



Research article



TransfOrming Transnational intErcultural sensitivity for Midwifery students through an inclusive mobility model: A mixed-method evaluation of the TOTEMM project

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ABSTRACT

Background: Contemporary midwifery curricula require that student midwives have insight and understanding of global health practice and intercultural sensitivity. The current mobility model excludes large numbers of students from engaging in transnational learning.

Objectives: 1) to evaluate midwifery students' experiences of blended mobility; 2) to investigate if the combination of virtual and physical mobility activities supported development of intercultural sensitivity and soft skills.

Design: Multi-centre mixed-methods study.

Settings: Four European Higher Education Institutions located in England, Italy, Estonia and The Netherlands.

Participants: Sixty-four midwifery students studying in one of the four partner institutions selected as study sites and who participated in the TOTEMM blended mobility scheme took part in the evaluation.

Methods: Data were collected through two online surveys, face-to-face focus groups and learning analytics. Descriptive summary statistical analysis of survey data was undertaken. Focus group discussions were subjected to thematic analysis. Findings from the quantitative survey and qualitative focus groups were merged using a convergent mixed methods approach. Learning Analytics were interpreted as complementary to the above components, to further triangulate the findings.

Results: Both virtual and physical components were evaluated positively by students, with high engagement confirmed by learning analytics. A statistically significant increase in the mean of the Total Intercultural Sensitivity Scale score was seen between the pre- and post-mobility surveys, indicating participation in the TOTEMM mobility model was associated with enhanced intercultural sensitivity. Positive effects on confidence, open-mindedness, empathy, interaction and non-judgment were shared by participants.

Conclusions: TOTEMM is an innovative inclusive approach to enable a diverse student group to benefit from transnational learning, including the development of intercultural sensitivity. The TOTEMM blended mobility model has potential for integration into future midwifery curricula and programmes in the four partner settings involved in TOTEMM and utility for the wider European context.

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1. Introduction

For many years Erasmus has funded European students to study abroad as part of their degree programmes, aiming to develop improved awareness of different cultures and to grow global citizens. Expected benefits include improvement of soft skills, such as confidence, knowledge of international contexts, ability to interact and work with individuals from other cultures, adaptability, foreign language proficiency and communication skills (European Commission, 2014).

Contemporary midwifery curricula require that student midwives have insight and understanding of global health practice and intercultural sensitivity (ICM, 2023) and yet the current mobility model excludes large numbers of students from engaging in transnational learning. In midwifery education, Erasmus placements of nine weeks duration focus on providing clinical practice experience. However, the midwifery profession and student body are predominantly female and more likely to hold caring responsibilities. Such factors may potentiate inequalities in accessing international mobility. Previous research identified that barriers to physical mobility for some Erasmus students are family separation, poor integration between domestic and partner programmes, concerns over language differences and finance (Isserstedt and Schnitzer, 2002; Kehm, 2005). A cross-sectional survey conducted with 205 European midwifery students showed high level of interest across a range of mobility opportunities, especially those of shorter duration such as conferences, volunteering experiences, 1–2 weeks elective placements and study tours (Borrelli et al., 2021). Barriers to mobility reflected earlier research, including finance, caring responsibilities, concerns about fitting mobility activities into the midwifery programme, negative impact on studies and language barriers. The most frequently identified facilitators of mobility included professional perspectives such as interest in other cultures and midwifery in other settings and an endorsement that mobility would add value to the development as a midwife (Borrelli et al., 2021).

Mobility experiences help students develop intercultural competence (Hofstede, 2009), defined as ‘the ability to communicate effectively and appropriately in intercultural situations based on one’s own intercultural knowledge skills and attitudes’ (Deardorff, 2006: 247). The acquisition of intercultural competence is regarded as the most important outcome of mobility because it prepares students to live and work in other countries (Hinchcliffe and Jolly, 2010). Finding and evaluating new ways to widen opportunities in transnational learning and the development of intercultural sensitivity is an urgent priority and of particular relevance to midwifery students who are expected to provide culturally appropriate care for women and families from a range of backgrounds.

