

A COMPREHENSIVE STUDY ON ELDERLY SELF-CARE MODEL: INTEGRATING FUNCTIONALITY, CONCEPT ANALYSES, AND CARE NEEDS

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ABSTRACT: This review paper explores the historical progression and contemporary significance of self-maintenance practices among older individuals, highlighting its crucial role in managing health challenges. Tracing its origins from ancient practices to its reinterpretation in modern times, the study navigates through societal changes that have influenced how self-care is perceived and practiced, particularly among the elderly. It examines various factors influencing self-care in older populations, such as socioeconomic status, social support, and health indicators. The research emphasizes the importance of precise conceptual definitions of self-care across different fields. Furthermore, it stresses the need for a better understanding of Care Needs in Daily Living (CNDL) among older adults, emphasizing the role of governments in crafting policies to meet their specific needs. Ultimately, this study aims to provide a comprehensive framework for understanding and addressing the self-care needs of the elderly, facilitating improved healthcare interventions, and enhancing their overall quality of life.

Index Terms:—Self-care Model, Care Needs in Daily Living (CNDL), Backman Model.

INTRODUCTION

Throughout history, individuals have implemented measures to safeguard their well-being and devised tactics to combat ailments and other health-related issues." [1]. Since the beginning of human history, people have devised a variety of techniques to deal with disease and health issues. Self-care practices have been aided by information sharing, rituals, and the eating of particular foods [2]. But until the prevalence of chronic illness rose in the late 20th century, self-care was not well defined [3]. The concept has been linked to broader notions of independence, accountability, and self-guidance, and has been influenced by factors such as symptom control, belief in one's abilities, taking charge of one's health, and tracking one's progress. [4][5].

Before the healthcare system was legally founded, self-care was practiced in communities, and in some situations, people relied on it since they couldn't get healthcare [6][7]. But as the scientific period progressed, individuals started seeking care largely in acute settings, and its use lost importance. Self-care was further undermined by technological advancements [8].

The transition from acute to chronic illness patterns over the last half of the 20th century made self-care more widespread and essential [9]. Support organisations like Alcoholics Anonymous emphasised the unavoidable need for self-care and worked to identify care shortages [1]. The idea of self-care developed as a result of a number of social movements, such as the wellness and women's movements, which produced a

cultural environment that supported its growth [10]. As autonomy became increasingly valued in society, there was a rise in the creation of support groups and a greater emphasis on individual participation in healthcare. This shift occurred alongside an increase in the population and the prevalence of chronic illnesses, leading to a greater acceptance and awareness of self-care practices. [11].

Research indicates that self-care in the elderly is influenced by factors such as education level, socioeconomic condition, and communal support, and is in reverse related to stressful life events [12][13]. Elderly individuals, particularly those with low socioeconomic status and minority groups, require special attention in self-care due to their low health levels, minimal self-care activity, and lack of self-confidence [14][15]. Enhanced self-efficacy contributes to the enhancement of self-care routines and the mitigation of chronic disabilities [16]. Elements like life contentment, self-worth, practical ability, level of education, familial response, and support from family members also play a role in the self-care of the elderly [17][18].

Tracy et al. discovered that the frequency of disabilities and their influence on living conditions play a vital role in determining the quality of life among the elderly [12]. The global elderly population is projected to experience significant growth due to the rising life expectancy, and it is estimated to reach two billion individuals by the year 2050 [19]. The aging process in the 21st century has considerable implications across different facets of society, influencing aspects such as the workforce, the need for products and services, social assistance, and relationships between

generations[20][21].

The concept of self-care was chosen because it is widely recognized as a fundamental aspect of nursing practice. Nurses often provide support through assessment and education to help patients regain their health, achieve independence, and improve their overall well-being. [5]. Given the diverse interpretations of self-care found across different fields, it's essential to establish clear definitions to facilitate effective communication among clinicians, researchers, and patients. This clarity will help delineate roles and responsibilities more effectively. [22][23]. The researchers conducted a thorough examination of the existing understanding of self-care principles.

