Strongly disagree	0 (0.0)	1 (1.0)	
Q17: "It's difficult to talk about sexual orientation, gender identity and/or sex characteristics with my patient/client."	Strongly agree	3 (2.9)	4 (3.9)	0.200
	Agree	11 (10.8)	10 (9.8)	
	Neither agree nor disagree	29 (28.4)	16 (15.7)	
	Disagree	45 (44.1)	50 (49.0)	
	Strongly disagree	14 (13.7)	22 (21.6)	
Q20: Do you agree with the statement: "If I could decide myself, I would feel comfortable to change my practice (e.g. the way my office looks like, documentation, communication style) to be more LGBTI friendly."	Strongly agree	36 (35.6)	60 (58.8)	0.011
	Agree	43 (42.6)	28 (27.5)	
	Neither agree nor disagree	18 (17.8)	13 (12.7)	
	Disagree	3 (3.0)	0 (0.0)	
	Strongly disagree	1 (1.0)	1 (1.0)	

[a] question included in the table have been synthetized from the original one; the full questionnaire is available on the evaluation report. *percent per category is presented with respect to the non-missing values. Missing values are not shown for clarity, but the range of missing observations per question was 0-2.

"*Self-competence*" score in the pre-test (0.004) resulted for participants with past professional experience with LGBTI patients. However, no significant differences emerged after the training between these groups.

The variables summarised in Table 4 were subsequently entered into three multivariate models evaluating factors associated with "*Self-competence*", "*Acknowledgement*" and "*Willingness*" scores. Below we summarise these factors, which were significantly associated with the respective scores. All other factors were not significant in the multivariable models. The "*Self-competence*" score increased significantly in the post-test in comparison to pre-test (SR 1.17, 95% CI 1.05–1.30, p-value 0.004). Moreover, past professional experience with LGBTI patients predicted higher scores for this attitude factor (SR 1.29, 95% CI 1.11–1.47,

Table 4
Pre- and post-training attitude scores[a], by demographic and professional characteristics.

		Willingness to inclusive practice				Self-competence in care provision for LGBTI people				Acknowledgement of LGBTI needs in healthcare			
	N	Pre-test median value (IQR)	p-value	Post-test median value (IQR)	p-value	Pre-test median value (IQR)	p-value	Post-test median value (IQR)	p-value	Pre-test median value (IQR)	p-value	Post-test median value (IQR)	p-value
Total	102	5.0 (3.0–6.0)		6.0 (4.0–8.0)		1.0 (−1.0–3.0)		2.0 (1.0–3.0)		0.0 (−1.0–2.0)		1.5 (−0.5–3.0)	
Age group													
18-30	39	5.0 (3.0–7.0)	0.530	6.0 (4.0–8.0)	0.124	0.0 (−1.0–1.0)	0.001	2.0 (0.0–3.0)	0.02	1.0 (−1.0–2.0)	0.148	2.0 (1.0–3.0)	0.431
31-50	42	5.0 (3.0–7.0)		6.0 (5.0–7.0)		2.0 (0.0–3.0)		3.0 (1.0–4.0)		1.0 (−1.0–2.0)		2.0 (−1.0–4.0)	
51–64	19	4.5 (3.0–6.0)		5.0 (3.0–6.0)		1.0 (-1.0–3.0)		2.0 (1.0–3.0)		−1.0 (−2.0–1.0)		0.0 (−2.0–2.0)	
Sexual orientation													
LGB	50	6.0 (4.0–7.0)	0.000	7.0 (5.0–8.0)	0.004	1.0 (0.0–3.0)	0.484	3.0 (1.0–4.0)	0.116	1.0 (0.0–3.0)	0.039	2.0 (0.0–3.0)	0.222
Heterosexual	52	4.0 (2.0–5.0)		6.0 (3.0–6.5)		0.0 (−1.0–2.0)		2.0 (0.5–3.0)		−1.0 (−2.0–2.0)		1.0 (−0.5–3.0)	
Profession													
Physician	20	5.0 (3.0–7.0)	0.373	6.0 (3.0–7.0)	0.118	0.5 (−1.0–2.0)	0.044	2.5 (1.0–3.0)	0.283	0.0 (−1.0–2.0)	0.618	2.0 (0.5–3.0)	0.753
Nurse	23	4.0 (3.0–6.0)		6.0 (5.0–7.0)		0.0 (−1.0–1.0)		2.0 (1.0–3.0)		0.0 (−1.0–2.0)		1.0 (0.0–3.0)	
Psychologist	32	5.0 (3.0–6.0)		6.0 (4.0–7.5)		2.0 (0.0–3.0)		3.0 (2.0–3.5)		1.0 (−1.0–2.0)		1.0 (-1.0–3.0)	
Other	25	5.0 (3.0–6.0)		7.0 (4.0–8.0)		1.0 (−1.0–3.0)		2.0 (1.0–3.0)		0.0 (−1.0–2.0)		2.0 (−1.0–3.0)	
Professional experience with LGBTI patients													
No	18	4.0 (2.0–5.0)	0.019	6.0 (3.0–7.0)	0.427	−1.0 (-1.0–1.0)	0.004	0.5 (0.0–3.0)	0.163	0.5 (-1.0–2.0)	0.955	1.5 (0.0–3.0)	0.713
Yes	69	6.0 (4.0–7.0)		6.0 (4.0–8.0)		2.0 (0.0–3.0)		3.0 (2.0–4.0)		0.5 (−1.0–2.0)		2.0 (−1.0–3.0)	

