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Master's thesis

**NURSING CARE OF THE GERIATRIC POPULATION WITH  
ALZHEIMER'S DISEASE IN SKILLED NURSING INSTITUTIONS  
AND IN THE COMMUNITY**

**(223-Nursing)**

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## **ABSTRACT**

### **STUDY OBJECTIVES**

1. To explore the basic concepts of etiology and pathogenesis of Alzheimer's disease and determine the specifics of mental status and cognitive impairment, as well as the stages of development and diagnostic criteria of the disease.

2. To determine socio-hygienic and medico-psychological aspects of lifestyles in patients with Alzheimer's disease and their family members.

3. To validate medical and organizational technologies of nursing care for patients with Alzheimer's disease and to conduct a medico-social analysis of care-related activities performed at medico-social institutions and in the home.

4. To provide a socio-hygienic and medico-psychological assessment of the problems arising when providing care for patients with Alzheimer's disease, to assess the level of interactions between healthcare personnel and relatives of patients with Alzheimer's type dementia and to define the tasks of nursing personnel when providing care for the aged and elderly patients with Alzheimer's disease.

### **THE OBJECT OF THE STUDY**

Organization of nursing care for the aged and elderly patients with Alzheimer's disease in medico-social institutions and in the home.

### **THE SUBJECT OF THE STUDY**

The factors that define the quality of nursing care for the aged and elderly patients with Alzheimer's disease in medico-social institutions and in the home.

### **METHODS OF STUDY**

- Sociological method,
- Statistical method
- Clinical methods (observation, comparison and measurements).

### **CONCLUSIONS**

This study has explored the basic concepts of etiology and pathogenesis of Alzheimer's disease and determined the specifics of mental status and cognitive impairment, as well as the stages of development and diagnostic criteria of the disease. The research has determined the socio-hygienic and medico-psychological aspects of lifestyles in patients with Alzheimer's disease and their family members. The study has validated medical and organizational technologies of nursing care for patients with Alzheimer's disease and conducted a medico-social analysis of care-related activities performed at medico-social institutions and in the home.

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## INTRODUCTION

*The relevance of the study.* At present the issue of the geriatric global population is becoming immensely significant for the welfare and economy of most developed and developing countries [30]. The number of aged and elderly people in developed countries is quite high. For instance, there is one aged person per six adults in Europe and in the United States [29]. Statistical data predict this demographic to grow in the underdeveloped countries as well.

The above aforementioned demographic problems apply to all countries of the world, especially to those where depopulation is prominent. The aging of the population is leading to where the elderly constitute a substantial proportion of patients both in the community and institutions [29]. The health problems of geriatric population are a high priority within the health care systems in all and any country of the world [40].

A substantial portion of morbidity patterns in aged and elderly people belongs to diseases of the central nervous system and mental disorders [29]. The most frequently occurring of these ailments include various types of dementia, depressive disorders, anxiety disorders and somatization disorders. [34].

Dementia is a term marked by lapses in memory, changes in personality, and impaired reasoning. Dementia in Alzheimer's disease also referred to as senile Dementia is a progressive disease that destroys memory and other important mental functions. In most cases, it does not begin until 65 years of age, but sometimes it may appear at an earlier age [4].

Alzheimer's disease is a constantly progressive neurodegenerative disease of the central nervous system with definitive clinical and pathomorphological manifestations [50]. The latter are followed by escalating cognitive impairment, emerging disorientation to place and person and loss of motivation; the patient becomes passive and lacking in previous interest. The patient gradually loses their independence (the average life expectancy after the onset of disease is approximately 7 to 9 years) [17, 21].

***Epidemiology.** It should be noted that in parallel with growing numbers of elderly people in the world, the percentage of people with dementia is also increasing. Currently, 18 million people worldwide have dementia, and by the year 2025, this number will reach 34 million. This means that over the next 25 to 27 years, more than 2,000 people will be diagnosed with dementia every day. [4].*

The two main parameters used in epidemiological studies include incidence and prevalence of the disease. Incidence reflects the number of new cases per person-time unit (usually expressed as a number of new cases per 1000 persons/years), while prevalence indicates the total number of people affected by the disease in the population at a given time-point.

Cohort longitudinal studies (in which an initially healthy population is subject to many years of monitoring) reported incidence at 10–15 new cases per 1000 person-years for all types of dementia and at 5–8 new cases per 1000 persons/years for Alzheimer's disease, which constitutes approximately a half of total yearly number of diagnoses (see Table 1.) [30].

As reflected by the statistics, old age is the main risk factor: with every five years past 65 years the risk index roughly doubles, increasing from 3 cases/1000 persons/years at 65 years to 69 cases/1000 persons/years by 95 years of age. Gender-specific differences also apply: females are more susceptible to Alzheimer's disease, especially after 85 years of age [45].

The prevalence of a disease within a population depends on various factors, including incidence and mortality. Since incidence is increasing with age, mean age of the population in the studied geographical area should be routinely taken into account. In 2000, approximately 1.6% of population in the US (both total and the 65-75 years age group) had Alzheimer's disease. In the 75-84 years age group, this index was already 19% and in people over 84 years of age, the prevalence of the disease was as high as 42% [9].

**Table 1. The incidence of Alzheimer's disease in people over 65 years of age**

<b>Age</b>	<b>Incidence (new cases) per 1000 person-years</b>
<b>65-69</b>	3
<b>70-74</b>	6
<b>75-79</b>	9
<b>80-84</b>	23
<b>85-89</b>	40
<b>90-</b>	69

The prevalence of Alzheimer's disease is lower in the less developed countries [4]. According to WHO, 0.379% of global population had dementia in 2005. In 2015, this proportion increased to 0.441% and a greater percentage, that is, 0.556% of the Earth's population may be affected by the disease by the year 2030 [9]. Similar conclusions are drawn by the authors of other research papers. Another study states that global prevalence of this disease was 0.40% in 2006 (range: 0.17–0.89%, absolute quantity: 26.6 million people, with a range of 11.4–59.4 million) and predicts the percentage to increase three-fold and the absolute quantity of patients to increase four-fold by the year 2050 [8].

On the average, at least 44 million people in the world live with dementia, making it a global problem calling for attention [7].

When an individual is diagnosed with Alzheimer's disease, this brings about radical changes both to his/her life and to the lives of his/her family members, significant others and friends [28]. In this disease, the patient is not the only one who suffers; the evolving dementia affects the relatives and the significant others of the patient who act as caregivers and as such are exposed to substantial physical, financial and emotional stress. Many of the caregivers are elderly people themselves, often aged 70–80 years, and have ailments of their own [5].

This why there is a need for continuous quality care for patients with Alzheimer's disease provided by nursing personnel [28]. Such care may be provided both in the home and in dedicated medico-social institutions. It should be noted that

the work of a home care nurse is becoming increasingly complex and multifaceted [12]. It involves various aspects of preventive, diagnostic and therapeutic work and general care for the patient. Nursing personnel has been allotted a task of educating the patients' relatives/significant others in basic emergency interventions, patient care, patient rehabilitation and medico-social aid for the elderly and disabled people, which necessitates the research into their professional activities under contemporary conditions [13].

Currently, the nursing roles in delivery of expert care in medico-social institutions for the aged and elderly patients are increasing dramatically. Under current conditions, the nursing process brings along a new understanding of a nurse's role within the framework of health-care practice. The nursing process maybe used to evaluate the quality of care and the efficacy of nursing interventions [27].

Comparatively few studies are dedicated to this problem, which calls for additional scientific generalizations and defines the rationale for undertaking this research work.

### **THE GOAL OF THE STUDY**

To investigate the specifics and conduct a systematic analysis of the role of nursing care for the aged and elderly patients with Alzheimer's disease in medico-social institutions and in the home in order to improve organization and quality of nursing work.

### **STUDY OBJECTIVES**

5. To explore the basic concepts of etiology and pathogenesis of Alzheimer's disease and determine the specifics of mental status and cognitive impairment, as well as the stages of development and diagnostic criteria of the disease.

6. To determine socio-hygienic and medico-psychological aspects of lifestyles in patients with Alzheimer's disease and their family members.

7. To validate medical and organizational technologies of nursing care for patients with Alzheimer's disease and to conduct a medico-social analysis of care-related activities performed at medico-social institutions and in the home.

8. To provide a socio-hygienic and medico-psychological assessment of the problems arising when providing care for patients with Alzheimer's disease, to assess the level of interactions between healthcare personnel and relatives of patients with Alzheimer's type dementia and to define the tasks of nursing personnel when providing care for the aged and elderly patients with Alzheimer's disease.

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### **METHODS OF STUDY:**

- Sociological method,
- Statistical method
- Clinical methods(observation, comparison and measurements).

### **THE SCIENTIFIC AND PRACTICAL VALUE OF THE STUDY**

The findings of the research study deepen the knowledge on organization of care for the aged and elderly patients with Alzheimer's disease in medico-social institutions and in the home. The work has analyzed medico-social problems of the aged and elderly patients with Alzheimer's disease, their mental status and cognitive impairment. The work has provided a socio-hygienic and medico-psychological evaluation of the problems arising as part of care for patients with Alzheimer's



disease. The work has evaluated the level of relationships between healthcare personnel and the relatives/significant others of patients with Alzheimer-type dementia. This work has substantiated the managerial and medical technologies of medico-social, medico-psychological and hygienic principles of care for the aged and elderly patients with Alzheimer's disease in medico-social institutions and in the home; the tasks of nursing personnel when providing care have been defined.

## CHAPTER 1.

### CLINICAL AND PATHOGENETIC CHARACTERIZATION OF ALZHEIMER'S DISEASE. SPECIFIC ASPECTS OF MENTAL STATUS AND COGNITIVE IMPAIRMENTS (REVIEW OF LITERATURE)

#### 1.1. Hypotheses for development of Alzheimer's disease

Three principal competing hypotheses have been suggested to explain possible etiology of Alzheimer's disease: cholinergic hypothesis, amyloid hypothesis and tau-hypothesis [47].