To address the identified gaps, we conducted the TOTEMM (Transforming Transnational intercultural sensitivity for Midwifery students through an inclusive Mobility model) project, funded by Erasmus+. The overall aims of the project were: 1) to promote equity, social inclusion and participation of non-mobile midwifery students, by co-creating and implementing an innovative blended mobility model that combined virtual and physical mobility activities; 2) to determine midwifery students’ experiences of blended mobility and make recommendations for future use; 3) to investigate if the combination of virtual and physical mobility activities supported development of intercultural sensitivity and soft skills, such as communication skills, team working, digital learning, language development, understanding of midwifery and related public health issues in European settings.

2. Methods

2.1. Study design

A multi-centre mixed-methods study was carried out in four European Higher Education Institutions located in England, Italy, Estonia and The Netherlands. As part of the TOTEMM blended mobility model,

the participating students were invited to complete two virtual learning packages on the Moodle platform, working jointly with students from partner institutions. The learning packages included an Introduction to Midwifery in Europe and one of four packages on public health topics related to midwifery practice (Promoting positive lifestyle choices; Empowering women to maintain their sense of safety; Championing the needs of the migrant population; Optimising psychological well-being for women and families). Packages were developed in collaboration with midwifery students (not participating in the evaluation project), service users, academics, researchers, an Advisory Group panel and the University of Nottingham Health and E-Learning Media team. Students also had an opportunity to be involved in a 5-day physical mobility component either through physical travel or hosting visiting students in one of the four partner countries.

Data were collected through two online surveys using the Jisc Online Surveys platform and face-to-face focus group discussions. Learning analytics about engagement with the virtual packages were also undertaken to complement and contextualise students’ experiences and the overall evaluation of the mobility model. The TOTEMM project started in September 2019 and was significantly affected by the Covid-19 pandemic. Following uncertainties on whether physical mobility could go ahead due to travel restrictions, this was rescheduled impacting on the overall project and evaluation schedule. Fig. 1 reports the different components and chronological timing of the evaluation.

2.2. Research team

The research team was composed by midwifery educators and researchers from all partner institutions in the United Kingdom, Estonia, Italy and The Netherlands. The University of Nottingham team led on data collection and analysis, with each partner facilitating two focus group discussions. The University of Nottingham Health and E-Learning Media Team undertook learning analytics about the virtual packages’ completion.

2.3. Participant sampling

Eighty midwifery students from the following four Higher Education Institutions were invited to take part in the TOTEMM project and its evaluation: The University of Nottingham (England); Tallinn Health Care College (Estonia); University of Milano-Bicocca (Italy); AVAG Midwifery Academy Amsterdam Groningen (The Netherlands). Inclusion criteria were ability to give informed consent; student midwife at one of the four Higher Education Institutions selected as study sites;

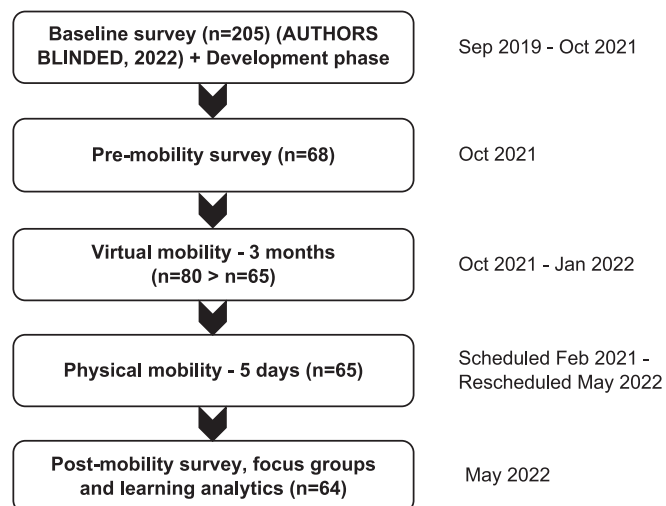


Fig. 1. TOTEMM project components.

participating in the blended mobility scheme. Exclusion criteria were qualified midwives; student midwives on study interruption or discontinuation. Numbers of participating students in each phase of the project are reported in Fig. 1.

