



Intercultural Education of Nurses in Europe

Transcultural Robotics Nursing (TRN)

Output 2.2

Modules Report

IENE 10

Preparing health and social care workers to work with socially assistive artificially intelligent robots in health and social care environments

2020-1-UK01-KA202-078802

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Introduction

This document is part of the Intellectual Output (IO) 2 of the project “Preparing health and social care workers to work with socially assistive artificially intelligent robots in health and social care environments” - IENE10.

The overall aim of IENE 10 is to develop a European Transcultural Robotic Nursing (TRN) curriculum model and learning materials which will be suitable for training health and social care workers and educators, not only within the partnership of this project but also internationally.

This output is developed with an aim to create the curriculum outline alongside with learning aims and objectives for the four modules that will be delivered in the MOOC course on TNR. By working through these modules, participants are expected to have more knowledge about socially assistive robots (SARs) and their use and advantages in health and social care. The curriculum is also designed to create more awareness about the potential challenges and barriers that may be faced when deploying SARs into social and health care.

This document provides an overview of the following four curriculum module outlines:

TRN Awareness

TRN Knowledge

TRN Sensitivity

TRN Competence

Each module includes an aim, learning outcomes, content outline, suggestions for module learning activities and recommendations for additional reading. Each module has four topics, and every topic represent a minimum of one hour learning.

The aim and learning outcomes of each module were designed based on the findings from previous outputs IO1.1 and IO1.2 (see brief summaries below) and feedback from other team members. The learning outcomes were developed using the revised Bloom’s taxonomy framework (Anderson et al., 2001) to create effective, clear, and achievable learning outcomes which also reflect on the aims. Module content for each topic was created after identifying learning outcomes, followed by suggestions for learning activities to accomplish learning objectives. Google Search was used to identify relevant and potential resources suitable for both compulsory and optional

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learning activities, among them various TEDx talks, articles, videos etc. The first draft of the document was sent to all partners for reviewing and comments. Received feedback was then used to improve the module outlines.

The TRN modules have been developed based on:

- The findings of the IO1.1 of this project - International, European, and national literature reviews
- Thematic areas derived from the findings of IO1.1 and other literature reviews
- The revised Papadopoulos, Tilki and Taylor model (Papadopoulos, 2006)
- Papadopoulos model for “Culturally Competent Compassion” (Papadopoulos, 2018)
- The findings of the IO1.2 of this project, TRN Curriculum Model

The four TRN Modules are designed based on the TRN curriculum model developed during IO1 to assure that all topics included in IO1 will be covered. The four TRN modules provide the content for this project’s TRN-MOOC course (Massive Open Access Online Course) aiming to:

- Raise awareness about the potential advantages of AI and Socially Assistive Robots in health and social care;
- Provide knowledge and understanding about both negative and positive implications of AI and Socially Assistive Robots on health and social care, including matters relating to inequalities and social inclusion;
- Provide knowledge and understanding of the relevance of ethics related to the development and deployment of AI and Transcultural Robotics Nursing (TRN);
- Provide skills and knowledge of the practical aspects of deploying AI & TRN in health and social care, including robot-human interaction, technical aspects and malfunctions, and infection control.

The four modules are designed to provide participants, primarily health and social care workers and educators, who have either limited or no prior knowledge on socially assistive robots, a comprehensive background knowledge which promotes culturally competent and compassionate transcultural care with the use of artificial intelligence and social robots.



This document will be used as a guide to develop the next intellectual input (IO3), which will include creating of the learning units/tools and materials for each module for the MOOC course.

Brief summary of the IO1.1 and IO1.2

During Intellectual Output 1.1 of this project, the leading partner (CY) created a report where recent European and International publications and various reports on TRN related topics, especially those related to workforce training were presented. Together with other project partners, 25 international/European and 124 national (Cyprus, Austria, Italy, Romania, UK) publications/sources were presented. Relevant literature was obtained through peer reviewed articles (published between 2018-January 2021) and grey literature (searched between 2010- January 2021).

Evidence from International and European sources showed that, in general, health and social care staff have mixed views about using robots in care settings. On the one side, health professionals seem to have positive attitudes towards the use of social robots when caring for older adults (Chuan, Cindy and Wend, 2020) and many felt that in psychosocial care for older adults, social robots can be practical and beneficial (Chuan, Cindy and Wend, 2020; Rantanen, Lehto, Vuorinen and Coco, 2018). However, various barriers for the implementation of socially assistive robots related to technical problems, previous experience with technology, robots' limited capabilities and existing negative preconceptions towards the use of robots in healthcare (Papadopoulos et al., 2019).

Due to global ageing population, health and social care services are in need of more resources. Culturally competent and socially assistive robots are likely to be trusted and accepted by caregivers and could also relieve the ongoing pressures on health and social care staff (Research Centre for Transcultural Studies in Health, nd). Some countries have already implemented robots in care facilities, for example, in Japan human-like robots are being used as supplemental healthcare workers in care homes for older adults, according to grey literature (Hamstra, 2018).

Potential disadvantages, such as hacking healthcare databases and a lack of 'human touch' can exist while implementing SARs in health and social care (Hamstra, 2018). Various studies also noted the importance of setting robots' social and legal boundaries to protect caregivers' and clients'/patients' safety and privacy

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(Papadopoulos et al., 2020; Vänni et al., 2019; Coco, Kangasniemi and Rantanen, 2018; Maalouf, Sidaoui, Elhajj and Asmar, 2018).

The European Commission (2020) has declared that artificial intelligence is a strategic technology that benefits citizens, businesses and societies taken that it maintains human-centeredness and is ethical, sustainable and respects fundamental rights and values. However, more evidence is needed regarding SARs in relation to health and social care provision.

