Co-funded by the Erasmus+ Programme of the European Union

Ludwig Fresenius Schulen

Projekt Medic

Competence profile nurse 4.0

Labour market analysis/needs analysis of the care sector

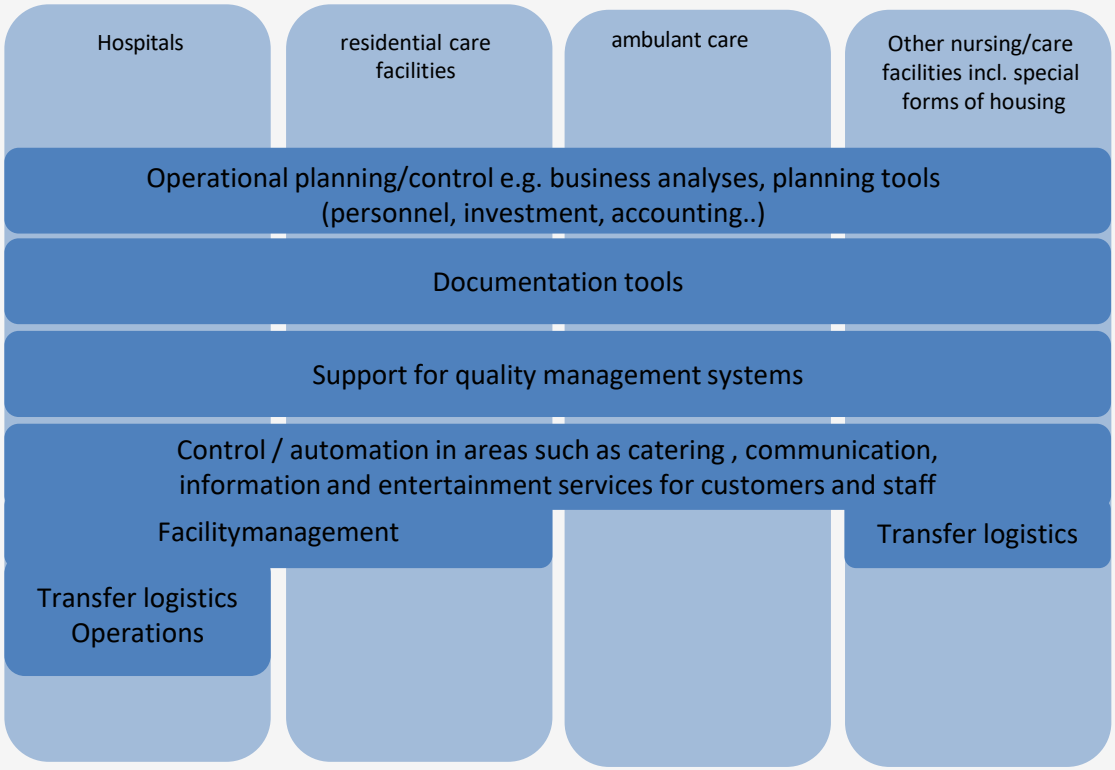
MEDIC - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user license any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

Digitalisation

What applications
of digitalisation already
exist in care?
(Work areas)



Co-funded by the
Erasmus+ Programme
of the European Union

Digitalisation

2. What digitalisation does the market need?
   - Why is it needed?
   - Is the measure feasible?
   - At what cost?

For the decision on establishment, cost-benefit-opportunity risks are weighed up from an economic point of view, but also from a business point of view.

Co-funded by the
Erasmus+ Programme
of the European Union

Digitalisation

3. What digitalisation already exists in care?

	Managing Director	Staff	Patient / Resident
Benefits	- Increased efficiency - Better use of resources - Error reduction - Higher quality - Better controllability - Analyses	- Allocation of resources possible in a different way - more time for "real care - Reduction of error sources through digital controls and through digital retrievability of standards etc - Digital monitoring of clients possible - to protect them (vital signs etc.) - Improved exchange with relatives and operational partnersas well as authorities through modern communication technology	- Possibly higher quality of care through fewer errors - More resources for human interaction through digitalization /automation of other processes - Digital Monitoring - Telemedicine as additional medical care possible - Maintaining relationships to relatives with restrictions digitally supported - Overcoming limitations (voice-controlled systems, speech computer with own speech impairment...)
Disadvantages	- Purchase costs - Change management in company necessary	- Efforts to increase digital skills needed	- Purchase costs - Social exclusion - Familiarisation with the new technology

Co-funded by the
Erasmus+ Programme
of the European Union

Telemedicine/telecare in care

What opportunities lie in telemedicine in care?