2.4. Recruitment

All midwifery students participating in the TOTEMM project were invited to take part in the mixed-method evaluation. An introductory email was forwarded to all potential participants, including a Participant Information Sheet ensuring sufficient time to consider participation. The research team were available to answer any queries and provide more detailed information. The Participant Information Sheet, the survey and all study materials were in English as all students were studying packages in English. A glossary of key terms was provided for students to assist those for whom English was not their native language.

2.5. Ethical considerations

The study was reviewed and approved by the University of Nottingham Faculty of Medicine and Health Sciences Research Ethics Committee (Ethics Approval Number: FMHS 303-0621). This met the requirement for ethical review in partner institutions, where required. Participation in the study was entirely voluntary and students could withdraw from the study at any time without giving any reason. It was made clear that the student's academic progression would not be affected by their decision. Online informed consent was gained prior to completion of both online surveys. A separate written consent was obtained prior to participation in the focus group discussion. Participants' answers were anonymised and numerical identifiers allocated to enable anonymised paired analysis of questionnaire data. Digital data was held securely on computers protected by password.

2.6. Data collection

Students were invited to complete two online surveys, one prior to starting the first e-learning package and one after completing the virtual and physical mobility components. Both surveys were distributed by email, with an embedded link to the Jisc survey platform. The online survey collected the following data: demographic data (age, country of study, year of study and caring responsibilities); midwifery students' mobility activities; packages taken and experiences of those; fitting the packages in to their midwifery programme and impact on studies; interest and experiences of blended approach to mobility and of virtual group work; experiences of digital resources included in virtual learning packages; students' perceptions of other aspects of experience e.g. communication skills development, experiences of team working and digital learning. The questionnaire also included use of the Intercultural Sensitivity Scale (Chen and Starosta, 2000), formed by 24 items with five possible response options for each question, ranging from *Strongly agree* to *Strongly disagree*. A five-point Likert scale was used to respond to each item: 5 = strongly agree; 4 = agree; 3 = uncertain; 2 = disagree; 1 = strongly disagree, with some items reverse scored. The 24 items map onto five domains: Interaction Engagement; Respect for Cultural Differences; Interaction Confidence; Interaction Enjoyment and Interaction Attentiveness. Participants were allocated a unique personal identifier to enable comparison of items and scores at the two time-points.

Face-to-face tape-recorded semi-structured focus groups were convened at the end of the physical mobility component in the hosting country. Each focus group lasted about 1 h, involved students from all partner institutions and was facilitated by academics or members of the project. Briefing sessions and guidance notes were developed for facilitators to standardise approach. A shared topic guide was used for all group discussions, exploring experiences of online learning and mobility model; self-reported impacts on knowledge and skills; understanding of public health issues in midwifery; career plans; communication skills;

impact on digital capabilities and perspectives of how the model could best be integrated into programmes.

The learning analytics of the virtual learning packages were captured utilising the Learning Management System functionality. Learning analytics refers to the process of gathering, analysing, and reporting data about learners and their contexts, to enhance our understanding of how to optimise learning and the settings in which it takes place (Lang et al., 2017). Moodle, the chosen Learning Management System, records the interactions by users, termed 'hits', on different assets such as pages, lessons, forums, access to files, clicks on Uniform Resource Locators, labels, files, folders, and others.