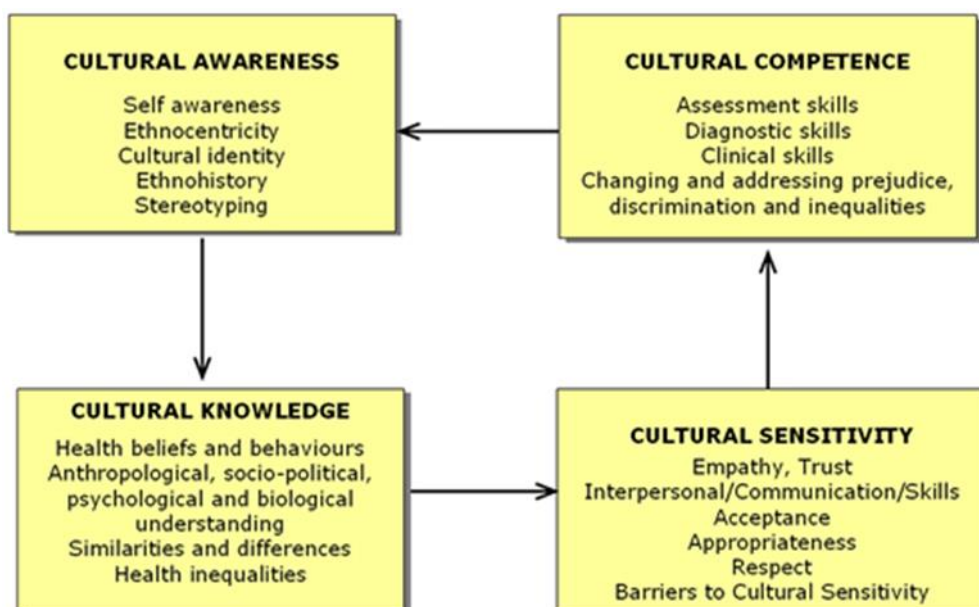
Valuable evidence from various national (Cyprus, Austria, Italy, Romania, UK) peer reviewed articles and grey literature were also identified. For example, in German literature, Kiemel (2018) noted that robotic assistance system can provide support in palliative and intensive care and offer assistance to older people, while Honekamp et al. (2019) highlighted the necessity of nursing robots due to shortages of staff. Italian peer reviewed literature reported that robots can be used for human needs (Ciardo et al., 2020), such as motivating people to perform physical exercises, engaging with them through conversations, checking their vitals, reducing their sense of loneliness and having positive effect on emotional, personal and social life (Balisteri, 2018; Ciardo et al., 2020; Balistreri, 2021). However, according to the grey literature, robots will not be able to substitute human care due to lack of empathy and emotions (Redazione di Nurse Time, 2019; Marino, 2020). Further grey literature from Germany noted that although digitization in nursing provides various benefits, risks and disadvantages also exist (Zentrum für Qualität in der Pflege, 2019), among them cost intensity and the complexity of the requirements (Bendel et al., 2018). In the open access book, Bendel and colleagues (2018) also discuss questions such as: Who is responsible for incorrect support and supply by the machine? To what extent can this support or endanger the personal and informational autonomy of the patient? Is the robot a relief or a competitor for caregivers? These questions need answers found by society and science. Romanian literature found that assistive technologies are used in integrated care services among older adults and during surgeries (Anghel et al., 2020; Andras et al., 2020).

Extensive literature regarding the use of robots exists in the UK. Winkle et al. (2020) report that SARs are increasingly implemented in healthcare and independent living settings. Evidence from grey literature noted that robots could help meet the needs of ageing population (HM Government, 2017) in social (UK-RAS White Paper, 2017) and healthcare (Concilium Research and Consultancy and skills for care, 2018).

Although, no peer reviewed articles related to robots and health/nursing were found from Cyprus, according to Greek literature, using robots improved the attention and ability to follow instructions among autistic children (Fachantidis et al., 2018).

Following the extensive literature review conducted during IO 1.1, **Intellectual Output 1.2** of this project was conducted. The leading partner of this output (CY) designed a TRN curriculum which aims to promote culturally competent and compassionate transcultural care using socially assistive robots.

IENE10, like all the previous IENE projects (IENE 1 to IENE 9), is primarily based on the Papadopoulos, Tilki, and Taylor Model (Papadopoulos, 2006). The four constructs of the model include: (1) Cultural Awareness; (2) Cultural Knowledge; (3) Cultural Sensitivity; and (4) Cultural Competence.



The Papadopoulos, Tilki and Taylor Model (Papadopoulos, 2006)

The analysis of the evidence identified in IO1.1 resulted in four macro themes:
Theme 1: Knowledge about the robot’s functionality, capability and purpose- this theme views also the potential benefits and challenges as well as the potential role of the robot and importance of communication between different stakeholders.



Theme 2: Learning how to operate the robot- this theme covers patients' safety and needs as well as robot's function and operation aspects.

Theme 3: Legal, ethical issues and human rights to consider when working with robots - including consent, awareness, data protection and policy issues.

Theme 4: General training requirements- this theme concentrates on maximizing learning and covers various challenges health professionals might face.