- Frequent visits/referrals possible
- Care with less logistical effort-especially important for rural regions
- Integration of interprofessional teams via video conferences feasible

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

1. Where is robotics needed in care?

- Robotics in care is seen as useful primarily for taking over individual tasks (e.g. transferring people) and routine tasks (e.g. serving drinks, serving meals)

Physical discharge:
- Developed to relieve caregivers physically in their daily work routine
- Patient positioning -- Prevention of pressure sores
- e.g.. *Robotic Bed*, developed by the Japanese company Panasonic ->Hospital bed that can transform into a wheelchair and is controlled by voice command

Better work organisation and logistics
- better organisation of work processes
- e.g. for carrying and transporting material, dispensing drinks or controlling liquid intake

Mental relief:
- Emotional robotics aims to support the addressing, communication or engagement of cognitively impaired people
- For caregivers, time savings and psychological relief are conceivable - at least indirectly, because robotic animals can attract the attention of those in need of care and stimulate social activity

Market potential is seen in particular through support with repetitive activities

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

2. Where is robotics needed in care?

	Challenge	Use of robotics
Oral hygiene	• Many patients with poor oral hygiene during their stay in hospital • Poor oral hygiene can result in pneumonia at worst • A patient with pneumonia stays in hospital for an average of 10 days	• A robot is not directly the solution to the problem • It is not possible to replace human oral care with oral care by a robot for safety reasons • There are already machines for cleaning dentures, which could be part of the solution
Overweight	• In Germany, 66.5% of all adults are overweight [Cunningham, 2009]. The same is true for 47% of Danish adults. [Sundhedsstyrelsen, 2013] • Obesity results in, among other things, longer stays in hospitals, purchase of special equipment and a heavy working environment • Care is more time-consuming, e.g. in relation to help with dressing	• A robot is not an immediate solution to the problem
Hand hygiene	• Spread of bacteria from hands and other surfaces has a major impact on the spread of diseases and infections in the hospital and care sector • Poor hand hygiene is, among other things, one of the causes of the many diseases acquired in hospitals [Kraeftens Bekaempelse, 2012]	• Idea: A mobile hand washer for patients • Water and soap is not possible in a mobile robot unit due to water supply and drainage • Disinfection would be an alternative • Safety is essential in direct patient-robot interaction

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

2. Where is robotics needed in care?

	Challenge	Use of robotics
Arrangement and registration of meals	• Around 60 % of the elderly in nursing homes are at risk of malnutrition • 40% of all patients in hospitals are at risk of malnutrition • Several causes are pointed to, including lack of time among staff to create good settings for meals and to record the food eaten • With malnutrition, sickliness and mortality increase	• Idea: A mobile robot that 1) transports the food, 2) keeps the food warm and 3) automatically registers the food information • The solution relates primarily to computer vision technology, and is less dependent on robot technology • Food recognition and analysis through camera technology is already developed and patented by SRI International • A simple solution will be to improve the IT system
Cleaning/sterilisation of equipment	• Poor cleaning of equipment increases the risk of spread of infectious diseases in the hospital/nursing home	• An equipment wash bay does not necessarily involve a robotic solution • One solution could be a transport robot that often transports the transports equipment to/from a central wash bay, ensuring that the cleaning happens
Textile cleaning	• In clinics and nursing homes, large quantities of textiles accumulate that need to be cleaned. Reliable cleaning, at the same time gentle/appropriate to the clothing and reliably assignable to the client is desired	• Recognition of the textiles in relation to care instructions and clients can be easily implemented

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

2. Where is robotics needed in care?

	Challenge	Use of robotics
Taking medication	• Between 21% and 55% of elderly patients/citizens do not take their medicine correctly • This is often due to lack of information, forgetfulness or complex circumstances related to taking the medication	• One possibility could be a sorting robot that assembles the medicine
Documentation	• Nurses spend half an hour a day on documentation • This time is not available for the patients	• The challenge cannot be solved directly with robot technology alone • However, the challenge can possibly be thought of in the development of another solution

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

3. Is it already being used?

Robotics is hardly widespread in German care. It is usually only used in pilot projects:

Transport of goods or medicines:
for example by theRoboCourier orROBOT-Rx (Nejat et al. 2009)