2.7. Data analysis

Descriptive summary statistical analysis of survey data was undertaken through the Jisc Online Surveys platform and Microsoft Excel. Differences in students' intercultural sensitivity pre- and post-mobility were evaluated through a paired *t*-test. Focus group discussions were professionally transcribed verbatim and anonymised. Transcripts were subjected to thematic analysis (Clarke et al., 2019) by one researcher with confirmation of codes and themes by a second researcher to identify themes within the data. Transcripts from all settings were treated as one dataset and analysed together. Findings from both components (quantitative survey and qualitative focus groups) were considered together, in accordance with a convergent mixed methods approach (Fetters et al., 2013). Analysis was led by one partner, with all partners involved in detailed discussion and interpretation of the findings. For learning analytics, the data was downloaded from Moodle, anonymised, and combined into a single Excel file. Learning Analytics were interpreted as complementary to the survey and the focus groups, to further triangulate the findings.

2.8. Validity, reliability, and methodological integrity

Our mixed-methods evaluation combined quantitative and qualitative data to answer complex questions about an innovative and inclusive mobility model. A structured and rigorous approach was applied throughout the project evaluation to enhance validity, reliability and methodological integrity. Trustworthiness and consistency were established by audit trail, regular team management meetings, reflexivity, triangulation and convergent intersection of qualitative and quantitative data.

3. Results

Sixty-four midwifery students between the 1st and 4th year of a midwifery programme, studying in one of the four partner institutions

Table 1
Students' country, age range and caring responsibilities.

	%	N
Country		
England	20.3	13
Estonia	29.7	19
Italy	31.3	20
The Netherland	18.8	12
Age range		
18–20 years	9.4	6
21–29 years	81.3	52
30–39 years	6.3	4
40–49 years	3.1	2
50 or above	0	0
Caring responsibilities		
No	70.3	45
Yes, for child/children	14.1	9
Yes, for adults	1.6	1
Yes, for both child/children and adults	14.1	9

took part in the evaluation. Students' demographics are reported in Table 1.

Findings are presented for experiences of virtual mobility; experiences of physical mobility; potential incorporation of TOTEMM blended mobility model in the midwifery programme; impact of TOTEMM on development as future midwife and career plans; and intercultural sensitivity. Supplementary material 1 reports supporting participants' quotes from the focus groups.

3.1. Experiences of virtual mobility

Most students reported completion of the 'Introduction to Midwifery in Europe' package ($n = 61$; 95 %) and commented positively on its structure, the lighter-hearted elements included and learning about different countries. This package was considered to open conversations to other group work.

Between 15 and 17 students completed each of the public health packages, with learning analytics showing high engagement across all packages. We asked whether they would have preferred being able to choose which topic they studied. Almost half of the students ($n = 31$; 48 %) were happy with being allocated; 20 (31 %) had no strong feelings and 13 (20 %) would have preferred to choose the topic.

Over two thirds of students ($n = 42$; 67 %) enjoyed the package content to a great or very great extent and a third ($n = 21$; 33 %) to some extent. The response option 'Not at all' was not selected. We were interested in the extent to which TOTEMM affected their views of online learning. For 36 (56 %), it had made no difference, 26 (41 %) reported increased enjoyment of online learning and 2 (3 %) reduced enjoyment.

The public health packages were considered to consolidate and complement previous teaching and depth of material appropriate. Students appreciated exposure to topics not covered in their own setting, which equipped them with prior knowledge of the midwife's role before visiting a country.

The online packages included a range of digital resources. Most frequently enjoyed were videos including contributions from women and midwives ($n = 63$); multiple choice quizzes ($n = 57$) and the final group work collaboration (creation of a poster or app) ($n = 54$). Resources that students enjoyed less were reading ($n = 23$); audio narration ($n = 19$), question and free text answers ($n = 18$). The inclusion of a mix of resources was considered important.

Forty-one (64 %) students enjoyed online interactive group work to a great or very great extent; 18 (28 %) to some extent and 5 students (8 %) did not enjoy these at all.

Working together on online packages assisted in forming relationships and were a good preparation for physical mobility. Enjoyment appeared influenced by the engagement of all group members. Learning analytics indicated that participants viewed multiple forum posts regardless of whether they posted a question or not, thus their interest regarding peers' posts was high, extending their knowledge and interaction through peers' contributions.