Older adults represent a demographic group that is particularly vulnerable worldwide, possessing distinct needs that set them apart from other segments of society. According to the United Nations, it is the duty of governments to develop and enforce policies that cater to these specific needs and interests. [24]. While partially

satisfying these requirements might have a detrimental influence on everyday activities, meeting them fully enhances their quality of life. In order to adequately meet their needs, it's crucial to understand the daily living care requirements of those we provide care and services to. Certain demands are unique to this era and not present in prior periods, therefore a thorough and precise evaluation of their CNDL is required. Governments must thus enact laws to address the needs of the elderly[25].

With the current demographic composition, the unforeseeable upward trajectory of the aging population is projected to rise significantly in the upcoming years. By 2040, the World Health Organization predicts that China will experience a significant rise, potentially up to 60%, in the number of elderly individuals who will require daily care. This increase will present a formidable challenge to the nation's healthcare system, which is currently designed to meet the diverse needs of individuals across different age groups. [26].

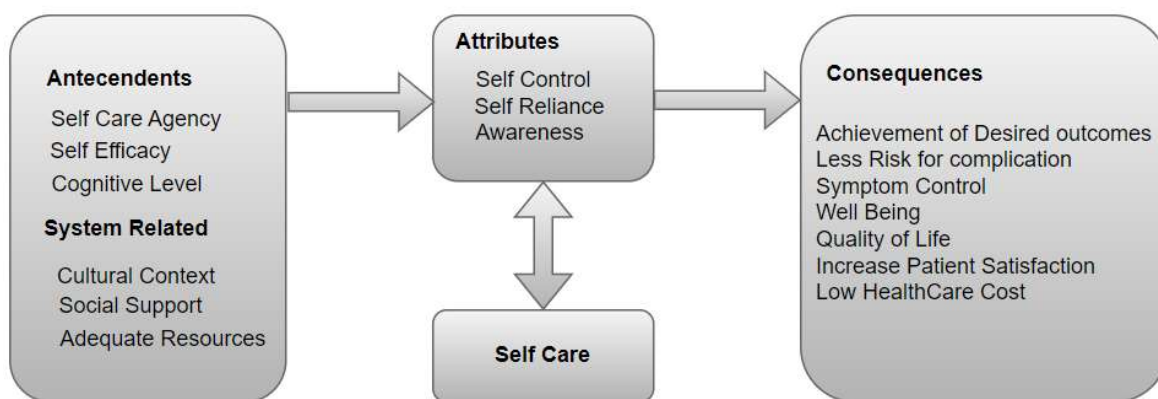


Figure 1: Origins, characteristics, and outcomes of Self-Care. [23]

LITERATURE REVIEW

The societal implications of aging in the 21st century are profound, impacting various sectors like the workforce, demand for commodities such as housing and transportation, social assistance, and intergenerational connections[27]. From 1956 to 2016, the elderly population in Iran witnessed a remarkable surge of 542%, equivalent to an annual growth rate of approximately 9% over the six-decade period.[28]. As of today, approximately 4,500,000 elderly individuals reside in Iran. According to the 2016 National Census of Iran, this demographic constitutes around 8.5% of the country's total population, with more than 7.5% of Tehran City's residents being over 65 years old. The unforeseeable upward trajectory of the aging year increasing from 7.27% in 2006 to surpass 16% by 2050. This anticipated shift is poised to become an unprecedented phenomenon[29].

The elderly should not be equated with disability

in old age, as the implementation of self-management and self-care programs aimed at controlling chronic illnesses such as arthritis, heart disease, or high blood pressure can effectively prevent and even postpone disability. Recognizing the crucial impact of self-care on aging health, the health sector emphasizes the need for further research to promote self-care. Consequently, the Backman model is employed to delineate the dimensions of self-care and the influencing factors among the elderly in Tehran City. This systematic and integrated model serves to elucidate the self-care knowledge of the elderly population[30].