Based on the model, the literature review, the macro-theme areas revealed from it and discussions with the team, the following model was proposed:

The PTT/IENE10 TRN Curriculum model

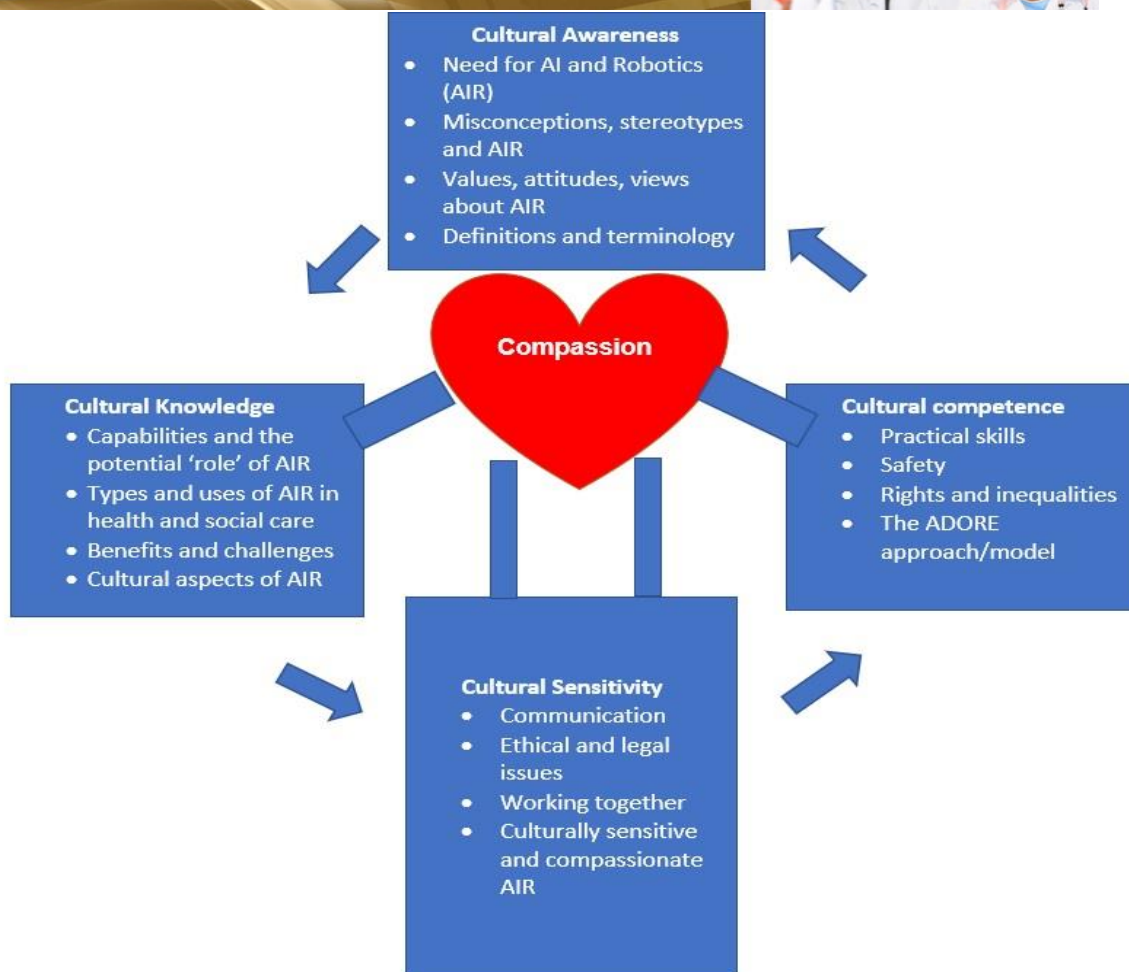
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The TRN MOOC's delivery structure

The MOOC curriculum is five weeks long and consists of four modules. Each week will consist of 4 days where participants will engage with a different learning tool focusing on a specific aspect of the TRN module of the week. The fifth day of the week is devoted to catching up, to completing the module assignments and self-assessment exercises. The first week focuses on orientation to the course and cultural awareness related to the need for and the use of SARs in health and social care. The second week deals with cultural knowledge and aims to familiarize participants with different types of SARs. The third module addresses the theme of cultural sensitivity and the use of SARs in health and social care and the fourth module focuses on cultural competence and the implementation of culturally competent SARs. The last week is devoted to synthesis of the previous learning as well as the last assessment and evaluation of the MOOC course.

WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5
Orientation MODULE 1				
	MODULE 2			
		MODULE 3		
			MODULE 4	
				Synthesis and Assessment

The Orientation and Synthesis/Assessment modules will be created by the project Co-ordinator)

Module 1 -TRN Awareness

Aim

The aim of this module is to enhance awareness of the need for and the use of SARs in health and social care.

Learning outcomes

When you have worked through this tool, you will:

1. Gain knowledge related to some of the relevant key terms, definitions and abbreviations used in this course and the domain of AI and robotics
2. Gain awareness of some of the main reasons for SARs being used in health and social care settings, including some key potential uses for different stakeholders
3. Become aware of some of the main misconceptions and/or stereotypes that currently exist regarding the use of SARs in caring patients/clients
4. Become aware of the cultural values, attitudes and views that health and social professionals may have about SARs

Module Content (Each module will have four content topics as per curriculum map in IO 1.2. Each topic represents a minimum of 1 hour learning)

Topic 1: Definitions, terminology and course orientation

- Module orientation: Introduction to structure, activities and tasks of the module
- Overview of key terms and abbreviations used in the course
- Definitions/Explanations of key terminology and abbreviations used in AI and robotics

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It is essential to clarify the terms used (such as artificial intelligence, transcultural nursing robots/tics) for a better understanding of the model, training and its implementation.

Topic 2: Need for AI and Robotics

- A consideration of the rationale for SARs in health and social care settings
- The potential usefulness for SARs in relation to patient/client care
- The potential usefulness for SARs in relation to formal carers
- The potential usefulness for SARs in relation to informal and family carers

This deals with the rationales, reasons and needs of use of AI and robotics/robots in health and social care. It explores the help which may be provided not only to the patients/clients, but also to the providers/professionals and carers.

Topic 3: Misconceptions, stereotypes about robots

- Main misconceptions and stereotypes about SARs providing care to the patient/client
- Main misconceptions and stereotypes about SARs being deployed in health and social care settings

It refers to possible misconceptions and/or stereotypes that exist regarding the use of SARs in caring for patients/clients, such as inability of the robot to provide emotional support, replacement of health personnel etc.