[a] Attitude scores are defined as sum of scores for individual attitude questions. For each question the scale ranges from -2 to 2, where 0 represents neutral answer, negative values – less desirable attitudes and positive values – desirable. The range of Willingness to inclusive practice is from -8 to 8, Self-competence in care provision for LGBTI people – from -6 to 6, Acknowledgement of LGBTI needs in healthcare – from – 6 to 6.

p-value 0.001). Higher "*Acknowledgement*" scores were predicted by a higher knowledge score, SR of 1.05 (95% CI 1.02–1.09) per additional knowledge score point, p-value 0.004. However, being aged 51–64 in comparison to younger ages was associated with a lower score in this attitude factor (SR 0.83, 95% CI 0.71-0.97, p-value 0.017). Furthermore, "*Willingness*" factor was also associated with sexual orientation of trainees: heterosexual trainees predicted lower "*Willingness*" scores (SR 0.92, 95% CI 0.85-0.998, p-value 0.046).

4. Discussion and conclusion

4.1. Discussion

Although knowledge levels were found to be reasonable already before participating in the training course, the training improved participants' knowledge regarding inclusive communication, understanding of basic terminology, concepts, and main trans and intersex health issues. Specifically, having undertaken training was the most significant predictor of a higher level of knowledge.

Some concepts were less familiar to the participants before training. For example, intersectionality which should be considered in taking care of LGBTI patients [5], was poorly understood before the training, but increased by 44.1% after the training. Conversely, some gaps remained. Understanding of the difference between the concepts of "sexual orientation", "gender identity" and "sex characteristics", only improved slightly after the training, suggesting that the core content of the training potentially needs to be adjusted further and/or explained more fully.

The sample included a high proportion of LGB participants (45.5%). Therefore, in this paper we were able to use this variable as a proxy of previous awareness, better knowledge and inclusive attitudes, as confirmed by the pre-test knowledge scores in comparison with heterosexual participants. When implementing the training as part of healthcare, the baseline knowledge may be lower compared to this study. The post-test median scores did not differ and were uniformly high in all groups and improvement in knowledge did not depend on previous professional experience with LGBTI patients. Thus, there is a significant learning benefit to undertaking the course regardless of previous knowledge and it can be argued that this training is generally appropriate for healthcare professionals.

Although in terms of general attitude participants evaluated themselves as already being inclusive toward LGBTI people, variability emerged across specific aspects relating to attitudes before the training. Whilst they were willing to provide inclusive practice, participants still largely believed (erroneously) that LGBTI people have similar access to healthcare compared to the general population and they were not very likely to ask about a patient's sexual orientation, gender identity or sex characteristics, nor use gender neutral language when addressing patients. Similarly, in Stott [32] medical students rarely asked about sexual orientation, gender identity or sexual health during clinical practice although they indicated that they felt comfortable with LGBT people. Despite the generally inclusive attitudes, these attitudes can contribute to heteronormative assumptions in healthcare that pose a barrier for LGBTI people to accessing care [2,3]. Finally, before the training, half of the participants declared they did not feel competent to provide services for LGBTI patients. This confirms the benefit of promoting training to the healthcare professionals who evaluate themselves as being LGBTI inclusive.

Changes in attitude were less pronounced compared to improvement of knowledge, but nevertheless noticeable especially in terms of improved awareness of LGBTI needs in healthcare and increased self-competence. The significant improvement in the "acknowledgement" factor was predicted by the increase in knowledge, while, the increase in self-competence did not depend on knowledge. Self-competence was higher after the training and in those professionals who declared past professional experience with LGBTI patients. Looking at single items, the proportion of participants who declared that they had the skills and competences to provide service to LGBTI people significantly increased after the training. "Self-competence" as measured in our study, reflects to a certain extent, the self-efficacy or perceived behavioural control necessary for the behavioural change.

Although knowledge improved in all age groups, in the group aged 51–64 years, 25% achieved only half or fewer correct answers. "Self-competence" attitudes varied across age groups; however age represented a significant determinant in multivariable analysis only for "acknowledgment of LGBTI needs" factor, with the oldest age group reporting lower acknowledgement. Although being younger was associated with more positive attitudes toward LGBTQ people, literature on the role of age in this field is not consistent [3].