The progress of society and advancements in science are contributing to an extended life expectancy in Europe, resulting in a higher percentage of older adults. [25], Individuals facing numerous health-related issues, especially those with chronic non-communicable diseases (CNDs), encounter increased complexity in their care due to multimorbidity and a greater manifestation of disease

symptoms[31].The increasing elderly population in developed nations is contributing to the growing burden of Chronic Non-Communicable Diseases (CNDs). Individuals with CNDs frequently find themselves in solitary home environments, with an average of just one hour of professional care annually. The rest of the time, they rely on their own self-care capabilities[32].Self-care-focused interventions play a pivotal role in mitigating the impact of Chronic Non-Communicable Diseases (CNDs). Self-care is characterized as the capacity of individuals, families, and communities to advocate for and sustain health, prevent diseases, and effectively manage illness and disability, whether or not healthcare providers are involved[33]. Operations research plays a role in assisting individuals with chronic neurological disorders (CNDs) within their home settings. Employing analytical and scientific methods, operations research supports decision-making for intricate issues. Its applications in healthcare date back to the mid-twentieth century, contributing to decision-making in various complex health and healthcare scenarios[34].A systematic and recent literature review on the application of operations research in home healthcare highlighted the existing research gap in both home care planning and the reevaluation of patients' requirements[35].

The care requirements of elderly individuals in the Chinese community are heavily influenced by a range of socio-demographic factors. These factors include cultural norms that emphasize family care, limited availability of formal care services, and changes in family structures brought about by demographic and socioeconomic shifts. [36].Relying on family for care, along with changes like more empty nests and fewer family members available to provide care, has put pressure on the conventional elderly care system in China.[37]. Addressing the care needs of older adults has become increasingly important. Studies have highlighted various socio-demographic factors, such as age, gender, living arrangements, level of education, mental well-being, and social/family support, as influential in determining these needs. However, the complex interplay between these factors and their relative significance in the care system remain unclear.[38] . To bridge this knowledge gap, the present study employed Structural Equation Modeling (SEM) to examine and illustrate the intricate causal relationships among these factors. The aim was to gain practical insights into the Care Needs in Daily Living (CNDL) of community-dwelling individuals aged 75 and above, thereby offering valuable guidance for home- and community-based care services. This research also has the potential to inform healthcare strategies in other societies experiencing rapid aging trends. [39].

Brief Overviews Of Selected Models: In this review paper, various elderly self-care models are briefly discussed which are as follows:

A. **Factors Influencing CNDL of Older Adults:** This model aims to outline the various factors that contribute to the Care Needs in Daily Living (CNDL) among older adults who reside in the community. Through the utilization of structural equation modeling, the study involved a sample of 3,448 older adults in China. The findings of the model highlight that physical and mental health are the most significant predictors of CNDL, while age and living situation also play a role. Conversely, economic factors, social support, and family support were identified as significant risk factors. The model identifies specific priority groups, such as the oldest individuals, those with lower incomes, individuals living in non-empty nest households, and those who perceive their health poorly or experience loneliness, as requiring additional daily assistance. The implications of this model for nursing management involve assisting health authorities and managers in prioritizing support strategies and optimizing resource allocation. [39].

B. **Backman Model for Self-Care Dimensions in Elderly:** Focused on applying the Backman Model, this study aims to determine self-care dimensions and related factors among 400 elderly individuals in Tehran's nursinghomes.The model takes into account a range of factors, including demographic traits, self-care practices, overall life contentment, functional abilities, and levels of social support. Findings revealed associations between self-care and factors like life satisfaction, functional capacity, and self-confidence. It recommends policymakers formulate diverse supportprograms—suchastransportation access andfacilities—toaidtheelderlyinmaintainingself-care capabilities [30].

C. **Functionality Profiles and Nursing Interventions:** This model employs the International Classification of Functioning, Disability, and Health codes to developfunctionalityprofilesandstructurednursing interventions. It focuses on elderly individuals in intensively and sparsely populated rural areas. Usingexploratoryandconfirmatoryfactoranalysis, itidentifies"SupportandRelationships"aslinkedto higher functional problems, necessitating greater self-care interventions. It anticipates mild functionality issues after 74 years and therapeutic self-care deficits in individuals aged 85 and above, offering insights into prioritizing interventions based on functionality profiles [40].