The *cholinergic hypothesis* was historically the first concept proposed to explain Alzheimer's disease; according to this hypothesis, the disease is caused by a reduced synthesis of acetylcholine neurotransmitter [39]. This hypothesis is currently considered unlikely, since the medications targeted at improving acetylcholine deficiency are scarcely effective in Alzheimer's disease. However, this hypothesis helped develop most of the existing methods of supportive therapy. Other cholinergic effects are suggested, e.g. initiation of large-scale amyloid aggregation leading to a generalized neuro-inflammatory process [47].

*Amyloid hypothesis* has been suggested in 1991, whereby the main cause of the disease is deposition of beta-amyloid (A $\beta$ ) [19]. The gene encoding the APP protein, from which beta-amyloid is formed, is located on the 21st chromosome. An interesting fact to support the amyloid hypothesis is that almost all 40 year-old survivors of Down syndrome (an additional copy of chromosome 21 or its region) were found to have Alzheimer-type abnormalities. Moreover, deposits of fibrillar amyloid plaques were found in the brain of transgenic mice with a mutant type of human APP gene; other abnormalities characteristic of Alzheimer's disease were also found in these animals [23]. An experimental vaccine has been demonstrated to purify the brain of amyloid plaques in early human trials. However, its effects on dementia were insignificant. There is no conclusive correlation between the

accumulation of plaques and neuronal loss. The amyloid hypothesis is currently viewed as the main one. However, even this hypothesis does not explain the entire variety of events and phenomena in Alzheimer's disease [22]. The accumulation of beta-amyloid is not considered to be a direct cause of the disease but rather a trigger that launches a sequence of neurodegenerative changes, many of which, including tau-pathies and neuronal loss, manifest only years later. What are the specific launchers of beta-amyloid accumulation *per se* and how this accumulation influences the tau protein remains unknown [25].

Along with the amyloid hypothesis, *tau-hypothesis* is being explored. According to the latter, the cascade of abnormal changes is triggered by structural deviations of tau protein. Presumably, the threads of the hyperphosphorylated tau protein begin to fuse with each other, eventually forming neurofibrillary tangles inside the nerve cells. This causes disintegration of microtubules and collapse of the intraneuronal transport system. Firstly, this is leading to disruption of biochemical signaling between the cells, and then to the death of the cells themselves. [25].

## **1.2. Neuropathology of Alzheimer's disease.**

The disease is characterized by the loss of neurons and synaptic connections in the cerebral cortex and in certain subcortical regions. The death of cells is leading to a significant atrophy of the affected areas, including degeneration of temporal and parietal lobes, areas of frontal cortex and the cingulate gyrus [50]. Both amyloid plaques and neurofibrillary tangles are readily visible on microscopy during post mortem assessment of brain samples obtained from the patients. The plaques are dense, generally insoluble deposits of beta-amyloid and cellular material inside and outside the neurons. They grow inside the nerve cells, forming insoluble warped meshing of fibers, often referred to as neurofibrillary tangles. Many elderly people develop some quantity of plaques and tangles in the brain; however, in Alzheimer's disease these elements are more numerous in certain areas of the brain, such as

temporal lobes [47].

**Biochemistry.** Enzymes cleave the precursor of beta-amyloid into sections; one particular section is playing a key role in formation of senile plaques of Alzheimer's disease [50].

It has been noted that Alzheimer's disease is always associated with a proteinopathy, that is, accumulation of abnormally convoluted proteins in brain tissue (namely, beta-amyloid and tau protein). The plaques are formed from small peptides, 39 to 43 amino acid residue long, referred to as beta-amyloid. The beta-amyloid is a fragment of a larger precursor protein, APP. This transmembrane protein plays an important role in the growth, survival and damage recovery of neurons. For the currently unknown reasons, APP is subject to proteolysis in Alzheimer's disease (it is cleaved into peptides by enzymes). The beta-amyloid filaments formed by one of the peptides stick together in the extracellular compartment to form dense elements known as senile plaques. In Alzheimer's disease, the structural changes of tau protein lead to disintegration of microtubules in brain cells [25].

To be more specific, Alzheimer's disease is also viewed as a tau-pathology, a disease associated with abnormal aggregation of tau protein. Each neuron contains a cytoskeleton, partly made up of microtubules that act like rails, directing nutrients and other molecules from the center of the cell to its periphery (that is, towards the end of the axon) and backwards. Along with several other proteins, tau protein is associated with microtubules; in particular, tau protein stabilizes them after phosphorylation. In Alzheimer's disease, tau protein is subject to excessive phosphorylation, which is why protein threads begin to bind to each other and stick together to form neurofibrillary tangles and destroy the transport system of the neuron [20].

The exact way in which the impaired synthesis and subsequent accumulation of beta-amyloid peptides cause the abnormalities typical of Alzheimer's disease is not

known [19]. The amyloid hypothesis traditionally highlighted accumulation of beta-amyloid as the main event triggering the process of neuronal degeneration. The deposits are believed to disrupt cellular homeostasis of calcium ions and to precipitate apoptosis. Mitochondria are known as a place of A $\beta$  accumulation in the neurons of patients; this peptide also inhibits the functioning of certain enzymes and affects utilization of glucose [50].

Inflammatory processes and cytokines may play a role in the pathophysiology of the disease. Since in any disease inflammation is a sign of tissue damage, in Alzheimer's disease it may either play a secondary role relative to the underlying disease or be viewed as a marker of immune response [47].

**Genetics.** Three genes are known, which largely explain the etiology of the rare early-onset type of Alzheimer's disease. However, the prevalent type of Alzheimer's disease presently does not fit into a genetics-only model. APOE is currently considered to be the most prominent genetic risk factor, but variations of this gene are associated only with some cases of the disease. [23].

Less than 10% of cases of the disease in people less than 60 years of age are associated with autosomal dominant (familial) mutations, which are found in less than 0.01% of general population. The mutations were found in the genes encoding APP, presenilin 1 and presenilin 2; most of these mutations enhance the synthesis of small protein Abeta42, the main component of senile plaques [25].

Most patients do not have a familial predisposition to the disease; however, genes may partially cause the risk. The most well-known genetic risk factor is the inherited E4 allele of the APOE gene, which may be associated with up to half the cases of late sporadic Alzheimer's disease. Genetics agree that many other genes may to certain degrees contribute to or prevent the development of late Alzheimer's disease. A total of 400 genes were checked for association with this prevalent type of the disease. One recent example is a variation of the RELN gene associated with

increased incidence in female subjects [23].

### **1.3. Risk factors of Alzheimer's disease.**

**1. Age.** Advanced age is the main risk factor of Alzheimer's disease. Most people with Alzheimer's disease are not younger than 65 years. Although infrequently, Alzheimer's disease (known as early-onset Alzheimer's disease) may begin before 65 years of age. The proportion of such patients is estimated at 5%. Quite frequently, manifestations of Alzheimer's disease in younger patients are diagnosed incorrectly [4].

**2. Moderate cognitive impairment.** The symptoms of moderate cognitive impairment include changes in the thinking process, but they do not interfere with activities of daily living and are not as serious as those in Alzheimer's disease or in other types of progressive dementia. Moderate cognitive impairment, especially when associated with memory problems, increases the risk for Alzheimer's disease and other types of dementia. However, moderate cognitive impairment are not always progressive. In some cases, they are reversible or remain stationary. [10].

**3. Cardiovascular disease.** Research studies demonstrate that brain health is directly related to cardiovascular health. With the blood, the brain receives oxygen and the nutrients required for its normal functioning and the heart is responsible for maintaining the blood flow to the brain. Therefore, the causative factors of cardiovascular disease may also be associated with the increased risk of Alzheimer's disease and other dementias. These factors include smoking, excessive weight/obesity, diabetes, high cholesterol and high blood pressure in middle-aged people [14].

**4. Educational level and Alzheimer's disease.** Research studies have found a relationship between fewer years of formal education and increased risk for Alzheimer's disease and other dementias. Although there is no apparent reason for such relationship, some scholars believe that more years of formal education may

likely help strengthen interneuronal connections, thereby allowing the brain to use alternative pathways to relay signals from one neuron to the other as a countermeasure to the changes caused by Alzheimer's disease and other dementias [26].

**5. Head injuries.** The risk for Alzheimer's disease and other dementias is increased as a result of moderate to severe head injuries, such as an impact to the head or other cranial injuries, which lead to memory loss or loss of consciousness for more than 30 minutes. Up to 50% of all head injuries are caused by motor vehicle accidents. People habitually/repeatedly receiving impacts to the head or other head injuries, e.g. athletes engaging in high-risk sports or combatants are also at high risk for dementia and impaired cognitive function [16].

#### **1.4. Stages of development of Alzheimer's disease.**

The natural progression of the disease is divided into four stages with progressive presentation of cognitive and functional impairment [4].

***Pre-dementia.*** The initial symptoms of the disease are often confused with manifestations of ageing or a response to stress. The earliest cognitive impediments are detectable in some people with an in-depth neurocognitive testing eight years before diagnosis. These initial symptoms may affect the performance of unsophisticated daily tasks. The most notable phenomenon is memory impairment, manifest as difficulty recalling recently learned facts and lack of capacity to learn new information [3]. Subtle problems with executive functions: concentration (focus), planning, cognitive flexibility and abstract thinking, or impaired semantic memory (the memory of the meaning of words and interrelationship between concepts) may also be symptoms of early stages of Alzheimer's disease [10]. This stage is notable for apathy, which remains the most persistent neuropsychiatric symptom throughout the course of the disease [36]. The preclinical stage or mild

cognitive impairment (MCI) can be also referred to as “mild cognitive reduction” or “mild cognitive disorder”. However, there is discussion whether MCI is the first stage of Alzheimer’s disease or a separate diagnostic entity [37, 41].