Students most frequently reported difficulties with interactive online group work related to agreeing a convenient time for everyone to meet via video-call ($n = 56$; 88 %); different time zones ($n = 25$; 39 %) and lack of facilitation from academic staff ($n = 14$; 22 %). Other difficulties related to Information Technology (IT) ($n = 11$; 17 %) and language barriers ($n = 10$; 16 %). Three students (5 %) had no difficulties.

Focus group discussions provided rich information about the nature of the IT issues, difficulties of arranging group meetings and sometimes working on outputs alone. Some students experienced this as demotivating but persisted due to a wish to travel. Technical problems and difficulty logging into accounts were experienced by students who accessed packages via Associate Accounts, which caused delays with starting packages and reduced motivation.

Packages were designed to provide students with flexibility to organise meetings themselves. However, this was not considered helpful. When these challenges had been resolved, many students enjoyed

the packages. Overall, students would have appreciated more input and checking in on their progress by educators but also acknowledged that with better organisation themselves, some problems may have been rectified earlier.

Some students highlighted the usefulness of clear instructions, navigation and linkage between sections, but part of them identified the navigation within the episodes of activities in Moodle as challenging. Based on learning analytics, the times that an activity started (945 times), restarted (418 times) and resumed (598 times) were high in relation with the times the activity tour was fully completed (559 times).

Students reported a variation in hours spent on the introductory and public health packages, summarised in Table 2.

Thirty-three students (52 %) felt that their knowledge increased to a great or very great extent; 27 (43 %) to some extent and three students (5 %) did not feel their midwifery knowledge was extended by the packages. Qualitative data reflected that knowledge was extended through learning about maternity care in different countries and that women may have different expectations. Packages were thought to inspire and reinforce the common public health purpose of midwives across different settings.

3.2. Experiences of physical mobility

Fifty students visited one of the partner countries whilst 14 remained in their home country and hosted visiting students. The 5-days physical mobility duration was considered 'about right' by 44 (71 %) students; 18 (29 %) students would have preferred longer than a week. No students indicated a preference for a shorter mobility experience.

The students enjoyed meeting peers from different countries; learning about other midwifery care; hearing about good practice in other settings and visiting new places. Learning about different cultures and meeting in person were considered easier than online, enabling friendships and improving language skills. The students commented positively on different aspects of physical mobility including hearing about research and social activities.

Informal discussions were considered as important as the formal programme for the week and provided opportunities to discuss additional topics. The balance between taught and informal or social activities worked well, with suggestions that social activity should be scheduled earlier in the week to foster relationships. Students thoroughly enjoyed presentations to peers about midwifery care in each country. The fact that groups had already formed through the virtual learning packages was considered helpful, enabled students to gel quickly and engage in activities without delay. The occasional student had been concerned about their language skills in advance of physical mobility but found this not to be a problem and advised that educators could reassure future students about this. Several students felt that the mobility experience had increased their language skills, through discussions with peers and presenting in their non-native language.

In focus groups students used extremely positive words to describe their experiences of physical mobility: 'inspired'; 'wonderful'; 'taking

Table 2
Time spent to complete online learning packages.

	%	N
Time spent on introductory package		
0–5 h	56.3	36
6–10 h	34.4	22
11–15 h	4.7	3
16–20	3.1	2
More than 20	1.6	1
Time spent on public health package		
0–5 h	34.4	22
6–10 h	42.2	27
11–15 h	17.2	11
16–20	1.6	1
More than 20	4.7	3

home good memories and experiences'; 'heard about other approaches that may help in my own setting'; 'amazing week'; 'would totally recommend to colleagues'; 'fun'; 'mobility week has inspired and renewed passion for midwifery'.

Hearing from peers about midwifery practice in different settings was considered better than reading about it; knowledge of other cultures increased, and students were able to appreciate the good practice in their own setting but also how that could be developed further. They appreciated the similarities in midwifery but also differences between settings.