Topic 4: Cultural values, attitudes, views about robots in general and specifically about SARs

- Personal (the MOOC's participants) cultural values, attitudes and views about robots
- What the literature reports about the attitudes and views that health and social care professionals have towards using SARs in their work settings

- Factors, barriers and enablers that may influence the health and social care workers' views and attitudes towards SARs and their adoption or rejections at their workplaces

It refers to the values, attitudes and views that health and social professionals may have about SARs. These may include mistrust, caution of using SARs and/or their value etc.

Suggestions for Module Learning Activities - summary (one per topic)

Topic 1: Definitions, terminology and course orientation

- Create and share your profile (template provided)
- Complete the pre-MOOC questionnaire
- Navigate through the orientation learning sessions as well as those which cover relevant terminology and explanations used in this course
- Navigate through the webpage provided (link in table)
- Complete the assessment (matching the terms with meanings)
- Reflect on any new concepts/terms/abbreviations learned in this topic in the discussion area

Topic 2: Need for AI and Robotics

- Navigate through the learning session that introduces the rationale for using SARs in health and social care settings and potential benefits for different stakeholders
- Watch the video: (link in table) 'SARs and the Growing Healthcare problem by Maja Mataric'.
- Participants are encouraged to share their thoughts/reflections about the learning session and about the video in the discussion area
- Ask participants to think about who else connected with health and social care could potentially benefit from SARs and how? They are invited to share their thoughts with other participants in the discussion area and read fellow participants' answers

- Participants are encouraged to read the article by Katie Engelhart and/or watch a video about autism, robots and dinosaurs (optional activities– links below) and share their thoughts in the discussion area
- Participants are asked to read through 3 short hypothetical scenarios (to be created). For example, one of them could describe a typical busy day at a care home. The scenario then describes a resident who is feeling sad, because he/she is missing his/her grandchild and is asking if a staff member could help them to make a call. One of the staff members is currently doing drug rounds and cannot help the resident at the moment. The other staff members are providing personal care to another patient/client and are also occupied. Participants are then asked to think about how SARs could be used in this situation to enhance the care provided to patients/clients.

Topic 3: Misconceptions, stereotypes about SARs

- Navigate through the learning session that introduces some of the main misconceptions and stereotypes about SARs providing care in relation to the patient/client, formal and informal carers
- Watch a video about how robotic pets help dementia patients (link in table)
- Participants are encouraged to reflect on the learning session and the video in the discussion area
- Participants to create a post where they reflect on their own misconceptions and/or stereotypes they might identify/have heard about with regard to the use of SARs in care.
- Read and comment on other participants' reflections in order to enhance awareness about the existing misconceptions and/or stereotypes about SARs

Topic 4: Cultural values, attitudes, views about SARs

- Navigate through the learning session that focuses upon health and social care professionals' cultural values, attitudes, views about SARs and the factors that might influence them.
- Participants are asked to read a piece by Emily Cross (link in table) and share their thoughts about the article in the discussion area.
- Ask participants to create a document where they describe factors that may influence health and social care professionals' views and attitudes towards

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	Dr. Maja Mataric talks about how SARs could help with growing healthcare problem. Video includes demonstration about how non-contact robots can serve as coaches, motivators, and companions for a variety of populations with special needs, including older adults, stroke patients, and the autistic population				
3.	<p>Robotic Pets Are Helping Dementia Patients (HBO)</p> <p>Video by VICE</p> <p>The video shows how robotic pets help brighten the mood of older adult residents, while also stimulating cognitive function.</p>	Video	English	<p>Individual learning</p> <p>Self-reflection</p>	https://www.youtube.com/watch?v=cFvGAL9tesM&ab_channel=VICENews
4.	<p>'Culture shock in the robot age'</p> <p>Emily Cross discusses in this piece about how cultural background and attitudes influence social interactions and acceptance towards robots</p>	Web	English	<p>Individual learning</p> <p>Self-reflection</p>	https://www.goethe.de/pri/k40/en/eth/rob.html

Self assessment (a short quiz or other fun way to quickly self-assess their learning)

A crossword puzzle with questions related to the module.

Suggested further reading (optional)

'What Robots Can—and Can't—Do for the Old and Lonely'

For older Americans, social isolation is especially perilous. Will machine companions fill the void? By Katie Engelhart, May 24, 2021

<https://www.newyorker.com/magazine/2021/05/31/what-robots-can-and-cant-do-for-the-old-and-lonely>

‘When dinosaurs ruled the Earth’

Short film autism, robots and dinosaurs and how personalized robots might act as a “social bridge” between a child on the autism spectrum and a more neurotypical child.

‘For C.J., an 8-year-old boy with autism, the worst part of the day is lunch and recess. Recess, in particular, is too loud and unstructured. Both of them are dominated by social rules – like a secret code of conduct – for which everyone has the rulebook except C.J. Instead, C.J. spends that hour every day inside the classroom, carefully unpacking his lunch of orange foods (oranges, Cheetos, orange bell peppers); doing dinosaur puzzles; and watching the inscrutable faces and madcap smiles outside the window.

Everyone assumes that C.J. doesn't want to be social, doesn't want to make friends.

Everyone, that is, except a strange visitor . . . Kiwi, a 2-foot tall, owl-like, socially assistive robot.’

<https://vimeo.com/210820130>

Module 2 - TRN Knowledge

Aim

The aim of this module is to familiarize participants with different types and uses of SARs in health and social care, and to create an awareness of SARs’ capabilities, potential ‘role’, benefits, challenges and aspects related to culture.