**Early dementia.** Progressive memory loss and agnosia seen in Alzheimer’s disease eventually lead to confirmation of the diagnosis. In a small fraction of patients, the primary manifestations include not memory impairment, but impairments of speech, executive functions, perception or motor defects (apraxia) [41]. The disease affects various aspects of memory in different ways. Old memories of the person's life (episodic memory), long learned facts (semantic memory), implicit memory (unconscious “muscle memory” of the sequence of actions, for example, remembering how to use cutlery) are more durable than new facts or recent reminiscences [43]. Aphasia is chiefly characterized by impoverishment of vocabulary and reduced fluency of speech, which weakens the patient’s capacity for verbal and written expression of thoughts. At this stage of the disease, the person usually can adequately operate simple concepts in verbal communication [46]. When drawing, writing, putting on clothes and performing other tasks using fine motor skills, the person may appear awkward due to certain problems with coordination and planning of movements. As the disease progresses, the person is often quite capable of performing many tasks independently, but he/she may need help or supervision when trying to perform manipulations that require special cognitive efforts. [14].

**Moderate dementia.** The ability to perform independent actions is decreased due to progressive deterioration of patient’s condition. Speech disorders become apparent, since due to diminishing vocabulary, the person makes increasingly frequent choices of wrong words to replace the forgotten ones (pseudogrammatism). The patient is also gradually losing their reading and writing skills. In time, coordination of complex sequences of movements is becoming progressively impaired, decreasing the person’s ability to perform most activities of



daily living. At this stage, problems with memory become more severe; the patient may fail to recognize their immediate family [26]. The previously intact long-term memory is also impaired and behavioral deviations are becoming more evident. Usual presentation includes such neuropsychiatric manifestations as vagrancy (planomania), evening exacerbations, irritability and emotional lability, the latter seen as crying, spontaneous aggression and resisting help and care [42]. False identification syndrome and other symptoms of delusion develop in approximately 30% of patients. Urinary incontinence may develop. The relatives and caregivers of the patient are stressed by these symptoms; the stress can be relieved by institutionalizing the patient [33].

***Severe dementia.*** At the last stage of Alzheimer's disease the patient is totally dependent on other people's physical assistance. The speech is reduced to using a few isolated phrases or even words; ultimately, the ability to speak is completely lost. Despite their loss of verbal skills, the patients often are able to understand and to reciprocate when addressed emotionally [42]. Although manifestations of aggression may still be present at this stage, more often than not, the patient's condition is characterized by apathy and exhaustion; at some point, the patient becomes unable to carry out even the simplest action without help from others. The patient loses muscle mass, ambulates with difficulty and at a certain point becomes unable to leave the bed independently, followed by being unable to take food [46].

At early stages, Alzheimer's disease is difficult to diagnose. A definitive diagnosis is usually made when cognitive impairments begin to interfere with patient's activities of daily living, although the patient may still be able to live independently. Mild cognitive problems gradually progress into escalating deviations affecting both the cognitive sphere and other dimensions of the person's life. This process will relentlessly make the person dependent on the assistance of other people [26].

Life expectancy of these patients is decreased; on the average, they may live approximately seven years after the diagnosis was made [28]. Less than 3% of patients are still alive after 14 years. The increased mortality is related to such signs as increasing severity of cognitive impairment, reduced functioning level, falls and deviations found at neurological examination [17]. Other related disorders, such as cardiac problems, diabetes and history of alcohol abuse are also associated with reduced survival. The earlier the onset of Alzheimer's disease, the more years on the average the patient is able to live after diagnosis. However, the overall life expectancy of such a person is low compared to intact population. The survival prognosis in females is better than in males [32].

Death usually occurs as a result of an external factor, such as a pressure ulcer or pneumonia, but not as a direct consequence of Alzheimer's disease. Cancer in population with Alzheimer's disease is less frequent than in general population [17].

### **1.5. Diagnosis of Alzheimer's disease. Diagnostic criteria.**

National Institute of Neurological Disorders and Stroke (NINDS) and Alzheimer's Disease Association (ADA) have compiled a list of the most frequent criteria used to diagnose Alzheimer's disease. According to the criteria, in order to make a clinical diagnosis of possible Alzheimer's disease, it is required to confirm the presence of cognitive impairment and presumptive dementia syndrome at neuropsychological testing. The final confirmation of the diagnosis requires a histopathological analysis of brain tissue. As intra vitam diagnoses made with the aforementioned criteria were compared with post mortem data, good statistical robustness and verifiability were noted [18].

Most frequently, the changes in Alzheimer's disease affect *eight domains*: memory; language abilities; receptivity; constructive abilities; orientation to space, time and person; problem-solving skills; executive functioning and self-support [33,

37].

The diagnosis of Alzheimer's disease may be facilitated by neuropsychological screening tests, where patients copy/draw shapes, try to remember words, read and do simple math [50].

The neuropsychological tests, such as MMSE, are widely used to assess the cognitive impairment, which must be present for the disease to be diagnosed. At the early stages of the disease, neurological examination usually does not show anything unusual, with the exception of manifest cognitive dysfunctions that may resemble conventional dementia. In light of this, an extended neurological examination is an important prerequisite for differential diagnosis of Alzheimer's disease and other similar conditions [18]. The relatives may provide important information on the level of activities of daily living of the patient and on the gradual deterioration of their thinking abilities. Since the patient usually does notice the impairment, the viewpoint of caregivers is of special significance. At the same time, in many cases the early symptoms of dementia remain unnoticed by the family and physician often receives incorrect information from the patient's relatives/significant others [5]. Additional tests amend the picture with information on other aspects of the disease or allow ruling out other diagnoses. Psychological tests are also performed to detect depression, which may either accompany Alzheimer's disease or actually be the cause of the cognitive deficit [14].

If available, SPECT and PET imaging can be used to support the diagnosis, in combination with other assessment methods, including the assessment of mental status. Compared to standard testing and history review, SPECT imaging is reported to be more effective to differentiate Alzheimer's disease from other etiologies in people already having dementia [50].

## CHAPTER 2.

### **SOCIO-HYGIENIC AND MEDICO-PSYCHOLOGICAL ASPECTS OF LIFESTYLES IN PATIENTS WITH ALZHEIMER'S DISEASE AND THEIR FAMILY MEMBERS**

#### **2.1. Socio-hygienic evaluation of principal activities of daily living in patients with Alzheimer's disease.**

Since the tangible basis of the disease is gradual destruction of brain cells and cerebral tissue, especially in those parts of the brain that are responsible for memory and thinking, the symptoms usually progress slowly but inexorably [6]. The patient is gradually losing basic cognitive functions (memory, judgment, abstract thinking, numerical ability etc.). There is a disintegration of the emotional sphere and of the personality in general; motor skills and (to a special degree) verbal skills are gradually lost. The patient stops recognizing even their significant others and immediate family, is often bed-ridden and unable to care for themselves[32].

Alzheimer's disease has a different impact in different people. It greatly depends on what kind of person the individual was before the onset of disease, i.e. on their personality, physical health, lifestyle, etc. The disease is creeping up on the patient unnoticed; it is quite difficult to define its starting point and to distinguish the latter from the so-called senile forgetfulness or absent-mindedness common in so many elderly people [10]. The first signs of the disease can be spotted by the relatives and family members of the patient, e.g. when he/she finds it difficult to find the right word during a conversation, when he/she scarcely recalls recent events (what they have done last night, what they had for breakfast, etc.), when the person is no longer interested in their favorite activities and/or losing their routine skills [16]. Seeking medical attention of specialist physician at early stages of the disease may help establish a correct diagnosis, increase treatment efficacy, effectively manage care for the patient, improve their quality of life and retain their workplace performance and professional and creative potential for as long as possible [44].

The early stage of the disease usually passes unnoticed. The relatives, friends and, not infrequently, even healthcare specialists wrongly attribute these symptoms to patient's senile age, considering them a normal part of ageing. Since the disease is developing gradually, it is often difficult or impossible to know the exact time of its onset [26]. The person is gradually developing the following problems:

- difficulties finding right words during conversation;
- deteriorated short-term memory;
- serious difficulties with independent decision-making;
- distorted perception of the milieu and recognition of objects; the person is easily disoriented, especially in a new or unfamiliar environment;
- the person may be disoriented to time;
- impaired understanding of complex/abstract ideas;
- the person loses initiative and motivation and displays indifference and isolation;
- depression and/or aggressive behaviors may develop;
- there are difficulties with complex household chores (e.g., cooking food);
- the person is no longer interested in their hobbies and other previously favorite activities.

As the disease progresses, the problems become increasingly evident and substantially limit the patient's scope of activities. The patient is experiencing difficulties in his/her everyday life, for example, the patient:

- becomes extremely forgetful, especially frequently failing to remember recent events and people's names;
- may get lost/disoriented in a familiar surroundings, in their own home or in a public setting;
- is unable to continue living independently;
- is not able to cook their food, clean up their home, go to a grocery store, etc.

- needs help with going to toilet, washing, putting on their clothes, etc.
- is no longer aware of their illness;
- is experiencing escalating communication deficits;
- has abnormal behaviors (e.g., vagrancy);
- may have visual hallucinations.

At the late stage, the patient is entirely dependent on his/her caregivers. At this point, memory impairments are becoming particularly serious and the physical aspect of the disease becomes evident [42]. The patient:

- loses the ability to speak and to understand speech;
- loses the ability to ambulate, his/her extremities become rigid;
- has difficulties eating; he/she depends on others to be fed;
- does not recognize his/her relatives, friends and customary items;
- is unable to control urination and/or bowel movements;
- behaves inadequately in the presence of other people;
- is confined to the bed or to a wheel-chair.