Phrases such as 'increases open-mindedness' and 'eye-opener' reflected this. Public health learning was helpful in applying knowledge in the increasing complexity of women's situations and supported a reconsideration of subjects sometimes seen as 'taboo' in some settings such as mental illness.

Students perceived that their potential to influence care at the country level was limited but felt that knowledge gained could improve the care they provided to individual women. Experiences during physical mobility made students more likely to question non-evidence-based practices. Students ascribed other skills development to mobility week: communication and co-operation with others, listening and life skills related to travel abroad.

Hosting students enjoyed welcoming their peers. Some had not anticipated positive gains from being a host student, but their experiences were richer than expected. Visiting students appreciated their hosts' efforts especially with the social programme and local knowledge.

The students acknowledged the rescheduling of mobility week and consequent organisational challenges due to the pandemic, suggesting consideration of the following elements for future implementation: early information about travel and activities; visiting students being co-located in the same accommodation to enable more opportunities for informal discussion; engagement with local clinical staff and access to clinical facilities. The ideal timing would be spring for better weather and lighter evenings.

We asked students to indicate the extent to which the physical mobility component of TOTEMM extended their midwifery knowledge. Fifty-five students (86 %) indicated to a great or very great extent, 8 (12 %) to some extent and one student (2 %) not at all. Examples of how the learning would be used included improving explanations to women and enabling a more midwifery-focused approach to care. Physical mobility week improved knowledge of midwifery in other countries and the public health role of midwife. There were a number of positive comments about the value of this experience for all students.

3.3. Potential incorporation of TOTEMM blended mobility model in the midwifery programme

Due to the innovative nature of the project, TOTEMM was offered as an activity additional to the students' existing midwifery programme. We asked students the extent to which they experienced difficulty in fitting TOTEMM activities in with their midwifery programme. Twenty-four students (37 %) found this to a great or very great extent; 27 (42 %) to some extent; 13 (20 %) students did not experience difficulty. Learning analytics showed that 17:00–17:59 was the most common time resources were used, with 25 % of students accessing packages outside usual working hours (9:00–17:00). For some students fitting in virtual group discussions was difficult due to clinical placements/internships.

The overall impact of TOTEMM on student's progression with their midwifery studies reflected a positive impact for the majority ($n = 52$; 81 %), neither positive nor negative for eight (13 %) students and negative for four (6 %) students. TOTEMM impacted positively as conventional 9-week Erasmus placements were not possible for many students. Negative impacts related to needing to complete programme hours missed during physical mobility.

Suggestions for optimal positioning within the midwifery programme varied; inclusion from the second year of programme onwards

was widely supported. Some students suggested that TOTEMM should not be optional as it could be beneficial for all students. It was important for TOTEMM to be integrated into a programme, rather than an additional activity, and be credit-bearing where appropriate. This would also avoid scheduling challenges with clinical placement. Views varied about the effectiveness and utility of the different components if provided separately.

3.4. Impact of TOTEMM on development as future midwife and career plans

Focus group discussions reflected a range of reasons for being interested in TOTEMM: interest in research opportunities and midwifery public health; access to other cultures; passion for midwifery and love of travel. Taking part in TOTEMM was considered to add value to their development as a future midwife, to a great or very great extent by 61 (95 %) students and to some extent by three (5 %). Positive impacts included becoming more open-minded, feeling inspired, meeting people and learning about different countries. Free text comments included hearing about different approaches to care; developing understanding of multicultural care, increased confidence and overseas contacts.

For some students, participation in TOTEMM stimulated a re-appraisal of their career plans. It had renewed their interest in a midwifery career and increased their feelings of belonging to the profession, commitment to improving care for an increasingly diverse population and multicultural awareness. TOTEMM supported reflection on practice and students felt they may be more likely to initiate or encourage change and question practice.

For students who had not previously considered working in a different country, TOTEMM raised that as a possibility. Students had gained an understanding of similarities and differences in midwifery education across partner countries and midwifery contacts across Europe. They indicated a sense of team identity developed during the physical mobility week and felt better informed about maternity care in other settings than their friends who had not done TOTEMM. Participation in TOTEMM was seen as beneficial for future employment and increased their likelihood of wider involvement in midwifery at a level beyond their immediate practice.

