

Supplementary file 5: Study characteristics

Author Year Country Design	Study population Number of participants	Population characteristics	Training target(s) Outcomes collected Tool(s) used	Study findings
Altmiller 2023 [24] USA Pre-post intervention study with comparison group Not randomised	Undergraduate Junior (Year 3) and Senior (Year 4) nursing students undertaking baccalaureate programme at one nursing school in the mid-Atlantic USA n=126 [I] n=63 (37 Juniors, 26 Seniors) [C] n=63 (34 Juniors, 29 Seniors)	No further population characteristics provided n=81 completed pre- and post-test survey	ATTITUDES BELIEFS COMFORT Pre-post training surveys using Transgender Attitudes and Beliefs Scale (TABS) Total score Interpersonal comfort sub-scale Sex and gender belief sub-scale Human value sub-scale Validated measure	Pre-post scores (between group comparison) Total score: [I] 0.84 score change; [C] 3.63 score change (p=0.829) Interpersonal comfort: [I] -0.66 score change; [C] 1.75 score change (p=0.608) Sex/gender beliefs: [I] 1.12 score change; [C] 1.75 score change (p=0.561) Human value: [I] 0.38 score change; [C] 0.12 score change (p=0.004)
Bauman and Hale [25] 1985 USA Pre-post intervention study with comparison group Not randomised	Undergraduate medical students (Year 1) [I] Elective course on homosexuality [C] Elective course on nutrition Number of participants not stated	No population characteristics provided	ATTITUDES 15-item pre-post course attitude questionnaire 7-point Likert scale Non-validated measure	Pre-post scores (between group comparison) Pre-course: [I] 84.9; [C] 74.7; p=0.04 Post-course: [I] 91.1; [C] 74.7; p<0.001 Within group comparison: [I] p=0.05; [C] No difference [I] Significantly more accepting towards homosexual lifestyles on 12/15 measures; [C] No difference
Garcia Acosta 2019 [26] Spain (Canary	Undergraduate nursing students (Years 3 and 4)	Sex: [I] Arm 1: M: 7 (22.6%) [I] Arm 2: M: 8 (28.6%)	KNOWLEDGE 30-item Knowledge Questionnaire about	Mean differences in post-test scores (between group comparison)

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Islands) Pre-post intervention study with comparison group Intervention group randomised	n=114 [I] Arm 1: (Film forum) n=31 Year 4 students [I] Arm 2: (Problem-based learning) n=28 Year 4 students [C] n=57 Year 3 students from same faculty	[C] M: 15 (26.3%) Mean age: [I] Arm 1: 23.0 (SD 4.1) [I] Arm 2: 22.7 (SD 3.6) [C] 22.1 (SD 4.9) Sexuality: [I] Arm 1: Heterosexual 24 (77.4%) [I] Arm 2: Heterosexual 21 (75%) [C] Heterosexual 53 (93%)	Transgender (KQaT) Domains: Biological (care protocol for transgender individuals) Psychological Social Legal Non-validated measure	Film forum vs. control: mean difference 0.347 (95% CI: 0.271 to 0.424); p<0.05 PBL vs. control: mean difference 0.312 (95% CI: 0.232 to 0.392); p<0.05 Significant improvement in knowledge post- intervention between either intervention group and control Film forum vs. PBL: mean difference 0.036 (- 0.054 to 0.125); p=1.00 No difference in knowledge post-intervention between intervention groups
Hawton 1979 [27] UK Pre-post intervention study with comparison group Not randomised	Undergraduate medical students (Year 1) n=70 [I] n=42 students taking human sexuality course [C] n=28 students at a similar stage of clinical study to whom the human sexuality course was not available [I] n=32 completed course	Substantially more male than female students No further population characteristics provided	ATTITUDES 22-item pre-post questionnaire covering various aspects of sexuality Pre-post questionnaire to measure attitudes to students' own sexuality Non-validated measures	Pre-post scores (within group comparison) [I] Significant change over time in attitudes towards homosexuality (p<0.001) [C] No differences over time in attitudes The 10 students who dropped out had pre- course scores suggesting less accepting attitudes towards homosexuality (p<0.05) compared with those who completed
Leslie 2018 [28] USA Randomised controlled trial	Undergraduate medical students (Year 1) n=143 [I] n=72; [C] n=70	Sex: [I] M: 41 (56.2%); F: 32 (43.8%) [C] M: 41 (57.7%); F: 29 (40.8%) Sexuality: [I] Heterosexual: 69 (94.5%) [C] Heterosexual: 64 (91.4%) Ethnicity (white):	ATTITUDES Implicit Association Test (IAT) to assess implicit bias Validated measure	Pre-post scores (between group comparison) Implicit bias specific to sexuality: [I] Post-intervention IAT mean 0.21 [C] Post-intervention IAT mean 0.42 Difference between groups 0.21; Cohen's d=0.52 (moderate effect size) favouring intervention; p=0.002