Learning outcomes

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When you have worked through this tool, you will:

1. Become familiar with different types of SARs and their various uses in health and social care
2. Gain knowledge about the capabilities and the potential 'role' of SARs in health and social care
3. Gain knowledge of some of the benefits and challenges related to usage of SARs in health and social care
4. Become aware of the cultural aspects that play a role when implementing SARs in health and social care

Module Content (Each module will have four content topics as per curriculum map in IO 1.2. Each topic represents a minimum of 1 hour learning)

Topic 1: Types and uses of SARs in health and social care

- Module orientation: Introduction to structure, activities, and tasks of the module
- Overview of different types of SARs that can be used in health and social care
- Usage possibilities for SARs in health and social care settings and/or at home

This deals with the different types of robots that can be used in health and social care in different settings and/or at home.

Topic 2: Capabilities and the potential 'role' of SARs

- What are the types of conversational tasks and possible use cases of SARs in relation to patient/client care?
- What are the types of health-care assistance tasks (reminding to take medication, drink water, do exercise etc) that SARs can do while providing care to patient/client?
- What are the ways in which SARs could “keep an eye” on the patient/client in health and social care settings?

It refers to the capabilities of SARs such as generally “keeping an eye” on an individual, providing information to the patient, providing company to patients through conversation, games, etc, reminding the patient about appointments, taking tablets, drinking water, doing gentle exercise etc

Topic 3: Benefits and challenges

- Potential benefits of using SARs in health and social care in relation to formal care staff
- Potential challenges that health and social care staff may face when using SARs in health and social care

It deals with the advantages and challenges that may exist due to the use of robotics/robots in caring, such as freeing time for nursing staff to do more advance work for the patient/client.

Topic 4: Cultural aspects of SARs

- Cultural influences upon towards SARs’ appearance
- The role of culture on SARs’ verbal and non-verbal communication style
- Overview of culturally competent SARs

This sub-unit deals with robots’ aesthetics and appearance, proxemics, hand gestures, volume of voice, etc. Also, regarding cultural background of client, such as gender, age, ethnicity, religion, family etc.

Module Learning Activities - summary (one per topic.)

Topic 1: Types and uses of SARs in health and social care

- Navigate through the module orientation session
- Navigate through the learning session that introduces different types and uses of SARs in health and social care.

- Participants are asked to read the article about social robots (link in table)
- Participants are asked to reflect on the learning session and the article in the discussion area.
- Participants are given a suggestion to read a science comic about social robots (optional task- link in 'further reading suggestions' and encouraged to share their thought about the comic in the discussion area

Topic 2: Capabilities and the potential 'role' of SARs

- Navigate through the learning session that provides an overview of SARs' capabilities and the potential 'role of SARs in health and social care
- Watch a video about robots and AI and how they can be implemented in health and social care (link in table)
- Ask participants to think about what kind of 'role' they think SARs could/could not play in health and social care. Participants are asked to create a post and share it with other participants.
- Participants are asked to read and comment fellow participants' posts
- Participants are encouraged to listen to a podcast about socially assistive robots with Maja Matarić and Audrow Nash (optional activity – link below) and share their thoughts on these in the discussion area

Topic 3: Benefits and challenges

- Navigate through the learning session that covers some of the potential benefits and challenges of implementing SARs in health and social care
- Read through a blog post about how can social robots relieve healthcare providers under pressure during COVID-19 (link in table)
- Participants are encouraged to reflect on the learning session and blog post in the discussion section.
- Participants are asked to create a document where they describe some of the benefits and challenges that they think would be most relevant in their workplace when implementing SARs in care. Participants are asked to share their document

- Read fellow participants’ documents to enhance your awareness about other potential benefits/challenges that fellow participants have shared

Topic 4: Cultural aspects of SARs

- Navigate through the learning session that introduces the importance of culture in relation to SARs in health and social care.
- Watch a video about culturally competent SARs (link in table)
- Participants are encouraged to share their thoughts on culturally competent robots in the discussion area
- Ask participants to reflect on their own beliefs how cultural background of patients/clients may influence their expectations towards SARs’ appearance and communication style. Participants are asked to share their ideas with fellow course participants in the discussion area.
- Read and reflect upon fellow students’ ideas.
- Participants are asked to read through a hypothetical scenario (to be created) where patient's/client's cultural background is not considered when implementing SARs in care. Participants are then asked to identify problematic situations in the scenario and rewrite the scenario in a way that the patient's/client's cultural background is taken into account.

Details of resources to be used for the module learning activities

No.	Title and description of the resource	Type	Language of resource	Learning /training / assessment and evaluation activities	Access URL / download
1.	<p>‘Social Robots – a New Perspective in Healthcare’ by Oliver Korn</p> <p>‘Dr Oliver Korn, Professor for Human Computer Interaction and Director of the Affective & Cognitive Institute at Offenburg</p>	Article	English	Individual learning Self reflection	https://researchchoutreach.org/articles/social-robots-new-perspective-health-care/



	University in Germany, discusses whether social robots should be able to replicate human emotions and explores ethical challenges arising from it. He examines various examples of social robots together with the results of an expert study into the desired future abilities and applications of both service and companion robots.'				
2.	<p>The Robot Will See You Now – AI and Your Health Care Robots & Us by WIRED</p> <p>The video introduces some ways how to use AI and robots in health and social care.</p>	Video	English	Individual learning Self-reflection	https://www.youtube.com/watch?v=x1Qu1YKZA0Y&ab_cchannel=WIRED
3.	<p>Furhat blog</p> <p>'How can social robots relieve healthcare providers under pressure?' by Chris Wood and Susanna Dillenbeck</p> <p>Article gives examples how social robots potentially can be used to relieve the workload of hospital staff during COVID-19</p> <p>Alternative/Extra resources:</p> <p>'Challenges and advantages of robotic nursing care: a social and ethical analysis'</p>	Blog post Blog post	English English	Individual learning Self-reflection	https://furhatrobotics.com/blog/social-robots-relieve-healthcare-providers/ https://corporatesocialresponsibilityblog.com/2018/06/26/robotic-nursing-care/
4.	A short animation video that introduces CARESSES.	Video	English	Individual learning Self-reflection	https://www.youtube.com/watch?v=eLTKhfVYrTw&ab_c

					hannel=CARESSES-CulturallyAwareRobots
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Self assessment (a short quiz or other fun way to quickly self-assess their learning)

A short quiz that covers all four topics.