3.5. Intercultural sensitivity

The final sample for analysis of Intercultural Sensitivity was $n = 47$ ($n = 18$ missing data), due to participant errors in recording the unique identifier and withdrawals. An increase in the mean of the Total Intercultural Sensitivity Scale score was seen between the pre- (96.62) and post-mobility (99.34) surveys, indicating increased intercultural sensitivity. This difference was statistically significant ($p = 0.018$). Statistically significant increases between the pre and post mobility total Intercultural Sensitivity Scale score support interpretation of positive impacts on intercultural sensitivity for midwifery students associated with participation in the TOTEMM package. Statistically significant score increases were identified for the Interaction Engagement and Interaction Confidence domains. The other domains (Respect for Cultural Differences; Interaction Enjoyment; and Interaction Attentiveness) showed little difference between means. Pre- and post-mobility mean scores and p values for all domains are reported in [Table 3](#).

4. Discussion

TOTEMM is the first blended mobility model developed for midwifery students in Europe that can be delivered for a group of peers studying in different countries, rather than at an individual level. Additionally, it can be accessed by students whose personal circumstances preclude standard Erasmus placements, such as caring responsibilities and financial barriers ([European Commission, 2014](#); [Forder and Fowle, 2017](#); [Rostovskaya et al., 2020](#); [Borrelli et al., 2022](#)).

Table 3
ISS domains pre- and post-mobility mean scores and p values.

Domain	Pre-mobility mean score	Post-mobility mean score	P value
Interaction Engagement	28.47	29.42	0.03
Interaction Confidence	17.04	18.42	0.005
Respect for Cultural Differences	27.40	27.63	0.411
Interaction Enjoyment	12.28	12.38	0.692
Interaction Attentiveness	11.43	11.47	0.874
Total score	96.62	99.32	0.018

Virtual mobility can serve as an effective option to address challenges related to cultural awareness, intercultural relationships and soft skills. Although it cannot provide the same immersive learning experience of physical mobility, it can be implemented as a complementary activity to the latter (Buiskool and Hudepohl, 2020). The TOTEMM model provides an inclusive approach to midwifery education that fosters the development of public health knowledge and intercultural sensitivity through the combination of virtual and physical mobility.

With intercultural sensitivity regarded as the most important outcome of mobility (Hinchcliffe and Jolly, 2010; Hofstede, 2009), several researchers have recognised its importance and investigated related dimensions, competencies, skills and personal attributes (Detweiler, 1978; Bhawuk and Brislin, 1992; Dinges and Baldwin, 1996). Increased awareness of cultural differences related to childbearing and maternity care were demonstrated through different components of the TOTEMM evaluation. Impacts were demonstrated in both quantitative and qualitative data sources. Students indicated a better understanding of the needs of women from different cultural groups and how they would use the TOTEMM experience in their practice to provide more culturally appropriate care, reflecting increased cultural sensitivity. Positive effects on confidence, open-mindedness, empathy, interaction and non-judgment were shared by participants, also highlighted as key elements accounting for intercultural sensitivity by Chen and Starosta (2000). Previous studies confirmed that benefits for individuals who engage in study mobility experiences include improvement in soft skills, such as knowledge of other countries, ability to interact and work with individuals from different cultures, confidence, adaptability, foreign language proficiency and communication skills (European Commission, 2014), with potential positive impacts for employability and career choices (Unver et al., 2021). In a context where complex challenges are often encountered in developing a multicultural curriculum (Banks, 2003) and teaching undergraduate students to internalise the concept of cultural difference (Mahoney and Schamber, 2004), the TOTEMM model can be considered effective in providing education in this topic. The application of TOTEMM into contemporary midwifery curricula would also support the requirement of student midwives having insight and understanding of global health practice and intercultural sensitivity (ICM, 2019). This is important in many settings where maternity care is provided and where maternity professionals may be offering care to women from diverse cultural backgrounds (WHO, 2020). Other options available to promote intercultural awareness are midwifery twinning partnerships between institutions (RCM, 2020; ICM, 2023) and the Decolonising Midwifery Education Toolkit (RCM, 2020).