## **2.2. Assessment of medico-social activity of family caregivers of patients with Alzheimer's disease and their need for medico-social counseling and psychological interventions.**

Since Alzheimer's disease is incurable and degenerative in its nature, and since it gradually undermines the person's self-care capacity, caregiver support is actually the main therapy, which deserves special attention throughout the course of the disease. [28]. The care for and monitoring of the patient is extremely important. That role is frequently assumed by the spouse or a close relative. Such a heavy burden greatly affects social, psychological, financial and other dimensions of caregiver's life [5].

The care for patients with Alzheimer's disease is often very demanding. In a home-based setting, the burden of care for such patients usually falls on the relatives, which are exposed to extreme emotional stress by having to witness the ongoing

decline of their significant other and loved one. The unpreparedness and helplessness of relatives in a setting of chronic stress may very adversely affect their own health and are hardly helpful for the patient. A high incidence of medical conditions and mental disorders is found in people providing care for demented patients. According to research data, living beneath the same roof with the patient, being the patient's spouse; depression, inadequate behaviors, hallucinations, sleep disorders and lack of normal ambulation in a patient are all the factors that increase the incidence of psychosocial problems [28]. The caregiver will need to spend an average of 47 hours a week with the patient, often at the expense of their work time; in addition to that, care-related expenses are often very high. As reported in various studies, direct and indirect expenses related to care for such patients in the US are from 18,000 to 77,500\$ per year [30].

Nurses and physicians need to provide psychological support to persons taking care of patients in the home and teach them special skills that may help them cope with their problems. Therefore, healthcare personnel are facing the important challenges of educating and counseling the patients' relatives and providing them with effective psychological support [2].

It is important to note that the relatives of the patient with Alzheimer's disease often sacrifice their personal life and interests by being engaged in long-term care for such patients. It is not infrequent that they themselves have to seek professional services and consultation of a psychiatrist or a psychologist to manage a certain problem(s) arising due to the progression of the disease in their relative. Efficacious strategies to support relatives of such patients include trainings, psychotherapy sessions and seminars/workshops on hygienic interventions in patients with Alzheimer's disease [15]. According to research studies, the mental health of persons caring for such patients can be improved with techniques of cognitive behavioral therapy and by teaching them stress management techniques, both individually and in groups [27].

## CHAPTER 3.

### MEDICAL AND ORGANIZATIONAL TECHNOLOGIES OF NURSING CARE FOR PATIENTS WITH ALZHEIMER'S DISEASE. MEDICO-SOCIAL ANALYSIS OF CARE-RELATED ACTIVITIES

#### **3.1. Geriatric medico-social center as the principal clinical setting for management of patients with Alzheimer's disease.**

Most of the developed countries of the world experience a demographic crisis that involves all principal demographic processes, namely fertility, mortality and migration [21]. In a setting of overall reduction in population, there are serious changes in age structure, in other words, ageing of the population. This is directly associated with increasing expenditures on care for the elderly population. In this connection, there is a need to explore the most cost-effective ways to provide long-term healthcare services and to pay more attention to geriatric services, nursing care institutions and medico-social units of home-based care [30].

A geriatric medico-social center provides the following [35]:

1. Long-term elective healthcare services for the elderly patients with special problems of losing their self-care capacity.
2. Organizing skilled treatment, rehabilitation and care for the severely affected patients and providing them with a dignified end of life.
3. Improving the quality of life in patients that have lost their self-care capacity.

A typical medico-social center has a clearly delineated structure. The main staffing pool of such centers involves the nurses working in multidisciplinary teams. The structure of the center includes general geriatric wards, a geriatric mental unit, a gerontologic urological ward, a gerontologic surgical ward, trauma and orthopedics and rehabilitation units and a hospice with a field service. The hospice is intended for patients with pain unmanageable in a home-based setting or for patients with no access to care/people living alone [27].



The field service is staffed with nurses, call center operators and a physician. It allows the patients to stay in their homes for as long as possible and is a powerful support asset for the family and/or relatives. In the surgical ward, patients may have surgical treatments (hernioplasty, procedures for cholelithiasis, etc.). The trauma and orthopedics unit provides treatment and care for the patients with hip fractures. Here the patients may have their physical therapy/exercise therapy sessions as necessary. Skilled care is only possible when provided by professional nurses specially trained in geriatric care [38]. The Urology ward provides treatment and care for the patients with urinary incontinence, benign prostatic hyperplasia, etc. The geriatric mental unit is offering pharmacological therapy, psychotherapy, rehabilitation services and social assistance. The work in the ward is organized in a format of a multidisciplinary team. The nurses providing direct professional care for the incapacitated patients play an extremely important role in planning and implementation of nursing process. The family and relatives of elderly patients with mental disorders are getting considerable attention. The medical rehabilitation unit provides electrotherapy, physical therapy, hydromassage(jet shower), various modalities of psychotherapeutic care (one-on-one discussions, family psychotherapy, group therapeutic sleep sessions) aromatherapy, music therapy, dance therapy, craft/work therapy, etc. [48].

### **3.2. Working with patients in a setting of a geriatric center. Active utilization of nursing process in a geriatric mental unit.**

*Nursing process* is a scientifically proven method of organizing nursing care and fulfilling patient care plans. The nurse develops the care plan in a mutual agreement with the patient; the objective of the plan is to meet the needs/problems of the patient in the context of a specific clinical situation [35].

*The objective of the nursing process* is to support and restore patient's independence in meeting their fundamental needs [48].

The nursing process is an essential prerequisite for establishing a system of professional care for psychiatric patients. It includes five constituents [49]:

- 1) Nursing assessment (collection of information).
- 2) Determination of patient's problems.
- 3) Planning of nursing interventions.
- 4) Implementation of nursing interventions.
- 5) Evaluation of the efficacy of nursing interventions.

At the stage of nursing assessment, the nurse is using various methods to collect and register information about the patient in writing. This takes into account the individual needs of the patient typical for the specific personality, the stage of the disease and the age of the patient. The information collected from the patient's relatives should be taken into account by all means [12]. In addition to basic patient information, a self-care deficit assessment questionnaire and a cognitive functioning test are used, which helps assess the condition of the patient and to find out his/her rehabilitation capacity (a geriatric assessment of the patient).

At the second stage, the nurse determines the problems of the patient. Then the nurse prepares a plan of his/her care-related activities and interventions and then implements the care according to the plan and to any changes that may occur during treatment. At the last stage, the nurse is assessing the efficacy of the plan. Then the entire cycle the cycle starts over again [1].

There are several *stages of treatment* in a geriatric center [14]:

- adjustment to in-patient/institutionalized conditions (at the beginning of institutionalization, the main task of the nurse is to help the patient adapt to a new environment and to monitor responses to pharmacological therapy (if any is used); the nurse will share his/her observations with other team members),
  - stabilizing therapy,
  - supportive therapy,
- day hospital (for the purposes of monitoring pharmacological therapy and better adjustment to home-based conditions),
- out-patient supervision.

The duration of patient's stay at the geriatric mental unit depends on his/her

baseline condition and the purpose of hospitalization. As a rule, the purpose of hospitalization is to assess the patient, select drug therapy and to develop an individualized care for the patient. Nursing process is applied at all stages of patient's stay at the clinic [11].

As a part of individual work with the patient, special attention is paid to establishing and maintaining communication with the patient, which may often be difficult in geriatric psychiatry due to reduced communication capacity of demented patients, mood disorders, impaired speech, intellectual deficits, delirious states and conditions aggravated by severe medical conditions [12]. In addition to that, the patient's condition may be further complicated by sensory impairments (auditory, visual and tactile).

An important role is played by ongoing promotion of independence of the patients. The nurse should not only encourage, but also initiate independent activities of the patients, especially such as hygienic routine, making the bed, taking care of appearance, taking food, etc. This facilitates faster post-discharge adaptation of the patient in the home and contributes to slower progression of the disease. [14].

Educating the relatives and issuing nursing recommendations at discharge are also very important. A long-term stay of the patient in the ward results in prolonged interactions between the nurse, the patient and the patient's family. Owing to constant communication, observation and caring for the patient, the nurse knows the specifics of his/her patient's personality and the individual course of the disease. This is why the nurse is the person most capable of establishing a rapport with the family and serving as a source of coaching, counseling and information. The support might be needed not only by the patient, but also by his/her caregivers [31].

The nurses are with their patients in the unit 24 hours a day. It is they to help the patient with their deeply intimate and personal functions, such as taking a bath or using a toilet. This proximity of nurses and patients helps develop such relations that can be later used for further therapy [38].

Three stages of dementia are distinguished. At the first stage, the patients are able to care for themselves independently. At the second stage, the patient is capable of performing part of his/her care. However, at the third stage, the demented patient will require comprehensive care provided by his/her relatives or nurses. The nurse teaches the relatives of the patient how to deliver proper care for the patient and explains the specifics of the course of disease (the specifics of taking food and medications, prevention of pressure ulcers, the action plan for an agitated or depressed patient, the specifics of hygienic routine, etc.). Professional information protects the caregiver from needless worries and safeguards the patient from improper care [46].

Proper staffing and personnel training is also playing a very important role. Qualifications, experience, core values, views and beliefs of nurses determine how such issues as patients' safety, comfort, personal liberties, privacy and trust of will be addressed. The success of therapy and rehabilitation in all and any patients includes support not only for their physiological functions, but also for their human dignity [48].

A special attention should be paid to creating and maintaining a benign sociopsychological and physiotherapeutic environment. If the focus is on patient's problems only, this will limit the options for treatment and care, while recognition of strengths and personal goals of the patients provides advantages when developing care strategies. These include patient's intellectual abilities, religious needs and creating a favorable physical microclimate (properly aired/ventilated, clean and comfortable rooms) [49].