Suggested further reading (optional)

Social robots – A science comic.

Summary

The prototype of a social robot has disappeared from the research lab shortly before the first large field study for use in elderly care. In the search for the stolen robot, many questions arise:

What are social robots and how can they be used?

How can social robots be used in the care of older adults?

Do social robots endanger jobs?

What are possible solutions?

<https://aci.hs-offenburg.de/social-robots-a-science-comic/>

Podcast about socially Assistive robots, with Maja Matarić and Audrow Nash.

30 minutes

In this podcast, Matarić talks about the care gap in health care, how her work leverages research in psychology to make robots engaging, and opportunities in socially assistive robotics for entrepreneurship.

<https://robohub.org/socially-assistive-robots/>

Module 3 - TRN Sensitivity

Aim

The aim of this module is to enhance the ability of participants to consider and address issues pertaining to communication, ethics and legislation, collaborative working, and culturally sensitive and compassionate human-robot companionship in health and social care.

Learning outcomes

When you have worked through this tool, you will:

1. Understand the importance of communication between health and social care staff, the client and his/her family members, carers and SARs
2. Gain knowledge about ethical and legal concerns associated with the safe implementation of SARs in health and social care
3. Recognise the significance of collaborative teamwork between different stakeholders, including SARs and client/patient themselves, towards ensuring quality of patient/client care
4. Gain awareness how SARs can provide culturally sensitive and compassionate human-robot companionship to patients/clients in health and social care settings.

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Module Content (Each module will have four content topics as per curriculum map in IO 1.2. Each topic represents a minimum of 1 hour learning)

Topic 1: Communication

- Module orientation: Introduction to structure, activities, and tasks of the module
- Human-robot interaction through hearing, sight, and touch
- The importance of communication between health and social care staff, client and his/her family members, carers and SARs during the provision of care
- Achieving effective communication with SARs

This explores the importance of communication of personnel, family, carers and robots and how this can be achieved in best way for the benefit of those in need.

Topic 2: Ethical and legal issues

- Overview of legal aspects and ethical concerns related to implementing SARs in health and social care
- The importance and complexities of seeking and obtaining consent from patients/clients and family members when implementing SARs in care
- Overview of current policies and regulations in relation to data protection, privacy, confidentiality, and security that support safe implementation of SARs in health and social care

This refers to policies that ensure ethical, legal and safe implementation of robots' activities/functions. It refers to the discussion of data protection, the possible need of consent from the patient/client, confidentiality of information stored and what is stored, possible insurance of the robot used.

Topic 3: Working together

- Elements of effective collaboration between the patient/client and different stakeholders and SARs to ensure quality of patient/client care

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- Benefits of effective teamwork between the patient/client, formal care staff, family members and SARs in health and social care

It refers to the collaboration of all involved in the care of patient/client- family, caregiver, professionals, robot and client him/herself.

Topic 4: Culturally sensitive and compassionate human-robot companionship

- Overview of principles of culturally sensitive and compassionate care
- The significance of culturally sensitive and compassionate human-robot companionship in health and social care
- Ways that SARs can provide culturally sensitive and compassionate human-robot companionship in health and social care

This deals with ways SARs can provide culturally sensitive and compassionate care through conversation, suggestions, and appropriate action.

Module Learning Activities - summary (one per topic)

Topic 1: Communication

- Navigate through the module introduction session
- Navigate through the learning session that introduces the aspects of human-robot interactions and the importance of communication between SARs and different stakeholders
- Participants are asked to watch a video about interacting with robot Paro (link in table)
- Participants are encouraged to share their thoughts about the learning session and on the video in the discussion area
- Participants are asked to think about how effective communication between different members and SARs related to patient/client care could benefit clients/patients in their own workplace
- Participants are asked to share their thoughts in the discussion area
- Participants are asked to read fellow participants' answers and then pick at least 1-2 to reply to

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- Participants are encouraged to watch at TEDTALK by Astrid Weiss discussing human robot interactions (link below- optional activity) and share their thoughts about the video.

Topic 2: Ethical and legal issues

- Navigate through the learning session that covers ethical and legal concerns and introduces current policies and legislation in relation to safe implementation of SARs in health and social care
- Participants are asked to watch a video about ethical issues in human-robot interaction (link in table)
- Participants are asked to create a post where they share one piece of knowledge they learned/found most interesting/useful from the learning session and one piece of information they learned/found most interesting/useful from watching the video. Participants are asked to share their posts with fellow students.
- Read and reflect on other participants posts
- Participants are encouraged to listen a podcast about social robots which also touches the theme of ethics (link below) (optional task) and share their thought about the podcast in the discussion area

Topic 3: Working together

- Navigate through the learning session that covers the elements and benefits of effective collaboration between patient/client, different stakeholders and SARs
- Watch a video about Kaspar the robot (link in table)
- Participants are encouraged to reflect on the learning session and the video in the discussion area
- Participants are asked to create a short powerpoint (spend about x minutes on that) about how working collaboratively with SARs would benefit and why. Participants are asked to share their powerpoint with fellow students.
- Participants are asked to pick a powerpoint from one fellow student and review it and leave feedback to their presentation. (For example, do they agree/disagree with the fellow participants and why?)
- Participants are encouraged to read an article by Adam Satariano, Elian Peltier and Dmitry Kostyukov about robot Zora (link below -optional reading)

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and share their thought about the article (including photos) in the discussion area

Topic 4: Culturally sensitive and compassionate Human-Robot companionship

- Navigate through the learning session that introduces culturally sensitive and compassionate HRC
- Watch a video (link in table)
- Participants are encouraged to reflect on the learning session and the video in the discussion area
- Participants are asked to create a post where they discuss their thoughts about how culturally sensitive and compassionate care provided by SARs can affect the quality of care and share it with fellow participants
- Read and reflect upon fellow students’ ideas.