The study presents some limitations. Although participation in the training was open to all healthcare and support workers, participants presented existing high levels of knowledge and inclusive attitudes. Almost half of the participants were LGB themselves and they achieved higher initial knowledge scores than their heterosexual counterparts. This could reflect a sample bias towards those willing to engage with LGBTI people and affect the generalisability of the results. However, we note that the differences between LGB and heterosexual participants after the training were minimal, which supports the supposition that the course is suitable for less knowledgeable audiences as well as those already conversant. With regards to generalisability, to the best of our knowledge in the LGBTI cultural competence training field, this study represents the first to be multicentre [14]. The inclusion of participants from six different European countries, with very different cultural backgrounds and discrimination levels aimed to maximise the generalisability of findings. However, a comparison across countries was not in the scope of the study and the results from any given site should not be considered representative for the entire country.

The delivery of the training was flexible and a slight adaptation of some activities to increase relevance was necessary. However, diverse strategies have been used to optimise the standardisation of the pilot training, such as detailed written instruction in the Trainer's Manual and train-the-trainer session to address any doubts regarding training implementation in each country.

Finally, effectiveness has been evaluated in terms of professionals' knowledge and attitudes, using the questionnaire which was not validated before, without considering the patients' perspective or considering direct health or service-related outcomes. Attitudes are self-evaluated and the knowledge and attitude do not necessarily translate into a real-world behavioural change. Clinical practice is implemented in a context of regulations and policies determined at a system level and, without entertaining the full spectrum of possible barriers and facilitators, interventions to improve healthcare practice might not be effective. An example is the absence of policies regarding the in-patient accommodation for trans patients [13]. That said, interventions at the intrapersonal, interpersonal and structural level have the potential to positively influence other levels within an ecological system [33]. Cultural competency training can empower healthcare workers by influencing structural factors and policy at a system level [34].

This study has a number of strengths insofar as a large sample of healthcare workers participated in the training, including non-clinical staff. The sample size was based on the idea that all the members of the health system contribute to the unique healthcare experience of patients and the entire healthcare team should be

educated to create a non-judgmental and culturally sensitive environment for LGBT patients [4]. Evaluation of the training suggests that LGBTI specific knowledge is relevant to both clinical and non-clinical participants and, in multivariable analysis, participants' profession did not turn out to be a significant determinant of the knowledge and attitude scores.

Furthermore, the Health4LGBTI training course is based on contemporary evidence to take into account the specific needs of trans and intersex people [14].

Finally, in recognition of the importance of co-production when developing cultural competence training [6], the Health4LGBTI training course has been developed with the active involvement of the main stakeholders, namely key advocacy groups such as OII (Organisation Intersex International) and ILGA Europe, grassroots NGOs in all the EU Member States and health professionals from different countries and a range of professional backgrounds, thus ensuring the practicability and acceptability of the training.

4.2. Conclusion

The Health4LGBTI training course led to the acquisition of essential knowledge in LGBTI health and represented an opportunity to improve attitudes for both healthcare professionals and non-clinical staff. The course led to an increase in knowledge, and although less marked, to an improvement in attitudes, irrespective of participants age and sexual orientation. The implementation of the training in different European Member States made this multicentre study of particular relevance and arguably the results therefore more generalisable. Nonetheless, preliminary results of the pilot should be explored in different contexts and with different healthcare professionals, including those who might not be open to LGBTI inclusion. The Health4LGBTI training offers an important starting point that can be adapted to local settings, thus ensuring that it is culturally and situationally relevant.

4.3. Practice implications

Health4LGBTI cultural competence training can empower healthcare professionals and support staff to identify and overcome barriers at an individual and system level. The dissemination of educational interventions across Europe, in ways that can address local specificities, is a key strategy in implementing best practice approaches in providing appropriate and inclusive care for LGBTI people and to address their specific needs in healthcare settings.

Improving healthcare workers' competences is a crucial part of multilevel interventions to reduce health inequalities. Moreover, the promotion of specific training on LGBTI health across different institutions and the empowerment of healthcare workers could have a "cascade effect" on different stakeholders (top-down approach). Alternatively, although not evaluated in the study, the pilot implementation of the Health4LGBTI training also created an opportunity to form a network of healthcare professionals willing to provide equitable health services. The implementation of training can thus reinforce the motivations of health professionals already sensitised to this topic, to share their knowledge and experiences (bottom-up approach) of LGBTI inclusive care. This is an important step to ensuring healthcare becomes equally accessible to all, including LGBTI people.

Author's contributions

All authors have made substantial contributions to the conception and design of the study; VD, MR, KZ, FF, FA drafted the article; MR, KZ coordinated the data collection and data management and performed the formal analysis; FA, MR, NS, NP, LZ were responsible for training organisation, recruitment and delivery in the 6 Member States; All authors revised the manuscript critically for important intellectual content. All authors reviewed and approved the final version of the manuscript to be submitted.

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Declaration of Competing Interest

None.

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Appendix A

Appendix A and Appendix B are available online: http://psychiatry.univr.it/projects/health4lgbti/documents.

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