Dementia is an irreversible process; chances of cure are absent. However, applying a customized nursing approach and modern pharmacological therapies, the disease may be stabilized, thereby improving self-care capacities of the patients. Considerable restoration of self-care potential occurs due to quality and proper organization of nursing care and rational selection of pharmacological treatment [33].

The objective of nursing care for the aged and elderly people with dementia is maintenance of patients' autonomy first in the hospital and then in the home to prevent progressive reduction of self-care potential and to lessen dependence on other people [24].

Professional or family caregivers should know the factors that reduce the functional capacities of the patient and try to exclude these factors whenever possible [6]. The known factors that potentiate the symptoms of dementia include the following:

- unknown places;
- being alone for a long time;
- excessive external stimuli and irritants (for example, meeting large numbers of strangers);
- darkness (appropriate lighting is necessary even at night time);
- all infectious diseases (most frequently, urinary tract infections);
- surgical interventions and general anesthesia are used only when invariably indicated;
- hot weather (overheating and dehydration);
- taking large amounts of drug products.

Hospitalization/institutionalization in Alzheimer's disease is a costly measure, which sometimes produces a negative effect (accelerates disease progression). Any changes in environment, caregiver personnel and often changes of drug schedule usually aggravate the course of the disease. Hospitalization is indicated if intended therapy is not safe for outpatient use, in case of absence of thorough medical supervision of the patient and also in confusion, psychosis and antisocial behavior [28].

### **3.3. Forms and methods of home-based care for patients with Alzheimer-type dementia.**

The interventions of home-based patient care deserve a special attention. It is important that the relatives and other persons participating in care for the patient knew the main signs and symptoms of Alzheimer's disease, understood the pattern of disease progression, took into account the factors enhancing the symptoms of dementia and could perform the basic practical care procedures [35].

First of all, the patient will need a clear and constant daily routine, which will help organize and streamline their tangled life and will relieve them from the burden of having to make difficult decisions. The daily routine of the patient should include his/her usual activities; this will help them preserve a sense of confidence and security. It is important to help the patient retain their dignity and self-esteem. The nurses and any other healthcare personnel should refrain from discussing the patient's condition in his/her presence, since the words and actions of other people may provoke anxiety and resentment [38].

In many cases, physical exercise may support patient's functional capacity for a while. However, for recommendations on the type and complexity of exercise it is best to seek professional opinion. If a person liked working in the garden before their illness, they may enjoy using the retained skills. However, one should not forget that as the disease unfolds, the capacities and interests of the demented patient might change. Therefore, the care professional should carefully observe the patient and make necessary adjustments to the type and content of his/her activities[2].

It is unacceptable to draw patient's attention to his/her failures. Any conflict will only lead to unnecessary stress for both the patient and the caregivers. Any manifestations of anger, bitterness or resentment will only deteriorate the situation and make the problem even worse. It is very important to remain calm at all times; try to laugh with, but not at the patient [1].

The patient will need a safe environment. Memory loss and impaired

coordination put the patient at greater risk for injuries. The home should be made a safe place for the patient: remove piercing and cutting objects, household poisons and drugs out of patient's sight and reach, hide away dangerous electrical appliances, turn off the gas when the patient is left alone at home, install patient safety appliances (for instance, a microwave oven to cook/heat the food), check door locks and install window locks. Make sure to use "patient-proof" locks. As much as possible, do not change the furniture arrangement the patient is accustomed to. The patient will need adequate ambient lighting, light on the stairs and nightlights installed in the bedroom and in the bathroom. Temperature conditions in the room should be controlled, not too cold or too hot, with no drafts; the patient should be assisted to select and put on the clothes that meet temperature conditions [11].

It is important to monitor the quality of food products and to make sure the patient does not consume any spoiled or low-quality foods. Handrails may need to be installed in the bathroom; the floors in the house and the tiles in the bathroom should not be slippery. To prevent falls, all flooring in the home must be skidproof; rugs and mats should be avoided. The furniture should be robust and steady; the chairs and the bed should be of sufficient height [2].

It is important to maintain communication with the patient [38]. As the disease unfolds, communication between the caregiving personnel and the patient will become increasingly difficult. The patient's vision and hearing must be checked; stronger glasses or hearing aid replacement may be considered as required. When talking to the patient, it is recommended to:

- address the patient by name (including patronymic name where culturally applicable);
- speak clearly, slowly, face to face with the patient with the caregiver's head on the patient's eye level;
- show love and warmth; hug the patient, if it does not embarrass him/her;

- listen to the patient carefully;
- pay adequate attention to non-verbal communication channels;
- try to find out what gestures and phrases/words and hint words

are needed to ensure an effective communication with the patient;

- make sure to avoid negative critics, arguments and conflicts;
- before beginning to talk, make sure the patient is listening.

It is important to remember the specific aspects of bathing and personal hygiene in patients with Alzheimer's disease. The patient may forget to wash themselves, may see no need to wash or forget how to wash. When offering help to the patient, make sure every effort taken to preserve their personal dignity [35]. Previous and usual habits of the patient should be followed whenever possible. General recommendations include the following:

- Taking a shower may be simpler than taking a bath, but if the person is not used to shower, this may embarrass them.
- If the patient refuses to take a bath or a shower, wait for a while: their mind may change.
- As much as possible, let the patient do everything themselves.
- If the patient is embarrassed when assisted to take a bath or a shower, some parts of the body may remain covered.
- Safety first: all bathroom furniture items, handles and handrails must be reliably fixed to provide grasping support; a non-skid bathroom rug and an additional stable chair are also important.

***Dressing the patients.*** The patient may forget how to dress themselves or see no need to change their clothes. Sometimes the patients show up improperly dressed in the presence of other people. Therefore, the patient's clothes should be arranged in the order it is put on. As much as possible, avoid clothes with complicated fastenings; clothing with elastic bands, Velcro, zippers, etc. is preferred. The patient should not be rushed when dressing; his/her independence should be



encouraged at all times. The footwear should be comfortable, skidproof (with a rubber sole) and well fitted (unrestrictive but not falling off the foot).

***Going to the bathroom and the issues of incontinence.*** The patients may forget where the bathroom is located and what they are supposed to do in the bathroom; sense of urgency may also disappear with time. Therefore, the patients should be encouraged to go to the bathroom; whenever possible, a routine bathroom schedule should be established. It may be a good idea to leave the bathroom door open to make it easier to find and to make sure the patient's clothes are easily taken off. Within reasonable limits, fluid intake at bedtime may be restricted. A chamber pot may be placed by the patient's bedside. Diapers may be used as required.

***Nutrition and food preparation.*** People with dementia often forget to eat; they may not remember how to use their spoon or fork. At the late stages of the disease patients may need to be fed. Physical problems may appear, such as lack of ability to chew and swallow normally. The patient may have to be reminded to take their food. The patient may be given such food that they can eat with their hands. The food should be served cut into little pieces to prevent asphyxia. At the late stages of the disease, purees and liquid foods may be used. The patient may need to be reminded to eat slowly. It is important to remember that the patient may lose his/her sensation of cold and hot and may get themselves burned, therefore the food should be warm. If any problems with swallowing appear, seek physician's consultation for interventions that stimulate swallowing. It is important to make sure that the patient receives sufficient amount of nutrients. At the late stages of the disease the patient may lose their ability to cook. This might be a serious problem if the patient lives alone. Poor motor coordination leads to increased risk of injuries, for instance, burns and cuts when preparing food.

***Insomnia.*** The caregivers often find insomnia in their patients the most grueling problem. To control this disorder, the patient should not be allowed to sleep during the day. A daily long walk or more physical exercise at daytime might help as

well. It is important to make sure the patient is comfortable during his/her bedtime.

The patient may forget where they put a personal item of theirs. Quite often, they may accuse others of stealing their things. It may be helpful to find out whether the patient has a stowaway where they hide their things. Any accusations by the patient should be confronted calmly, without irritation.

**Vagrancy.** Sometimes the patients are prone to vagrancy, which is a source of much anxiety and worries to relatives and caregiver personnel. The patient may leave their house and wander in the neighborhood; they may go to an unknown destination and get lost or even end up in another city. If the patient may leave their home by themselves, care should be taken of their safety; for example, they should have an identification on their person at all times, a note may be placed in the pocket of their clothes with address and phone number of the patient's family or caregiver(s). It is a good idea to have a recent photograph of the patient available in the event they get lost and assistance of other people/law enforcement agencies may be needed to locate them. As an attempt to prevent vagrancy, unbreakable mirrors can be attached to all doors: their own reflection in the mirror distracts the patient from the intention to open the door.

**Delusions and hallucinations.** Patients may have delusions and hallucinations. Delusions are characterized by false beliefs developing in a patient. For example, the patient may think he/she is persecuted/watched, that there are people who intend to poison him/her or inflict harm, etc. Delusions are perceived by the patient as a fear-instilling reality. The patient may have visual and auditory hallucinations, that is, see or hear things that do not exist, for example, figures and/or voices of people talking in his/her room. It is important not to argue with the patient concerning the reality of what he/she seems to see or hear, because if they feel they have to defend their views, the delusion may actually grow stronger. If the patient is scared, try to calm them down by diverting their attention from the hallucination to a real object in their room. A consultation with the physician is mandatory; the

patient's condition may be caused by some medication(s) he/she is taking.

***Aggressive behavior.*** Aggressive or violent behavior in a patient is a serious problem for the caregivers. In such cases, the following advice may be helpful: one may try to keep calm and refrain from showing one's own fear or anxiety. Every effort should be taken to avoid reciprocal aggression; an accusing, threatening or judgmental tone of voice may escalate aggressiveness of the patient. Do not be too close to the patient; he/she may perceive it as a threat. An attempt should be made to switch the attention of the patient to something calm and to assess what caused such a reaction of the patient and to ensure that these events do not happen again. If the aggressive behavior of the patient repeats frequently, there might be a need to seek specialist's help.