Support with other nursing activities:
Hygiene or serving drinks and food through humanoid robots or cleaning robotics

Moving people or heavy objects:
for example, by the humanoid robot RI-Man, which can lift and carry people with mobility impairments, or the multifunctional Lifter of the Fraunhofer Institute (cf. Becker 2013)

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

4. How would robotics be accepted?

Possible barriers:

Replacement of human labour:
-humanoid robots that could replace human labour -> humans would then only take on those tasks that a robot cannot perform

Possible applications depend on the conditions on site:
-Barriers due to thresholds, steps or stairs exist.
-Robotics usually do not fit "inconspicuously" into the environment

A clear division of roles between humans and machines will be decisive for market penetration
Care should continue to be provided by humans -> robots could support this process

Co-funded by the
Erasmus+ Programme
of the European Union

Roboting (Human-Robot-Human-Interaction)

5. Robotics - feasible or still visionary?

Facility management	Nursing staff	Nursing science	Nursing school
XXX	X-XX	X	XX

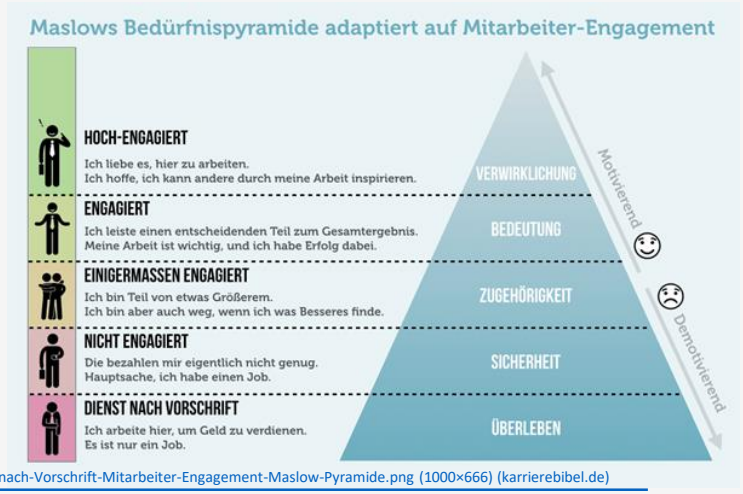
- Expectation/acceptance of feasibility to the actual status from X to XXX
- Obstacles are fear of new things, concern about being replaced/less well looked after, lack of technical requirements and know-how

Co-funded by the
Erasmus+ Programme
of the European Union

Prevention of demotivation on the job

1. Reasons for demotivation

- Ideally, people's deficit motives are fully satisfied
- If an occupation cannot satisfy personal needs, then dissatisfaction and a drop in work performance are the consequences



Dienst-nach-Vorschrift-Mitarbeiter-Engagement-Maslow-Pyramide.png (1000×666) (karrierebibel.de)

Co-funded by the
Erasmus+ Programme
of the European Union

Prevention of demotivation on the job

2. Motivational instruments

Material motivational instruments -> financial incentives (salaries, wages, employee share ownership or other material rewards such as company housing or paid holidays)

-> Material incentives do not have the strongest effect on performance behaviour
-> But of great importance as motivational instruments

Employee participation
- Means that employees participate in the substantive rights and functions
- Staff is tied to the company, improvement of the working atmosphere -> work motivation is increased
- A possible variant in nursing care is debt participation, also called employee loans

Social benefits
- Statutory, collectively agreed and voluntary social benefits
- Possibility of flexible working hours in the care sector
- Part-time models can offer positive incentives
- Introduction of a company pension scheme

Immaterial motivational instruments -> intangible motivational instruments only work if there is mutual trust between employers and employees

Motivation to work through the work itself
- *Physical and mental activity* -> no separation between thinking and doing
- *Varied activity* -> only routine work has a negative effect on work motivation
- *Productive activity* -> work input and work result should be in favourable relation to each other
- *Communicative activity* -> maintain social contacts at the workplace

Human resources development
- The main objective of human resources development is to qualify all workers for current and future work tasks.
- The main topics of personnel development are personnel promotion measures as well as education, training and further education
- The skills of the employees should be strengthened
- Offers the opportunity for personality development and self-realisation
- Employees are satisfied, as they have the opportunity to expand their skills without their own costs and interruption of the employment relationship

