



**Faculty of Applied and Creative Arts**

**Design Thinking for Age-Friendly Furniture in Chinese Nursing Homes:  
Addressing Physiological and Behavioral Characteristics of the Elderly**

**Zhang Yun**

**Doctor of Philosophy  
2024**

Design Thinking for Age-Friendly Furniture in Chinese Nursing Homes:  
Addressing Physiological and Behavioral Characteristics of the Elderly

Zhang Yun

A thesis submitted

In fulfillment of the requirements for the degree of Doctor of Philosophy

(Design Technology)

Faculty of Applied and Creative Arts  
UNIVERSITI MALAYSIA SARAWAK

2024

## DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



.....

Signature

Name: ZhangYun

Matric No.: 20010009

Faculty of Applied and Creative Arts

Universiti Malaysia Sarawak

Date : 28/09/2024

## ACKNOWLEDGEMENT

The research work of this thesis was completed under the meticulous guidance of my supervisor, Prof. Dr. Musdi Shanat, whose stringent demeanor and scientific approach gave me significant assistance and influence. I would like to express my sincere gratitude to Prof. Dr. Musdi Shanat for his guidance during my doctoral studies.

I appreciate all the support and help from the elderly, experts, designers, friends and enterprise in providing valuable research and interview opportunities for this study during the writing process of the thesis.

This thesis is completed on the basis of previous theoretical research and practical exploration. I would like to express my heartfelt appreciation to the authors of all articles, images, and case studies referenced and cited in this study.

I would like to extend my thanks to my wife, Feng Fan, for her unwavering support and companionship. She has given me the positive energy to overcome challenges, and I eagerly anticipate to be with you in this new phase of life to create a more promising future for both of us!

Finally, I would like to acknowledge my parents for their support and understanding throughout the research and writing of my doctoral thesis. Their unconditional love serves as the eternal significance and boundless motivation for me to pursue and complete my doctoral study.

## ABSTRACT

This research aims to explore the method of addressing the design challenges of age-friendly furniture by optimizing product functionality and implementing innovative design to meet the diverse needs of the elderly in nursing homes in China. Therefore, this research analyse the physiological and behavioral characteristics of the elderly in nursing homes in China, to explore their existing problems and user requirements, to propose the attributes, elements, principles and methods of age-friendly furniture design, and finally to verify the feasibility and effectiveness of the proposed research questions and objectives through design practice. In order to fulfil the objectives of this research and address the research questions, a combination of qualitative and quantitative research methods was utilized to summarise, gather, and analyse the research data, as well as to identify the principal issues and solutions of the research program. This research applies various research techniques, including literature analysis, questionnaires, and interviews, in conjunction with direct observation of specific objects, to conduct a thorough investigation into the current state of furniture usage, design requirements, and physiological and behavioral characteristics of the elderly residing in nursing homes. On this basis, the study analyses the existing problems and causes, design attributes and focal points, as well as user requirements, in relation to the development of age-friendly furniture designs for nursing homes. Furthermore, two brainstorming design workshops are organized to identify keywords, functional hierarchy models, design features, and design concepts for age-friendly furniture design. By analysing the data obtained from the research and conducting a systematic study, this study summarizes seven major user requirements and six major design elements. Subsequently, it proposes seven design principles and a range of design methods tailor to the physiological and behavioral characteristics of the elderly in nursing homes in China.

The study proceeds to implement and validate the proposed design principles and methods. Additionally, it highlights the limitations of design practice, future work, and recommendations. Finally, the design practice and validation are executed.

**Keywords:** China, nursing home, elderly, age-friendly, furniture design

***Penyelidikan tentang Pemikiran Reka Bentuk Perabot Mesra Penuaan Rumah  
Penjagaan Berdasarkan Ciri-ciri Fisiologi dan Tingkah Laku untuk Warga Emas di  
China***