When the disease starts to progress, every opportunity should be used to support the patient's self-care potential and reduce their internal discomfort and isolation from other people. Find a useful and feasible activity for the patient with adjustment for their individual needs and the capacities of caregivers. A sick person constantly needs comfort and encouragement; it is never acceptable to scold or reprimand them or to make any insulting remarks [46].

## CHAPTER 4.

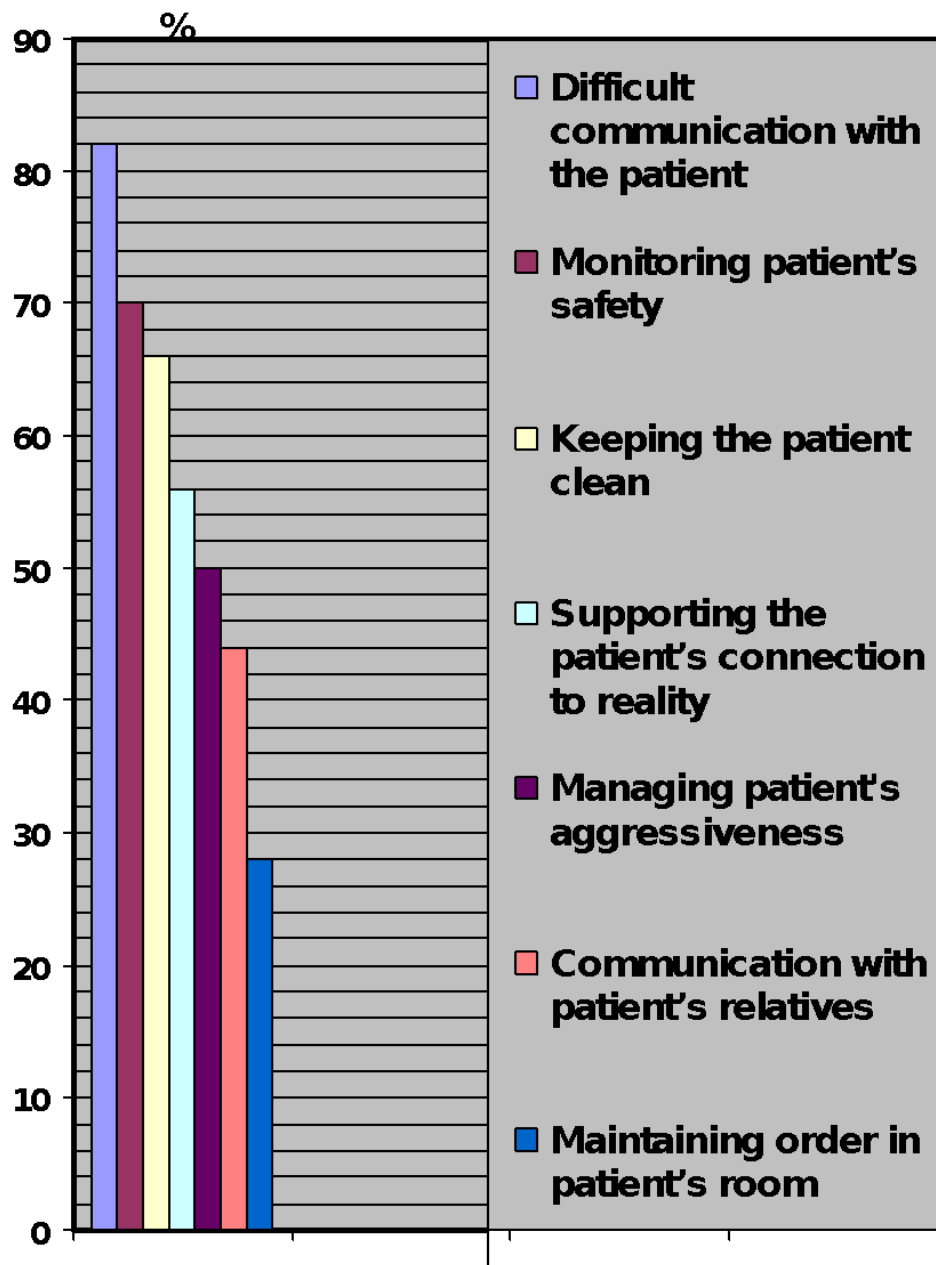
### THE RESULTS OF THE STUDY AND THEIR ANALYSIS

We have undertaken to perform a medico-psychological and socio-hygienic evaluation of the problems arising as part of care for patients with Alzheimer's disease. The study assessed the impact of main risk factors on the possibilities of care for patients with Alzheimer's disease in a healthcare institution and the relationships between healthcare personnel and the relatives of the patients. During the study, we have reviewed medical records on health status and the course of the disease in study subjects (clinical records, etc.) as well as a number of regulatory documents.

The **object** of the study included 50 nurses providing care to patients with Alzheimer's disease in geriatric mental units of gerontologic centers. The study population included women of active working age. The mean age of the nurses was 43 years (range: 20 to 68 years).

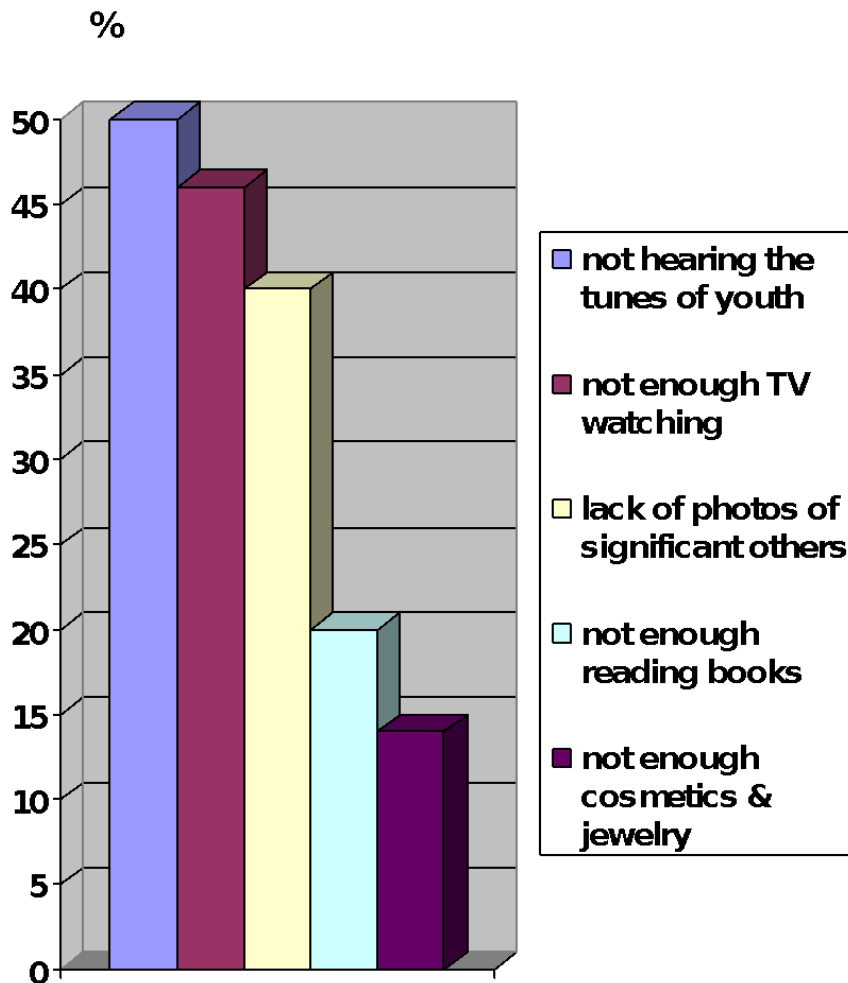
The answers to the question on what was the most difficult thing in caring for patients with Alzheimer's disease were as follows (from most frequent to less frequent):

- difficulties communicating with the patient: by 41 study subjects (82%),
  - monitoring of patient's safety: by 35 study subjects (70%),
  - keeping the patient clean: by 33 study subjects (66%),
  - supporting the patient's connection to reality: by 28 study subjects (56%),
  - managing patient's aggressiveness: by 25 study subjects (50%),
  - communication with patient's relatives/significant others: by 22 study subjects (44%),
  - maintaining order in the patient's room caused the least problems; difficulties with this item were reported by only 14 study subjects (28%). (Fig. 1).
- Note: each of the responders could choose more than one option.