D. **Multi-Criteria Decision Model for Chronic Disease Patients:** Tailored for individuals with persistent health conditions, this model incorporates the DEX methodology to establish a comprehensive decision-

making framework for evaluating both health status and self-care capabilities within a home setting. Tested on ten cases, the model aids in symptom recognition, empowering patients for self-care decision-making. It promotes an engaged role for patients in managing their health and has the potential to facilitate a collaborative approach among healthcare professionals for older individuals with chronic conditions who are residing independently at home.

Each model offers distinct insights and implications for healthcare policymakers, practitioners, and managers, catering to specific aspects of care needs and self-care management among older adults and chronic disease patients [41].

Integrating functionality, concept analysis and self-care needs of models: A comprehensive approach is analyzed that facilitates older people to manage their well-being and sustain their freedom. The Backman Model Study focuses on grasping the needs and experiences of human beings inside a particular setting, such as Tehran, Iran. In this model, Healthcare professionals may learn a great deal about the unique needs and issues that society faces by collecting and evaluating data [30].

To determine the individual's healthcare plans and needs, the Nursing Care Intervention Model may be developed and implemented. To enhance health outcomes, this model emphasizes the value of individualized treatment and the application of research-backed techniques. Healthcare practitioners may effectively meet patients' entire needs and enable them to contribute in their own care by mapping nursing tactics to functionality

profiles and self-care criteria. [40]. Physicians regularly evaluate the requirements of each patient and determine their functionality profiles and modifying nursing actions [39]. A multi-dimensional decision-making framework may be used, considering a range of aspects such as patient preferences, feasibility, and cost-effectiveness. Effectively utilizing scarce resources to facilitate the integration of functionality, concept analysis, and self-care requirements into nursing practice. Healthcare practitioners may enhance the provision of high-quality remedy and advance people's overall well-being by combining these concepts. [41].

METHODOLOGY

Based on the perceptions collected from the analyses in sections III and IV, a probable prototype Model could entail shaping a tailored self-care managing solution for the elderly. This system would control cutting-edge technology, incorporating advanced algorithms and wearable gadgets, to constantly examine the health and daily routines of elder individuals in real-time.

The research approach would need crafting a randomized controlled trial to evaluate the efficiency of the tailored care managing approach in enhancing health results and diminishing the need for formal care services. Community-dwelling elderly people would be enlisted as members and randomly allocated to either the trial group, getting the tailored care management system, or the command group, accepting standard care.

Table 1: Comparative Study on Self-Care Models for Elderly.

Attributes	Nursing Care Intervention Model (CNDL)	Backman Model Study (Tehran, Iran)	Functionality Profiles & Nursing Interventions Model	A Multi-Criteria Decision Model
Objective	Develop a model illustrating factors influencing CNDL of older adults	Apply Backman Model to determine self-care dimensions in elderly	Determine functionality profiles & nursing interventions for self-care.	Develop a decision model for assessing health & self-care in chronic disease patients at home
Study Setting	Community-dwelling older adults in China	Elderly in Tehran, Iran nursing homes	Elderly in extensively/sparsely populated rural areas Not specified	Patients with chronic diseases at home
Sample Size/Technique	3,448 via stratified random cluster sampling	400 elderly through systematic random sampling		Tested on ten cases
Methods Used	Structural equation modeling	Chi-square, Pearson correlation, regression analysis	Exploratory factor analysis, confirmatory factor analysis, ordinal regression	DEX methodology
Main Findings	Physical & mental health major predictors; age, living situation,	Factors associated with self-care: life satisfaction, functional	Functional problems expected >74 years; "Support and	Model assists timely recognition of symptoms, empowering