**ABSTRAK**

*Penyelidikan ini bertujuan untuk meneroka cara menangani cabaran reka bentuk perabot mesra penuaan dengan mengoptimumkan fungsi produk dan melaksanakan reka bentuk yang inovatif, bagi memenuhi pelbagai keperluan individu warga emas di rumah jagaan warga emas China. Oleh itu, objektif penyelidikan ini adalah untuk menganalisis ciri-ciri fisiologi dan tingkah laku warga tua di rumah jagaan kejururawatan China, untuk meneroka masalah sedia ada dan keperluan pengguna, untuk mencadangkan sifat, elemen, prinsip dan kaedah reka bentuk perabot mesra penuaan, dan akhirnya untuk mengesahkan kebolehlaksanaan dan kesahihan cadangan soalan dan objektif kajian dengan melaksanakan amalan reka bentuk. Penyelidikan ini menggunakan pelbagai teknik penyelidikan, termasuk analisis literatur, soal selidik, dan temu bual, bersama-sama dengan pemerhatian langsung objek tertentu, untuk menjalankan penyiasatan menyeluruh ke atas keadaan semasa penggunaan perabot, keperluan reka bentuk, dan ciri fisiologi dan tingkah laku individu warga tua yang tinggal di rumah jagaan. Berdasarkan asas ini, kajian menganalisis masalah dan punca sedia ada, sifat reka bentuk dan titik fokus, serta keperluan pengguna, berkaitan dengan pembangunan reka bentuk perabot mesra penuaan untuk rumah jagaan. Tambahan pula, tiga bengkel reka bentuk sumbangsaran telah dianjurkan untuk mengenal pasti kata kunci, model hierarki berfungsi, ciri reka bentuk dan konsep reka bentuk untuk reka bentuk perabot mesra penuaan. Dengan menganalisis data yang diperolehi daripada penyelidikan dan menjalankan kajian yang sistematik, kertas kerja ini merumuskan tujuh keperluan pengguna dan enam elemen reka bentuk. Selepas itu, ia mencadangkan tujuh prinsip reka bentuk dan pelbagai kaedah reka bentuk yang*

*disesuaikan dengan ciri fisiologi dan tingkah laku individu warga emas di rumah jagaan orang China. Kertas kerja ini meneruskan untuk melaksanakan dan mengesahkan prinsip dan kaedah reka bentuk yang dicadangkan. Selain itu, ia menyerlahkan batasan, kerja masa depan dan cadangan amalan reka bentuk. Akhirnya, amalan reka bentuk dan pengesahan dilaksanakan.*

**Kata kunci:** *China, rumah pengasuh, orang tua, ramah tua, reka bentuk perabot*

## TABLE OF CONTENTS

	<b>Page</b>
<b>DECLARATION</b>	i
<b>ACKNOWLEDGEMENT</b>	ii
<b>ABSTRACT</b>	iii
<i><b>ABSTRAK</b></i>	v
<b>TABLE OF CONTENTS</b>	vii
<b>LIST OF TABLES</b>	xiv
<b>LIST OF FIGURES</b>	xvi
<b>LIST OF ABBREVIATIONS</b>	xix
<b>CHAPTER 1: INTRODUCTION</b>	<b>1</b>
1.1 General Introduction	1
1.2 Research Background	1
1.2.1 The Current Situation and Trend of Ageing Population in China	2
1.2.2 New Perspective on the Elderly Population	3
1.2.3 The Challenges in Designing Furniture for the Elderly	6
1.3 Problem Statement	11
1.4 Research Questions	12
1.5 Research Objectives	13

1.6	Research Hypothesis	13
1.7	Significance of Study	14
1.8	Scope of Research	16
1.9	Research Limitation	18
1.10	Structure of the Study	19
1.11	Chapter Summary	22
	<b>CHAPTER 2: LITERATURE REVIEW</b>	<b>24</b>
2.1	Introduction	24
2.2	New Concept of Age-friendly Furniture	25
2.2.1	Overview Theory of Age-friendly Furniture in China	25
2.2.2	The Development of Age-friendly Furniture Trend in Global Scenario	28
2.3	Physiological and Behavioral Characteristics of the Elderly in China	33
2.3.1	Physiological Characteristics	33
2.3.2	Behavior Characteristics	36
2.4	Age-friendly Design in China	43
2.4.1	Current Research Status of Product Design for the Elderly	43
2.4.2	Application and Mainstream Theory of Ageing Product Design	50
2.4.3	Conceptual Frameworks and Models for Age-Friendly Furniture Design	58
2.4.4	Nursing Home Elderly Care Facilities Design	61
2.4.5	China's Intelligent Ageing Facilities	63