Details of resources to be used for the module learning activities

No.	Title and description of the resource	Type	Language of resource	Learning /training / assessment and evaluation activities	Access URL / download
1.	‘The soft side of robots: elderly care’ Video from Financial Times showing how residents are interacting with Paro the robot through touch and talking and listening. Some points about benefits of PARO, ethical concerns and stereotypes about robots are also discussed in the video.	Video	English	Self learning Self reflection	https://www.youtube.com/watch?v=ppPLDEi82lg&ab_channel=FinancialTimesFinancialTimes
2.	Kate Darling – Ethical issues in human-robot interaction The	Video	English	Self-learning	https://www.youtube.com/watch?v=m3gp4LFgPX0&ab

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	<p>Conference 2015</p> <p>Kate Darling is a Research Specialist at the MIT Media Lab and a Fellow at the Harvard Berkman Center and the Yale Information Society Project. In the video themes related to anthropomorphism and emotional affections to human alike robots are touched on</p>			Self reflection	channel=TheConference%2FMediaEvolutionTheConference%2FMediaEvolution
3.	<p>'Child-sized robot helps autistic kids learn social skills'</p> <p>Kaspar is a humanoid robot that acts as a social companion to improve the lives of children with autism and other communication difficulties.</p> <p>Video shows how robot Kaspar alongside with a teacher and/or a therapist are helping children with autism enhance their social skills</p>	Video	English	<p>Self-learning</p> <p>Self-reflection</p>	https://www.youtube.com/watch?v=PAX8AYXLM70&ab_channel=TheStraitsTimes
4.	<p>A video about CARESSES, A robot that is culturally competent (featuring Pepper) In the video you can see Pepper the robot communicating with care-home residents in the UK and Japan.</p>	Video	English	<p>Self learning</p> <p>Self reflection</p>	https://www.youtube.com/watch?v=0at2oZt_rag&ab_channel=CARESSES-CulturallyAwareRobots



Self assessment (a short quiz or other fun way to quickly self-assess their learning)

Develop a short trivia game that covers main points from all 4 topics. Participants have multiple choices and limited time to choose the right answer. The faster they choose the correct answer the more points they get.

Suggested further reading (optional)

Will care robots care? | Astrid Weiss | TEDxTUWien

https://www.youtube.com/watch?v=hQa_I14cknA&ab_channel=TEDxTalks

Social robots with Bertram Malle podcast

<https://www.machine-ethics.net/podcast/social-robots-with-bertram-malle/>

'Meet Zora, the Robot Caregiver'

By Adam Satariano, Elian Peltier and Dmitry Kostyukov for New York Times

<https://www.seattletimes.com/business/meet-zora-the-robot-caregiver/>

Module 4 - TRN Competence

Aim

The aim of this module is to enhance participants' knowledge about the practical skills, safety precautions, rights and inequalities of patient/client, and the ADORE approach/model in relation to implementing SARs in health and social care settings

Learning outcomes

When you have worked through this tool, you will:

1. Gain an understanding about the practical knowledge and skills needed to work with SARs in health and social care
2. Gain knowledge of potential issues related to physical and psychological safety of the patient/client when implementing SARs in health and social care
3. Appreciate patients'/clients' rights and potential inequalities in relation to receiving care from SARs
4. Understand the ADORE (Assess, Do, Observe, Revise, Evaluate) approach/model and its core principles.

Module Content (Each module will have four content topics as per curriculum map in IO 1.2. Each topic represents a minimum of 1 hour learning)

Topic 1: Practical skills

- Module orientation: Introduction to structure, activities, and tasks of the module
- The importance of upskilling health and social care staff in order to successfully implement AI and robotics in health and social care
- Overview of necessary skills that health and social care staff need to be aware of when operating SARs
- The importance of following robot's specific user guide when implementing SARs in health and social care
- Dealing with potential malfunctions of SARs

This refers to cleaning the robot, turning the robot on and off, re-charging the robot, dealing with malfunctions of the robot.

Topic 2: Safety

- Potential issues related to physical and psychological safety of the patient/client when implementing SARs in health and social care
- Actions that aim to ensure patient/client physical safety when implementing SARs in health and social care
- Actions that aim to ensure patient/client psychological safety when implementing SARs in health and social care

This refers to knowledge that is needed and actions to be taken in best way as to ensure the physical and psychological safety of the patient/client such as compliance with infection control, and reduction of patient anxiety about confidentiality and privacy matters.

Topic 3: Rights and inequalities

- Rights of the patient/client when receiving care from SARs
- The potential impact of AI and robotics on widening health inequalities

- Preventing and eliminating health inequalities with implementing SARs in health and social care

This deals with the rights of the patients/clients when receiving care.

It also refers to the opportunities or not that some patients/clients have to use and/or be provided with care by robots.

Topic 4: The ADORE approach/model

- Introduction and rationale behind the ADORE approach/model
- Understanding the principles of ADORE approach/model
- ADORE approach/model impact on transcultural robotic nursing

The ADORE model was developed by Professor Irena Papadopoulou during the CARESSES project (2017-2020). The ADORE model (Assess, Do, Observe, Revise, Evaluate) underpins the actions, processes and decisions related to transcultural robotic nursing.

