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Technology Specialisation 1

Rehabilitation strategies for Patients with Cardiovascular disease

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Abstract

Acronyms and Abbreviations

ICT Information Communications Technology

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1 Introduction

1.1 Background

1.1.1 Technology

1.1.2 The Danish Healthcare System

The establishment of the Danish Healthcare System started in the eighteenth century. The first hospital was placed in Copenhagen and it opened in 1757. This hospital is still functioning and is today known as Rigshospitalet. Outside the capital small hospitals were build during the late eighteenth century. Even then the hospital was partly financed by taxes, patient payment and charity. In the late nineteenth century every thirteenth Dane was a member in a sick-benefit association which the Danish Government co-funded. The Danish Welfare State has its root in 1933 where the Social reform was founded. With this reform Danes with a low income it became a demand that they were members of a sick.benefit association. During the thirties taxes gradually became the dominant finance source to the Danish Healthcare System.
The sick-benefit associations was shut down in 1973 and replaced by public health insurance. The Danish public health insurance is paid by the Danes themselves within taxes. But the insurance provides free care for everyone regardless of income and residence. This public health insurance includes hospital stays, surgery, visits to a GP and specialist'. Furthermore it provides partly funding for dentist, physiotherapist, chiropractor, podiatrist and contributes to medicin.
Every healthcare system consist of users, healthcare institutions and the financial third part, besides the fundamental financial mechanism user fee, tax and budgets/rates. This is described with the tripartite model in figure 1.1. The A, B and C is the financial mechanism and 1, 2 and 3 is the consistence of the healthcare system. The model shows how a third part is pushed in between the users and the healthcare institutions. This third part creates equality between users as much as possible. The constellation of finances differs from country to country. Denmark is mostly funded by the Government through taxes whereas US citizen needs health insurance to pay the for these services.

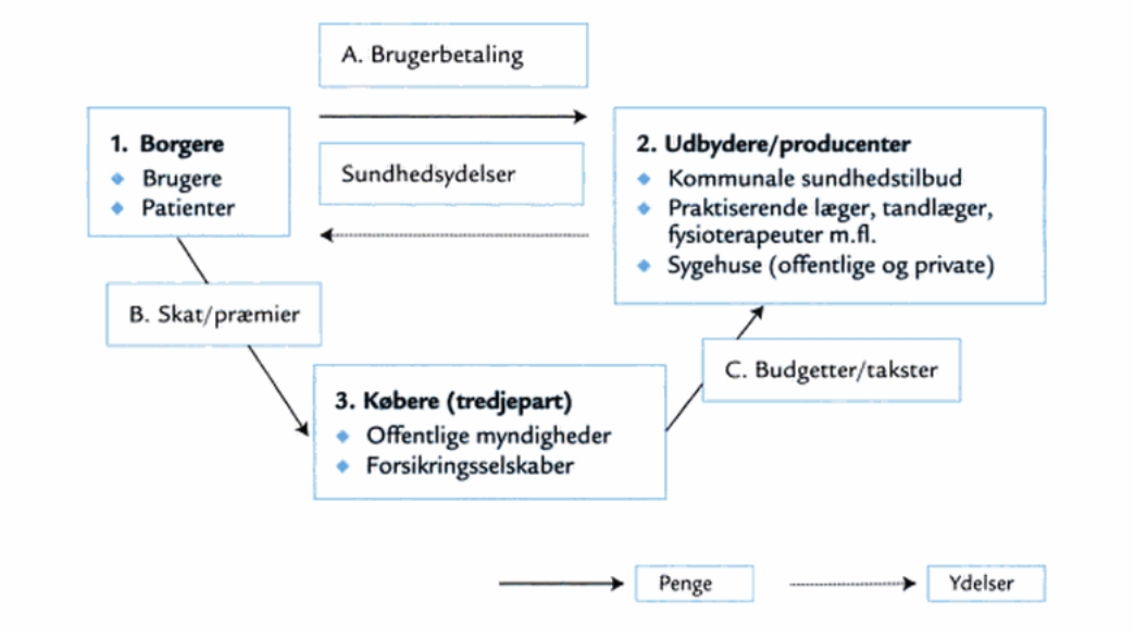

Figure 1.1: Tripartite model [1]