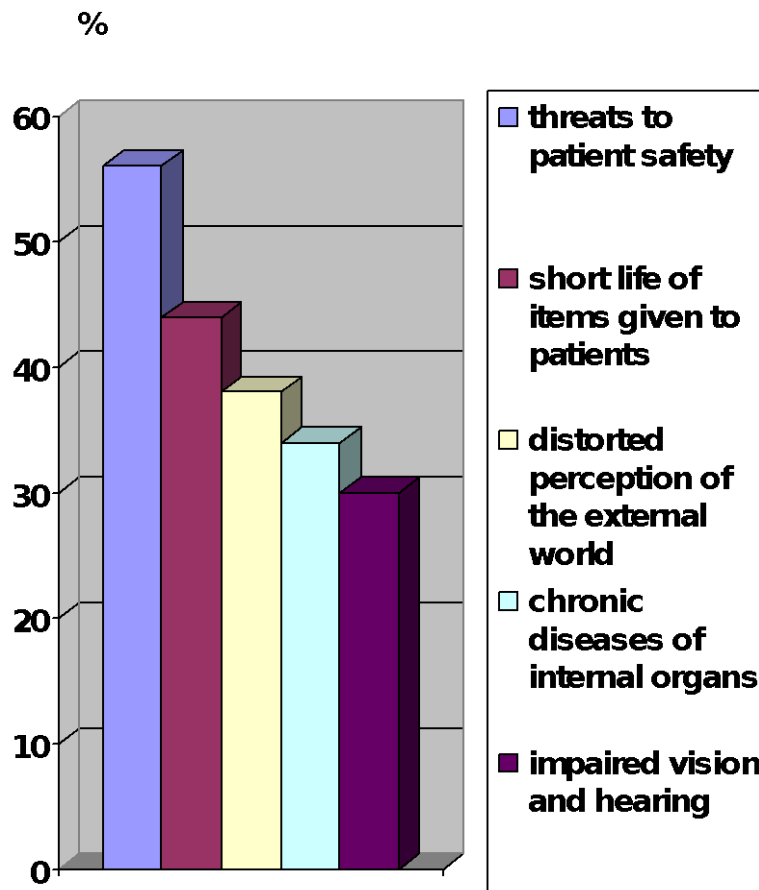
**Fig. 1. Distribution of responses by the nurses concerning the main difficulties when caring for patients with Alzheimer's disease (as %)**

The study included assessment of esthetic needs of patients with Alzheimer's disease. According to the nurses, these patients most notably experienced the lack of: hearing the tunes of their youth, as reported by 25 subjects (50%); watching TV, as reported by 23 subjects (46%) and photographs of their significant others, as reported by 20 subjects (40%). Least of all, the patients were reported to want to read books (10 subjects; 20%) and use jewelry and cosmetics (7 subjects; 14%)(Fig. 2). Note: each of the responders could choose more than one option.



**Fig. 2. Distribution of responses given by the nurses to the question about the needs of patients with Alzheimer's disease**

The principal hindrances to meeting the aforementioned needs were seen by the caregiving nurses as the following: threats to patient safety, 28 subjects (56%); short life of items given to patients, 22 subjects (44%); distorted perception of the external world, 19 subjects (38%), chronic diseases of internal organs, 17 subjects (34%) and impaired vision and hearing, 15 subjects (30%) (see Fig. 3).

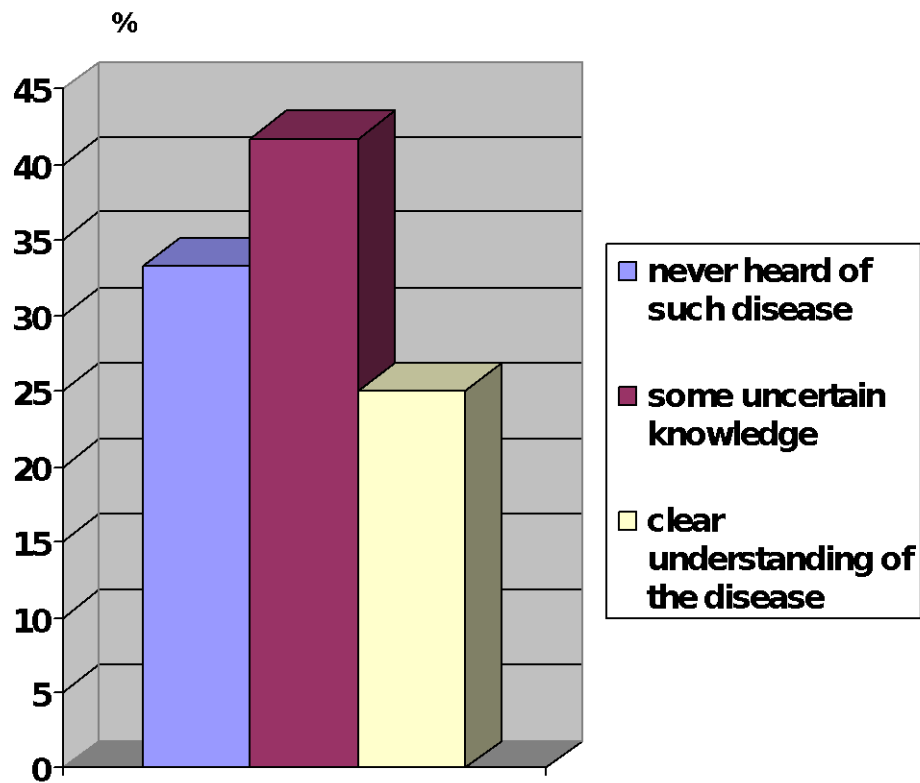


**Fig. 3. Distribution of responses given by the nurses to the question about principal hindrances to meeting the needs of patients with Alzheimer's disease**

The level of relationships between healthcare personnel and the relatives/significant others of patients with Alzheimer-type dementia has also been evaluated.

The study population chiefly included persons of active working age. The mean age of patients' relatives was 40 years (range: 19 to 68 years); their total number was 60 persons.

In terms of Alzheimer's disease awareness, the surveyed relatives of the patients were distributed in the following way: “never heard of such disease before”, 20 persons (33.3%); some uncertain knowledge of the disease, 25 persons (41.7%); clear understanding of the disease, 15 persons (25%) (see Fig. 4).



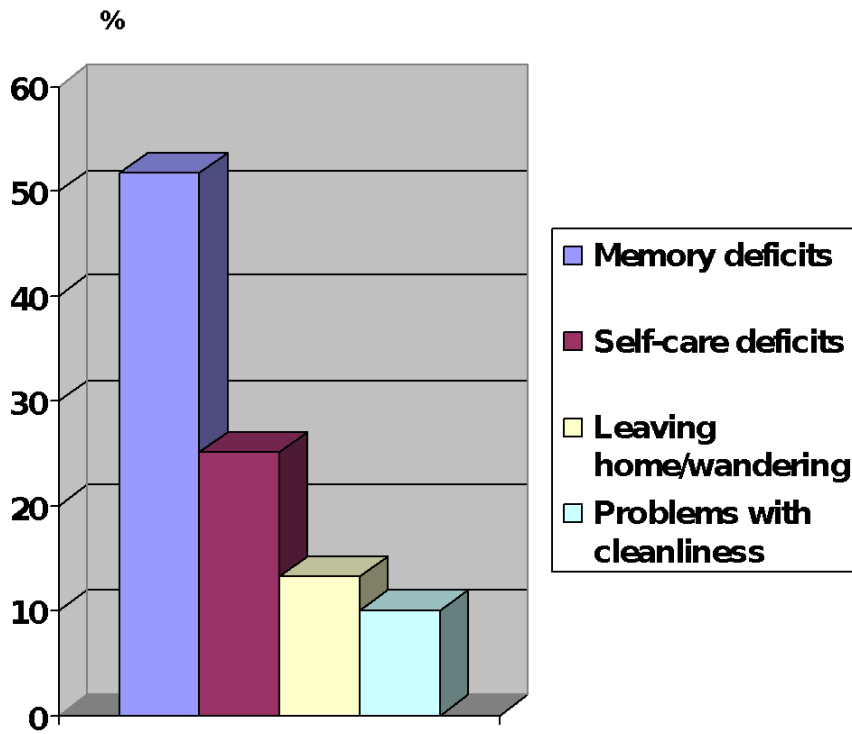
**Fig. 4. Distribution of patient's relatives in terms of Alzheimer's disease awareness**

The main difficulties encountered by the family of the sick person were related to memory deficits in the patient, as reported by 31 persons (51.7%). Self-care deficits were important for 15 respondents (25%), leaving home/wandering was important for 8 respondents (13.3%) and problems with cleanliness were the main concern for 6 respondents (10%) (see Fig. 5).

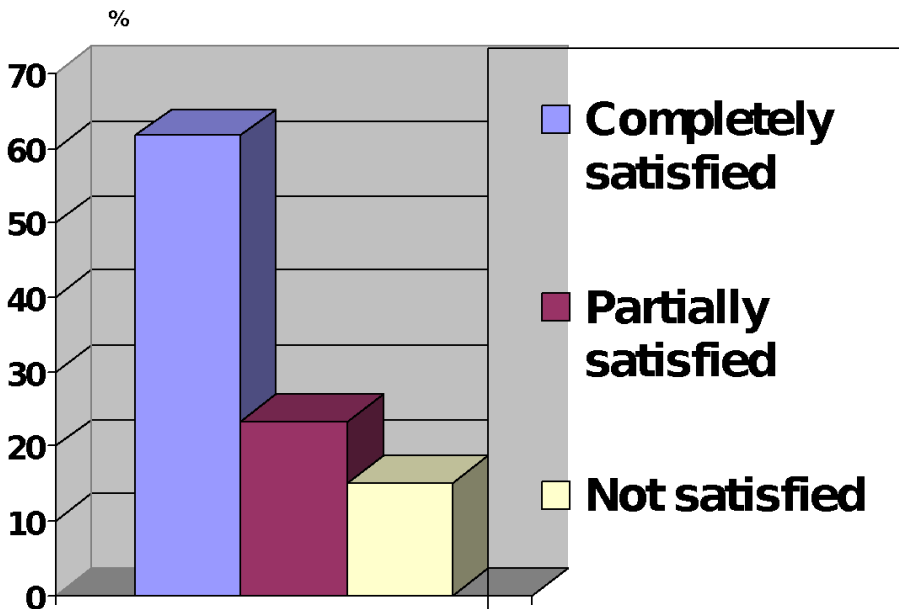
The majority of respondents asked for help from a psychiatrist when their relative started having signs of the disease.

In terms of satisfaction with the help received, the respondents were distributed in the following way: “completely satisfied”, 37 persons (61.7%) and “partially satisfied”, 14 persons (23.3%). Nine patients (15%) have responded “no” to the question “Are you satisfied with the help you received from your healthcare personnel?” (see Fig. 6).





