

## Chapter 34

# E-Health and Telemedicine in the Elderly: State of the Art

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### ABSTRACT

*In the last sixty years, there has been an increase in life expectancy especially in females and in industrialized countries. This, along with the reduction of population growth, is leading to a reversal of the population pyramid: a narrow base of adults has to maintain a wide top of elderly people. Old people are often affected by multi-pathologies and comorbidities. Furthermore, the changes in family's structure, particularly the reduction of the central role of the Ancients, contribute to create the "frail elderly syndrome." Geriatric frailty is found in 20-30% of the elderly population over 75 and increases with advancing age. It was reported to be associated with long-term adverse health-related outcomes such as increased risk of geriatric syndromes, dependency, disability, hospitalization, institutional placement, and mortality. Obviously, it is also associated with an increase in healthcare costs. Telemedicine is an innovative healthcare system capable of ensuring both higher efficiency and better cost-effectiveness. It has wide variety of services, relative simplicity of use and moderate-low costs. Currently there is clinical evidence of telemonitoring impact on management of several clinical conditions such as chronic heart failure, arrhythmias, pacemaker and ICD controls, cardiac rehabilitation programs, and cardiovascular risk factors.*

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## INTRODUCTION

It has become clear that Telemedicine, and more generally E-Health, is an area of interest in world circles for research, design and management of healthcare delivery systems for elderly patients. In particular, emphasis on specialized care in areas suffering from a shortage of expertise or where access to healthcare is difficult.

At the present time, more the 11% of the world's population is over 60 years old with the elder population growing faster than the total population in practically all regions of the world. There are significant disparities from nation to nation mainly due to a poor cultural interest in what has been termed as the 'Frail and Elderly.' The scope of importance includes key technologies such as biosensors and communications, multi-disciplinary nets of research in bioinformatics, genomics, neuroinformatics, remote monitoring and diagnostics for the assistance and prevention, diagnosis and treatment of diseases encountered by the frail and elderly. The growing pressures of global demographics, medical advances and patient empowerment are leading to greater and greater demand for more health attention, to the issues of healthcare transformation and to the global societal role of E-Health and Telemedicine.

In the first part the following Chapter will discuss the demographic changes of the society and their impact on family organization and on Ancient rule. It will also explain the meaning of the term "frail elderly" and its importance on management of medical resources.

In the middle part the Chapter will focus on the eHealth and Telemedicine concepts, on the recognition of their potential roles in the National Health Services and the consequent development of national programmes designed to improve their applications in health setting.

The last part of the Chapter is dedicated to the Italian situation; showing, in particular, the

important differences, in terms of awareness of the potential role of Telemedicine in management of health problems and subsequent economical investments, between north and south of Italy.

## BACKGROUND

At the present time, 1 out of 9 people of the world's population is over 60 years old (see Figure 1), that is to say 740 million elderly people out of a world's population of 6900 million. Most of this elderly population (about 54%) lives in Asia whereas about 21% lives in Europe. In 2050, it is estimated that this proportion will be 1 in 5, that means that the over 60s (2 billion) will represent 20% of the world's population (about 9 billion). This trend towards an ageing population is distributed differently in different countries; particularly, it is more evident in industrialized countries than in developing countries. In fact, at the present time, in Europe, the over 60s are 20% while in Asia, Latin America and the Caribbean these are 10% and 5% in Africa (United Nations, 2009).

Another fundamental aspect of the world's population is the ageing of the elderly. There exists a part of the population called the "oldest old," being 80 or more years old. Now, 14% of the older population (about 103 million people), is oldest old and by 2050 this will rise to 20% which means 400 million people. Among these oldest old, there is also growth of the over 100 years old. This class, at the moment, is about 454.000 strong, but it will grow almost tenfold by 2050 to about 4.1 million (see Figure 2). It means that the older population is growing faster than the total population in practically all regions of the world, the oldest old population is growing even faster and the difference in growth rates between the older population and the total population is increasing (United Nations, 2009).

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