2.5	Overview of Nursing Home Age-friendly Furniture	65
2.5.1	Definition of Nursing Home Furniture	65
2.5.2	Research and Application of Ageing Furniture Design in Nursing Homes	68
2.5.3	Market Situation of Nursing Home Age-friendly Furniture Products in China	77
2.6	Chapter Summary	81
	<b>CHAPTER 3: RESEARCH METHODOLOGY</b>	<b>87</b>
3.1	Introduction	87
3.2	Research Framework	88
3.2.1	Phase One: Preliminary Study	89
3.2.2	Phase Two: Research Plan and Methods	90
3.2.3	Phase Three: Data Collection and Analysis	91
3.2.4	Phase Four: Design Practice and Validation	94
3.3	Research Thinking	95
3.4	Research Approach	100
3.4.1	Literature Review	102
3.4.2	Questionnaire	110
3.4.3	Interview	117
3.4.4	Brainstorming	129
3.4.5	Design Practice	136
3.5	Chapter Summary	142

<b>CHAPTER 4: DATA ANALYSIS AND FINDINGS</b>	<b>144</b>
4.1 Introduction	144
4.2 Data Analysis of Literature Review	145
4.2.1 Analysis of the Volume and Areas of Publications	146
4.2.2 Research Highlights and Keyword Cluster Analysis	149
4.2.3 Analysing the Development of Research on Age-friendly Furniture Design	152
4.2.4 Summary of Literature Review	155
4.3 Data Analysis of Questionnaire	158
4.3.1 Analysis of Data from Questionnaire 1: Basic Situation of the Elderly in China Nursing Homes	159
4.3.2 Data Analysis of Questionnaire 2: Physiological and Behavioural Characteristics of the Elderly in China Nursing Homes	164
4.3.3 Analysis of Data from Questionnaire 3: Furniture for the Elderly in China Nursing Homes	174
4.3.4 Summary of the Questionnaire	198
4.4 Data Analysis of Interview	199
4.4.1 Analysis of Interview 1: Academicians, Designers and Furniture Manufacturers	200
4.4.2 Analysis of Interview 2: Elderly in China Nursing Homes	207
4.4.3 Summary of Interviews	212
4.5 Data Analysis of Brainstorming	214

4.5.1	Brainstorming 1 Analysis: Identifying Keywords for Age-friendly Furniture Design	215
4.5.2	Brainstorming 2 Analysis: Identifying Design Keywords and Functional Hierarchy Models for Age-friendly Multifunctional Beds	217
4.5.3	Summary of Brainstorming Activities	220
4.6	Chapter Summary	221
<b>CHAPTER 5: The Development and Evaluation of Age-Friendly Multifunctional Furniture Through Design Practice</b>		<b>223</b>
5.1	Introduction	223
5.2	Rational of Furniture Design: A Case Study	224
5.2.1	From China’s National Conditions	224
5.2.2	From the Bed’s Own Functions	225
5.2.3	From Research on the Physiological and Behavioural Conditions of Elderly in Nursing Homes	225
5.2.4	From the Perspective of the Physical and Mental Health of Elderly in Nursing Homes	226
5.3	Design Feature : Multifunctional Bed Design Specifical	227
5.3.1	Intelligent Design	228
5.3.2	Diversified Functional Requirements of Users	231
5.3.3	Transformation of User Behaviour and Experience	235
5.3.4	Application of Modular Design	237

5.4	Design Ideation	241
5.4.1	Design Thinking and Process Framework	241
5.4.2	User Requirements Acquisition Analysis and Design Opportunities	241
5.4.3	Design Concept and Positioning	243
5.4.4	Design Ideas	246
5.5	Design Programme	247
5.5.1	Design Sketches	247
5.5.2	Computer-generated Renderings	250
5.5.3	Real Detail Drawings	251
5.5.4	Final Drawing	257
5.6	Prototype	259
5.6.1	Technical Drawing (CAD)	260
5.6.2	Technical Details and Main Structure of the Multifunctional Bed	263
5.6.3	Recommended Prototyping Specifications and Parameters	266
5.6.4	Modelling Mock-ups	268
5.6.5	Prototype Performance Testing	270
5.7	Service Design Blueprint and Customer Journey	272
5.8	Chapter Summary	275
	<b>CHAPTER 6: DISCUSSION AND CONCLUSION</b>	<b>278</b>
6.1	Introduction	278