**Fig. 5. Distribution of respondents' main concerns when providing care for patients with Alzheimer's disease**

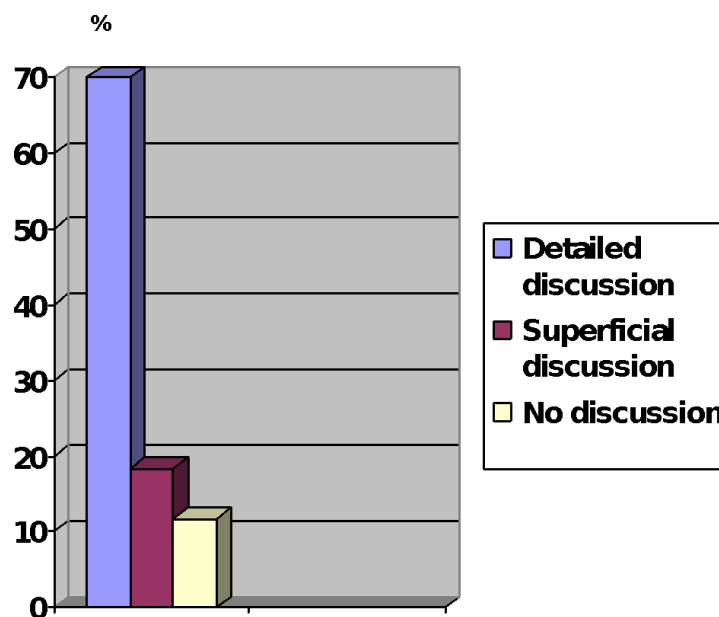


**Fig. 6. The pattern of responses given by the respondents on the satisfaction with the professional help received (%)**

During assessment of the issue whether healthcare personnel have talked to patients' relatives about the disease, its course and progression and the specifics of care, a detailed conversation was reported to have occurred in 70% of cases (42 persons). Superficial discussions were performed with 11 respondents (18.3%). Seven of the surveyed family members (11.7%) replied that no discussions were held with them at all (Fig. 7).

This data suggests high professional level of nursing staff and their proper attitude to their professional duties.

Slightly more than a half of respondents (35 persons, 58.3%) stated they performed an independent information search and found quite extensive and useful material. "Searched, but could not find much" was a type of response in 21 respondents (35%). As few as 4 (6.7%) of the surveyed relatives/significant others have not attempted to find any additional literature on Alzheimer's disease.



**Fig. 7. Distribution of respondents depending on their response to the question whether healthcare workers have conducted discussions with them about Alzheimer's disease**

Therefore, a properly organized nursing care plays a crucial role in the management of patients with Alzheimer's disease. The leading part in providing accessible and effective patient care is played by the nurses who combine not only such qualities as tidiness, amiability, clemency and industriousness, but also education, intellect, integrity and professional competencies.

## CONCLUSIONS

1. This study has explored the basic concepts of etiology and pathogenesis of Alzheimer's disease and determined the specifics of mental status and cognitive impairment, as well as the stages of development and diagnostic criteria of the disease. Three principal competing hypotheses have been suggested to explain possible etiology of Alzheimer's disease: cholinergic hypothesis, amyloid hypothesis and tau-hypothesis. Risk factors of Alzheimer's disease include the following: age (elderly), moderate cognitive impairment, cardiovascular disease, education level (fewer years of formal education) and head injuries. The course of the disease is divided into four stages, with a progressive presentation of cognitive and functional impairment: pre-dementia, early dementia, moderate dementia and severe dementia. The changes in Alzheimer's disease affect eight domains: memory; language abilities; receptivity; constructive abilities; orientation to space, time and person; problem-solving skills; executive functioning and self-support. The important instrument for diagnosis of Alzheimer's disease is represented by neuropsychological screening tests, where patients copy/draw shapes, try to remember words, read and do simple math. If available, SPECT and PET imaging can be used to support the diagnosis, in combination with other assessment methods, including the assessment of mental status.

2. The study has determined the socio-hygienic and medico-psychological aspects of lifestyles in patients with Alzheimer's disease and their family members. Patients with Alzheimer's disease have impaired perception of their milieu and impaired object recognition; the patient is easily disoriented, especially in unfamiliar surroundings; the patient may have difficulties finding the right words to express themselves during a conversation; short-term memory deficits are evident; patients experience serious difficulties with independent decision-making; patients are often disoriented to time; the understanding of complex and abstract thoughts is impaired; the person loses initiative and motivation and displays indifference and isolation; depression and/or aggressive behaviors may develop; there are difficulties with

complex household chores (e.g., cooking food); the patient needs help with going to toilet, washing, putting on their clothes, etc.; the patient is no longer aware of their illness; abnormal behaviors (e.g., vagrancy) are present; escalating communication deficits are experienced; finally, the patient may have visual hallucinations. At a late stage, the patient is entirely dependent on his/her caregivers. At this point, memory impairments are becoming particularly serious and the physical aspect of the disease becomes evident. The patient: loses the ability to speak and to understand speech; loses the ability to ambulate, his/her extremities become rigid; has difficulties eating; he/she depends on others to be fed; does not recognize his/her relatives, friends and customary items; is unable to control urination and/or bowel movements; behaves inadequately in the presence of other people; is confined to the bed or to a wheelchair. A full or a partial loss of cognitive functions and the degenerative character of the disease define the need in continuous care for the patient. That role is frequently assumed by the spouse or a close relative. This greatly affects social, psychological, financial and other dimensions of caregiver's life. A high incidence of medical conditions and mental disorders is found in people providing care for demented patients. The interests of the sick relative are often placed above the interests of the caregiver, which instills dissatisfaction and sense of inferiority in the caregiver. In this connection, there is a frequent need for hospitalization and nursing care.

3. The study has validated medical and organizational technologies of nursing care for patients with Alzheimer's disease and conducted a medico-social analysis of care-related activities performed at medico-social institutions and in the home. A geriatric medico-social center is the principal clinical setting for management of patients with Alzheimer's disease. It provides the following services: long-term elective healthcare services for the elderly patients with special problems of losing their self-care capacity; organizing skilled treatment, rehabilitation and care for the severely affected patients and providing them with a dignified end of life; and improving the quality of life in patients with lost self-care capacity. The main staffing

pool of such centers involves the nurses working in multidisciplinary teams. The structure of the center includes general geriatric wards, a geriatric mental unit, a gerontologic urological ward, a gerontologic surgical ward, trauma and orthopedics and rehabilitation units and a hospice with a field service. Active utilization of nursing process takes place in all departments and units, including the geriatric mental unit. The objective of the nursing process is to support and restore patient's independence in meeting their fundamental needs. It includes the following five components: Assessment (collection of information); Diagnosis (determination of patient's problems); Planning of nursing interventions; Implementation of nursing interventions and Evaluation of efficacy of nursing interventions. The stages of treatment in a geriatric center include the following: adjustment to in-patient/institutionalized conditions (at the beginning of institutionalization, the main task of the nurse is to help the patient adapt to a new environment and to monitor responses to pharmacological therapy (if any is used); the nurse will share his/her observations with other team members), stabilizing therapy, supportive therapy, day hospital (for the purposes of monitoring pharmacological therapy and better adjustment to home-based conditions), out-patient supervision. In the home, it is important to provide for the patient a daily routine with sufficient physical activity and to ensure the home is a safe environment for the patient. Temperature conditions in the room should be controlled. The quality of foods should be monitored. Communication with the patient should be maintained. If productive psychiatric symptoms aggravate, hospitalization of the patient is indicated.

4. The study has provided a socio-hygienic and medico-psychological assessment of the problems arising when providing care for patients with Alzheimer's disease, assessed the level of interactions between healthcare personnel and relatives of patients with Alzheimer's type dementia and defined the tasks of nursing personnel when providing care for the aged and elderly patients with Alzheimer's disease. Thus, the main challenges of nursing care in this patient category included

the following, as reported by nurses: difficulties communicating with the patient, 41 study subjects (82%); monitoring of patient's safety, 35 study subjects (70%); keeping the patient clean, 33 study subjects (66%); supporting the patient's connection to reality, 28 study subjects (56%); managing patient's aggressiveness, 25 study subjects (50%); communication with patient's relatives/significant others, 22 study subjects (44%); maintaining order in the patient's room caused the least problems; difficulties with this item were reported by only 14 study subjects (28%).

Esthetic needs of patients with Alzheimer's disease have also been studied. According to the nurses, these patients most notably experienced the lack of: hearing the tunes of their youth, as reported by 25 subjects (50%); watching TV, as reported by 23 subjects (46%) and photographs of their significant others: as reported by 20 subjects (40%). Least of all, the patients were reported to want to read books (10 subjects; 20%) and use jewelry and cosmetics (7 subjects; 14%).

The principal hindrances to meeting the aforementioned needs were seen by the caregiving nurses as the following: threats to patient safety, 28 subjects (56%); short life of items given to patients, 22 subjects (44%); distorted perception of the external world, 19 subjects (38%), chronic diseases of internal organs, 17 subjects (34%) and impaired vision and hearing, 15 subjects (30%).

The level of relationships between healthcare personnel and the relatives/significant others of patients with Alzheimer-type dementia has also been evaluated. In terms of Alzheimer's disease awareness, the surveyed relatives of the patients were distributed in the following way: "never heard of such disease before", 20 persons (33.3%); some uncertain knowledge of the disease, 25 persons (41.7%); clear understanding of the disease, 15 persons (25%).

The main difficulties encountered by the family of the sick person were related to memory deficits in the patient, as reported by 31 persons (51.7%). Self-care deficits were important for 15 respondents (25%), leaving home/wandering was important for 8 respondents (13.3%) and problems with cleanliness were the main concern for 6 respondents (10%).

In terms of satisfaction with the help received, the respondents

were distributed in the following way: “completely satisfied”, 37 persons (61.7%) and “partially satisfied”, 14 persons (23.3%). Nine patients (15%) have responded “no” to the question “Are you satisfied with the help you received from your healthcare personnel?”.



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