	economic factors, social/family support impact CNDL	capacity, social support, self-confidence	Relationships" linked to higher issues; therapeutic self-care deficits in >85 years	patients for self-care
Conclusion	Model helps target older adults needing assistance; prioritizes oldest, low-income, poor health individuals.	Suggests support programs based on factors influencing self-care in elderly	Highlights priority for interventions, identifies key risk groups for assistance	Model aids patients' active role in health care, promotes independence
Implications for Nursing/Healthcare Management	Information for priority groups, strategies to ease caregiving burdens	Suggestions for health system policymakers, support program formulation	Guidance for resource allocation, support strategies	Integrating model into self-care, interprofessional approach support

Data collection would incorporate gathering demographic points, health status, monitoring daily activities, and evaluating the utilization of formal concern services. The research methodology would involve accompanying considerations before and after the involvement to compare results between the control and experimental groups. Statistical analysis would then be utilized to assess the effect of the customized care management system on health outcomes and care needs. This system would offer categories like medication reminders, fall detection, activity tracking, and interaction with healthcare providers, fitted to individual needs and preferences.

By indorsing self-care and independence amongst older adults, the custom-made management system has the possible to enhance overall well-being, reduce dependence on formal care services, and improve the value of care provided to older adults in the community.

DISCUSSION & LIMITATIONS

Although the Nursing Care Intervention Model (CNDL), Backman Model Study, Functionality Profiles & Nursing Interventions Model, and Multi-Criteria Decision Model offer valuable insights into tackling the care needs of older adults, there remain several areas that could be enhanced and further explored. Many studies may consider on self-reported events or subjective judgments, which could initiate bias and mistakes into the information. Furthermore, conventional approaches of data collection corresponding surveys or interviews may not completely portray the obscured and dynamic nature of care needs among older adults. Hence, there is a need for the improvement and validation of more objective and thorough assessment tools to present real-time data on various features of health and well-being. Likewise, existing models' analysis techniques may not always report for the intricate interplay among different components influencing care needs. Augmented statistical methods, such as machine learning algorithms

or network analysis, might be used to uncover unknown patterns and relationships within the data.

The research has numerous limitations that need to be considered. Primarily, the sample ranges and methodologies designed across studies, which may affect the ability to simplify and maintain regularity in findings. Secondly, the aim on definite geographical areas, such as rural regions or identifiable nursing homes in Tehran, may restrict the wider applicability of the results to distinct elderly populations. Thirdly, some studies had a narrow span, potentially missing important aspects of self-care or Care Needs in Daily Living (CNDL), which are crucial for comprehensive elderly care. Furthermore, the deficit of a longitudinal approach hinders insight of how factors change over time. Also, while interventions are projected, there is not enough consideration of their feasibility and practical implementation inside healthcare systems. Finally, possible biases, unmeasured variables, and limited testing on smaller case samples induce concerns about the toughness and comprehensiveness of the models built. Addressing these limitations is necessary for providing more trustworthy and applicable supervision for nursing care, healthcare management, and policy development for the elderly.

Conclusion: The study determines a thorough examination of elderly self-care models, their significance in addressing health issues and improving the well-being of older individuals. It delves into historic roots, societal changes, and various factors influencing elderly self-care, stressing the need for clear conceptual understanding and a profound grasp of Care Needs in Daily Living. This review paper nodsto the vulnerability of the elderly and underscores the importance of existing self-care policies to meet the specific requirements of elders. Furthermore, these models depict the fundamental role of nursing practice in assessing, educating, and encouraging older adults for independent living and overall health. It recognizes the elderly's fragility and highlights the need to implement government programs that are particularly designed to satisfy their requests. To promote independence and a higher quality of life, the study's conclusion advocates for improved healthcare

interventions and policies that are focused on improving older people's experiences with self-care and encouraging active patient involvement in healthcare decisions.

Future research could explore the development of more advanced evaluation tools and methodologies to comprehensively assess the diverse self-care needs of older people. Moreover, the challenge of conducting studies in varied cultural and geographical contexts is found across different populations.

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