6.2	Physiological and Behavioural Characteristics of Elderly in China Nursing Homes	279
6.2.1	Physiological Characteristics of Elderly	280
6.2.2	Behavioural Characteristics of Elderly	283
6.3	Existing Problems, Attributes and Requirements of Age-friendly Furniture Design in China Nursing Homes	287
6.3.1	Problem Identification	288
6.3.2	Design Attributes	290
6.3.3	User Requirements and Analyses	291
6.4	Key Points for Designing for the Physiological and Behavioural Characteristics of Elderly	293
6.4.1	Specificity and Key Points of Design Element	294
6.4.2	Specificity and Key Points of Design Principle	298
6.4.3	Specificity and Key Points of Design Method	300
6.5	Design Verification and Recommendation of Multifunctional Age-friendly Bed	311
6.5.1	Validation of Design Practice	311
6.5.2	Design Recommendation of Age-friendly for China Nursing Homes	313
6.6	Conclusion	315
6.7	Future Work and Recommendations	320
	<b>REFERENCES</b>	<b>322</b>
	<b>APPENDICES</b>	<b>339</b>

## LIST OF TABLES

		<b>Page</b>
Table 3.1	Range of Topics and Specific Content of Interviews with Elderly in Nursing Homes	123
Table 3.2	Topics and Specific Content of Expert Interviews	126
Table 3.3	Behavioural Analysis Table for Brainstorming Methods	133
Table 3.4	Design Practices: Design Thinking for Multifunctional Adaptive Beds	141
Table 4.1	Frequency Analysis of Educational Qualification, Occupation, Economic Sources and Income	162
Table 4.2	Frequency Analysis of Physical Health Conditions of Elderly in Nursing Homes	164
Table 4.3	Frequency Analysis of Living Situation of Elderly in Nursing Homes	165
Table 4.4	Analysis of Questionnaire 2 Response Rate and Prevalence	171
Table 4.5	Validity Analysis of Questionnaire 2	173
Table 4.6	Questionnaire 3-1 Satisfaction Rating Matrix	175
Table 4.7	Questionnaire 3-1 AHP Hierarchical Analysis Judgement	177
Table 4.8	Questionnaire 3-1 AHP Hierarchical Analysis Results	177
Table 4.9	Cronbach's Reliability Analysis Table	179
Table 4.10	Validity Analysis Results of Questionnaire 3-1	180
Table 4.11	Frequency Analysis Results of Interest in Furniture Products	181
Table 4.12	Frequency Analysis Results of Reasons for Interest in Age-friendly Furniture	182
Table 4.13	Survey on Knowledge of Age-friendly Furniture Frequency Analysis Results	182
Table 4.14	Survey on Concerns about Age-friendly Furniture Frequency Analysis Results	183
Table 4.15	Surveys on Style Choices in Frequency Analysis Results	185

Table 4.16	Summary of Questionnaire 3-2 Multiple Choice Response and Prevalence Rates	188
Table 4.17	Questionnaire 3-2 Validity Analysis Table	189
Table 4.18	Summary of Questionnaire 3-3 Response and Prevalence Rates	196
Table 4.19	Results of Questionnaire 3-3 Validity Analysis	197
Table 4.20	Content Analysis of Expert In-Depth Interview Keyword List	201
Table 4.21	Content Analysis of Interviews Elderly in Nursing Homes	208
Table 4.22	List of Keyword Weights Extracted from Brainstorming Session 1	217
Table 4.23	List of Keyword Weights Extracted from Brainstorming Session 2 for the Bed Design Practice	218
Table 5.1	Computer Rendering Modelling	251
Table 5.2	Customer Journey	274
Table 6.1	Content Analysis of Physiological Characteristics and Problems of Elderly	282
Table 6.2	Content Analysis of Changes in Behavioral Characteristics and Issues Manifestations in the Elderly	285
Table 6.3	Design Methods for Physiological Characteristics and Issues of Elderly in Nursing Homes	303
Table 6.4	Design Methods for Behavioural Characteristics and Issues of Elderly in China Nursing Homes	308