In 2007 Denmark made big structural changes throughout the healthcare organisation. Municipalities was combined which meant a change from 275 municipalities to 98. The 14 counties was replaced with by 5 regions. The Danish Healthcare System is thereby organized in three levels: State, region and municipalities.

in 1927 there was a total of 160 somatic hospitals in Denmark.

omlægning fra amt til regioner [1]

1.1.3 Target Group and Market Segment

The need for cardiac rehabilitation should be evaluated for all patients with heart disease. This includes patients who have had a balloon dilation or by-pass surgery and patients with stable ischemic heart disease. Patients with heart failure, pacemaker or who have had heart-valve surgery or cardiac transplantation should also be evaluated for the purpose of cardiac rehabilitation [2]. By this statement it is seen, that this invention will involve a large target group.

To teach cardiac patients about their illness and how they are able to influence the course of the disease, means that the risk of dying is reduced. Furthermore research shows, that rehabilitation programs with physical exercise reduce cardiac mortality [3].

1.2 Problemstatement

More than half of the danish citizens over the age of 55 suffer from a cardiovascular disease. Furthermore, cardiovascular diseases are one of the most common causes to death in Denmark. The total cost of treating cardiovascular patients at the Danish Healthcare System was 5.5 billion DKK in 2015. Every year approximately 55.700 Danes is diagnosed with cardiovascular disease.

Nearly 107.100 Danes are hospitalized every year for cardiovascular disease and almost 73.100 Danes are yearly at one or more consultations at the hospital. Approximately 23 percent of the cardiovascular patients are readmitted into the hospital within 30 days after being discharged. It has been proven, that cardiac rehabilitation results in a reduction in deaths caused by cardiovascular diseases and the need for readmissions [3].

All this indicates that cardiovascular patients constitute a large part of the Danish states economy. This leads to our problem statement which is:

- What impact would an ICT solution for rehabilitation have on both cardiovascular patients and the Danish Healthcare System?
- How can ICT be used to shorten hospital stay for cardiovascular patients?
- Which barriers/challenges can such system meet in implementation?

1.2.1 Delimitation

This project is limited only to be focusing on healthcare in Denmark and how the technology within rehabilitation will have an essential impact on the Danish Healthcare System. However, the project will be compared to related ICT solutions in EU as scientific articles based on The Danish Healthcare System is limited in this research area.

Relevant data on how the Danish Healthcare System is establish will mainly be based on literature found in books and on websides were guidelines, statistics and the historical development is being published.

2 | Method

3 | Theory

4 | Empirical process

5 | Analysis and discussion

5.0.1 Relative's Experiences of cardiac Patient's telemedicine rehabilitation

It is known that it can be stressful to be a relative to cardiac patients. Most often relatives help with home exercises, medicine dosage and transportation to and from the hospital. They participate in discussions about the patient's illness and they do housekeeping and practical activities at home, which the patient isn't capable of doing. Research has shown that relatives are in risk of being a patient themselves as a consequence of the stressful job it is to take care of the patient [4] [5]. Therefore, telemedicine rehabilitation is being offered to reduce relative's homecare. By introducing telemedicine rehabilitation relatives feel more comfortable and secure as the patient is being monitored and healthcare staff react if the patient's measurements are to be concerned about. By an interview of 13 cardiac patients who participated in telemedicine rehabilitation the results indicated that relatives find telemedicine equipment easy to use and the use of telemedicine motivates the patient to be more active in their own treatment [6].

A research has taken place in Denmark where the patient did weekly blood pressure- and weight measurements. A heart rate monitor was used three times a week under physical conditions. Data were shown on an application via smartphone and hereby the patient, relatives and healthcare staff were able to follow the patient's state of health. For the patients it was a relief that they were able to do exercises and health measurements at home and hereby they were able to do so according to work schedule as well as motivation and mental energy. Furthermore, less hospital visits removes focus on the disease and makes the patient feel more normal and less ill. Hereby patients experience higher quality of life as they feel healthier [7].

Relatives experienced that everyday life were more normal by using telemedicine rehabilitation as they were able to continue everyday routines and spent less time taking care of the patient. They experienced more freedom as they didn't have to take the patient to rehabilitation classes, regulate diet and take care of medicine. It indicates that relatives to patients using telemedicine rehabilitation gain more freedom and less concern and responsibility [8].

6 | Conclusion

Appendix

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