Overall, both the virtual and physical components were evaluated positively by the participating students, with high engagement confirmed by learning analytics. Some challenges of virtual learning were highlighted, mirroring the ones reported in the literature, including isolation (Gillett-Swan, 2017), problems with peer communication, lack of synchronous feedback (Kim et al., 2005), technical difficulties, poor sense of community, time limits and difficulty in understanding course objectives (Song et al., 2004). Students taking part in TOTEMM had experienced increases in online learning due to the pandemic, which raised the prevalence of psychological stress, anxiety, frustration and depression among university students (Aristovnik et al.,

2020; Azmi et al., 2022). Preparing students for the possible challenges and setting appropriate expectations appears an important point in planning completion of virtual learning packages, with emphasis given to attention, motivation, emotion and experience (Bransford et al., 2000).

The TOTEMM project was carried out at a unique time during which the Covid-19 pandemic emergency occurred, the United Kingdom left the European Union and a war commenced in Europe, close to the borders of one of the partners. At the point of planning TOTEMM, these events were not anticipated and the extent of disruption unprecedented. By the time of virtual and physical mobility implementation, students in all countries had faced significant changes to their personal lives and University experiences. Higher engagement and enjoyment may have been achieved in the absence of a pandemic and at times when learning was not almost exclusively online. The missing data ($n = 18$) for Intercultural Sensitivity Scale evaluation was due to loss or use of incorrect identifier by participants, which is a limitation to be addressed or considered for future studies. Although generalisability of results cannot be assumed for all settings, the participants of this study come from different European settings; they provided useful insights into acceptability, skills development, facilitators and challenges following implementation of an inclusive and innovative blended mobility model.

Based on the findings, recommendations for future implementation of the TOTEMM blended mobility model are:

- Continuation of TOTEMM: TOTEMM can continue as an inclusive approach to supporting mobility for all students, with resourcing required to support integration into programmes.
- Integration into midwifery programmes and support from midwifery educators: TOTEMM or its components can be integrated into existing programmes to achieve allocated space within timetables, initial group discussions facilitated by educators and channels set up for group work that are accessible for all.
- Timing in programme and application at scale: TOTEMM can be offered to students from the second year of their programme.
- Package content: content should be reviewed for contextual and contemporary applicability by all future users.
- Physical mobility: clear and detailed information should be provided to students prior to physical mobility. The ideal duration of physical mobility is one week. Following physical mobility, students should be enabled to share experiences with their peers formally on return to their own Higher Education Institution.

5. Conclusions

TOTEMM is an innovative inclusive approach to enable a diverse student group to benefit from transnational learning, including the development of intercultural sensitivity skills. The virtual learning packages have been released under Creative Commons licences and are publicly available. The TOTEMM blended mobility model has potential for integration into future midwifery curricula and programmes in the four partner settings involved in TOTEMM and utility for the wider European context that requires consideration of cultural diversity and shares similar public health challenges. The model has flexibility as different aspects of midwifery practice could be included in the virtual learning packages. Future provision will require resourcing for student travel, staff time and information technology expertise to facilitate platform identification or integration. TOTEMM was developed and tested for the European context. We cannot make definitive recommendations for transferability to all settings but there may be opportunities for further adaptation, collaboration and evaluation in other international contexts.

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CRedit authorship contribution statement

Sara Borrelli: Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization. **Stathis Konstantinidis:** Writing – review & editing, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Simona Fumagalli:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Annely Kärema:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Silja Mets-Oja:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Antonella Nespoli:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Gina Sands:** Writing – review & editing, Software, Formal analysis. **Anne-Marika Smit:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Maria A. van Oost:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Louise Walker:** Writing – review & editing, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Helen Spiby:** Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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