## LIST OF FIGURES

	<b>Page</b>
Figure 1.1 Structure of the Study	20
Figure 2.1 Conceptual Framework of Age-friendly Furniture	61
Figure 3.1 Research Framework	89
Figure 3.2 Design Thinking Framework	96
Figure 3.3 Overview of the Literature Review Process and Steps	104
Figure 3.4 Step-by-step diagram for data collection	108
Figure 3.5 Setting up CiteSpace Software Screenshot	109
Figure 3.6 Literature Review CiteSpace Analysis Software Screenshot	109
Figure 3.7 Screenshot of Furniture for the Elderly Satisfaction Analysis Software	114
Figure 3.8 Validity test analysis software screenshot	116
Figure 3.9 Language Protocol Analysis of the Interview	125
Figure 3.10 Interview Transcript NVivo Software Analytics Screenshot	128
Figure 3.11 Brainstorming Session Implementation	134
Figure 3.12 Brainstorming Session Implementation and Process Framework	135
Figure 4.1 Annual Trend of the Number of Literature on Age-friendly at China and Abroad	147
Figure 4.2 Distribution of Relevant Fields of China Age-friendly Design	147
Figure 4.3 Distribution of Relevant Fields of International Ae-friendly Design	149
Figure 4.4 Keyword Cluster View of Age-friendly Design Literature in China	150
Figure 4.5 Keyword Cluster View of Age-friendly Design Literature in International	151
Figure 4.6 Timeline View of Age-friendly Furniture Research in China	153
Figure 4.7 Timeline View of International Research on Age-friendly Furniture	154

Figure 4.8	Geographic Distribution and Number of Questionnaire	158
Figure 4.9	Percentage Distribution of the Elderly by Age	159
Figure 4.10	Percentage Distribution of Height in the Elderly	160
Figure 4.11	Results of Survey on Physical Problems of Elderly in Nursing Homes	166
Figure 4.12	Survey on the Psychological State of Elderly in Nursing Homes	167
Figure 4.13	Physical Behaviour Survey of the Elderly	168
Figure 4.14	Survey of Daily Behavioural Activities of Elderly in Nursing Homes	169
Figure 4.15	A Survey of Venue for Behavioural Accidents in the Daily Lives of Elderly	169
Figure 4.16	Behavioural Activity Space Needs of Elderly in Nursing Homes	170
Figure 4.17	Results of Survey on Color Choices of Elderly	184
Figure 4.18	Survey Results for Elderly' Material Choices	184
Figure 4.19	Survey Results on Elderly Demand for Age-friendly Furniture Smart Projects	186
Figure 4.20	Findings on Areas of Improvement in Age-friendly Furniture	187
Figure 4.21	Survey of Existing Furniture Usage Problems	190
Figure 4.22	Findings of Problems with Table Furniture in Nursing Homes	191
Figure 4.23	Findings of Problems with Seating Furniture in Nursing Homes	192
Figure 4.24	Findings of Problems with Cabinet Type Furniture in Nursing Homes	193
Figure 4.25	Findings on the Design Needs of Cabinet Furniture in Nursing Homes	193
Figure 4.26	Findings of Problems with Bed Furniture in Nursing Homes	194
Figure 4.27	Survey Results for Nursing Home Bed Design Requirements	195
Figure 4.28	Structural Model for Keyword Analysis of Expert Interviews	204
Figure 4.29	Functional Hierarchy Model for Age-friendly Multifunctional Bed	219
Figure 5.1	Multi-functional Bed Intelligent Monitoring Service Design Platform System	228
Figure 5.2	Diversified Functional Needs Map for Elderly in Nursing Homes	232

Figure 5.3	Transformation Map of Behavior and Experience of Elderly Users in Nursing Homes	236
Figure 5.4	Modular Design of Multifunctional Beds in Nursing Homes	240
Figure 5.5	Multi-functional Age-friendly Bed Design Thinking and Flow Chart	241
Figure 5.6	Design Concept and Positioning Diagram for Age Multifunctional Beds in China Nursing Homes	245
Figure 5.7	Functional Design Sketch for Age-friendly Multifunctional Bed 1	248
Figure 5.8	Functional Design Sketch for Age-friendly Multifunctional Bed 2	249
Figure 5.9	Multi-functional Bed Colour Scheme and Material Map	252
Figure 5.10	Functional Breakdown Schematic 1	256
Figure 5.11	Functional Breakdown Schematic 2	257
Figure 5.12	3/4 View of Multi-functional Bed 1	258
Figure 5.13	3/4 View of Multi-functional Bed 2	258
Figure 5.14	Side View of Multi-functional Bed	259
Figure 5.15	Front View of the Bed Design	261
Figure 5.16	Side View of the Bed Design	261
Figure 5.17	Top View of the Bed Design	262
Figure 5.18	Schematic of the Dimensions of a Removable Tabletop	262
Figure 5.19	Technical Details of the Bed Framer 1	264
Figure 5.20	Technical Details of the Bed Framer 2	264
Figure 5.21	Technical Details of the Bed Framer 3	265
Figure 5.22	Exploded View of the Multi-functional Bed	265
Figure 5.23	Final Mock-ups of the Bed	270
Figure 5.24	Radar Chart of Overall Product Evaluation Results	272
Figure 5.25	Service Design Blueprint	273
Figure 6.1	Analysis of User Demand for Age-friendly Furniture Products for Elderly in Nursing Homes	293