Module Learning Activities - summary (one per topic)

Topic 1: Practical skills

- Navigate through the module introduction session
- Navigate through the learning session that introduces practical skills needed to work with SARs in health and social care
- Participants are asked to watch a video about the Topol review and the importance of preparing the healthcare workforce to deliver the digital future (link in table)
- Participants are asked to list three new things they learned from this learning session and/or video and share their reflections in the discussion area
- Participants are encouraged to browse the Topol review for additional information (link below – optional reading)

Topic 2: Safety

- Navigate through the learning session that introduces issues related to physical and psychological safety when implementing SARs in health and social care
- Participants are asked to read through the opinion piece (link in table)
- Participants are encouraged to reflect on the learning session and on the opinion piece in the discussion area
- Participants are asked to read through a hypothetical scenario (to be created) where potential physical and psychological safety issues when implementing SARs in care are included. Participants are asked to identify potential issues that might threaten patient/client physical and psychological safety and provide potential solutions. Participants are asked to create a document of their findings and recommendations and share it with fellow participants
- Participants are asked to read work from other participants and reflect on their ideas

Topic 3: Rights and inequalities

- Navigate through the learning session that introduces the topic about patient/client rights and potential inequalities when implementing SARs in care
- Participants are encouraged to reflect on the learning session in the discussion area
- Participants are asked to read through and reflect upon an article (link in table)
- Participants are asked to apply their learning towards assessing potential ways in which culturally competent SARs could reduce health inequalities in their own workplace.
- Participants are asked to share their ideas and reflect on fellow participants' posts

Topic 4: The ADORE approach/model

- Navigate through the learning session that introduces the ADORE approach/model
- Participants are encouraged to reflect on the learning session in the discussion area

- Participants are asked to watch a video of robot Pepper demonstrating cultural knowledge adaptation (link in table)
- Participants are asked to reflect how transcultural robotics nursing that follows ADORE approach/model could improve patient/client care in their workplace
- Participants are asked to create a post where they share their thoughts about the ADORE model
- Participants are asked to read and reflect on fellow participants' ideas

Details of resources to be used for the module learning activities

No.	Title and description of the resource	Type	Language of resource	Learning /training / assessment and evaluation activities	Access URL / download
1.	<p>'Dr Eric Topol: Preparing the healthcare workforce to deliver the digital future'</p> <p>The Technology Review is introduced by Dr Eric Topol. The Review explores the potential of game-changing technologies on the skills required by NHS staff. Discussion follows with NHS figures discussing the potential of the Topol Review to prepare the healthcare workforce to deliver the digital future.</p>	Video	English	<ul style="list-style-type: none"> • Individual learning • Self-reflection • Self-assessment 	https://www.youtube.com/watch?v=hVyyLMZPJ-o&t=48s&ab_channel=HealthEducationEngland-HEE
2.	<p>Social robots in rehabilitation: a question of trust. By Philipp Kellmeyer et al (2018).</p>	Opinion piece	English	<ul style="list-style-type: none"> • Individual learning • Self-reflection 	https://www.semanticscholar.org/paper/Social-robots-in-rehabilitation%3A-A-qu



	<p>Authors propose that safety, shared intentionality, predictability of behavior, and mutual attunement are crucial for establishing trust between humans and SARs.</p> <p>Hypothetical scenario – to be created</p>				<p>estion-of-Kellmeyer-Mueller/4a341e59e5b5289f078ac357c3c8c22e5cd4c515</p> <p>Participants must press 'PDF' to read the article</p>
3.	<p>'Can the right technology end health inequalities?' – article describes existing health inequalities, gives examples how COVID-19 has put health inequalities in a spotlight and asks how can health tech end health inequalities.</p>	article	English	<ul style="list-style-type: none"> • Individual learning • Self-reflection 	<p>https://www.openaccessgovernment.org/end-health-inequalities/98761/</p>
4.	<p>CARESSES robot showing cultural knowledge adaptation, February 2018.</p> <p>A video showing Indian person Kabir interacting with robot Pepper. Pepper is learning through conversation with Kabir that Kabir is interested in Japanese culture, and starts choosing conversation topics accordingly.</p>	Video	English	<ul style="list-style-type: none"> • Individual learning • Self-reflection 	<p>https://www.youtube.com/watch?v=WQJ0d5yXD0A&t=216s&ab_channel=CARESSES-CulturallyAwareRobots</p>

Self assessment (a short quiz or other fun way to quickly self-assess their learning)

A drag and drop activity with text. Participants are presented with number of statements, that cover all four topics, all missing relevant information. Participants have to complete the sentences by using the correct words from the list provided.

Participants are encouraged to reflect how this course enhanced their awareness about AI and robotics, especially SARs and provide feedback.



Suggested further reading (optional)

Topol review

Preparing the healthcare workforce to deliver the digital future

An independent report on behalf of the Secretary of State for Health and Social Care, February 2019.

<https://topol.hee.nhs.uk/the-topol-review/>

Learning and Assessment Approaches

The **key educational principles used in this MOOC** are:

- Independent and collaborative learning
- Reflection on own learning and experiences
- Creation and co-creation of knowledge
- Active interaction with inspiring activities and with the experiences of others
- Bite-sized learning
- Focus on a unique topic or small number of topics, for a short period
- Maximum use of available educational technologies and social media
- Peer facilitation
- Peer feedback
- Variety of methods for assessing achievement

The assessment methods will be:

Assessment quizzes

First the participants' achievement of the learning outcomes will be assessed formatively through self-assessment quizzes or other suitable methods.

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The summative assessment

This assessment requires each participant to produce an artefact which captures the essential elements of their whole learning. The artefacts could be a short animation, a power point presentation, a podcast, a short video and so on.

Grading the participants

Grading will be assigned to the extend of participation in the following:

- Accessing and reading relevant information;
- Reflective activities and personal blog entries;
- Analysis of scenarios and discussion boards;
- Individual or group-creation of artefacts;
- Evidence or plans for transference of new knowledge and skills to their workplace.

Attendance verification will be captured electronically by the MOOC platform through the course management facility which enables the facilitators to monitor each participant and track their progress. The participants will be also able to monitor their own progress and achievements.

The assessment and grading procedure will be elaborated in the 'Project Assessment and Evaluation' document.

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