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		[I] White: 60 (83.3%) [C] White: 48 (76.2%)		
Martin 2022 [29] USA Randomised controlled trial	Undergraduate medical and nursing students and physician assistants n=200 (immediate post- intervention follow-up) [I] Arm 1: TGD woman presenting with embedded videos of TGD adolescent lived experience (n=46) [I] Arm 2: Cisgender woman presenting with embedded videos of TGD adolescent lived experience (n=46) [I] Arm 3: Cisgender woman presenting without embedded videos (n=44) [C] Arm 4: No intervention (n=64) n=100 completed 30-day follow-up (n=19; n=28; n=29; n=24)	Sex: M: 39 (20%); F: 141 (71%); Non- binary: 20 (10%) Age: 18-25: 52 (26%) 26-35: 68 (34%) 36+: 80 (50%)	ATTITUDES COMFORT Change in total score of Transgender Knowledge, Attitudes and Beliefs Scale (T-KAB) and differences in sub- domains: Social tolerance Comfort and contact Acceptance Validated measure (adapted) T-KAB adapted by changing wording from “transgender men or women” to “adolescent males” or “adolescent females”	Pre-post scores (between group comparison) Mean scores on all measures of T-KAB increased in video group compared to the no video group; Improvements persisted after 30 days (p<0.01) Within group comparison: Arm 1: Total: t=4.80; p<0.001 Social tolerance: t=1.48 [NS] Comfort and contact: t=2.62; p<0.05 Acceptance: t=3.86; p<0.001 Arm 2: Total: t=2.77; p<0.01 Social tolerance: t=1.53 [NS] Comfort and contact: t=2.65; p<0.05 Acceptance: t=3.16; p<0.01 Arm 3: Total: t=3.91 p<0.001 Social tolerance: t=0.57 [NS] Comfort and contact: t=0.87 [NS] Acceptance: t=3.15; p<0.01 All intervention arms combined: Total: t=3.77; p<0.001 Social tolerance: t=0.59; p<0.05 Comfort and contact: t=1.96; p<0.001 Acceptance: t=1.75, p<0.001

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Ozkara San 2020 [30] USA Pre-post intervention study with comparison group Not randomised	Undergraduate nursing students with prior degree n=68 [I] n=16 taking foundations of oncology elective course [C] n=52 taking other mandated course	Sex: M: 16%; F: 84% Age: 25-30: 54% Ethnicity: White: 51%	SELF-EFFICACY Scores on Transcultural Self-Efficacy Tool (TSET) Total score Cognitive sub-scale Practical sub-scale Affective sub-scale Validated measure	Mean difference (SD) in pre-post scores (between group comparison) Total: [I] 1.35 (0.71); [C] 0.85 (0.81); p=0.027 Cognitive: [I] 1.57 (0.78); [C] 0.99 (1.0); p=0.025 Practical: [I] 1.42 (1.08); [C] 1.19 (1.26); NS Affective: [I] 1.49 (0.98); [C] 0.41 (0.96); p=0.024
Schabath 2022 [31] USA Randomised pragmatic trial	Randomly selected postgraduate oncologists selected for equal distribution across the USA n=225	No further population characteristics provided	KNOWLEDGE ATTITUDES PRACTICE LBGT-related knowledge, attitudes and affirmative practices immediately after intervention and at 3- month follow-up Non-validated measure	Pre-post scores (within group comparison) LGBT-related attitudes [I] Significant improvement (p<0.001) [C] No significant change (p=0.98) LGBT-affirming practice [I] Significant improvement (p<0.01) [C] Significant improvement (p<0.01) Knowledge [I] Significant improvement (p<0.01) [C] Significant improvement (p<0.01) Similar significant findings seen at 3 months
Singer 2019 [32] USA Pre-post intervention	Perinatal healthcare professionals (obstetricians, nurse-midwives, nurse practitioners, registered nurses, physician assistants)	Sex: M: 30 (16%); F: 157 (84%) Age: 20-29: 72 (38.5%) 20-39: 46 (24.6%)	KNOWLEDGE ATTITUDES INTENDED BEHAVIOUR Providing perinatal care to LGBT patients	Pre-post scores (within group comparison) Commitment to LGBT/queer care: [I] No difference; [C] No difference Prejudice:

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study with comparison group Not randomised	n=187 [I] n=99; [C] n=88	40-49: 27 (14.4%) 50-59: 26 (13.9%) 60-69: 10 (5.3%) Sexuality: Heterosexual: 135 (72.2%) Ally: 9 (4.8%) LGBTQ: 22 (11.8%)	5-point Likert scale Scale items aggregated into 7 sub-scales Non-validated measure	[I] NS reduction; [C] Sig. increase Sensitive language: [I] Sig. improvement; [C] Sig. improvement larger for intervention Misconception: [I] Sig. improvement; [C] NS improvement Normativity: [I] Sig. improvement; [C] No difference Health care equivalence: [I] No difference; [C] No difference
White 2020 [33] USA Pre-post intervention study with comparison group Not randomised	Postgraduate nursing students n=94 [I] n=30 students enrolled on course [C] n=64 students enrolled at institution but not on course	Sex: [I] F: 29 (97%) [C] F: 57 (89%) Age: [I] 18-29: 21 (71%) 30+: 9 (29%) [C] 18-29: 47 (74%) 30+: 17 (26%) Ethnicity: [I] White: 29 (97%) [C] White: 54 (84%) Sexuality: [I] Heterosexual: 28 (90%) [C] Heterosexual: 57 (90%)	KNOWLEDGE PREPAREDNESS COMFORT CONFIDENCE Pre-post intervention survey developed according to Theory of Planned Behaviour: Non-validated measure	Mean differences (SD) in post-test scores (between group comparison) Sexual health knowledge: [I] 94%; [C] 93% No difference between groups Preparedness to provide healthcare to diverse populations: [I] 4.37 (0.49); [C] 2.73 (1.14); Mean diff 1.63; p<0.05 Comfort initiating discussions: [I] 4.40 (0.89); [C] 3.50 (1.05); Mean diff 0.93; p<0.05 Confidence performing sexual health assessment with gender minorities: [I] 3.80 (1.06); [C] 2.31 (0.81); Mean diff 1.49; p<0.05

Key: C = control; I = intervention; TGD = Transgender; SD = standard deviation; LGBT = Lesbian, gay, bisexual, transgender; NS = Not significant