## LIST OF ABBREVIATIONS

AHP	Analytical Hierarchy Process
CNBS	China National Bureau Statistics
CNKI	China National Knowledge Infrastructure
F	Female
M	Male
Q	Questionnaire
RMB	Ren Min Bi
RQ	Research Question
RO	Research Objective
UN	United Nations
WHO	World Health Organization

# CHAPTER 1

## INTRODUCTION

### 1.1 General Introduction

This research centres on examining the correlation between the elderly population and the utilization of furniture in the design of nursing home spaces. With a fundamental understanding of China's increasingly prominent ageing population problem, the objective of this research is to provide furniture products that suit the needs and preferences of China's elderly. By conducting a thorough investigation and analysis of the psychological, physiological, and behavioral characteristics of the elderly, this research aims to explore the various elements, principles, methods, and design approaches that can be implemented in the creation of age-friendly furniture for China nursing homes.

This research aims to discover, investigate, develop, and design ageing furniture in nursing home in China. This chapter outlines the background of the research, the problem statement, the research questions, the research objectives, the significance of the study, the scope of the research, the limitations, and the research framework.

### 1.2 Research Background

The ageing of China's population and the growth of the elderly care industry have necessitated a higher requirements for the design and research of age-friendly furniture in nursing homes. However, current furniture manufacturers and designers often overlook the unique characteristics of elderly residents in nursing homes, resulting in a limited number of truly "age-friendly" furniture products. Given the physiological and behavioral changes that occur with age, there is an urgent need for design to enhance interaction and

communication between the elderly and their living furnishings. Therefore, it is crucial to develop and design age-friendly furniture that aligns with the physiological and behavioral characteristics of the elderly population in nursing homes.

### **1.2.1 The Current Situation and Trend of Ageing Population in China**

The guidebook aims to assist postgraduate research students in writing their final thesis. This can be achieved through the following objectives:

Based on data from the Seventh National Population Census and the United Nations World Population Prospects 2022, an analysis of population ageing trends in China reveals that the country is currently experiencing a rapid development of population ageing, with this process expected to accelerate in the future, leading to an increasingly aged society (Dong, 2022).

China officially entered an aged society in the year 2000. From 1982 to 2020, the proportion of the elderly population aged 60 and above in China has drastically increased from 7.62% to 18.7%, accounting for a population of approximately 264,019,000. Similarly, the proportion of the elderly population aged 65 and above has risen significantly from 4.91% to 13.5%, with a population of approximately 190,635,000 (CNBS, 2019). According to the population projections in the United Nations World Population Prospects 2022, the number of individuals aged 60 and above in China is expected to surpass 500 million by 2050, constituting 38.81% of the total population. Additionally, the proportion of the population aged 80 and above is projected to exceed 10 % (UN, 2022).

Currently, China's fertility rate has declined to a level below replacement, while

life expectancy and mortality rates align closely with those observed in developed nations. It is evident that the initial phase of the 21st century will witness the most rapid period of population ageing in China. Consequently, the living conditions of the elderly, the establishment of elderly care facilities, and the development of products tailored to the needs of the ageing population have garnered significant attention from various stakeholders.

## **1.2.2 New Perspective On the Elderly Population**

### **a) The Concept of Well Being for Elderly**

Treating the elderly as a problem is rife with negative connotations. This results in older people often finding themselves in a passive role when implementting designed interventions that encounter difficulties in achieving sustainable well-being for the elderly. To foster new aspects of design for the ageing population and allow the elderly to enjoy their old age, it is necessary to have a new understanding of the nature of happiness and well-being.

Well-being is closely associated with the concepts of happiness and welfare, although there are notable distinctions between them. In contemporary psychological research, the English equivalent of well-being is derived from the compound term Well-being, reflecting Western views of human existence. Happiness means both subjective and objective happiness. It encompasses both “the happiness that human beings derive from the fulfilment of their needs and the pleasure that individuals derive from being able to realize their values,” and can be expressed in terms of objective counterparts and quality of life. The design process should focus on the design object’s potential to regulate happiness-enhancing behaviors rather than materialistic attributes. On the one hand, this is an