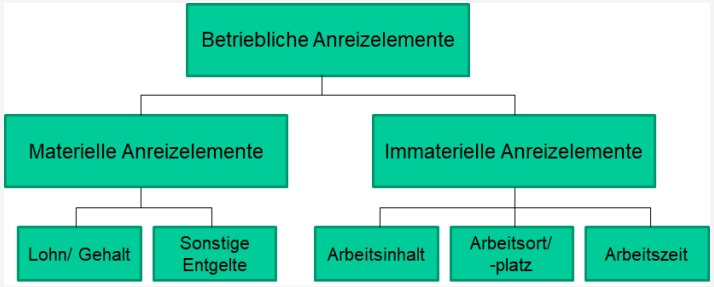
- *Job Enrichment* -> Expansion of the planning decision-making and control field of the employees
  - Due to the independent and autonomous work, the activities are perceived as more interesting
  - Work performance, work qualification and work motivation increase

Co-funded by the
Erasmus+ Programme
of the European Union

Prevention of demotivation on the job

2. Motivational instruments

	- *Job Enlargement*	-> Redesign of work tasks -Job Enlargement reduces the one-sided burden on employees
	- *Job Rotation*	-> Workers can broaden their knowledge, have new experiences - Qualification level of the staff increases - Job rotation has a positive effect on maintaining and improving performance
Delegation	- Leaders have the task of delegating activities, transferring responsibilities to the staff - Independent and self-responsible work are prerequisites for type of leadership method - Employees complete delegated tasks very efficiently - Staff motivation to work increases when tasks are completed independently and on their own responsibility	
Staff appraisal	- Recognition is an important component in today's working world - It is important to appreciate the work performance of the staff and to assess it accordingly with praise and criticism	
Teamwork	- Emotional burdens on individuals can be balanced out by the group - Teams have the ability to compromise and strike a balance between dissent and agreement - In the field of care, teamwork plays a significant role - Tensions in the care team as well as frequent staff changes and competitive thinking have a negative impact on work	



Co-funded by the
Erasmus+ Programme
of the European Union

Prevention of demotivation on the job

3. Does nursing need measures to prevent demotivation?

- Evaluation of job dissatisfaction: employees' assessment, evaluation, attitudes, feelings and behaviours towards their job
- Close connection between job dissatisfaction and demotivation, demotivation can arise from job dissatisfaction
- Inclusion of the employee's leadership
- Preventing outflow
- Intrinsic and extrinsic motivation to prevent demotivation
- Employee motivation presupposes that the employees' work is meaningful
- Employees want to have the opportunity to help shape their workplace
- An increase in employee motivation in nursing can be achieved above all through feedback on work performance
- It is important to help employees to help themselves!

Current: During the Corona crisis, the care sector lost more than 9,000 care workers between April and June 2020 alone, according to the BA (share of 0.5%); a good third of the almost 3,600 care workers surveyed by the DBfK in 12/2020 were considering a career change.

Quelle: Thüringer Allgemeine vom 9.3.21, Seite 8 Papierausgabe

Co-funded by the
Erasmus+ Programme
of the European Union

Prevention of demotivation on the job

4. What measures can be taken privately?

One in five workers no longer interested in their job, HR managers estimate

Internal dismissal: Causes

- Competition
- Envy or antipathy among colleagues
- Too much or too little work or tasks
- Central problem is often the leadership style, more precisely: lack of recognition and feedback from the boss

Inner resignation: Heed the warning signs

- Inner resignation does not happen overnight
- Being sick more often
- Neglect yourself and your hobbies
- Carry bad moods from the job into private life as well
- No longer see any sense in his work

Inner resignation: Talking about problems is important

- Friends and family are the first point of contact
- Professional support from the company doctor
- If the relationship is trusting, it is advisable to talk to superiors
- Also raise the issue with the works council
- Clarify own design options and expectations

Co-funded by the
Erasmus+ Programme
of the European Union

Environmental balance under consideration of digitalisation in care

What ecological effects can there be from more digitalisation in care?

- Paperless work (documentation, communication)
- Saving resources through digitally supported control in various areas
- Intelligent facility management/smart home technology leads to energy savings
- Less energy consumption in logistics
- Rationalisation in stockpiling
- Nutrition software can lead to optimal meal planning, taking into account client needs, stockpiling and ecological balance of foods
- Control cleaning smartly-as intensively as necessary, as gently as possible -less energy use/environmental pollution

MEDIC - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user license any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.